**As confidentially submitted to the Securities and Exchange Commission on October 11, 2019.**
**This draft registration statement has not been publicly filed with the**
**Securities and Exchange Commission and all information herein remains strictly confidential.**

**Registration No. 333-**

# UNITED STATES
# SECURITIES AND EXCHANGE COMMISSION

**Washington, D.C. 20549**

# FORM S-1
# REGISTRATION STATEMENT

***UNDER***
***THE SECURITIES ACT OF 1933***

# SUTROVAX, INC.

(Exact name of Registrant as specified in its charter)

| **Delaware** | **2836** | **46-4233385** |
|---|---|---|
| **(State or other jurisdiction of incorporation or organization)** | **(Primary Standard Industrial Classification Code Number)** | **(I.R.S. Employer Identification Number)** |

**SutroVax, Inc.**
**353 Hatch Drive**
**Foster City, California 94404**
**(650) 837-0111**
**(Address, including zip code, and telephone number, including area code, of Registrant's principal executive offices)**

**Grant E. Pickering**
**President and Chief Executive Officer**
**SutroVax, Inc.**
**353 Hatch Drive**
**Foster City, California 94404**
**(650) 837-0111**
**(Name, address, including zip code, and telephone number, including area code, of agent for service)**

*Copies to:*

| **Robert W. Phillips**<br>**Charles S. Kim**<br>**J. Carlton Fleming**<br>**Cooley LLP**<br>**101 California Street, 5th Floor**<br>**San Francisco, California 94111**<br>**(415) 693-2000** | **Jane Wright-Mitchell**<br>**SutroVax, Inc.**<br>**353 Hatch Drive**<br>**Foster City, California 94404**<br>**(650) 837-0111** | **Peter N. Handrinos**<br>**Brian J. Cuneo**<br>**Miles P. Jennings**<br>**Latham & Watkins LLP**<br>**140 Scott Drive**<br>**Menlo Park, California 94025**<br>**(650) 328-4600** |
|---|---|---|

**Approximate date of commencement of proposed sale to the public:** As soon as practicable after this Registration Statement is declared effective.

If any of the securities being registered on this form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, check the following box. ☐

If this form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

If this form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

If this form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

| | | | |
|---|---|---|---|
| Large accelerated filer | ☐ | Accelerated filer | ☐ |
| Non-accelerated filer | ☒ | Smaller reporting company | ☒ |
| | | Emerging growth company | ☒ |

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 7(a)(2)(B) of the Securities Act. ☐

**CALCULATION OF REGISTRATION FEE**

| **Title of Each Class of Securities To Be Registered** | **Proposed Maximum Aggregate Offering Price(1)** | **Amount of Registration Fee** |
|---|---|---|
| Common Stock, $0.001 par value per share | $ | $ |

(1) Estimated solely for the purpose of calculating the registration fee pursuant to Rule 457(o) under the Securities Act of 1933, as amended. Includes the aggregate offering price of additional shares that the underwriters have the option to purchase, if any.

**The Registrant hereby amends this Registration Statement on such date or dates as may be necessary to delay its effective date until the Registrant shall file a further amendment which specifically states that this Registration Statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933 or until the Registration Statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.**

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The information in this preliminary prospectus is not complete and may be changed. We may not sell these securities until the registration statement filed with the Securities and Exchange Commission is effective. This preliminary prospectus is not an offer to sell these securities and it is not soliciting an offer to buy these securities in any state or other jurisdiction where the offer or sale is not permitted.

Subject to Completion
Preliminary Prospectus dated , 2020

PROSPECTUS

# Shares


## Common Stock

This is an initial public offering of shares of common stock of SutroVax, Inc. We are selling shares of our common stock.

We expect the public offering price to be between $ and $ per share. Currently, no public market exists for the shares. After pricing of the offering, we expect that the shares will trade on the Nasdaq Global Market under the symbol " ."

We are an "emerging growth company" as defined under the federal securities laws and, as such, we have elected to comply with certain reduced public company reporting requirements for this prospectus and may elect to do so in future filings.

**Investing in our common stock involves risks that are described in the "Risk Factors" section beginning on page 12 of this prospectus.**

| | Per Share | Total |
|---|---|---|
| Initial public offering price | $ | $ |
| Underwriting discounts and commissions(1) | $ | $ |
| Proceeds, before expenses, to us | $ | $ |

(1) See the section entitled "Underwriting" for additional information regarding compensation payable to the underwriters.

To the extent the underwriters sell more than shares of common stock, the underwriters have the option to purchase up to an additional shares of common stock from us at the initial public offering price less the underwriting discounts and commissions.

**Neither the Securities and Exchange Commission nor any other state securities commission has approved or disapproved of these securities or passed on the adequacy or accuracy of this prospectus. Any representation to the contrary is a criminal offense.**

The underwriters expect to deliver the shares to purchasers on or about , 2020.

**BofA Merrill Lynch** **Jefferies** **Evercore ISI**

**Cantor** **Needham & Company**

Prospectus dated , 2020

## EXPLANATORY NOTE

Pursuant to the applicable provisions of the Fixing America's Surface Transportation Act, we are omitting our unaudited financial statements as of June 30, 2019 and for the six months ended June 30, 2018 and 2019 because they relate to historical periods that we believe will not be required to be included in the prospectus at the time of the contemplated offering. We intend to amend this registration statement to include all financial information required by Regulation S-X at the date of such amendment before distributing a preliminary prospectus to investors.

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Neither we nor the underwriters have authorized anyone to provide you with information other than that contained in this prospectus or any free writing prospectus prepared by or on behalf of us or to which we have referred you. We and the underwriters take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. We and the underwriters are offering to sell, and seeking offers to buy, common stock only in jurisdictions where offers and sales are permitted. The information contained in this prospectus or any free writing prospectus is accurate only as of its date, regardless of its time of delivery or of any sale of shares of our common stock. Our business, financial condition, results of operations and prospects may have changed since that date.

For investors outside of the United States: We have not, and the underwriters have not, done anything that would permit this offering or possession or distribution of this prospectus in any jurisdiction where action for that purpose is required, other than the United States. Persons outside of the United States who come into possession of this prospectus must inform themselves about, and observe any restrictions relating to, the offering of the shares of common stock and the distribution of this prospectus outside of the United States.

## PROSPECTUS SUMMARY

*This summary highlights selected information contained elsewhere in this prospectus. This summary does not contain all of the information you should consider before investing in our common stock. You should read this entire prospectus carefully, including the sections entitled "Risk Factors" and "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our financial statements and the related notes included elsewhere in this prospectus, before making an investment decision. Our fiscal year ends on December 31. Unless the context otherwise requires, all references in this prospectus to "we," "us," "our," "our company" and "SutroVax" refer to SutroVax, Inc.*

### Overview

We are a next-generation vaccine company seeking to improve global health by developing superior and novel vaccines designed to prevent or treat some of the most common and deadly infectious diseases worldwide. Our cell-free protein synthesis platform enables us to design and produce protein carriers and antigens, the critical building blocks of vaccines, in ways that we believe conventional vaccine technologies currently cannot. Our lead vaccine candidate, SVX-24, is a 24-valent investigational broad-spectrum pneumococcal conjugate vaccine, or PCV, that we believe has the potential to become the standard of care in the $7 billion global pneumococcal vaccine market.

Our cell-free protein synthesis platform, which is comprised of the XpressCF platform exclusively licensed from Sutro Biopharma, Inc., or Sutro Biopharma, and our proprietary know-how, offers several advantages over conventional cell-based protein expression methods, which we believe enable us to generate more broad-spectrum and/or more immunogenic vaccines. In the context of conjugate vaccines, we believe we can add more antigenic strains without compromising the overall immune response. In particular, our ability to specify the attachment point of antigens, including polysaccharides, on protein carriers represents a significant improvement over the random conjugation that occurs with conventional technologies. This site-specific conjugation is designed to ensure that B-cell and/or T-cell epitopes are optimally exposed, maximizing the immune response, whereas random conjugation blocks these critical immunogenic epitopes, dampening the immune response and causing a phenomenon known as carrier suppression. We believe this precise control of conjugation chemistry enables us to design broader-spectrum conjugate vaccine candidates using carrier-sparing conjugates that use less protein carrier without sacrificing immunogenicity. We are also able to design novel conjugate vaccine candidates using standard amounts of protein carrier to generate heightened immunogenicity. Beyond conjugate vaccines, we believe we can also design novel protein vaccine candidates based on well-appreciated but highly complex antigens that currently cannot be made with conventional technologies to address diseases for which there are no available vaccines.

The global vaccine market was $36 billion in 2018 and is expected to grow at an 8% compound annual growth rate, or CAGR, to approximately $58 billion by 2025. The global pneumococcal vaccine market has grown rapidly over the last two decades, reaching $7 billion in sales in 2018, and is expected to grow to $10 billion by 2025. The two leading pneumococcal vaccine franchises, Pneumovax and Prevnar, have generated over $100 billion in combined sales and have been on the market for 42 years and 20 years, respectively. The major types of pneumococcal disease are pneumonia (lung infection), bacteremia (bloodstream infection) and meningitis (infection of the tissue surrounding the brain and spinal cord). According to the American Thoracic Society, pneumonia is the world's leading cause of death among children under five years of age, accounting for 16% of all deaths in the age group. Pneumonia is also the most common cause of unplanned hospitalization in the United States and affects both children and adults. There are currently more than 90 circulating strains of pneumococcus, of which approximately one-third are known to be pathogenic.

The current vaccine standard of care for pneumococcal disease includes the combination of Merck's Pneumovax 23 and Pfizer's Prevnar 13 for adults, and Pfizer's Prevnar 13 for infants. Pneumovax 23 is a

polysaccharide vaccine that protects against 23 strains of pneumococcus but is not thought to protect against pneumonia and provides only transient protection against bacteremia in adults. Furthermore, Pneumovax 23 is neither boostable nor durable, which prevents it from being effective in infants. Prevnar 13 is a PCV that protects against only 13 strains of pneumococcus but offers significantly better immunogenicity, protects against pneumonia and is suitable for both adults and infants. Routine immunization with PCVs has been effective in dramatically lowering the incidence of invasive pneumococcal disease, or IPD, in both adults and children in the United States and other industrialized nations. However, due to a phenomenon called serotype replacement, strains that are not covered by existing vaccines are increasing in prevalence. In 2015, over 75% of IPD incidence in both children and adults was caused by strains beyond the 13 strains covered by Prevnar 13. Efforts to improve upon current standard of care vaccines center around expanding the valency of PCVs to address the strains driving residual pneumococcal disease. However, limitations due to conventional conjugation chemistry and carrier suppression have complicated those efforts, and there remains a growing need for broader-spectrum PCVs, as evidenced by the fact that despite Prevnar 13's superior immunogenicity profile, Pneumovax 23 remains universally recommended in adults, given its broader-spectrum coverage.

The U.S. Centers for Disease Control, or CDC, its Advisory Committee on Immunization Practices, or ACIP, and similar international advisory bodies develop vaccine recommendations for both children and adults. New pediatric vaccines that receive ACIP preferred recommendations are almost universally adopted, and adult vaccines that receive a preferred recommendation are widely adopted. We believe that our PCVs will be well-positioned to obtain these preferred recommendations, by virtue of their broader spectrum, which could drive rapid and significant market adoption.

**Our Pipeline**

We carefully select our target disease areas and vaccine candidates to address areas of significant unmet medical need based on the following criteria: well-defined commercial landscape and efficient market adoption, low biological risk and established clinical pathways. The following table summarizes our current pipeline:

| Program | Profile/Type | Vaccine Description | Target Population | Disease | Status |
|---|---|---|---|---|---|
| SVX-24 | Superior Conjugate Vaccine | 24-valent PCV |  | Invasive Pneumococcal Disease | Preclinical POC vs Prevnar 13 and Polysaccharide/Alum[1] (IND-enabling stage) |
| | | |  | Invasive Pneumococcal Disease and Otitis Media | Preclinical POC vs Prevnar 13 (IND-enabling stage) |
| SVX-XP | Superior Conjugate Vaccine | Next-generation 32-valent PCV |  | Invasive Pneumococcal Disease | Preclinical POC vs Prevnar 13 and Polysaccharide/Alum[2] |
| | | |  | Invasive Pneumococcal Disease and Otitis Media | Preclinical POC vs Prevnar 13 |
| SVX-A1 | Novel Conjugate Vaccine | Monovalent conjugate / complex protein-based vaccine |  | Group A Strep Infections | Preclinical POC + Grant Funding |
| SVX-PG | Novel Protein Vaccine | Multiple complex protein-based therapeutic vaccine |  | Periodontitis | Preclinical POC |

 = Adults  = Children  = Infants

*(1) For the Polysaccharide/Alum comparator, we used 23 polysaccharides in Pneumovax 23 at an equivalent dose with the addition of strain 6A and alum as the objective of the study was to evaluate whether SVX-24 showed a conjugate-like response in all 24 strains.*

*(2) For the Polysaccharide/Alum comparator, we used 23 polysaccharides in Pneumovax 23 and 9 additional polysaccharides with alum for comparison.*

Our lead vaccine candidate, SVX-24, is a preclinical, 24-valent PCV designed to provide the broad-spectrum coverage of Pneumovax 23 with an immunogenicity profile comparable to Prevnar 13. We believe SVX-24, if approved, has the potential to become the standard of care in the $7 billion global pneumococcal vaccine market. Our second PCV, known as SVX-XP, builds on the technical proof of concept established by SVX-24 and would, if approved, expand the breadth of coverage to 32 strains, including emerging strains responsible for IPD and antibiotics resistance, without compromising immunogenicity due to carrier suppression.

Our preclinical proof of concept studies for SVX-24 measured serotype-specific IgG antibody responses, the surrogate endpoint for pediatrics, and opsonophagocytic activity, or OPA, responses, the surrogate endpoint for adults of our vaccine candidates against Prevnar 13 and Pneumovax 23. In these studies, our vaccine candidates have shown comparable responses to the 13 common strains in Prevnar 13 and superior responses to the 23 common strains in Pneumovax 23. We believe our preclinical study results may be predictive of clinical trial results based on our use of the same rabbit model used to develop each of the PCVs approved to date.

We believe our PCVs could receive regulatory approval based on a demonstration of non-inferiority to the standard of care using well-defined surrogate immune endpoints rather than requiring clinical field efficacy studies, consistent with how other PCVs have obtained regulatory approval in the past. We expect to submit an investigational new drug, or IND, application for SVX-24 to the U.S. Food and Drug Administration, or FDA, in 2021.

In addition to our PCV franchise, we are developing a novel conjugate vaccine candidate for group A strep. Group A strep causes 700 million cases, the majority of which are of pharyngitis, commonly known as strep throat, worldwide each year and increases the risk for severe invasive infections, such as sepsis, necrotizing fasciitis and toxic shock syndrome. There is currently no vaccine against group A strep. In September 2019, we announced a grant of up to $15.1 million, awarded by CARB-X, a global non-profit partnership dedicated to accelerating antibacterial innovation to tackle the rising global threat of drug-resistant bacteria, to develop this vaccine candidate.

We are also developing a novel protein vaccine candidate targeting the keystone pathogen responsible for periodontitis, a chronic oral inflammatory disease affecting an estimated 65 million adults in the United States. Our initial goal is to develop a therapeutic vaccine to slow or stop disease progression; however, the results from clinical trials may inform the potential adoption of prophylactic immunization.

**Our Platform**

We are leveraging our scalable cell-free protein synthesis platform to develop potentially superior and novel conjugate and protein vaccine candidates for adult and pediatric indications by taking advantage of the following:

- *Site-Specific Conjugation.* We are able to specify the attachment point of antigens, including polysaccharides, on protein carriers to ensure optimal exposure of B-cell and/or T-cell epitopes, thereby creating protein carriers designed to have enhanced potency. We believe this precise control of conjugation chemistry enables us to create broader-spectrum conjugate vaccine candidates using carrier-sparing conjugates that use less protein carrier without sacrificing immunogenicity. We are also able to design novel conjugate vaccine candidates using standard amounts of protein carrier to generate heightened immunogenicity.

- *Production of Novel Protein Vaccines.* We can design novel protein vaccine candidates based on well-appreciated but highly complex antigens that currently cannot be made with conventional technologies to address diseases for which there are no available vaccines. We can design and produce these “tough-to-make” antigens that conform to the target pathogens, thereby increasing the likelihood that the vaccine will elicit a protective immune response.

- *Speed, Flexibility and Scalability of the Discovery Engine.* We are able to rapidly screen vaccine candidates and produce conjugates, thereby accelerating the process of making and testing vaccine candidates. Furthermore, we believe our platform can scale linearly from discovery to commercial scale.

**Our Strategy**

The key elements of our strategy are:

- Rapidly advance SVX-24 through IND-enabling activities, clinical development and regulatory approval.

- Establish scalable production of SVX-24.
- Create a long-lasting PCV franchise by offering the broadest-spectrum PCV available.
- Advance our novel vaccine candidates and expand our pipeline.
- Continue to build a robust intellectual property portfolio.

**Manufacturing and Supply**

We believe that an efficient and high-quality manufacturing process is critical to our long-term success. We have strategically aligned with Lonza, a globally recognized contract development and manufacturing organization based in Switzerland, to develop a robust and scalable manufacturing process for SVX-24. We have partnered closely with Lonza to transfer technology, develop and optimize processes and prepare for both clinical trial and commercial requirements for SVX-24. With this ongoing partnership, we believe we are addressing the complexity of vaccine development and production, thus establishing barriers to entry to protect our PCV franchise.

**Management and Investors**

SutroVax was formed in 2013 through its relationship with Sutro Biopharma by our three co-founders, Grant Pickering, Jeff Fairman and Ash Khanna, with the goal of utilizing Sutro Biopharma's proprietary XpressCF platform in the field of vaccines to address infectious diseases. Since that time, we have assembled a distinguished group of executives, directors and advisors with extensive experience in vaccine development, manufacturing and commercialization. Our co-founder and Chief Executive Officer, Grant Pickering, played a prominent role in developing Provenge, the first therapeutic cancer vaccine to reach the market. Our co-founder and Vice President of Research, Jeff Fairman, and our Senior Vice President of Process Development and Manufacturing, Paul Sauer, have been developing and industrializing vaccines and other biologics for over 20 and 30 years, respectively. We also benefit from directors and advisors that have previously served as heads of research and development for GlaxoSmithKline, Merck and Sanofi-Pasteur, including our board chairman, Moncef Slaoui, who served as the chairman of GlaxoSmithKline Vaccines. Together, our executives, directors and advisors have made essential contributions to the development of many widely used preventative and therapeutic vaccines, including pneumococcal vaccines such as Prevnar, Prevnar 13, Synflorix and Pneumovax 23, as well as other vaccines, including Provenge, Gardasil, Cervarix, Shingrix, Zostavax, Rotateq, Rotarix and Bexsero, among others.

We are supported by leading investors, including TPG Growth, Abingworth LLP, Longitude Capital, Frazier Healthcare Partners, Pivotal bioVenture Partners, Medicxi Ventures, Roche Venture Fund, CTI Life Sciences Fund and Foresite Capital.

**Risk Factors Summary**

Our business is subject to numerous risks and uncertainties, including those discussed more fully in the section entitled "Risk Factors." These risks include, but are not limited to:

- We are in the early stages of vaccine development and have a very limited operating history and no products approved for commercial sale, which may make it difficult for you to evaluate the success of our business to date and to assess our future viability.
- We have incurred significant net losses since inception and anticipate that we will continue to incur substantial net losses for the foreseeable future and may never achieve or maintain profitability. Our stock is a highly speculative investment.

- Even after this offering, we will require substantial additional funding to finance our operations. If we are unable to raise additional capital when needed, we could be forced to delay, reduce or terminate certain of our development programs or other operations.

- Our approach to the discovery and development of our vaccine candidates is based on novel technologies that are unproven, which may expose us to unforeseen risks and makes it difficult to predict the time and cost of vaccine candidate development and time to obtain regulatory approval.

- Our vaccine candidates have never been tested in human subjects and are in early, preclinical stages of development and may fail in development or suffer delays that materially and adversely affect their commercial viability. If we are unable to complete development of or commercialize our vaccine candidates or experience significant delays in doing so, our business would be materially harmed.

- Our business is highly dependent on the success of SVX-24, which is in the early stages of development. If we are unable to obtain approval for SVX-24 and effectively commercialize SVX-24, our business would be significantly harmed.

- Our primary competitors have significantly greater resources and experience than we do, which may make it difficult for us to successfully develop our vaccine candidates, or may result in others discovering, developing or commercializing products before or more successfully than us.

- We may not be successful in our efforts to use our cell-free protein synthesis platform to expand our pipeline of vaccine candidates and develop marketable candidates.

- We currently rely on third-party manufacturing and supply partners, including Lonza and Sutro Biopharma, to supply raw materials and components for, and manufacture, our vaccine candidates. Our inability to have sufficient quantities of our vaccine candidates manufactured, or our failure to comply with applicable regulatory requirements or to supply sufficient quantities at acceptable quality levels or prices, or at all, would materially and adversely affect our business.

- The FDA regulatory approval process is lengthy and time-consuming, and we may experience significant delays in the clinical development and regulatory approval of our vaccine candidates.

- If we are unable to obtain and maintain patent protection for our technology and products, or if the scope of the patent protection obtained is not sufficiently broad, we may not be able to compete effectively in our markets.

**Corporate Information**

We were incorporated under the laws of the state of Delaware in November 2013. Our principal executive offices are located at 353 Hatch Drive, Foster City, California 94404. Our telephone number is (650) 837-0111. Our website address is https://www.sutrovax.com. Information contained on, or that can be accessed through, our website is not incorporated by reference into this prospectus.

SutroVax, the SutroVax logo and our other registered or common law trade names, trademarks or service marks appearing in this prospectus are the property of SutroVax, Inc. Trade names, trademarks and service marks of other companies appearing in this prospectus are the property of their respective owners.

**Implications of Being an Emerging Growth Company**

We qualify as an "emerging growth company" as defined in the Jumpstart Our Business Startups Act, or the JOBS Act, enacted in April 2012. An emerging growth company may take advantage of reduced reporting requirements that are otherwise applicable to public companies. These provisions include, but are not limited to:

- not being required to comply for a certain period of time with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act of 2002, as amended;
- reduced disclosure obligations regarding executive compensation in our periodic reports, proxy statements and registration statements; and
- exemptions from the requirements of holding a stockholder advisory vote on executive compensation and any golden parachute payments not previously approved.

We will remain an emerging growth company until the earliest of (i) the last day of our first fiscal year in which we have total annual gross revenues of $1.07 billion or more; (ii) the last day of our fiscal year following the fifth anniversary of the completion of this offering; (iii) the date on which we are deemed to be a "large accelerated filer," under the rules of the SEC, which means the market value of equity securities that is held by non-affiliates exceeds $700.0 million as of the prior June 30th; and (iv) the date on which we have issued more than $1.0 billion in non-convertible debt securities during the prior three-year period.

We have elected to take advantage of certain of the reduced disclosure obligations in the registration statement of which this prospectus is a part and may elect to take advantage of other reduced reporting requirements in future filings. In addition, the JOBS Act provides that an emerging growth company can take advantage of an extended transition period for complying with new or revised accounting standards. This provision allows an emerging growth company to delay the adoption of some accounting standards until those standards would otherwise apply to private companies. We have elected to use the extended transition period for complying with new or revised accounting standards that have different effective dates for public and private companies until the earlier of the date that we are no longer an emerging growth company or we affirmatively and irrevocably opt out of the extended transition period provided in the JOBS Act. However, as described in Note 3 to our financial statements included elsewhere in this prospectus, we early adopted certain accounting standards, as the JOBS Act does not preclude an emerging growth company from adopting a new or revised accounting standard earlier than the time that such standard applies to private companies to the extent early adoption is permitted. As a result, the information that we provide to our stockholders may be different than you might receive from other public reporting companies in which you hold equity interests.

**The Offering**

| | |
|---|---|
| Common stock offered by us | shares |
| Option to purchase additional shares | shares |
| Common stock to be outstanding immediately after this offering | shares ( shares if the underwriters exercise their option to purchase additional shares in full) |
| Use of proceeds | We estimate that the net proceeds from the sale of our common stock in this offering will be approximately $ million (or approximately $ million if the underwriters exercise their option to purchase additional shares in full), based on the assumed initial public offering price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.<br><br>The principal purposes of this offering are to increase our capitalization and financial flexibility, create a public market for our common stock, facilitate future access to the public equity markets by us, our employees and our stockholders and increase our visibility in the marketplace. We currently intend to use the net proceeds we receive from this offering to fund completion of IND-enabling activities and our clinical development of SVX-24, ongoing preclinical development of our other vaccine candidates and general corporate purposes, including working capital, operating expenses and capital expenditures. See the section entitled “Use of Proceeds” for additional information. |
| Risk factors | See the section entitled “Risk Factors” for additional information. |
| Proposed trading symbol on the Nasdaq Global Market | “ ” |

The number of shares of our common stock that will be outstanding after this offering is based on shares of our common stock (including (i) 28,175,226 shares of our redeemable convertible preferred stock on an as-converted basis, (ii) the issuance of shares of our common stock as a result of the expected net exercise of an outstanding warrant to purchase 100,000 shares of our redeemable convertible preferred stock and (iii) the issuance of shares of our common stock as a result of the expected net exercise of an outstanding warrant to purchase 53,744 shares of our common stock) outstanding as of December 31, 2018, and excludes:

- 5,117,067 shares of our common stock issuable upon the exercise of options to purchase shares of our common stock outstanding as of December 31, 2018, with a weighted-average exercise price of $1.05 per share;
- 965,760 shares of our common stock issuable upon the exercise of options to purchase shares of our common stock granted after December 31, 2018, with a weighted-average exercise price of $1.21 per share;

- shares of our common stock reserved for future issuance under our 2020 Equity Incentive Plan, or 2020 Plan, (including up to shares of our common stock comprised of (i) the shares reserved and remaining available for issuance under our 2014 Equity Incentive Plan, or 2014 Plan, that will be added to our 2020 Plan reserve upon its effectiveness plus (ii) the number of shares subject to stock options or other stock awards granted under our 2014 Plan that would have otherwise returned to our 2014 Plan, which will be added as they become available (e.g., due to forfeiture of the underlying 2014 Plan award)), which includes an annual evergreen increase and will become effective in connection with this offering; and

- shares of our common stock reserved for future issuance under our 2020 Employee Stock Purchase Plan, or ESPP, which includes an annual evergreen increase and will become effective in connection with this offering.

Unless otherwise indicated, the information in this prospectus assumes:

- an initial public offering price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus;

- the conversion of all outstanding shares of our redeemable convertible preferred stock into 28,175,226 shares of our common stock upon the closing of this offering;

- no exercise of the outstanding options described above;

- the net exercise of (i) the outstanding warrant to purchase 100,000 shares of our redeemable convertible preferred stock with an exercise price of $6.8296 per share, resulting in the issuance of shares of our common stock and (ii) the outstanding warrant to purchase 53,744 shares of our common stock with an exercise price of $0.47 per share, resulting in the issuance of shares of our common stock, in each case, assuming an initial public offer price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, both of which will terminate if not exercised prior to the completion of this offering;

- no exercise of the underwriters' option to purchase up to an additional shares of our common stock; and

- the filing and effectiveness of our amended and restated certificate of incorporation and the adoption of our amended and restated bylaws, each of which will occur upon the closing of this offering.

## Summary Financial Data

The following tables set forth our summary statements of operations data for the years ended December 31, 2017 and 2018, and our summary balance sheet data as of December 31, 2018, which have been derived from our audited financial statements included elsewhere in this prospectus. Our historical results are not necessarily indicative of the results that may be expected for any period in the future. You should read the following summary financial data together with the sections entitled "Management's Discussion and Analysis of Financial Condition and Results of Operations" and "Selected Financial Data" and our financial statements and the related notes included elsewhere in this prospectus. The summary financial data included in this section are not intended to replace the financial statements and are qualified in their entirety by our financial statements and the related notes included elsewhere in this prospectus.

| | Year Ended December 31, | |
|---|---|---|
| | 2017 | 2018 |
| | (in thousands, except share and per share data) | |
| **Statements of Operations Data:** | | |
| Operating expenses: | | |
| Research and development | $ 12,785 | $ 30,145 |
| General and administrative | 5,048 | 5,388 |
| Total operating expenses | 17,833 | 35,533 |
| Loss from operations | (17,833) | (35,533) |
| Other income (expense), net: | | |
| Interest expense | (69) | (75) |
| Interest income | 233 | 903 |
| Foreign currency transaction gain (loss) | (9) | 42 |
| Change in fair value of the redeemable convertible preferred stock tranche liability | 440 | 5,178 |
| Total other income (expense), net | 595 | 6,048 |
| Net loss and comprehensive loss | $ (17,238) | $ (29,485) |
| Net loss per share attributable to common stockholders, basic and diluted | $ (2.87) | $ (4.80) |
| Weighted-average shares outstanding used in computing net loss per share attributable to common stockholders, basic and diluted(1) | 6,014,717 | 6,142,274 |
| Pro forma net loss per share, basic and diluted (unaudited)(1) | | $ |
| Weighted-average shares outstanding used in computing pro forma net loss per share, basic and diluted (unaudited)(1) | | |

(1) See Notes 2 and 12 to our financial statements included elsewhere in this prospectus for an explanation of the calculations of our basic and diluted net loss per share, basic and diluted pro forma net loss per share and the weighted-average number of shares used in the computation of the per share amounts.

| | As of December 31, 2018 | | |
|---|---|---|---|
| | Actual | Pro Forma(1) | Pro Forma As Adjusted(2)(3) |
| | | (in thousands) | |
| **Balance Sheet Data:** | | | |
| Cash and cash equivalents | $ 66,090 | $ | $ |
| Working capital(4) | 59,955 | | |
| Total assets | 70,802 | | |
| Redeemable convertible preferred stock warrant liability | 462 | | |
| Redeemable convertible preferred stock tranche liability | 3,185 | | |
| Series A redeemable convertible preferred stock | 24,967 | | |
| Series B redeemable convertible preferred stock | 55,151 | | |
| Series C redeemable convertible preferred stock | 37,692 | | |
| Total stockholders' (deficit) equity | (57,728) | | |

(1) The pro forma balance sheet data gives effect to (i) the conversion of all of our outstanding shares of redeemable convertible preferred stock as of December 31, 2018 into 28,175,226 shares of our common stock immediately prior to the closing of this offering; (ii) the issuance of shares of our common stock as a result of the expected net exercise of an outstanding warrant to purchase 100,000 shares of our redeemable convertible preferred stock and the related reclassification of the redeemable convertible warrant liability to common stock and additional paid-in capital, assuming an initial public offering price of $ per share, which is the midpoint of the estimated price range set forth on the cover page of this prospectus; (iii) the issuance of shares of our common stock as a result of the expected net exercise of an outstanding warrant to purchase 53,744 shares of our common stock, assuming an initial public offering price of $ per share; (iv) the removal of gains or losses resulting from the re-measurement of the redeemable convertible preferred stock warrant liability as the warrants will be exercised for shares of common stock immediately prior to our IPO; and (v) the filing and effectiveness of our amended and restated certificate of incorporation that will be in effect immediately upon the closing of this offering.

(2) The pro forma as adjusted column gives effect to: (i) the pro forma adjustments set forth in footnote (1) above and (ii) the sale of shares of our common stock in this offering at the assumed initial public offering price of $ per share, the midpoint of the estimated price range set forth on the cover page of this prospectus, after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

(3) Each $1.00 increase (decrease) in the assumed initial public offering price of $ per share, the midpoint of the estimated price range set forth on the cover page of this prospectus, would increase (decrease) each of our pro forma as adjusted cash and cash equivalents, working capital, total assets and total stockholders' (deficit) equity by approximately $ million, assuming the number of shares of common stock offered by us, as set forth on the cover page of this prospectus, remains the same, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. Similarly, each increase (decrease) of 1.0 million shares of common stock offered by us would increase (decrease) each of our pro forma as adjusted cash and cash equivalents, working capital, total assets and total stockholders' (deficit) equity by approximately $ million, assuming the assumed initial public offering price of $ per share remains the same, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. The pro forma and pro forma as adjusted information discussed above is illustrative only and will depend on the actual initial public offering price and other terms of this offering determined at pricing.

(4) Working capital is defined as total current assets less total current liabilities. See our financial statements and the related notes included elsewhere in this prospectus for further details regarding our current assets and current liabilities.

## RISK FACTORS

*Investing in our common stock involves a high degree of risk. You should carefully consider the risks described below, as well as the other information in this prospectus, including our financial statements and the related notes and the section of this prospectus entitled "Management's Discussion and Analysis of Financial Condition and Results of Operations," before deciding whether to invest in our common stock. The occurrence of any of the events or developments described below could harm our business, financial condition, results of operations and growth prospects. In such an event, the market price of our common stock could decline and you may lose all or part of your investment. Additional risks and uncertainties not presently known to us or that we currently deem immaterial also may impair our business operations.*

### Risks Related to Our Financial Position and Capital Needs

***We are in the early stages of vaccine development and have a very limited operating history and no products approved for commercial sale, which may make it difficult for you to evaluate the success of our business to date and to assess our future viability.***

To date, we have devoted substantially all of our resources to performing research and development, undertaking preclinical studies and enabling manufacturing activities in support of our product development efforts, hiring personnel, acquiring and developing our technology and vaccine candidates, organizing and staffing our company, performing business planning, establishing our intellectual property portfolio and raising capital to support and expand such activities. As an organization, we have not yet demonstrated an ability to successfully complete clinical development, obtain regulatory approvals, manufacture a commercial-scale product or conduct sales and marketing activities necessary for successful commercialization or arrange for a third party to conduct these activities on our behalf. Consequently, any predictions about our future success or viability may not be as accurate as they could be if we had a longer operating history.

Our current vaccine candidate pipeline includes four preclinical programs. We may encounter unforeseen expenses, difficulties, complications, delays and other known or unknown factors in achieving our business objectives, including with respect to our vaccine candidates. We will need to transition at some point from a company with a research and development focus to a company capable of supporting commercial activities. We may not be successful in such a transition.

***We have incurred significant net losses since inception and anticipate that we will continue to incur substantial net losses for the foreseeable future and may never achieve profitability. Our stock is a highly speculative investment.***

We are a preclinical stage biotechnology vaccine company that was incorporated in November 2013. Investment in preclinical stage companies and vaccine development is highly speculative because it entails substantial upfront capital expenditures and significant risk that any potential vaccine candidate will not gain regulatory approval or become commercially viable. We do not have any products approved for sale and have not generated any revenue from product sales. As a result, we are not profitable and have incurred losses in each year since inception. Our net losses were $17.2 million and $29.5 million for the years ended December 31, 2017 and 2018, respectively. As of December 31, 2017 and 2018, we had an accumulated deficit of $29.6 million and $59.1 million, respectively.

We expect to continue to spend significant resources to fund research and development of, and seek regulatory approvals for, our vaccine candidates. We expect to incur substantial and increasing operating losses over the next several years as our research, development, manufacturing, preclinical testing and clinical trial activities increase. As a result, our accumulated deficit will also increase significantly. We may encounter unforeseen expenses, difficulties, complications, delays and other unknown factors that may adversely affect our business. The size of our future net losses will depend, in part, on the rate of future growth of our expenses and

our ability to generate revenue. However, we do not expect to generate any revenue from commercial product sales unless and until we successfully complete development and obtain regulatory approval for one or more of our vaccine candidates, which we expect will take a number of years. Our prior losses and expected future losses have had and will continue to have an adverse effect on our stockholders' equity and working capital. Even if we eventually generate revenue, we may never be profitable and, if we do achieve profitability, we may not be able to sustain or increase profitability on a quarterly or annual basis.

***Even after this offering, we will require substantial additional funding to finance our operations. If we are unable to raise additional capital when needed, we could be forced to delay, reduce or terminate certain of our development programs or other operations.***

As of December 31, 2018, we had cash and cash equivalents of $66.1 million. We believe that the net proceeds from this offering will be approximately $ million, based on an assumed public offering price of $ per share, which is the midpoint of the estimated price range set forth on the cover page of this prospectus, after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us. We believe that such proceeds, together with our existing cash and cash equivalents as of the date of this prospectus, will fund our current operating plans through at least the next months from the date of this offering. However, our operating plan may change as a result of many factors currently unknown to us, and we may need to seek additional funds sooner than planned. We will need to raise additional capital before we can progress any of our vaccine candidates into a pivotal clinical trial. We expect to finance our cash needs through public or private equity or debt financings, third-party (including government) funding and marketing and distribution arrangements, as well as other collaborations, strategic alliances and licensing arrangements or any combination of these approaches. Our future capital requirements will depend on many factors, including:

- the timing, progress and results of our ongoing preclinical studies for our vaccine candidates;
- the scope, progress, results and costs of research and development, testing, screening, manufacturing, preclinical development and clinical trials;
- the outcome, timing and cost of seeking and obtaining regulatory approvals from the U.S. Food and Drug Administration, or FDA, and comparable foreign regulatory authorities, including the potential for such authorities to require that we perform field efficacy studies for our pneumococcal conjugate vaccine, or PCV, candidates, require more studies than those that we currently expect or change their requirements regarding the data required to support a marketing application;
- the cost of building a sales force in anticipation of any product commercialization;
- the costs of future commercialization activities, including product manufacturing, marketing, sales, royalties and distribution, for any of our vaccine candidates for which we receive marketing approval;
- our ability to maintain existing, and establish new, strategic collaborations, licensing or other arrangements and the financial terms of any such agreements, including the timing and amount of any future milestone, royalty or other payments due under any such agreement;
- any product liability or other lawsuits related to our products;
- the expenses needed to attract, hire and retain skilled personnel;
- the revenue, if any, received from commercial sales, or sales to foreign governments, of our vaccine candidates for which we may receive marketing approval;

- the costs to establish, maintain, expand, enforce and defend the scope of our intellectual property portfolio, including the amount and timing of any payments we may be required to make, or that we may receive, in connection with licensing, preparing, filing, prosecuting, defending and enforcing of any patents or other intellectual property rights;

- the expenses needed to attract, hire and retain skilled personnel; and

- the costs of operating as a public company.

Our ability to raise additional funds will depend on financial, economic and other factors, many of which are beyond our control. We cannot be certain that additional funding will be available on acceptable terms, or at all. We have no committed source of additional capital and if we are unable to raise additional capital in sufficient amounts or on terms acceptable to us, we may have to significantly delay, scale back or discontinue the development or commercialization of our vaccine candidates or other research and development initiatives. Our license agreements may also be terminated if we are unable to meet the payment obligations or milestones under the agreements. We could be required to seek collaborators for our vaccine candidates at an earlier stage than otherwise would be desirable or on terms that are less favorable than might otherwise be available, or relinquish or license on unfavorable terms our rights to our vaccine candidates in markets where we otherwise would seek to pursue development or commercialization ourselves.

***Due to the significant resources required for the development of our vaccine candidates, and depending on our ability to access capital, we must prioritize development of certain vaccine candidates. Moreover, we may expend our limited resources on vaccine candidates that do not yield a successful vaccine and fail to capitalize on vaccine candidates that may be more profitable or for which there is a greater likelihood of success.***

Due to the significant resources required for the development of our vaccine candidates, we must decide which vaccine candidates to pursue and advance and the amount of resources to allocate to each. Our decisions concerning the allocation of research, development, management and financial resources toward particular vaccine candidates may not lead to the development of any viable commercial vaccines and may divert resources away from better opportunities. Similarly, our potential decisions to delay, terminate, license or collaborate with third parties in respect of certain vaccine candidates may subsequently also prove to be less than optimal and could cause us to miss valuable opportunities. If we make incorrect determinations regarding the viability or market potential of any of our vaccine candidates or misread trends in the biopharmaceutical industry, in particular for vaccines, our business could be seriously harmed. As a result, we may fail to capitalize on viable commercial products or profitable market opportunities, be required to forego or delay pursuit of opportunities with other vaccine candidates that may later prove to have greater commercial potential than those we choose to pursue or relinquish valuable rights to such vaccine candidates through collaboration, licensing or other royalty arrangements in cases in which it would have been advantageous for us to invest additional resources to retain sole development and commercialization rights.

***Raising additional capital may cause dilution to our stockholders, including investors in this offering, restrict our operations or require us to relinquish rights to our technologies or vaccine candidates.***

We may seek additional capital through a combination of public and private equity offerings, debt financings, strategic partnerships and alliances and licensing arrangements. To the extent that we raise additional capital through the sale of equity or convertible debt securities, your ownership interest will be diluted, and the terms may include liquidation or other preferences that adversely affect your rights as a stockholder. The incurrence of indebtedness would result in increased fixed payment obligations and could involve certain restrictive covenants, such as limitations on our ability to incur additional debt, limitations on our ability to acquire or license intellectual property rights and other operating restrictions that could adversely impact our ability to conduct our business. If we raise additional funds through strategic partnerships and alliances and licensing arrangements with third parties, we may have to relinquish valuable rights to our technologies or vaccine candidates, or grant licenses on terms unfavorable to us.

**Risks Related to Our Business and Industry**

***Our approach to the discovery and development of our vaccine candidates is based on novel technologies that are unproven, which may expose us to unforeseen risks and makes it difficult to predict the time and cost of vaccine candidate development and obtain regulatory approval.***

We are developing a pipeline of vaccine candidates utilizing our cell-free protein synthesis platform, which is comprised of the XpressCF platform exclusively licensed from Sutro Biopharma, Inc., or Sutro Biopharma, and our proprietary know-how for vaccine applications against infectious disease, and our future success depends on the successful application of this approach to vaccine development. We are in the early stages of developing our vaccine candidates and there can be no assurance that any development problems we experience in the future will not cause significant delays or unanticipated costs, or that such development problems can be overcome. We may also experience delays in developing a sustainable, reproducible and scalable manufacturing process or transferring that process to manufacturing partners, which may prevent us from completing our clinical trials or commercializing our products on a timely or profitable basis, if at all. In addition, since we have not yet entered clinical development, we do not know the specific doses that may be effective in the clinic or, if approved, commercially. Finding a suitable dose may delay our anticipated clinical development timelines.

Furthermore, our expectations with regard to our scalability and costs of manufacturing may vary significantly as we develop our vaccine candidates and understand these critical factors. Conjugate vaccine development is highly complex, and development of broad-valency PCVs is further complicated by the number of components, analytical assays, and potential for adjustments, including but not limited to changes in raw materials, composition, formulation, manufacturing methods and dosing, which could result in drug substances and/or drug product that may vary between preclinical and clinical studies over time.

In addition, the preclinical and clinical trial requirements of the FDA, European Medicines Agency, or EMA, and other regulatory agencies and the criteria these regulators use to determine the safety and efficacy of a vaccine candidate are determined according to the type, complexity, novelty and intended use and market of the potential products. Approvals by the FDA and EMA for existing pneumococcal vaccines, such as Prevnar 13 and Pneumovax 23, may not be indicative of what these regulators may require for approval of our vaccine candidates. For example, we expect to use opsonophagocytic activity, or OPA, titers as the primary immunogenicity surrogate endpoint for the SVX-24 program in adults because Prevnar 13 was approved based on the establishment of non-inferiority of serotype-specific OPA responses relative to Pneumovax 23; however, there can be no assurance that this approach will be sufficient for regulatory approval or that regulators will not require field efficacy trials. In addition, novel aspects of our vaccine candidates and manufacturing processes may create further challenges in obtaining regulatory approval. The regulatory approval process for our novel vaccine candidates can be more complex and consequently more expensive and take longer than for other, better known or extensively studied pharmaceutical or other vaccine candidates. More generally, approvals by any regulatory agency may not be indicative of what any other regulatory agency may require for approval or what such regulatory agencies may require for approval in connection with new vaccine candidates. Moreover, our vaccine candidates may not perform successfully in clinical trials.

***Our vaccine candidates have never been tested in human subjects and are in early, preclinical stages of development and may fail in development or suffer delays that materially and adversely affect their commercial viability. If we are unable to complete development of or commercialize our vaccine candidates or experience significant delays in doing so, our business would be materially harmed.***

We have no products that have entered clinical trials or that are on the market, and all of our vaccine candidates are in early discovery and preclinical stages of development. Vaccine development generally takes many years. In particular, our most advanced vaccine candidate, SVX-24, showed positive results in a preclinical proof of concept study in 2017, and we expect to submit an investigational new drug, or IND, application to the

FDA in 2021. Our other vaccine candidates are in earlier stages of discovery and preclinical development and may never advance to clinical-stage development. Our ability to achieve and sustain profitability depends on obtaining regulatory approvals for and successfully commercializing our vaccine candidates, either alone or with third parties, and we cannot guarantee that we will ever obtain regulatory approval for any of our vaccine candidates. We have limited experience in conducting and managing the clinical trials necessary to obtain regulatory approvals, including approval by the FDA. Before obtaining regulatory approval for the commercial distribution of our vaccine candidates, we must conduct extensive preclinical tests and clinical trials to demonstrate the safety and efficacy of our vaccine candidates.

We may not have the financial resources to continue development of, or to enter into new collaborations for, a vaccine candidate if we experience any issues that delay or prevent regulatory approval of, or our ability to commercialize, vaccine candidates, including:

- negative or inconclusive results from our preclinical or clinical trials, leading to a decision or requirement to conduct additional preclinical testing or clinical trials or abandon a program;
- product-related adverse effects experienced by patients in our clinical trials;
- difficulty achieving successful development of our manufacturing processes, including process development and scale-up activities to supply products for preclinical studies, clinical trials and commercial sale, if approved;
- timely completion of our preclinical studies and clinical trials, including any field efficacy studies that may be required, which may be significantly slower or cost more than we currently anticipate and will depend substantially upon the performance of third-party contractors;
- inability of us or any third-party contract manufacturer to scale up manufacturing of our vaccine candidates to supply the needs of preclinical studies, clinical trials and commercial sales, and to manufacture such products in conformity with regulatory requirements;
- delays in submitting INDs or compatible foreign applications or delays or failures in obtaining necessary approvals from regulators to commence a clinical trial, or suspension or termination of a clinical trial once commenced;
- conditions imposed by the FDA or similar foreign authorities regarding the scope or design of our clinical trials, including any requirements to perform field efficacy studies;
- delays in enrolling patients in our clinical trials;
- inadequate supply or quality of vaccine candidate components or materials or other supplies necessary for conducting clinical trials;
- inability to obtain alternative sources of supply for which we have a single source for vaccine candidate components;
- the availability of coverage and adequate reimbursement and pricing from third-party payors, including government authorities, pertaining to the vaccine candidate, once approved, and patients' willingness to pay out-of-pocket if third-party payor reimbursement is limited or not available;
- greater than anticipated costs of our clinical trials, including chemistry, manufacturing and controls, or CMC, activities related to our clinical trials;
- harmful side effects or inability of our vaccine candidates to meet efficacy endpoints;

- unfavorable FDA or other regulatory agency inspection and review of one or more of our clinical trial sites or our contract manufacturers' facilities;

- failure of our third-party contractors or investigators to comply with regulatory requirements or otherwise meet their obligations in a timely manner, or at all;

- delays and changes in regulatory requirements, policy and guidelines, including the imposition of additional regulatory oversight around clinical testing generally or with respect to our technology or vaccine candidates in particular; or

- varying interpretations of our data by the FDA and comparable foreign regulatory authorities.

In particular, while we believe our PCVs could receive regulatory approval based on well-defined surrogate immune endpoints rather than requiring clinical field efficacy studies, which is consistent with how other PCVs have obtained regulatory approval in the past, there can be no assurance that the FDA or comparable foreign regulatory authorities will provide approvals on such basis. In addition, changes to the standard of care or the approval of new vaccines could change the threshold for achievement of non-inferiority using the established surrogate immune endpoints that our PCVs will need to meet in our clinical trials.

Our inability to complete development of or commercialize our vaccine candidates, or significant delays in doing so due to one or more of these factors, could have a material and adverse effect on our business, financial condition, results of operations and prospects.

Moreover, principal investigators for our clinical trials may serve as scientific advisors or consultants to us from time to time and receive compensation in connection with such services. Under certain circumstances, we may be required to report some of these relationships to the FDA or comparable foreign regulatory authorities. The FDA or comparable foreign regulatory authorities may conclude that a financial relationship between us and a principal investigator has created a conflict of interest or otherwise affected interpretation of the study. The FDA or comparable foreign regulatory authorities may therefore question the integrity of the data generated at the applicable clinical trial site and the utility of the clinical trial itself may be jeopardized. This could result in a delay in approval, or rejection, of our marketing applications by the FDA or comparable foreign regulatory authorities, as the case may be, and may ultimately lead to the denial of marketing approval of one or more of our vaccine candidates.

***Our business is highly dependent on the success of SVX-24, which is in the early stages of development. If we are unable to obtain approval for SVX-24 and effectively commercialize SVX-24, our business would be significantly harmed.***

Our business and future success depends on our ability to obtain regulatory approval of, and then successfully commercialize, our most advanced vaccine candidate, SVX-24. SVX-24 is in the early stages of development, and to date has only completed preclinical proof of concept studies as compared to Prevnar 13 and polysaccharide/alum in rabbits. Although SVX-24 has produced successful results in animal studies, it may not demonstrate the same properties in humans and may interact with human biological systems in unforeseen, ineffective or harmful ways. SVX-24 will require additional clinical and non-clinical development, regulatory review and approval in multiple jurisdictions, substantial investment, access to sufficient preclinical, clinical and commercial manufacturing capacity and significant marketing efforts before we can generate any revenue from product sales. We cannot provide any assurance that we will be able to successfully advance SVX-24 through the development process.

The clinical and commercial success of SVX-24 and future vaccine candidates will depend on a number of factors, including the following:

- our ability to raise any additional required capital on acceptable terms, or at all;

- our ability to complete IND-enabling studies and successfully submit IND or comparable applications;
- timely completion of our preclinical studies and clinical trials, which may be significantly slower or cost more than we currently anticipate and will depend substantially upon the performance of third-party contractors;
- whether we are required by the FDA or similar foreign regulatory agencies to conduct additional clinical trials, including field efficacy studies, or other studies beyond those planned to support the approval and commercialization of our vaccine candidates or any future vaccine candidates;
- acceptance of our proposed indications and primary surrogate endpoint assessments for our PCV candidates by the FDA and similar foreign regulatory authorities;
- any changes to the required threshold for the achievement of non-inferiority using established surrogate immune endpoints that our PCVs will need to meet in our clinical trials;
- our ability to demonstrate to the satisfaction of the FDA or comparable foreign regulatory authorities the safety, efficacy and acceptable risk to benefit profile of SVX-24 or any future vaccine candidates;
- the pace and prevalence of serotype replacement following the introduction of SVX-24 or SVX-XP or other vaccines targeting pneumococcal disease;
- any vaccine-vaccine interference studies that may be required, particularly with the standard of care pediatric vaccine regimen;
- the prevalence, duration and severity of potential side effects or other safety issues experienced with our vaccine candidates or future approved products, if any;
- the timely receipt of necessary marketing approvals from the FDA or comparable foreign regulatory authorities;
- achieving, maintaining and, where applicable, ensuring that our third-party contractors achieve and maintain compliance with our contractual obligations and with all regulatory requirements applicable to our lead vaccine candidates or any future vaccine candidates or approved products, if any;
- obtaining and maintaining an Advisory Committee on Immunization Practices, or ACIP, preferred recommendation or comparable foreign regulatory authority's recommendation of our vaccine candidates and the willingness of physicians, operators of clinics and patients to utilize or adopt any of our future vaccine candidates to prevent or treat age-associated diseases;
- the ability of third parties with whom we contract to manufacture adequate clinical study and commercial supplies of our lead vaccine candidates or any future vaccine candidates, remain in good standing with regulatory agencies and develop, validate and maintain commercially viable manufacturing processes that are compliant with current good manufacturing practices, or cGMP;
- our ability to successfully develop a commercial strategy and thereafter commercialize our vaccine candidates or any future vaccine candidates in the United States and internationally, if approved for marketing, reimbursement, sale and distribution in such countries and territories, whether alone or in collaboration with others;

- the convenience of our treatment or dosing regimen;
- acceptance by physicians, payors and patients of the benefits, safety and efficacy of our vaccine candidates or any future vaccine candidates, if approved, including relative to alternative and competing treatments;
- patient demand for our vaccine candidates, if approved;
- our ability to establish and enforce intellectual property rights in and to our vaccine candidates or any future vaccine candidates; and
- our ability to avoid third-party patent interference, intellectual property challenges or intellectual property infringement claims.

These factors, many of which are beyond our control, could cause us to experience significant delays or an inability to obtain regulatory approvals or commercialize our vaccine candidates. Even if regulatory approvals are obtained, we may never be able to successfully commercialize any of our vaccine candidates. Accordingly, we cannot provide assurances that we will be able to generate sufficient revenue through the sale of our vaccine candidates or any future vaccine candidates to continue our business or achieve profitability.

***Our primary competitors have significantly greater resources and experience than we do, which may make it difficult for us to successfully develop our vaccine candidates, or may result in others discovering, developing or commercializing products before or more successfully than us.***

The vaccine market is intensely competitive and is dominated by a small number of multinational, globally established pharmaceutical corporations with significant resources; Pfizer, Merck, GlaxoSmithKline, and Sanofi together control approximately 75% of the global vaccine market. We may also face competition from many different sources, including pharmaceutical and biotechnology companies, academic institutions, governmental agencies and public and private research institutions. Vaccine candidates that we successfully develop and commercialize may compete with existing vaccines and new vaccines that may become available in the future. Many of our competitors have substantially greater financial, lobbying, technical, human and other resources than we do and may be better equipped to develop, manufacture and market technologically superior vaccines, including the potential that our competitors may develop chemical processes or utilize novel technologies for developing vaccines that may be superior to those we employ. In addition, many of these competitors have significantly greater experience than we have in undertaking preclinical testing and clinical trials of new products and in obtaining regulatory approvals, including for many vaccine franchises. Accordingly, our competitors may succeed in obtaining FDA approval or a preferred recommendation for their products. For example, Prevnar 13 obtained FDA approval for the prevention of invasive pneumococcal disease, or IPD, in infants based on non-inferior IgG antibody responses relative to Prevnar, using the surrogate immune endpoints established by the prior Prevnar field efficacy study. Pfizer is currently implementing a similar approach to development of its 20-valent PCV vaccine candidate, and may have a more efficient path to regulatory approval given Pfizer’s and the FDA’s previous experience with Prevnar 13. For more information, see the section entitled “Business—Competition.”

Many of our competitors have established distribution channels for the commercialization of their vaccine products, whereas we have no such established channels or capabilities. In addition, many competitors have greater name recognition, more extensive collaborative relationships or the ability to leverage a broader vaccine portfolio. Our commercial opportunity could be reduced or eliminated if our competitors develop and commercialize vaccines that are safer, more effective, more convenient, less expensive or with a more favorable label than any vaccine candidates that we may develop.

As a result of these factors, our competitors may obtain regulatory approval of their products before we are able to, which may limit our ability to develop or commercialize our vaccine candidates. Our competitors

may also develop vaccines that are safer, more effective, more widely accepted or less expensive than ours, and may also be more successful than we are in manufacturing and marketing their products. These advantages could render our vaccine candidates obsolete or non-competitive before we can recover the costs of such vaccine candidates' development and commercialization.

Mergers and acquisitions in the pharmaceutical and biotechnology industries may result in even more resources being concentrated among a smaller number of our competitors. Smaller and early-stage companies may also prove to be significant competitors, particularly through collaborative arrangements with large and established companies. These third parties compete with us in recruiting and retaining qualified scientific, management and commercial personnel, establishing clinical trial sites and subject enrollment for clinical trials, as well as in acquiring technologies complementary to, or necessary for, our programs.

For additional information regarding our competition for each of our vaccine candidates, see the section entitled "Business—Competition."

***We and our contract manufacturers may face difficulty satisfying chemistry, manufacturing and controls requirements imposed by the FDA and comparable foreign regulatory authorities. To date, no product developed using a cell-free manufacturing platform has received approval from the FDA or been commercialized.***

While we are designing and developing a manufacturing process that we believe can scale to address clinical and commercial vaccine supply, we do not own or operate any manufacturing facilities. We rely on contract manufacturing organizations, or CMOs, including our strategic partnership with Lonza, to access resources to facilitate the development and, if approved, commercialization of SVX-24 and our other vaccine candidates. Advancing our vaccine candidates may create significant challenges, including:

- manufacturing our vaccine candidates to our specifications, including process development, analytical development and quality control testing, and in a timely manner to support our preclinical and clinical trials and, if approved, commercialization;
- sourcing the raw materials used to manufacture our vaccine candidates for preclinical, clinical and, if approved, commercial supplies; and
- establishing sales and marketing capabilities upon obtaining any regulatory approval to gain market acceptance of our vaccines.

Before we can initiate a clinical trial or commercialize any of our vaccine candidates, we must demonstrate to the FDA that the CMC for our vaccine candidates meet applicable requirements, and in the EU, a manufacturing authorization must be obtained from the appropriate EU regulatory authorities. Because no product manufactured on a cell-free manufacturing platform has been approved in the United States, there is no manufacturing facility that has demonstrated the ability to comply with FDA requirements, and, therefore, the timeframe for demonstrating compliance to the FDA's satisfaction is uncertain. Delays in establishing that our manufacturing process and the facilities we utilize for manufacturing comply with cGMP or disruptions in our manufacturing processes, implementation of novel technologies or scale-up activities, may delay or disrupt our development efforts.

***Even if we obtain regulatory approval of our vaccine candidates, the products may not gain market acceptance among regulators, advisory boards, physicians, patients, third-party payors and others in the medical community.***

Even if any of our vaccine candidates receive marketing approval, they may fail to receive recommendations for use by regulators or advisory boards that recommend vaccines, or gain market acceptance

by physicians, patients, third-party payors and others in the medical community. If such vaccine candidates do not achieve an adequate level of acceptance, we may not generate significant product revenue and may not become profitable. The degree of market acceptance of any vaccine candidate, if approved for commercial sale, will depend on a number of factors, including but not limited to:

- receiving CDC and ACIP recommendations for use, as well as recommendations of comparable foreign regulatory and advisory bodies;
- prevalence and severity of the disease targets for which our vaccine candidates are approved;
- physicians, hospitals, third-party payors and patients considering our vaccine candidates as safe and effective;
- the potential and perceived advantages of our vaccine candidates over existing vaccines, including with respect to spectrum coverage or immunogenicity;
- the prevalence and severity of any side effects;
- product labeling or product insert requirements of the FDA or comparable foreign regulatory and advisory bodies;
- limitations or warnings contained in the labeling approved by the FDA or comparable foreign regulatory and advisory bodies;
- the timing of market introduction of our vaccine candidates as well as competitive products;
- the cost of treatment in relation to alternative treatments;
- the availability of coverage and adequate reimbursement and pricing by third-party payors, including government authorities;
- the willingness of patients to pay out-of-pocket in the absence of coverage and adequate reimbursement by third-party payors, including government authorities;
- relative convenience and ease of administration, including as compared to competitive vaccines and alternative treatments; and
- the effectiveness of our sales and marketing efforts.

In the United States, the CDC and ACIP develop vaccine recommendations for both children and adults, as do similar agencies around the world. To develop its recommendations, ACIP forms working groups that gather, analyze and prepare scientific information. The ACIP also considers many of the factors above, as well as myriad additional factors such as the value of vaccination for the target population regarding the outcomes, health economic data and implementation issues. ACIP recommendations are also made within categories, such as in an age group or a specified risk group. For example, the ACIP may determine that a preferred recommendation in a smaller child population may be more economical than recommending vaccinations for a larger adult population, which could adversely impact our market opportunity.

New pediatric vaccines that receive an ACIP preferred recommendation are almost universally adopted, and adult vaccines that receive a preferred recommendations are widely adopted. For example, in 2014, the ACIP voted to recommend Prevnar 13 for routine use to help protect adults aged 65 years and older against pneumococcal disease, which caused Prevnar 13 to become the standard of care along with continued use of

Pneumovax 23. ACIP can also modify its preferred recommendation. For instance, in June 2019, the ACIP voted to revise the pneumococcal vaccination guidelines and recommend Prevnar 13 for adults 65 and older based on the shared clinical decision making of the provider and patient, rather than a preferred use recommendation, which means the decision to vaccinate should be made at the individual level between health care providers and their patients. Pfizer recently noted that this revised recommendation is expected to have a negative effect on Prevnar 13 revenue for future periods.

If our vaccine candidates are approved but fail to receive CDC and ACIP recommendations, or recommendations of other comparable foreign regulatory and advisory bodies, or achieve market acceptance among physicians, healthcare providers, patients, third-party payors or others in the medical community, we will not be able to generate significant revenue. Even if our products achieve market acceptance, we may not be able to maintain that market acceptance over time if new products or technologies are introduced that are more favorably received than our products, are more cost effective or render our products obsolete.

***We may not be successful in our efforts to use our cell-free protein synthesis platform to expand our pipeline of vaccine candidates and develop marketable products.***

The success of our business depends in large part upon our ability to identify, develop and commercialize products based on our cell-free protein synthesis platform. We intend to pursue clinical development of additional vaccine candidates beyond SVX-24, including SVX-XP for PCV, SVX-A1 for group A strep and SVX-PG for periodontitis. Our research programs may fail to identify potential vaccine candidates for clinical development for a number of reasons or we may focus our efforts and resources on potential programs or vaccine candidates that ultimately prove to be unsuccessful. In addition, we cannot provide any assurance that we will be able to successfully advance any of our existing or future vaccine candidates through the development process.

Our potential vaccine candidates may be shown to have harmful side effects or may have other characteristics that may make the products unmarketable or unlikely to receive marketing approval. If any of these events occur, we may be forced to abandon our development efforts for a program or for multiple programs, which would materially harm our business and could potentially cause us to cease operations.

Even if we receive FDA approval to market additional vaccine candidates, we cannot provide assurance that any such vaccine candidates will be successfully commercialized, widely accepted in the marketplace or more effective than other commercially available alternatives. In addition, current PCVs do not address the majority of circulating strains causing pneumococcal disease. There has been a decrease in the incidence of disease attributable to the strains covered by existing vaccines but an increase in incidence attributable to non-covered strains that now cause most residual disease. Such change is driven by the void created when strains are taken out of circulation after widespread vaccination, which is a phenomenon known as serotype replacement. As a result of such change, broader spectrum PCVs are required to maintain protection against historically pathogenic strains while expanding coverage to current circulating and emerging strains. There can be no assurance that we will be able to develop higher valent vaccines to address serotype replacement.

In addition, because SVX-24 is our most advanced vaccine candidate, and because our other vaccine candidates are also based on our cell-free protein synthesis platform, if SVX-24 encounters safety or efficacy problems, manufacturing problems, developmental delays, regulatory issues or other problems, our development plans and business would be significantly harmed.

***We currently rely on third-party manufacturing and supply partners, including Lonza and Sutro Biopharma, to supply raw materials and components for, and manufacture, our vaccine candidates. Our inability to have sufficient quantities of our vaccine candidates manufactured, or our failure to comply with applicable regulatory requirements or to supply sufficient quantities at acceptable quality levels or prices, or at all, would materially and adversely affect our business.***

Efficient and scalable manufacturing and supply is a vital component of our business strategy. We currently do not own or operate any manufacturing facilities. We are designing and developing a manufacturing process that we believe can scale to address clinical and commercial vaccine supply. However, our assumptions as to our ability and our CMOs' ability to produce vaccines at the scale needed for clinical development and commercial demand, in particular for our PCVs, may prove to be wrong. If we encounter problems in our manufacturing processes or in our ability to scale to address commercial vaccine supply, our business would be materially adversely affected.

We rely on third-party contract manufacturers to manufacture preclinical and clinical trial product materials and supplies for our needs. There can be no assurance that our preclinical and clinical development product supplies will not be limited or interrupted or be of satisfactory quality or continue to be available on acceptable terms.

The manufacturing process for a vaccine candidate is subject to FDA or comparable foreign regulatory authority review. Our suppliers and manufacturers must meet applicable manufacturing requirements and undergo rigorous facility and process validation tests required by regulatory authorities in order to comply with regulatory standards, such as cGMPs. If our contract manufacturers cannot successfully manufacture material that conforms to our specifications and the strict regulatory requirements of the FDA or comparable foreign regulatory authorities, we may not be able to rely on their manufacturing facilities for the manufacture of elements of our vaccine candidates. Moreover, we do not control the manufacturing process at our contract manufacturers and are completely dependent on them for compliance with current regulatory requirements. In the event that any of our manufacturers fails to comply with such requirements or to perform its obligations in relation to quality, timing or otherwise, or if our supply of components or other materials becomes limited or interrupted for other reasons, we may be forced to manufacture the materials ourselves or enter into an agreement with another third party, which we may not be able to do on reasonable terms, if at all. In some cases, the technical skills, raw materials or technology required to manufacture our vaccine candidates may be unique or proprietary to the original manufacturer or supplier, and we may have difficulty applying such skills or technology or sourcing such raw materials ourselves, or in transferring such skills, technology or raw materials to another third party. These factors would increase our reliance on such manufacturer or require us to obtain a license from such manufacturer in order to enable us, or to have another third party, manufacture our vaccine candidates. If we are required to change manufacturers for any reason, we will be required to verify that the new manufacturer maintains facilities and procedures that comply with quality standards and with all applicable regulations and guidelines, and we may be required to repeat some of the development program. The delays associated with the verification of a new manufacturer could negatively affect our ability to develop vaccine candidates in a timely manner or within budget.

We expect to continue to rely on third-party manufacturers and suppliers, including Lonza and Sutro Biopharma, if we receive regulatory approval for any PCV or any other vaccine candidates. To the extent that we have existing, or enter into future, manufacturing arrangements with third parties, we will depend on these third parties to perform their obligations in a timely manner consistent with contractual and regulatory requirements, including those related to quality control and assurance. If we are unable to obtain or maintain third-party manufacturing for vaccine candidates, or to do so on commercially reasonable terms, we may not be able to develop and commercialize our vaccine candidates successfully. Our or a third party's failure to execute on our manufacturing requirements and comply with cGMPs could adversely affect our business in a number of ways, including:

- an inability to initiate or complete clinical trials of vaccine candidates under development;

- delay in submitting regulatory applications, or receiving regulatory approvals, for our vaccine candidates;
- subjecting third-party manufacturing facilities to additional inspections by regulatory authorities;
- requirements to cease distribution or to recall batches of our vaccine candidates; and
- in the event of approval to market and commercialize a vaccine candidate, an inability to meet commercial demands for our products.

In addition, because SVX-24 is our most advanced vaccine candidate, and because our other vaccine candidates are also based on our cell-free protein synthesis platform, if SVX-24 encounters safety or efficacy problems, manufacturing problems, developmental delays, regulatory issues or other problems, our development plans and business would be significantly harmed.

Additionally, we and our contract manufacturers may experience manufacturing difficulties due to limited vaccine manufacturing experience, resource constraints or as a result of labor disputes or unstable political environments. If we or our contract manufacturers were to encounter any of these difficulties, our ability to manufacture sufficient vaccine supply for our preclinical studies and clinical trials, or to provide product for patients once approved, would be jeopardized.

***Our vaccine candidates may cause undesirable side effects or have other properties, including interactions with existing vaccine regimens, that could halt their clinical development, prevent their regulatory approval, limit their commercial potential or result in significant negative consequences.***

Adverse effects or other undesirable or unacceptable side effects caused by our vaccine candidates could cause us or regulatory authorities to interrupt, delay or halt clinical trials and could result in a more restrictive label or the delay or denial of regulatory approval by the FDA or other comparable foreign regulatory authorities. We have not yet initiated any clinical trials of our vaccine candidates. Results of our clinical trials could reveal a high and unacceptable severity and prevalence of side effects or unexpected characteristics. In such an event, our clinical trials could be suspended or terminated, and the FDA or comparable foreign regulatory authorities could order us to cease further development of or deny approval of our vaccine candidates. Such side effects could also affect trial recruitment or the ability of enrolled patients to complete the clinical trial or result in potential product liability claims. The data safety monitoring board may also suspend or terminate a clinical trial at any time on various grounds, including a finding that the research patients are being exposed to an unacceptable health risk. Treatment-related side effects could also affect patient recruitment or the ability of enrolled subjects to complete the trial or result in potential product liability claims. In addition, any vaccine to be approved in pediatric populations may need to undergo extensive vaccine-vaccine interference studies with the standard of care pediatric vaccine regimen. Further, to the extent field efficacy studies are required, prophylactic vaccines typically require clinical testing in thousands to tens of thousands of healthy volunteers to define an approvable benefit-risk profile. The need to show a high degree of safety and tolerability when dosing healthy individuals could result in rare and even spurious safety findings, negatively impacting a program prior to or after commercial launch. Any of these occurrences may harm our business, financial condition and prospects significantly.

***Negative developments and negative public opinion of new technologies on which we rely may damage public perception of our vaccine candidates or adversely affect our ability to conduct our business or obtain regulatory approvals for our vaccine candidates.***

Negative developments and negative public opinion of new or existing technologies on which we rely may damage public perception of our vaccine candidates or adversely affect our ability to conduct our business or obtain regulatory approvals for our vaccine candidates. Public perception may be influenced by claims that

vaccines are unsafe, and products incorporating new vaccine technology may not gain the acceptance of the public or the medical community. Adverse public attitudes may negatively impact our ability to enroll patients in clinical trials. Moreover, our success will depend upon physicians specializing in our targeted diseases prescribing, and their patients being willing to receive, our vaccine candidates in lieu of, or in addition to, existing, more familiar vaccines or treatments for which greater clinical data may be available. Any increase in negative perceptions of the technologies that we rely on may result in fewer physicians prescribing our products or may reduce the willingness of patients to utilize our products or participate in clinical trials for our vaccine candidates.

***We may not be able to file INDs to commence clinical trials on the timelines we expect, and even if we are able to, the FDA may not permit us to proceed.***

We plan to submit an IND to the FDA to initiate a clinical trial of SVX-24 in 2021. However, our timing of filing on SVX-24 is dependent on further preclinical and manufacturing success. We cannot be sure that submission of an IND or IND amendment will result in the FDA allowing testing and clinical trials to begin, or that, once begun, issues will not arise that suspend or terminate such clinical trials. Additionally, even if such regulatory authorities agree with the design and implementation of the clinical trials set forth in an IND or clinical trial application, we cannot guarantee that such regulatory authorities will not change their requirements in the future.

***We may encounter substantial delays in our clinical trials or may not be able to conduct our trials on the timelines we expect.***

Clinical testing is expensive, time consuming and subject to uncertainty. We cannot guarantee that any clinical studies will be conducted as planned or completed on schedule, if at all. Even if these trials begin as planned, issues may arise that could suspend or terminate such clinical trials. A failure of one or more clinical studies can occur at any stage of testing, and our future clinical studies may not be successful. Events that may prevent successful or timely completion of clinical development include:

- inability to generate sufficient preclinical, toxicology or other in vivo or in vitro data to support the initiation of clinical trials;
- delays in sufficiently developing, characterizing or controlling a manufacturing process suitable for advanced clinical trials;
- delays in reaching a consensus with regulatory agencies on study design;
- delays in reaching agreement on acceptable terms with prospective contract research organizations, or CROs, and clinical study sites, the terms of which can be subject to extensive negotiation and may vary significantly among different CROs and clinical study sites;
- delays in obtaining required institutional review board, or IRB, approval at each clinical study site;
- imposition of a temporary or permanent clinical hold by regulatory agencies for a number of reasons, including after review of an IND application or amendment, or equivalent application or amendment; as a result of a new safety finding that presents unreasonable risk to clinical trial participants; a negative finding from an inspection of our clinical study operations or study sites; developments on trials conducted by competitors for related technology that raises FDA concerns about risk to patients of the technology broadly; or if the FDA finds that the investigational protocol or plan is clearly deficient to meet its stated objectives;
- delays in adding a sufficient number of trial sites and recruiting suitable patients to participate in our clinical trials;

- failure by our CROs, other third parties or us to adhere to clinical study requirements;
- failure to perform in accordance with the FDA's good clinical practice, or GCP, requirements or applicable regulatory guidelines in other jurisdictions;
- transfer of manufacturing processes to any new CMO or our own manufacturing facilities or any other development or commercialization partner for the manufacture of vaccine candidates;
- delays in having patients complete participation in a study or return for post-injection follow-up;
- patients dropping out of a study;
- occurrence of side effects associated with our vaccine candidates that are viewed to outweigh their potential benefits;
- changes in regulatory requirements and guidance that require amending or submitting new clinical protocols;
- changes in the standard of care on which a clinical development plan was based, which may require new or additional trials;
- the cost of clinical trials of our vaccine candidates being greater than we anticipate;
- clinical studies of our vaccine candidates producing negative or inconclusive results, which may result in our deciding, or regulators requiring us, to conduct additional clinical studies or abandon product development programs;
- delays or failure to secure supply agreements with suitable raw material suppliers, or any failures by suppliers to meet our quantity or quality requirements for necessary raw materials; and
- delays in manufacturing, testing, releasing, validating or importing/exporting sufficient stable quantities of our vaccine candidates for use in clinical studies or the inability to do any of the foregoing.

Any inability to successfully complete preclinical and clinical development could result in additional costs to us or impair our ability to generate revenue. In addition, if we make manufacturing or formulation changes to our vaccine candidates, we may be required to or we may elect to conduct additional studies to bridge our modified vaccine candidates to earlier versions. Clinical trial delays could also shorten any periods during which our products have patent protection and may allow our competitors to bring products to market before we do, which could impair our ability to successfully commercialize our vaccine candidates and may harm our business and results of operations.

***If we encounter difficulties enrolling patients in any clinical trials we may conduct, including any field efficacy trials that may be required, our clinical development activities could be delayed or otherwise adversely affected.***

We may experience difficulties in patient enrollment in any clinical trials we may conduct for a variety of reasons. The timely completion of clinical trials in accordance with their protocols depends, among other things, on our ability to enroll a sufficient number of patients who remain in the study until its conclusion. The enrollment of patients depends on many factors, including:

- the patient eligibility and exclusion criteria defined in the protocol;

- the severity and difficulty of diagnosing the disease under investigation;
- the size of the patient population required for analysis of the trial's primary endpoints;
- the proximity of patients to study sites;
- the design of the trial;
- our ability to recruit clinical trial investigators with the appropriate competencies and experience;
- our ability to obtain and maintain patient consents;
- the referral practices of physicians;
- the ability to monitor patients adequately during and after treatment; and
- the risk that patients enrolled in clinical trials will drop out of the trials before the injection of our vaccine candidates or trial completion.

To the extent we are required to conduct any field efficacy studies, enrollment of a sufficient number of patients may require additional time and resources given widespread vaccination rates in the United States, particularly in the pediatric population. As a result, we may be required to conduct any such trials outside the United States, which could cause additional complexity and delay. Delays in patient enrollment may result in increased costs or may affect the timing or outcome of any clinical trials we may conduct, which could prevent completion of these trials and adversely affect our ability to advance the development of our vaccine candidates.

***Interim "top line" and preliminary data from our clinical trials that we announce or publish from time to time may change as more patient data become available and are subject to audit and verification procedures that could result in material changes in the final data.***

From time to time, we may publish interim "top line" or preliminary data from our preclinical or clinical trials. Interim data from clinical trials that we may complete are subject to the risk that one or more of the clinical outcomes may materially change as patient enrollment continues and more patient data become available. We also make assumptions, estimations, calculations and conclusions as part of our analyses of data, and we may not have received or had the opportunity to fully and carefully evaluate all data when we publish such data. As a result, the "top line" results that we report may differ from future results of the same studies, or different conclusions or considerations may qualify such results once additional data have been received and fully evaluated. Preliminary or "top line" data also remain subject to audit and verification procedures that may result in the final data being materially different from the preliminary data we may publish. As a result, interim and preliminary data should be viewed with caution until the final data are available. Adverse differences between preliminary or interim data and final data could significantly harm our business prospects.

Further, others, including regulatory agencies, may not accept or agree with our assumptions, estimates, calculations, conclusions or analyses or may interpret or weigh the importance of data differently, which could impact the value of the particular program, the approvability or commercialization of the particular vaccine candidate and our company in general. In addition, the information we choose to publicly disclose regarding a particular study or clinical trial is based on what is typically extensive information, and you or others may not agree with what we determine is the material or otherwise appropriate information to include in our disclosure. Any information we determine not to disclose may ultimately be deemed significant by you or others with respect to future decisions, conclusions, views, activities or otherwise regarding a particular vaccine candidate or our business. If the "top line" data that we report differ from final results, or if others, including regulatory authorities, disagree with the conclusions reached, our ability to obtain approval for, and commercialize, vaccine candidates may be harmed, which could significantly harm our business prospects.

***We currently have no marketing and sales organization, and as an organization have no experience in marketing products. If we are unable to establish marketing and sales capabilities or enter into agreements with third parties to market and sell our vaccine candidates, we may not be able to generate product revenue.***

We currently have no sales, marketing or distribution capabilities and as an organization have no experience in marketing products. If we develop an in-house marketing organization and sales force, we will require significant capital expenditures, management resources and time, and we will have to compete with other pharmaceutical and biotechnology companies to recruit, hire, train and retain marketing and sales personnel.

If we are unable or decide not to establish internal sales, marketing and distribution capabilities, we will pursue collaborative arrangements regarding the sales and marketing of our products; however, there can be no assurance that we will be able to establish or maintain such collaborative arrangements, or if we are able to do so, that they will have effective sales forces. Any revenue we receive will depend upon the efforts of such third parties, which may not be successful. We may have little or no control over the marketing and sales efforts of such third parties and our revenue from product sales may be lower than if we had commercialized our vaccine candidates ourselves. We also face competition in our search for third parties to assist us with the sales and marketing efforts of our vaccine candidates.

There can be no assurance that we will be able to develop in-house sales and distribution capabilities or establish or maintain relationships with third-party collaborators to commercialize any product that receives regulatory approval in the United States or overseas. If we are unable to develop in-house sales and distribution capabilities or enter into relationships with third-party collaborators on acceptable terms or at all, we may not be able to successfully commercialize our products. If we are not successful in commercializing our products or any future products, either on our own or through arrangements with one or more third parties, we may not be able to generate any future product revenue and we would incur significant additional losses.

***A variety of risks associated with potentially conducting research and clinical trials abroad and marketing our vaccine candidates internationally could materially adversely affect our business.***

As we pursue approval and commercialization for our vaccine candidates overseas and conduct CMC and other operations overseas, we will be subject to additional risks related to operating in foreign countries, including:

- differing regulatory requirements in foreign countries;
- unexpected changes in tariffs, trade barriers, price and exchange controls and other regulatory requirements;
- increased difficulties in managing the logistics and transportation of storing and shipping vaccine candidates abroad;
- import and export requirements and restrictions;
- economic weakness, including inflation, or political instability in particular foreign economies and markets;
- compliance with tax, employment, immigration and labor laws for employees living or traveling abroad;
- foreign taxes, including withholding of payroll taxes;
- foreign currency fluctuations, which could result in increased operating expenses and reduced revenue, and other obligations incident to doing business in another country;

- difficulties staffing and managing foreign operations;
- workforce uncertainty in countries where labor unrest is more common than in the United States;
- differing payor reimbursement regimes, governmental payors or patient self-pay systems and price controls;
- potential liability under the U.S. Foreign Corrupt Practices Act of 1977, as amended, or comparable foreign regulations;
- challenges enforcing our contractual and intellectual property rights, especially in those foreign countries that do not respect and protect intellectual property rights to the same extent as the United States;
- production shortages resulting from any events affecting raw material supply or manufacturing capabilities abroad; and
- business interruptions resulting from geo-political actions, including war and terrorism.

These and other risks associated with our international operations and our collaborations with Lonza, based in Switzerland, may materially adversely affect our ability to attain or maintain profitable operations.

***We are highly dependent on our key personnel, and if we are not able to retain these members of our management team or recruit and retain highly qualified personnel, we may not be able to successfully implement our business strategy.***

Our ability to compete in the highly competitive biotechnology and pharmaceutical industries depends upon our ability to attract and retain highly qualified managerial, scientific and medical personnel. We are highly dependent on our management, scientific and medical personnel, including our President, Chief Executive Officer and co-founder and Vice President of Research and co-founder. The loss of the services of any of our executive officers, other key employees and other scientific and medical advisors, and our inability to find suitable replacements could result in delays in product development and harm our business.

We conduct substantially all of our operations at our facilities in the San Francisco Bay Area. This region is headquarters to many other biopharmaceutical companies and many academic and research institutions. Competition for skilled personnel in our market is intense and may limit our ability to hire and retain highly qualified personnel on acceptable terms or at all.

To induce valuable employees to remain at our company, in addition to salary and cash incentives, we have provided stock options that vest over time. The value to employees of stock options that vest over time may be significantly affected by movements in our stock price that are beyond our control and may at any time be insufficient to counteract more lucrative offers from other companies. Despite our efforts to retain valuable employees, members of our management and scientific and development teams may terminate their employment with us on short notice. Although we have employment agreements with our key employees, these employment agreements provide for at-will employment, which means that any of our employees could leave our employment at any time, with or without notice. We do not maintain “key person” insurance policies on the lives of these individuals or the lives of any of our other employees. Our success also depends on our ability to continue to attract, retain and motivate highly skilled junior, mid-level and senior managers as well as junior, mid-level and senior scientific and medical personnel.

***We have grown rapidly and will need to continue to grow the size of our organization, and we may experience difficulties in managing this growth.***

As our discovery, development and commercialization plans and strategies develop, and as we continue to transition into operating as a public company, we have rapidly expanded our employee base and expect to continue to add managerial, operational, sales, research and development, marketing, financial and other personnel. Current and future growth imposes significant added responsibilities on members of management, including:

- identifying, recruiting, integrating, maintaining and motivating additional employees;
- managing our internal development efforts effectively, including the clinical and FDA review process for our vaccine candidates, while complying with our contractual obligations to contractors and other third parties; and
- improving our operational, financial and management controls, reporting systems and procedures.

Our future financial performance and our ability to commercialize our vaccine candidates will depend, in part, on our ability to effectively manage our growth. Our management may also have to divert a disproportionate amount of its attention away from day-to-day activities in order to devote a substantial amount of time to managing these growth activities.

If we are not able to effectively expand our organization by hiring new employees and expanding our groups of consultants and contractors, we may not be able to successfully implement the tasks necessary to further develop and commercialize our vaccine candidates and, accordingly, may not achieve our research, development and commercialization goals.

***Obtaining and maintaining regulatory approval of our vaccine candidates in one jurisdiction does not mean that we will be successful in obtaining regulatory approval of our vaccine candidates in other jurisdictions.***

Obtaining and maintaining regulatory approval of our vaccine candidates in one jurisdiction does not guarantee that we will be able to obtain or maintain regulatory approval in any other jurisdiction, while a failure or delay in obtaining regulatory approval in one jurisdiction may have a negative effect on the regulatory approval process in others. For example, even if the FDA grants marketing approval of a vaccine candidate, comparable regulatory authorities in foreign jurisdictions must also approve the manufacturing, marketing and promotion of the vaccine candidate in those countries. Approval procedures vary among jurisdictions and can involve requirements and administrative review periods different from, and greater than, those in the United States, including additional preclinical studies or clinical trials as clinical studies conducted in one jurisdiction may not be accepted by regulatory authorities in other jurisdictions. In many jurisdictions outside the United States, a vaccine candidate must be approved for reimbursement before it can be approved for sale in that jurisdiction. In some cases, the price that we intend to charge for our products is also subject to approval.

We may also submit marketing applications in other countries. Regulatory authorities in jurisdictions outside of the United States have requirements for approval of vaccine candidates with which we must comply prior to marketing in those jurisdictions. Obtaining foreign regulatory approvals and compliance with foreign regulatory requirements could result in significant delays, difficulties and costs for us and could delay or prevent the introduction of our products in certain countries. If we fail to comply with the regulatory requirements in international markets and/or receive applicable marketing approvals, our target market will be reduced and our ability to realize the full market potential of our vaccine candidates will be harmed.

***We may form or seek strategic alliances or enter into additional licensing arrangements in the future, and we may not realize the benefits of such alliances or licensing arrangements.***

We may form or seek strategic alliances, create joint ventures or collaborations or enter into additional licensing arrangements with third parties that we believe will complement or augment our discovery, development and commercialization efforts with respect to our vaccine candidates and any future vaccine candidates that we may seek to develop. Any of these relationships may require us to incur non-recurring and other charges, increase our near and long-term expenditures, issue securities that dilute our existing stockholders or disrupt our management and business. In addition, we face significant competition in seeking appropriate strategic partners, and the negotiation process is time-consuming and complex. Moreover, we may not be successful in our efforts to establish a strategic partnership or other alternative arrangements for our vaccine candidates because they may be deemed to be at too early of a stage of development for collaborative effort, and third parties may not view our vaccine candidates as having the requisite potential to demonstrate safety and efficacy. Any delays in entering into new strategic partnership agreements related to our vaccine candidates could delay the development and commercialization of our vaccine candidates in certain geographies for certain indications, which would harm our business prospects, financial condition and results of operations.

If we license products or businesses, we may not be able to realize the benefit of such transactions if we are unable to successfully integrate them with our existing operations and company culture. We cannot be certain that, following a strategic transaction or license, we will achieve the results, revenue or specific net income that justifies such transaction.

***Revenue from any "catch up" opportunity may decline over time as more of the patient population is vaccinated.***

We intend to initially seek approval of our SVX-24 vaccine candidate in adults. If approved, we believe it may have the potential to serve as a "catch up" or booster to those adults who have previously received Pneumovax 23 or a lower valent PCV. Previous vaccines with a "catch up" opportunity have seen a high initial capture rate, but sales may decline over time as the number of individuals who remain unvaccinated with the new vaccine, and eligible for "catch up" opportunities, declines. Such decline could adversely affect our revenue over time.

***Our internal computer systems, or those used by our CROs or other contractors or consultants, may fail or suffer security breaches.***

Despite the implementation of security measures, our internal computer systems and the systems of our CROs, contractors and consultants are vulnerable to damage from computer viruses and unauthorized access. While we have not experienced any such material system failure or security breach to date, if such an event were to occur and cause interruptions in our operations, it could result in a material disruption of our development programs and our business operations. For example, the loss of clinical trial data from future clinical trials could result in delays in our regulatory approval efforts and significantly increase our costs to recover or reproduce the data. To the extent that any disruption or security breach were to result in a loss of, or damage to, our data or applications, or inappropriate disclosure of confidential or proprietary information, we could incur liability and the further development and commercialization of our vaccine candidates could be delayed.

***Business disruptions could seriously harm our future revenue and financial condition and increase our costs and expenses.***

Our operations, and those of our CMOs, CROs and other contractors and consultants, could be subject to earthquakes, power shortages, telecommunications failures, water shortages, floods, hurricanes, typhoons, fires, extreme weather conditions, medical epidemics and other natural or man-made disasters or business interruptions, for which we are predominantly self-insured. The occurrence of any of these business disruptions could seriously harm our operations and financial condition and increase our costs and expenses.

Our ability to manufacture our vaccine candidates could be disrupted if our operations or those of our suppliers are affected by a man-made or natural disaster or other business interruption. Our corporate headquarters are located in California near major earthquake faults and fire zones. The ultimate impact on us, our significant suppliers and our general infrastructure of being located near major earthquake faults and fire zones and being consolidated in certain geographical areas is unknown, but our operations and financial condition could suffer in the event of a major earthquake, fire or other natural disaster.

***If product liability lawsuits are brought against us, we may incur substantial liabilities and may be required to limit commercialization of our vaccine candidates.***

We face an inherent risk of product liability as a result of the clinical testing of our vaccine candidates and will face an even greater risk if we commercialize any products. For example, we may be sued if our vaccine candidates cause or are perceived to cause injury or are found to be otherwise unsuitable during clinical testing, manufacturing, marketing or sale. Any such product liability claims may include allegations of defects in manufacturing, defects in design, a failure to warn of dangers inherent in the product, negligence, strict liability or a breach of warranties. Claims could also be asserted under state consumer protection acts. If we cannot successfully defend ourselves against product liability claims, we may incur substantial liabilities or be required to limit commercialization of our vaccine candidates. Even successful defense would require significant financial and management resources. Regardless of the merits or eventual outcome, liability claims may result in:

- decreased demand for our vaccine candidates;
- injury to our reputation;
- withdrawal of clinical trial participants;
- initiation of investigations by regulators;
- costs to defend the related litigation;
- a diversion of management’s time and our resources;
- substantial monetary awards to trial participants or patients;
- product recalls, withdrawals or labeling, marketing or promotional restrictions;
- loss of revenue;
- exhaustion of any available insurance and our capital resources;
- the inability to commercialize any vaccine candidate; and
- a decline in our share price.

Our inability to obtain sufficient product liability insurance at an acceptable cost to protect against potential product liability claims could prevent or inhibit the commercialization of products we develop, alone or with corporate collaborators. Our insurance policies may also have various exclusions, and we may be subject to a product liability claim for which we have no coverage. Assuming we obtain clinical trial insurance for our clinical trials, we may have to pay amounts awarded by a court or negotiated in a settlement that exceed our coverage limitations or that are not covered by our insurance, and we may not have, or be able to obtain, sufficient capital to pay such amounts. Even if our agreements with any future corporate collaborators entitle us to indemnification against losses, such indemnification may not be available or adequate should any claim arise.

***Unstable market and economic conditions may have serious adverse consequences on our business, financial condition and stock price.***

The global credit and financial markets have experienced extreme volatility and disruptions in the past several years, including severely diminished liquidity and credit availability, declines in consumer confidence, declines in economic growth, increases in unemployment rates and uncertainty about economic stability. There can be no assurance that further deterioration in credit and financial markets and confidence in economic conditions will not occur. Our general business strategy may be adversely affected by any such economic downturn, volatile business environment or continued unpredictable and unstable market conditions. If the current equity and credit markets deteriorate, it may make any necessary debt or equity financing more difficult, more costly and more dilutive. Failure to secure any necessary financing in a timely manner and on favorable terms could have a material adverse effect on our growth strategy, financial performance and stock price and could require us to delay or abandon clinical development plans. In addition, there is a risk that one or more of our current service providers, manufacturers and other partners may not survive an economic downturn, which could directly affect our ability to attain our operating goals on schedule and on budget.

***Our employees, principal investigators, consultants and commercial partners may engage in misconduct or other improper activities, including noncompliance with regulatory standards and requirements and insider trading.***

We are exposed to the risk of fraud or other misconduct by our employees, principal investigators, consultants and commercial partners. Misconduct by these parties could include intentional failures, reckless and/or negligent conduct or unauthorized activities that violates (i) the laws and regulations of the FDA and other regulatory authorities, including those laws requiring the reporting of true, complete and accurate information to such authorities, (ii) manufacturing standards, (iii) federal and state data privacy, security, fraud and abuse and other healthcare laws and regulations in the United States and abroad and (iv) laws that require the true, complete and accurate reporting of financial information or data. In particular, sales, marketing and business arrangements in the healthcare industry are subject to extensive laws and regulations intended to prevent fraud, misconduct, kickbacks, self-dealing and other abusive practices. These laws and regulations restrict or prohibit a wide range of pricing, discounting, marketing and promotion, sales commission, customer incentive programs and other business arrangements. Such misconduct also could involve the improper use of individually identifiable information, including, without limitation, information obtained in the course of clinical trials, creating fraudulent data in our preclinical studies or clinical trials or illegal misappropriation of drug product, which could result in regulatory sanctions and cause serious harm to our reputation. It is not always possible to identify and deter misconduct by employees and other third parties, and the precautions we take to detect and prevent this activity may not be effective in controlling unknown or unmanaged risks or losses or in protecting us from government investigations or other actions or lawsuits stemming from a failure to comply with these laws or regulations. Additionally, we are subject to the risk that a person or government could allege such fraud or other misconduct, even if none occurred. If any such actions are instituted against us and we are not successful in defending ourselves or asserting our rights, those actions could result in significant civil, criminal and administrative penalties, damages, fines, disgorgement, imprisonment, exclusion from participating in government-funded healthcare programs, such as Medicare and Medicaid, additional reporting requirements and oversight if we become subject to a corporate integrity agreement or similar agreement to resolve allegations of noncompliance with these laws, contractual damages, reputational harm and the curtailment or restructuring of our operations, any of which could have a negative impact on our business, financial condition, results of operations and prospects.

***The Tax Cuts and Jobs Act, or the Tax Act, could adversely affect our business and financial condition.***

In December 2017, the Tax Act was signed into law. The Tax Act, among other things, contains significant changes to corporate taxation, including (i) reduction of the corporate tax rate from a top marginal rate of 35% to a flat rate of 21%, (ii) limitation of the tax deduction for interest expense to 30% of adjusted earnings

(with certain exceptions, including for certain small businesses), (iii) limitation of the deduction for post-2017 net operating losses, or NOLs, to 80% of current-year taxable income and elimination of net operating loss carrybacks for post-2017 NOLs, (iv) immediate deductions for certain new investments instead of deductions for depreciation expense over time and (v) modifying or repealing many business deductions and credits (including reducing the business tax credit for certain clinical testing expenses incurred in the testing of certain drugs for rare diseases or conditions generally referred to as "orphan drugs"). We continue to examine the impact the Tax Act may have on our business. Notwithstanding the reduction in the corporate income tax rate, the overall impact of the Tax Act is uncertain and our business, financial condition, results of operations and prospects could be adversely affected. We urge our stockholders, including purchasers of common stock in this offering, to consult with their legal and tax advisors with respect to the Tax Act and the tax consequences of investing in our common stock.

***Our ability to utilize our net operating loss carryforwards and certain other tax attributes may be limited.***

We have incurred substantial losses since inception and do not expect to become profitable in the near future, if ever. As of December 31, 2018, we had federal and state net operating loss carryforwards of $61.2 million and $62.6 million, respectively. The federal and state loss carryforwards, except the federal loss carryforward generated in 2018, begin to expire in 2034 unless previously utilized. Federal NOLs generated in 2018 have an indefinite carryforward period and do not expire. As of December 31, 2018, we also had federal and state research credit carryforwards of $0.7 million and $0.2 million, respectively. The federal research and development tax credit carryforwards expire beginning in 2034 unless previously utilized, and the state research and development tax credits can be carried forward indefinitely. In general, under Sections 382 and 383 of the U.S. Internal Revenue Code of 1986, as amended, a corporation that undergoes an "ownership change" (generally defined as a greater than 50 percentage point change (by value) in its equity ownership by certain stockholders over a three-year period) is subject to limitations on its ability to utilize its pre-change NOLs to offset future taxable income. We determined that there was an "ownership change" in 2015 that resulted in Section 382 limitations, or the 2015 Ownership Change. We have determined that the applicable limits from the 2015 Ownership Change should not impair the value or anticipated use of our federal and state NOLs. However, we may have experienced additional ownership changes in the past and may experience ownership changes in the future. As a result, if, and to the extent that we earn net taxable income, our ability to use our pre-change NOLs to offset such taxable income may be subject to limitations.

The Tax Act, among other things, includes changes to U.S. federal tax rates and the rules governing NOL carryforwards. For federal NOLs arising in tax years beginning after December 31, 2017, the Tax Act limits a taxpayer's ability to utilize NOL carryforwards to 80% of taxable income. In addition, federal NOLs arising in tax years ending after December 31, 2017 can be carried forward indefinitely, but carryback is generally prohibited. Deferred tax assets for NOLs will need to be measured at the applicable tax rate in effect when the NOL is expected to be utilized. The new limitation on use of NOLs may significantly impact our ability to utilize our NOLs to offset taxable income in the future.

***Our insurance policies may be inadequate and potentially expose us to unrecoverable risks.***

Although we intend to maintain product liability insurance coverage, such insurance may not be adequate to cover all liabilities that we may incur. We anticipate that we will need to increase our insurance coverage each time we commence a clinical trial and if we successfully commercialize any vaccine candidate. Insurance availability, coverage terms and pricing continue to vary with market conditions. We endeavor to obtain appropriate insurance coverage for insurable risks that we identify; however, we may fail to correctly anticipate or quantify insurable risks, we may not be able to obtain appropriate insurance coverage and insurers may not respond as we intend to cover insurable events that may occur. Conditions in the insurance markets relating to nearly all areas of traditional corporate insurance change rapidly and may result in higher premium costs, higher policy deductibles and lower coverage limits. For some risks, we may not have or maintain insurance coverage because of cost or availability.

**Risks Related to Our Reliance on Third Parties**

***We rely and will continue to rely on third parties to conduct our preclinical studies and clinical trials. If these third parties do not successfully carry out their contractual duties or meet expected deadlines, we may not be able to obtain regulatory approval of or commercialize our vaccine candidates.***

We currently do not have the ability to independently conduct preclinical or clinical studies that comply with the regulatory requirements known as good laboratory practices and GCP. The FDA and regulatory authorities in other jurisdictions require us to comply with GCP requirements for conducting, monitoring, recording and reporting the results of clinical trials, in order to ensure that the data and results are scientifically credible and accurate and that the trial subjects are adequately informed of the potential risks of participating in clinical trials. We rely on independent investigators and collaborators, such as universities, medical institutions, CROs and strategic partners to conduct our preclinical and clinical trials under agreements with us.

We will need to negotiate budgets and contracts with CROs and study sites, which may result in delays to our development timelines and increased costs. We will rely heavily on these third parties over the course of our clinical trials, and we control only certain aspects of their activities. Nevertheless, we are responsible for ensuring that each of our studies is conducted in accordance with applicable protocol and legal, regulatory and scientific standards, and our reliance on third parties does not relieve us of our regulatory responsibilities. We and these third parties are required to comply with GCPs, which are regulations and guidelines enforced by the FDA and comparable foreign regulatory authorities for vaccine candidates in clinical development. Regulatory authorities enforce these GCPs through periodic inspections of trial sponsors, principal investigators and trial sites. If we or any of these third parties fail to comply with applicable GCP regulations, the clinical data generated in our clinical trials may be deemed unreliable, and the FDA or comparable foreign regulatory authorities may require us to perform additional clinical trials before approving our marketing applications. There can be no assurance that, upon inspection, such regulatory authorities will determine that any of our clinical trials comply with the GCP regulations. In addition, our clinical trials must be conducted with biologic product produced under cGMPs and will require a large number of test patients. Our failure or any failure by these third parties to comply with these regulations or to recruit a sufficient number of patients may require us to repeat clinical trials, which would delay the regulatory approval process. Moreover, our business may be implicated if any of these third parties violates federal or state fraud and abuse or false claims laws and regulations or healthcare privacy and security laws.

Any third parties conducting our preclinical studies and clinical trials will not be our employees and, except for remedies available to us under our agreements with such third parties, we cannot control whether or not they devote sufficient time and resources to our programs. These third parties may also have relationships with other commercial entities, including our competitors, for whom they may also be conducting clinical trials or other drug development activities, which could affect their performance on our behalf. If these third parties do not successfully carry out their contractual duties or obligations or meet expected deadlines, if they need to be replaced or if the quality or accuracy of the clinical data they obtain is compromised due to the failure to adhere to our clinical protocols or regulatory requirements or for other reasons, our clinical trials may be extended, delayed or terminated and we may not be able to complete development of, obtain regulatory approval of or successfully commercialize our vaccine candidates. As a result, our financial results and the commercial prospects for our vaccine candidates would be harmed, our costs could increase and our ability to generate revenue could be delayed.

If any of our relationships with trial sites or any CRO that we may use in the future terminates, we may not be able to enter into arrangements with alternative trial sites or CROs or do so on commercially reasonable terms. Switching or adding third parties to conduct our clinical trials involves substantial cost and requires extensive management time and focus. In addition, there is a natural transition period when a new third party commences work. As a result, delays occur, which can materially impact our ability to meet our desired clinical development timelines.

***We rely on third parties, including Sutro Biopharma and Lonza, to supply raw materials and manufacture our preclinical and clinical product supplies of our vaccine candidates, and expect to rely on third parties to supply raw materials and produce and process our vaccine candidates, if approved. The loss of these suppliers or their failure to comply with applicable regulatory requirements or provide us with sufficient quantities at acceptable quality levels or prices, or at all, would materially and adversely affect our business.***

We do not have nor do we plan to build or acquire the infrastructure or capability internally to manufacture supplies for our vaccine candidates or the materials necessary to produce our vaccine candidates for use in the conduct of our preclinical studies or clinical trials, and we lack the internal resources and the capability to manufacture any of our vaccine candidates on a preclinical, clinical or commercial scale. We have entered into an agreement with Sutro Biopharma to supply us with extracts and custom reagents for use in manufacturing non-clinical and certain clinical supply of vaccine compositions. We have engaged Lonza to perform manufacturing process development and clinical manufacture and supply of components for SVX-24, including the manufacture of polysaccharide antigens, our proprietary eCRM protein carrier and conjugated drug substances. We also engaged Lonza to perform manufacturing process development and clinical manufacture and supply of SVX-24 finished drug product. Our agreements with Lonza are denominated in Swiss Francs. Fluctuations in the exchange rate for Swiss Francs may increase our costs and affect our operating results.

We intend to engage with Lonza and other outside vendors to manufacture supplies for our vaccine candidates. We have not yet caused our vaccine candidates to be manufactured on a clinical or commercial scale and may not be able to achieve commercial scale manufacturing and may be unable to create an inventory of mass-produced product to satisfy demands for any of our vaccine candidates.

We do not yet have sufficient information to reliably estimate the cost of the commercial manufacturing and processing of our vaccine candidates, and the actual cost to manufacture and process our vaccine candidates could materially and adversely affect the commercial viability of our vaccine candidates. As a result, we may never be able to develop a commercially viable product.

In addition, our anticipated reliance on a limited number of third-party suppliers and manufacturers exposes us to the following risks:

- We may be unable to identify manufacturers on acceptable terms or at all because the number of potential manufacturers is limited and the FDA may have questions regarding any replacement contractor. This may require new testing and regulatory interactions. In addition, a new manufacturer would have to be educated in, or develop substantially equivalent processes for, production of our products after receipt of FDA questions, if any.

- Our third-party suppliers and manufacturers might be unable to timely formulate and manufacture or supply raw materials for our vaccine candidates or produce the quantity and quality required to meet our clinical and commercial needs, if any.

- Contract manufacturers may not be able to execute our manufacturing procedures appropriately.

- Our future contract manufacturers may not perform as agreed or may not remain in the contract manufacturing business for the time required to supply our clinical trials or to successfully produce, store and distribute our products.

- Manufacturers are subject to ongoing periodic unannounced inspection by the FDA, the Drug Enforcement Administration and corresponding state agencies to ensure strict compliance with cGMP and other government regulations and corresponding foreign standards. We do not have control over third-party manufacturers' compliance with these regulations and standards.

- We may not own, or may have to share, the intellectual property rights to any improvements made by our third-party manufacturers in the manufacturing process for our products.

- Our third-party suppliers and manufacturers could breach or terminate their agreement with us.

Each of these risks could delay our clinical trials, the approval, if any, of our vaccine candidates by the FDA or the commercialization of our vaccine candidates, or result in higher costs or deprive us of potential product revenue. In addition, we will rely on third parties to perform release tests on our vaccine candidates prior to delivery to patients. If these tests are not appropriately done and test data are not reliable, patients could be put at risk of serious harm.

***If we or our third-party suppliers use hazardous, non-hazardous, biological or other materials in a manner that causes injury or violates applicable law, we may be liable for damages.***

Our research and development activities involve the controlled use of potentially hazardous substances, including chemical and biological materials. We and our suppliers are subject to federal, state and local laws and regulations in the United States governing the use, manufacture, storage, handling and disposal of medical and hazardous materials. Although we believe that we and our suppliers' procedures for using, handling, storing and disposing of these materials comply with legally prescribed standards, we and our suppliers cannot completely eliminate the risk of contamination or injury resulting from medical or hazardous materials. As a result of any such contamination or injury, we may incur liability or local, city, state or federal authorities may curtail the use of these materials and interrupt our business operations. In the event of an accident, we could be held liable for damages or penalized with fines, and the liability could exceed our resources. We do not have any insurance for liabilities arising from medical or hazardous materials. Compliance with applicable environmental laws and regulations is expensive, and current or future environmental regulations may impair our research, development and production efforts, which could harm our business prospects, financial condition or results of operations.

**Risks Related to Government Regulation**

***The FDA regulatory approval process is lengthy and time-consuming, and we may experience significant delays in the clinical development and regulatory approval of our vaccine candidates.***

The research, testing, manufacturing, labeling, approval, selling, import, export, marketing and distribution of drug products, including biologics such as conjugate vaccines, are subject to extensive regulation by the FDA and other regulatory authorities in the United States. We expect that our vaccine candidates will be regulated by the FDA as biologics. We are not permitted to market any biological drug product in the United States until we receive approval of a Biologics License Application, or BLA, from the FDA. We have not previously submitted a BLA to the FDA, or similar approval filings to comparable foreign regulatory authorities. A BLA must include extensive preclinical and clinical data and supporting information to establish the vaccine candidate's safety and effectiveness for each desired indication. Further, because our vaccine candidates that are subject to regulation as biological drug products, we will need to demonstrate that they are safe, pure and potent for use in their target indications. The BLA must also include significant information regarding the CMC for the product, including with respect to chain of identity and chain of custody of the product.

Clinical testing is expensive and can take many years to complete, and its outcome is inherently uncertain. Failure can occur at any time during the clinical trial process. The results of preclinical studies of our vaccine candidates may not be predictive of the results of early-stage or later-stage clinical trials, and results of early clinical trials of our vaccine candidates may not be predictive of the results of later-stage clinical trials. The results of clinical trials in one set of patients or disease indications may not be predictive of those obtained in another. In some instances, there can be significant variability in safety or efficacy results between different clinical trials of the same vaccine candidate due to numerous factors, including changes in trial procedures set forth in protocols, differences in the size and type of the patient populations, changes in and adherence to the

dosing regimen and other clinical trial protocols and the rate of dropout among clinical trial participants. Vaccine candidates in later stages of clinical trials may fail to show the desired safety and efficacy profile despite having progressed through preclinical studies and initial clinical trials. A number of companies in the biopharmaceutical industry have suffered significant setbacks in advanced clinical trials due to lack of efficacy or unacceptable safety issues, notwithstanding promising results in earlier trials. Most vaccine candidates that begin clinical trials are never approved by regulatory authorities for commercialization. In addition, even if such clinical trials are successfully completed, we cannot guarantee that the FDA or foreign regulatory authorities will interpret the results as we do, and more trials could be required before we submit a BLA or other marketing application.

We may also experience delays in completing planned clinical trials for a variety of reasons, including delays related to:

- obtaining regulatory authorization to begin a trial, if applicable;
- the availability of financial resources to commence and complete the planned trials;
- reaching agreement on acceptable terms with prospective CROs and clinical trial sites, the terms of which can be subject to extensive negotiation and may vary significantly among different CROs and trial sites;
- obtaining approval at each clinical trial site by an independent IRB;
- recruiting suitable patients to participate in and complete a trial;
- clinical trial sites deviating from trial protocol or dropping out of a trial;
- addressing any patient safety concerns that arise during the course of a trial;
- adding new clinical trial sites; or
- manufacturing sufficient quantities of qualified materials under cGMPs and applying them on a patient by patient basis for use in clinical trials.

We could also encounter delays if physicians encounter unresolved ethical issues associated with enrolling patients in clinical trials of our vaccine candidates in lieu of using existing vaccines that have established safety and efficacy profiles. Further, a clinical trial may be suspended or terminated by us, the IRBs for the institutions in which such trials are being conducted or by the FDA or other regulatory authorities due to a number of factors, including failure to conduct the clinical trial in accordance with regulatory requirements or our clinical protocols, inspection of the clinical trial operations or trial site by the FDA or other regulatory authorities resulting in the imposition of a clinical hold, unforeseen safety issues or adverse side effects, failure to demonstrate a benefit from using a vaccine candidate, changes in governmental regulations or administrative actions, lack of adequate funding to continue the clinical trial or based on a recommendation by the data safety monitoring board. If we experience termination of, or delays in the completion of, any clinical trial of our vaccine candidates, the commercial prospects for our vaccine candidates will be harmed, and our ability to generate product revenue will be delayed. In addition, any delays in completing our clinical trials will increase our costs, slow down our product development and approval process and jeopardize our ability to commence product sales and generate revenue.

Many of the factors that cause, or lead to, a delay in the commencement or completion of clinical trials may ultimately lead to the denial of regulatory approval of our vaccine candidates.

***The FDA may disagree with our regulatory plan, and we may fail to obtain regulatory approval of our vaccine candidates.***

The general approach for FDA approval of a new biologic or drug is for the sponsor to provide dispositive data from two Phase 3 clinical trials of the relevant biologic or drug in the relevant patient population. Phase 3 clinical trials typically involve hundreds of patients, have significant costs and are time consuming. While we have not had any discussions with the FDA regarding our regulatory plan, as a prerequisite for FDA approval, we believe that any new PCV, such as SVX-24, will have to be compared to the current standard of care, Prevnar 13 in infants and Prevnar 13 and Pneumovax 23 in adults. We believe that a successful comparison would be based on demonstrating clinical non-inferiority of the immune response to Prevnar 13 for common serotypes and to Pneumovax 23 for the incremental 11 serotypes. In addition, we expect to use OPA titers as the primary immunogenicity surrogate endpoint for the SVX-24 program in adults because Prevnar 13 was approved based on the establishment of non-inferiority of OPA responses relative to Pneumovax 23, on a strain-by-strain basis, but there can be no assurance that this approach will be sufficient for regulatory approval or that regulators will not require field efficacy trials. If the results are sufficiently compelling, we intend to discuss with the FDA submission of a BLA for SVX-24. However, we do not have any agreement or guidance from the FDA that our regulatory development plans will be sufficient for submission of a BLA for SVX-24.

We may seek accelerated approval from the FDA for our vaccine candidates and, if granted, the FDA may require us to perform post-marketing studies as a condition of approval to verify and describe the predicted effect on irreversible morbidity or mortality or other clinical endpoint. If the results from such post-marketing studies are not positive or otherwise fail to show the predicted effect, the drug or biologic may be subject to expedited withdrawal procedures by the FDA. In addition, the standard of care may change with the approval of new products in the same disease areas that we are studying. This may result in the FDA or other regulatory agencies requesting additional studies to show that our vaccine candidate is non-inferior or superior to the new products.

Our clinical trial results may also not support approval. In addition, our vaccine candidates could fail to receive regulatory approval for many reasons, including the following:

- the FDA or comparable foreign regulatory authorities may disagree with the design or implementation of our clinical trials;
- we may be unable to demonstrate to the satisfaction of the FDA or comparable foreign regulatory authorities that our vaccine candidates are safe and effective for any of their proposed disease areas;
- the results of clinical trials may not meet the level of statistical significance required by the FDA or comparable foreign regulatory authorities for approval;
- we may be unable to demonstrate that our vaccine candidates' clinical and other benefits outweigh their safety risks;
- any changes to the required threshold for the achievement of non-inferiority using established surrogate immune endpoints that our PCVs will need to meet in our clinical trials;
- any vaccine to be approved in pediatric populations may need to undergo extensive vaccine-vaccine interference studies with the standard of care pediatric vaccine regimen;
- the need to perform superiority or field efficacy trials, which can be larger, longer and more costly, if an existing vaccine is approved for a disease indication;
- the FDA or comparable foreign regulatory authorities may disagree with our interpretation of data from preclinical studies or clinical trials;

- the data collected from clinical trials of our vaccine candidates may not be sufficient to the satisfaction of the FDA or comparable foreign regulatory authorities to support the submission of a BLA or other comparable submission in foreign jurisdictions or to obtain regulatory approval in the United States or elsewhere;

- the FDA or comparable foreign regulatory authorities will inspect the commercial manufacturing facilities we may utilize and may not approve such facilities; and

- the approval policies or regulations of the FDA or comparable foreign regulatory authorities may significantly change in a manner rendering our clinical data insufficient for approval.

***Even if we receive regulatory approval of our vaccine candidates, we will be subject to ongoing regulatory obligations and continued regulatory review, which may result in significant additional expense, and we may be subject to penalties if we fail to comply with regulatory requirements or experience unanticipated problems with our vaccine candidates.***

Any regulatory approvals that we receive for our vaccine candidates may also be subject to limitations on the approved indicated uses for which a product may be marketed or to the conditions of approval, or contain requirements for potentially costly post-marketing testing, including post-marketing clinical trials, and surveillance to monitor the safety and efficacy of the vaccine candidate.

In addition, if the FDA or a comparable foreign regulatory authority approves our vaccine candidates, the manufacturing processes, labeling, packaging, distribution, adverse event reporting, conduct of post-marketing studies, storage, sampling, advertising, promotion, import, export and recordkeeping for our vaccine candidates will be subject to extensive and ongoing regulatory requirements. These requirements include submissions of safety and other post-marketing information and reports, registration and continued compliance with cGMPs and GCPs for any clinical trials that we conduct post-approval. As such, we and our contract manufacturers will be subject to continual review and inspections to assess compliance with cGMP and adherence to commitments made in any BLA, other marketing application and previous responses to inspectional observations. Accordingly, we and others with whom we work must continue to expend time, money and effort in all areas of regulatory compliance, including manufacturing, production and quality control. In addition, the FDA could require us to conduct another study to obtain additional safety or biomarker information. Further, we will be required to comply with FDA promotion and advertising rules, which include, among others, standards for direct-to-consumer advertising, restrictions on promoting products for uses or in patient populations that are not described in the product's approved uses (known as "off-label use"), limitations on industry-sponsored scientific and educational activities and requirements for promotional activities involving the internet and social media. Later discovery of previously unknown problems with our vaccine candidates, including side effects of unanticipated severity or frequency, or with our third-party suppliers or manufacturing processes, or failure to comply with regulatory requirements, may result in revisions to the approved labeling to add new safety information; imposition of post-market studies or clinical trials to assess new safety risks; or imposition of distribution or other restrictions. Other potential consequences include, among other things:

- restrictions on the marketing or manufacturing of our vaccine candidates, withdrawal of the product from the market or voluntary or mandatory product recalls;

- fines, warning letters or holds on clinical trials;

- refusal by the FDA to approve pending applications or supplements to approved applications filed by us or suspension or revocation of regulatory approvals;

- product seizure or detention, or refusal to permit the import or export of our vaccine candidates; and

- injunctions or the imposition of civil or criminal penalties.

The FDA's and other regulatory authorities' policies may change and additional government regulations may be enacted that could prevent, limit or delay regulatory approval of our vaccine candidates. We cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative or executive action, either in the United States or abroad. For example, certain policies of the current U.S. President's administration may impact our business and industry. Namely, the current U.S. President's administration has taken several executive actions, including the issuance of a number of Executive Orders, that could impose significant burdens on, or otherwise materially delay, the FDA's ability to engage in routine oversight activities such as implementing statutes through rulemaking, issuance of guidance and review and approval of marketing applications. It is difficult to predict how these orders will be implemented, and the extent to which they will impact the FDA's ability to exercise its regulatory authority. If these executive actions impose restrictions on the FDA's ability to engage in oversight and implementation activities in the normal course, our business may be negatively impacted. If we are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we are not able to maintain regulatory compliance, we may lose any marketing approval that we may have obtained, and we may not achieve or sustain profitability.

Any government investigation of alleged violations of law could require us to expend significant time and resources in response, and could generate negative publicity. Any failure to comply with ongoing regulatory requirements may significantly and adversely affect our ability to commercialize and generate revenue from our products. If regulatory sanctions are applied or if regulatory approval is withdrawn, the value of our company and our operating results will be adversely affected.

***We expect the vaccine candidates we develop will be regulated as biological products, or biologics, and therefore they may be subject to competition sooner than anticipated.***

The Biologics Price Competition and Innovation Act of 2009, or BPCIA, was enacted as part of the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act of 2010, or collectively, ACA, to establish an abbreviated pathway for the approval of biosimilar and interchangeable biological products. The regulatory pathway establishes legal authority for the FDA to review and approve biosimilar biologics, including the possible designation of a biosimilar as "interchangeable" based on its similarity to an approved biologic. Under the BPCIA, an application for a biosimilar product cannot be approved by the FDA until twelve years after the reference product was approved under a BLA. The law is complex and is still being interpreted and implemented by the FDA. As a result, its ultimate impact, implementation and meaning are subject to uncertainty. While it is uncertain when such processes intended to implement the BPCIA may be fully adopted by the FDA, any such processes could have a material adverse effect on the future commercial prospects for our biological products.

We believe that any of the vaccine candidates we develop that is approved in the United States as a biological product under a BLA should qualify for the twelve year period of exclusivity. However, there is a risk that this exclusivity could be shortened due to congressional action or otherwise, or that the FDA will not consider the subject vaccine candidates to be reference products for competing products, potentially creating the opportunity for generic competition sooner than anticipated. Moreover, the extent to which a biosimilar, once approved, will be substituted for any one of the reference products in a way that is similar to traditional generic substitution for non-biological products is not yet clear, and will depend on a number of marketplace and regulatory factors that are still developing.

***Our relationships with customers, physicians and third-party payors are subject, directly or indirectly, to federal and state healthcare fraud and abuse laws, health information privacy and security laws and other healthcare laws and regulations. If we or our employees, independent contractors, consultants, commercial partners and vendors violate these laws, we could face substantial penalties.***

Healthcare providers, physicians and third-party payors in the United States and elsewhere will play a primary role in the recommendation and prescription of any vaccine candidates for which we obtain marketing

approval. Our current and future arrangements with healthcare professionals, principal investigators, consultants, customers and third-party payors subject us to various federal and state fraud and abuse laws and other healthcare laws.

These laws may constrain the business or financial arrangements and relationships through which we conduct our operations, including how we research, market, sell and distribute our vaccine candidates, if approved. Such laws include:

- the U.S. federal Anti-Kickback Statute, which prohibits, among other things, persons or entities from knowingly and willfully soliciting, offering, receiving or providing any remuneration (including any kickback, bribe or certain rebate), directly or indirectly, overtly or covertly, in cash or in kind, to induce or reward, or in return for, either the referral of an individual for, or the purchase, lease, order or recommendation of, any good, facility, item or service, for which payment may be made, in whole or in part, under any U.S. federal healthcare program, such as Medicare and Medicaid. A person or entity does not need to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation;

- the U.S. federal civil and criminal false claims laws, including the civil False Claims Act, which can be enforced through civil whistleblower or qui tam actions, and civil monetary penalties laws, which prohibit, among other things, individuals or entities from knowingly presenting, or causing to be presented, to the U.S. federal government, claims for payment or approval that are false or fraudulent, knowingly making, using or causing to be made or used, a false record or statement material to a false or fraudulent claim, or from knowingly making a false statement to avoid, decrease or conceal an obligation to pay money to the U.S. federal government. Pharmaceutical manufacturers can cause false claims to be presented to the U.S. federal government by engaging in impermissible marketing practices, such as the off-label promotion of a product for an indication for which it has not received FDA approval. In addition, the government may assert that a claim including items and services resulting from a violation of the U.S. federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the civil False Claims Act;

- the Health Insurance Portability and Accountability Act of 1996, or HIPAA, which prohibits, among other things, knowingly and willfully executing, or attempting to execute, a scheme to defraud any healthcare benefit program, or knowingly and willfully falsifying, concealing or covering up a material fact or making any materially false statement, in connection with the delivery of, or payment for, healthcare benefits, items or services. Similar to the U.S. federal Anti-Kickback Statute, a person or entity does not need to have actual knowledge of the healthcare fraud statute implemented under HIPAA or specific intent to violate it in order to have committed a violation;

- HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act and its implementing regulations, which also impose certain obligations, including mandatory contractual terms, with respect to safeguarding the privacy and security of individually identifiable health information of covered entities subject to the rule, including health plans, healthcare clearinghouses and certain healthcare providers as well as their business associates, independent contractors of a covered entity that perform certain services involving the use or disclosure of individually identifiable health information for or on their behalf;

- the Federal Food Drug or Cosmetic Act, which prohibits, among other things, the adulteration or misbranding of drugs, biologics and medical devices;

- the U.S. Physician Payments Sunshine Act and its implementing regulations, which require certain manufacturers of drugs, devices, biologics and medical supplies that are reimbursable under

Medicare, Medicaid or the Children's Health Insurance Program, with specific exceptions, to report annually to the Centers for Medicare and Medicaid Services, or CMS, information related to certain payments and other transfers of value to physicians (defined to include doctors, dentists, optometrists, podiatrists and chiropractors) and teaching hospitals, as well as ownership and investment interests held by the physicians described above and their immediate family members;

- analogous U.S. state laws and regulations, including: state anti-kickback and false claims laws, which may apply to our business practices, including but not limited to, research, distribution, sales and marketing arrangements and claims involving healthcare items or services reimbursed by any third-party payor, including private insurers; state laws that require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the U.S. federal government, or otherwise restrict payments that may be made to healthcare providers and other potential referral sources; state laws and regulations that require drug manufacturers to file reports relating to pricing and marketing information, which require tracking gifts and other remuneration and items of value provided to healthcare professionals and entities; state and local laws requiring the registration of pharmaceutical sales representatives; and state laws governing the privacy and security of health information in certain circumstances, many of which differ from each other in significant ways and often are not preempted by HIPAA, thus complicating compliance efforts; and

- similar healthcare laws and regulations in the EU and other jurisdictions, including reporting requirements detailing interactions with and payments to healthcare providers and laws governing the privacy and security of certain protected information, such as the General Data Protection Regulation, or GDPR, which imposes obligations and restrictions on the collection and use of personal data relating to individuals located in the EU (including health data).

We may also be subject to other laws, such as the U.S. Foreign Corrupt Practices Act of 1977, as amended, which prohibit, among other things, U.S. companies and their employees and agents from authorizing, promising, offering or providing, directly or indirectly, corrupt or improper payments or anything else of value to foreign government officials, employees of public international organizations and foreign government owned or affiliated entities, candidates for foreign political office and foreign political parties or officials thereof, as well as federal consumer protection and unfair competition laws, which broadly regulate marketplace activities and activities that potentially harm consumers.

Ensuring that our internal operations and business arrangements with third parties comply with applicable healthcare laws and regulations will likely be costly. It is possible that governmental authorities will conclude that our business practices, including our relationships with physicians and other healthcare providers, some of whom are compensated in the form of stock options for consulting services provided, may not comply with current or future statutes, regulations or case law involving applicable fraud and abuse or other healthcare laws and regulations. If our operations are found to be in violation of any of these laws or any other governmental regulations that may apply to us, we may be subject to significant civil, criminal and administrative penalties, damages, fines, disgorgement, imprisonment, exclusion from participating in government-funded healthcare programs, such as Medicare and Medicaid, additional reporting requirements and oversight if we become subject to a corporate integrity agreement or similar agreement to resolve allegations of noncompliance with these laws, contractual damages, reputational harm and the curtailment or restructuring of our operations.

Even if resolved in our favor, litigation or other legal proceedings relating to healthcare laws and regulations may cause us to incur significant expenses and could distract our technical and management personnel from their normal responsibilities. In addition, there could be public announcements of the results of hearings, motions or other interim proceedings or developments. If securities analysts or investors perceive these results to be negative, it could have a substantial adverse effect on the price of our common stock. Such litigation or proceedings could substantially increase our operating losses and reduce the resources available for

development, manufacturing, sales, marketing or distribution activities. Uncertainties resulting from the initiation and continuation of litigation or other proceedings relating to applicable healthcare laws and regulations could have an adverse effect on our ability to compete in the marketplace. In addition, if the physicians or other providers or entities with whom we expect to do business are found not to be in compliance with applicable laws, they may be subject to significant criminal, civil or administrative sanctions, including exclusions from government-funded healthcare programs.

***Coverage and reimbursement may be limited or unavailable in certain market segments for our vaccine candidates, which could make it difficult for us to sell our vaccine candidates, if approved, profitably.***

Successful sales of our vaccine candidates, if approved, depend on the availability of coverage and adequate reimbursement from third-party payors including governmental healthcare programs, such as Medicare and Medicaid, managed care organizations and commercial payors, among others. Significant uncertainty exists as to the coverage and reimbursement status of any vaccine candidates for which we obtain regulatory approval.

Patients who receive vaccines generally rely on third-party payors to reimburse all or part of the costs associated with their treatment. Obtaining coverage and adequate reimbursement from third-party payors is critical to new product acceptance.

Third-party payors decide which drugs and treatments they will cover and the amount of reimbursement. Reimbursement by a third-party payor may depend upon a number of factors, including, but not limited to, the third-party payor's determination that use of a product is:

- a covered benefit under its health plan;
- safe, effective and medically necessary;
- appropriate for the specific patient;
- cost-effective; and
- neither experimental nor investigational.

Obtaining coverage and reimbursement of a product from a government or other third-party payor is a time-consuming and costly process that could require us to provide to the payor supporting scientific, clinical and cost-effectiveness data for the use of our products. Even if we obtain coverage for a given product, if the resulting reimbursement rates are insufficient, hospitals may not approve our product for use in their facility or third-party payors may require co-payments that patients find unacceptably high. Patients are unlikely to use our vaccine candidates unless coverage is provided and reimbursement is adequate to cover a significant portion of the cost of our vaccine candidates. Separate reimbursement for the product itself may or may not be available. Instead, the hospital or administering physician may be reimbursed only for administering the product. Further, from time to time, CMS revises the reimbursement systems used to reimburse health care providers, including the Medicare Physician Fee Schedule and Outpatient Prospective Payment System, which may result in reduced Medicare payments. In some cases, private third-party payors rely on all or portions of Medicare payment systems to determine payment rates. Changes to government healthcare programs that reduce payments under these programs may negatively impact payments from third-party payers and reduce the willingness of physicians to use our vaccine candidates.

In the United States, no uniform policy of coverage and reimbursement for products exists among third-party payors. Therefore, coverage and reimbursement for products can differ significantly from payor to payor. Further, one payor's determination to provide coverage for a product does not assure that other payors will also provide coverage for the product. Adequate third-party reimbursement may not be available to enable us to maintain price levels sufficient to realize an appropriate return on our investment in product development.

We intend to seek approval to market our vaccine candidates in both the United States and in selected foreign jurisdictions. If we obtain approval in one or more foreign jurisdictions for our vaccine candidates, we will be subject to rules and regulations in those jurisdictions. In some foreign countries, particularly those in Europe, the pricing of biologics is subject to governmental control. In these countries, pricing negotiations with governmental authorities can take considerable time after obtaining marketing approval of a vaccine candidate. Some of these countries may require the completion of clinical trials that compare the cost-effectiveness of a particular vaccine candidate to currently available vaccines. Other member states allow companies to fix their own prices for medicines but monitor and control company profits. The downward pressure on health care costs has become very intense. As a result, increasingly high barriers are being erected to the entry of new products. In addition, in some countries, cross-border imports from low-priced markets exert a commercial pressure on pricing within a country.

The marketability of any vaccine candidates for which we receive regulatory approval for commercial sale may suffer if government and other third-party payors fail to provide coverage and adequate reimbursement. We expect downward pressure on pharmaceutical pricing to continue. Further, coverage policies and third-party reimbursement rates may change at any time. Even if favorable coverage and reimbursement status is attained for one or more products for which we receive regulatory approval, less favorable coverage policies and reimbursement rates may be implemented in the future.

***Healthcare legislative reform measures may have a negative impact on our business, financial condition, results of operations and prospects.***

In the United States and some foreign jurisdictions, there have been, and we expect there will continue to be, several legislative and regulatory changes and proposed changes regarding the healthcare system that could prevent or delay marketing approval of vaccine candidates, restrict or regulate post-approval activities and affect our ability to profitably sell any vaccine candidates for which we obtain marketing approval. In particular, there have been and continue to be a number of initiatives at the U.S. federal and state levels that seek to reduce healthcare costs and improve the quality of healthcare. For example, in March 2010, the ACA was passed, which substantially changed the way healthcare is financed by both governmental and private payors in the United States. Among the provisions of the ACA, those of greatest importance to the pharmaceutical and biotechnology industries include:

- an annual, non-deductible fee on any entity that manufactures or imports certain branded prescription drugs and biologic agents, which is apportioned among these entities according to their market share in certain government healthcare programs;
- a Medicare Part D coverage gap discount program, in which manufacturers must agree to offer point-of-sale discounts off negotiated prices of applicable brand drugs to eligible beneficiaries during their coverage gap period, as a condition for the manufacturer's outpatient drugs to be covered under Medicare Part D;
- an increase in the statutory minimum rebates a manufacturer must pay under the Medicaid Drug Rebate Program to 23.1% and 13.0% of the average manufacturer price for branded and generic drugs, respectively;
- a methodology by which rebates owed by manufacturers under the Medicaid Drug Rebate Program are calculated for drugs that are inhaled, infused, instilled, implanted or injected;
- extension of a manufacturer's Medicaid rebate liability to covered drugs dispensed to individuals who are enrolled in Medicaid managed care organizations;
- expansion of eligibility criteria for Medicaid programs by, among other things, allowing states to offer Medicaid coverage to certain individuals with income at or below 133% of the federal poverty level, thereby potentially increasing a manufacturer's Medicaid rebate liability;

- expansion of the entities eligible for discounts under the Public Health Service pharmaceutical pricing program;
- a new Patient-Centered Outcomes Research Institute to oversee, identify priorities in and conduct comparative clinical effectiveness research, along with funding for such research; and
- establishment of a Center for Medicare Innovation at the CMS to test innovative payment and service delivery models to lower Medicare and Medicaid spending, potentially including prescription drug spending.

Some of the provisions of the ACA have yet to be fully implemented, while certain provisions have been subject to judicial and Congressional challenges, as well as recent efforts by the current U.S. President's administration to repeal or replace certain aspects of the ACA. For example, the Tax Act includes a provision that repealed, effective January 1, 2019, the tax-based shared responsibility payment imposed by the ACA on certain individuals who fail to maintain qualifying health coverage for all or part of a year, which is commonly referred to as the "individual mandate." Additionally, on January 22, 2018, the President signed a continuing resolution on appropriations for fiscal year 2018 that delayed the implementation of certain ACA-mandated fees, including the so-called "Cadillac" tax on certain high-cost employer-sponsored insurance plans, the annual fee imposed on certain health insurance providers based on market share and the medical device excise tax on non-exempt medical devices. Further, the Bipartisan Budget Act of 2018, or the BBA, among other things, amended the ACA, effective January 1, 2019, to close the coverage gap in most Medicare drug plans, commonly referred to as the "donut hole." In July 2018, the CMS, published a final rule permitting further collections and payments to and from certain ACA-qualified health plans and health insurance issuers under the ACA adjustment program in response to the outcome of federal district court litigation regarding the method CMS uses to determine this risk adjustment. On December 14, 2018, a U.S. District Court Judge in the Northern District of Texas, or Texas District Court Judge, ruled that the individual mandate is a critical and inseverable feature of the ACA, and therefore, because it was repealed as part of the Tax Act, the remaining provisions of the ACA are invalid as well. While the Texas District Court Judge, as well as the current U.S. President's administration and CMS, have stated that the ruling will have no immediate effect, it is unclear how this decision, subsequent appeals and other efforts to repeal and replace the ACA will impact the ACA. Congress may consider additional legislation to repeal or repeal and replace other elements of the ACA. We continue to evaluate the effect that the ACA and its possible repeal and replacement have on our business.

Other legislative changes have been proposed and adopted in the United States since the ACA was enacted. These changes include aggregate reductions to Medicare payments to providers of 2% per fiscal year pursuant to the Budget Control Act of 2011, which began in 2013 and, due to subsequent legislative amendments to the statute, including the BBA, will remain in effect through 2027 unless additional Congressional action is taken. The American Taxpayer Relief Act of 2012, among other things, further reduced Medicare payments to several types of providers, including hospitals and cancer treatment centers, and increased the statute of limitations period for the government to recover overpayments to providers from three to five years.

Additional changes that may affect our business include the expansion of new programs such as Medicare payment for performance initiatives for physicians under the Medicare Access and CHIP Reauthorization Act of 2015, which was fully operational in 2019. At this time, it is unclear how the introduction of the Medicare quality payment program will impact overall physician reimbursement.

Further, in the United States there has been heightened governmental scrutiny over the manner in which manufacturers set prices for their marketed products, which has resulted in several Congressional inquiries and proposed and enacted federal and state legislation designed to, among other things, bring more transparency to drug and biological product pricing, reduce the cost of prescription drugs and biological products under government payor programs and review the relationship between pricing and manufacturer patient programs. At the federal level, the current U.S. President's administration's budget proposals for fiscal years 2019 and 2020

contain further drug price control measures that could be enacted during the budget process or in other future legislation, including, for example, measures to permit Medicare Part D plans to negotiate the price of certain drugs under Medicare Part B, to allow some states to negotiate drug prices under Medicaid and to eliminate cost-sharing for generic drugs for low-income patients. Additionally, the current U.S. President's administration released a "Blueprint" to lower drug prices and reduce out of pocket costs of drugs that contains additional proposals to increase manufacturer competition, increase the negotiating power of specific federal healthcare programs, incentivize manufacturers to lower the list price of their products and reduce the out of pocket costs of drug products paid by consumers. The U.S. Department of Health and Human Services has begun soliciting feedback on some of these measures and, at the same time, is implementing others under its existing authority. Although some measures may require additional authorization to become effective, the U.S. Congress and the current U.S. President's administration have indicated that they will continue to seek new legislative and/or administrative measures to control drug and biological product costs. At the state level, legislatures have increasingly passed legislation and implemented regulations designed to control pharmaceutical and biological product pricing, including price or patient reimbursement constraints, discounts, restrictions on certain product access and marketing cost disclosure and transparency measures and, in some cases, designed to encourage importation from other countries and bulk purchasing. In addition, regional healthcare authorities and individual hospitals are increasingly using bidding procedures to determine which drugs, biological products and suppliers will be included in their healthcare programs. Furthermore, there has been increased interest by third-party payors and governmental authorities in reference pricing systems and publication of discounts and list prices.

We expect that additional U.S. federal healthcare reform measures will be adopted in the future, any of which could limit the amounts that the U.S. federal government will pay for healthcare products and services, which could result in reduced demand for our current or any future vaccine candidates or additional pricing pressures. We cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative action in the United States or any other jurisdiction. If we or any third parties we may engage are slow or unable to adapt to changes in existing or new requirements or policies, or if we or such third parties are not able to maintain regulatory compliance, our current or any future vaccine candidates we may develop may lose any regulatory approval that may have been obtained and we may not achieve or sustain profitability.

Further, on May 30, 2018, the Trickett Wendler, Frank Mongiello, Jordan McLinn, and Matthew Bellina Right to Try Act of 2017, or the Right to Try Act, was signed into law. The law, among other things, provides a federal framework for certain patients to access certain investigational new drug products that have completed a Phase 1 clinical trial and that are undergoing investigation for FDA approval. Under certain circumstances, eligible patients can seek treatment without enrolling in clinical trials and without obtaining FDA permission under the FDA expanded access program. There is no obligation for a pharmaceutical manufacturer to make its drug products available to eligible patients as a result of the Right to Try Act.

We expect that these and other healthcare reform measures that may be adopted in the future may result in more rigorous coverage criteria and in additional downward pressure on the price that we receive for any approved product, which could have an adverse effect on demand for our vaccine candidates. Any reduction in reimbursement from Medicare or other government programs may result in a similar reduction in payments from private payors. The implementation of cost containment measures or other healthcare reforms may prevent us from being able to generate revenue, attain profitability or commercialize our products. For additional information on healthcare reform, see the section entitled "Business—Government Regulation."

***Changes in funding for the FDA and other government agencies could hinder our ability to hire and retain key leadership and other personnel, or otherwise prevent new products and services from being developed or commercialized in a timely manner, which could negatively impact our business.***

The ability of the FDA to review and approve new products can be affected by a variety of factors, including government budget and funding levels, ability to hire and retain key personnel and accept the payment

of user fees and statutory, regulatory and policy changes. Average review times at the agency have fluctuated in recent years as a result. In addition, government funding of other government agencies that fund research and development activities is subject to the political process, which is inherently fluid and unpredictable.

Disruptions at the FDA and other agencies may also slow the time necessary for new drugs to be reviewed and/or approved by necessary government agencies, which would adversely affect our business. For example, over the last several years, including for 35 days beginning on December 22, 2018, the U.S. government has shut down several times and certain regulatory agencies, such as the FDA, have had to furlough critical FDA employees and stop critical activities. If a prolonged government shutdown occurs, it could significantly impact the ability of the FDA to timely review and process our regulatory submissions, which could have a material adverse effect on our business.

***European data collection is governed by restrictive regulations governing the use, processing and cross-border transfer of personal information.***

The collection and use of personal data in the European Union are governed by the General Data Protection Regulation, or GDPR. The GDPR imposes stringent requirements for controllers and processors of personal data, including, for example, more robust disclosures to individuals and a strengthened individual data rights regime, shortened timelines for data breach notifications, limitations on retention of information, increased requirements pertaining to special categories of data, such as health data, and additional obligations when we contract with third-party processors in connection with the processing of the personal data. The GDPR also imposes strict rules on the transfer of personal data out of the European Union to the United States and other third countries. In addition, the GDPR provides that EU member states may make their own further laws and regulations limiting the processing of personal data, including genetic, biometric or health data.

The GDPR applies extraterritorially, and we may be subject to the GDPR because of our data processing activities that involve the personal data of individuals located in the European Union, such as in connection with our EU clinical trials. Failure to comply with the requirements of the GDPR and the applicable national data protection laws of the EU member states may result in fines of up to €20,000,000 or up to 4% of the total worldwide annual turnover of the preceding financial year, whichever is higher, and other administrative penalties. GDPR regulations may impose additional responsibility and liability in relation to the personal data that we process, and we may be required to put in place additional mechanisms to ensure compliance with the new data protection rules. This may be onerous and may interrupt or delay our development activities and adversely affect our business, financial condition, results of operations and prospects.

**Risks Related to Our Intellectual Property**

***If we are unable to obtain and maintain patent protection for our technology and products, or if the scope of the patent protection obtained is not sufficiently broad, we may not be able to compete effectively in our markets.***

We rely upon a combination of patents, trademarks, trade secret protection and confidentiality agreements to protect the intellectual property related to our vaccine development programs and vaccine candidates. Our success depends in large part on our ability to obtain and maintain patent protection in the United States and other countries with respect to SVX-24 and any future vaccine candidates, as well as methods of making our vaccine candidates and components thereof. We seek to protect our proprietary position by filing patent applications in the U.S. and abroad related to our development programs and vaccine candidates. The patent prosecution process is expensive and time-consuming, and we may not be able to file and prosecute all necessary or desirable patent applications at a reasonable cost or in a timely manner.

The patents and patent applications that we own or in-license may fail to result in issued patents with claims that protect SVX-24 or any future vaccine candidate in the United States or in other foreign countries.

There is no assurance that all of the potentially relevant prior art relating to our patents and patent applications has been found, which can prevent a patent from issuing from a pending patent application, or be used to invalidate a patent. Even if patents do successfully issue and even if such patents cover SVX-24 or any future vaccine candidate, third parties may challenge their validity, enforceability or scope, which may result in such patents being narrowed, invalidated or held unenforceable. Any successful opposition to these patents or any other patents owned by or licensed to us could deprive us of rights necessary for the successful commercialization of any vaccine candidates or companion diagnostic that we may develop. Further, if we encounter delays in regulatory approvals, the period of time during which we could market a vaccine candidate under patent protection could be reduced.

If the patent applications we hold or have in-licensed with respect to our development programs and vaccine candidates fail to issue, if their breadth or strength of protection is threatened, or if they fail to provide meaningful exclusivity for SVX-24 or any future vaccine candidate, it could dissuade companies from collaborating with us to develop vaccine candidates and threaten our ability to commercialize future vaccines. Any such outcome could have a materially adverse effect on our business.

The patent position of biotechnology and pharmaceutical companies generally is highly uncertain, involves complex legal and factual questions and has been and will continue to be the subject of litigation and new legislation. In addition, the laws of foreign countries may not protect our rights to the same extent as the laws of the United States For example, many countries restrict the patentability of methods of treatment of the human body. Publications of discoveries in scientific literature often lag behind the actual discoveries, and patent applications in the United States and other jurisdictions are typically not published until 18 months after filing, or in some cases not at all. Therefore, we cannot know with certainty whether we were the first to make the inventions claimed in our owned or licensed patents or pending patent applications, or that we were the first to file for patent protection of such inventions. As a result of these and other factors, the issuance, scope, validity, enforceability and commercial value of our patent rights are highly uncertain. Our pending and future patent applications may not result in patents being issued which protect our technology or products, in whole or in part, or which effectively prevent others from commercializing competitive technologies and products. Changes in either the patent laws or interpretation of the patent laws in the United States and other countries may diminish the value of our patents or narrow the scope of our patent protection.

Moreover, we may be subject to a third-party pre-issuance submission of prior art to the U.S. Patent and Trademark Office, or the USPTO, or become involved in opposition, derivation, reexamination, inter partes review, post-grant review or interference proceedings challenging our patent rights or the patent rights of others. The costs of defending our patents or enforcing our proprietary rights in post-issuance administrative proceedings and litigation can be substantial and the outcome can be uncertain. An adverse determination in any such submission, proceeding or litigation could reduce the scope of, or invalidate, our patent rights, allow third parties to commercialize our technology or products and compete directly with us, without payment to us, or result in our inability to manufacture or commercialize products without infringing third-party patent rights. In addition, if the breadth or strength of protection provided by our patents and patent applications is threatened, it could dissuade companies from collaborating with us to license, develop or commercialize current or future vaccine candidates.

The issuance of a patent is not conclusive as to its inventorship, scope, validity or enforceability, and our owned and licensed patents may be challenged in the courts or patent offices in the United States and abroad. Such challenges may result in loss of exclusivity or freedom to operate or in patent claims being narrowed, invalidated or held unenforceable, in whole or in part, which could limit our ability to stop others from using or commercializing similar or identical technology and products, or limit the duration of the patent protection of our technology and products. Generally, issued patents are granted a term of 20 years from the earliest claimed non-provisional filing date. In certain instances, patent term can be adjusted to recapture a portion of delay by the USPTO in examining the patent application (patent term adjustment) or extended to account for term effectively lost as a result of the FDA regulatory review period (patent term extension), or both. The scope of patent

protection may also be limited. Without patent protection for our current or future vaccine candidates, we may be open to competition from generic versions of such products. Given the amount of time required for the development, testing and regulatory review of new vaccine candidates, patents protecting such candidates might expire before or shortly after such candidates are commercialized. As a result, our owned and licensed patent portfolio may not provide us with sufficient rights to exclude others from commercializing products similar or identical to ours.

***If we fail to comply with our obligations under any license, collaboration or other agreements, we may be required to pay damages and could lose intellectual property rights that are necessary for developing and protecting our vaccine candidates.***

We have licensed certain intellectual property rights related to the XpressCF platform and methods of making components of SVX-24 from Sutro Biopharma. We also license certain intellectual property rights related to a non-cross reactive group A strep carbohydrate antigen and related methods of production from the Regents of the University of California. If, for any reason, these agreements are terminated or we otherwise lose those rights, it could adversely affect our business. These agreements impose, and any future collaboration agreements or license agreements we enter into are likely to impose, various development, commercialization, funding, milestone, royalty, diligence, sublicensing, insurance, patent prosecution and enforcement or other obligations on us. If we breach any material obligations, or use the intellectual property licensed to us in an unauthorized manner, we may be required to pay damages and the licensor(s) may have the right to terminate the license, which could result in us being unable to develop, manufacture and sell products that are covered by the licensed technology or enable a competitor to gain access to the licensed technology.

***Obtaining and maintaining our patent protection depends on compliance with various procedural, document submission, fee payment and other requirements imposed by governmental patent agencies, and our patent protection could be reduced or eliminated for noncompliance with these requirements.***

Periodic maintenance fees on any issued patent are due to be paid to the USPTO and other foreign patent agencies in several stages over the lifetime of the patent. The USPTO and various foreign national or international patent agencies require compliance with a number of procedural, documentary, fee payment and other similar provisions during the patent application process. While an inadvertent lapse can in many cases be cured by payment of a late fee or by other means in accordance with the applicable rules, there are situations in which noncompliance can result in abandonment or lapse of the patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. Noncompliance events that could result in abandonment or lapse of patent rights include, but are not limited to, failure to timely file national and regional stage patent applications based on our international patent application, failure to respond to official actions within prescribed time limits, non-payment of fees and failure to properly legalize and submit formal documents. If we or our licensors fail to maintain the patents and patent applications covering SVX-24 or any future vaccine candidate, or the XpressCF platform, our competitors might be able to enter the market, which would have an adverse effect on our business.

***Third-party claims or litigation alleging infringement of patents or other proprietary rights, or seeking to invalidate our patents or other proprietary rights, may delay or prevent the development and commercialization of SVX-24 and any future vaccine candidate.***

Our commercial success depends in part on our avoiding infringement and other violations of the patents and proprietary rights of third parties. There is a substantial amount of litigation, both within and outside the United States, involving patent and other intellectual property rights in the biotechnology and pharmaceutical industries, including patent infringement lawsuits, interferences, derivation and administrative law proceedings, inter partes review and post-grant review before the USPTO, as well as oppositions and similar processes in foreign jurisdictions. Numerous U.S. and foreign issued patents and pending patent applications, which are owned by third parties, exist in the fields in which we and our collaborators are developing vaccine candidates.

As the biotechnology and pharmaceutical industries expand and more patents are issued, and as we gain greater visibility and market exposure as a public company, the risk increases that our vaccine candidates or other business activities may be subject to claims of infringement of the patent and other proprietary rights of third parties. Third parties may assert that we are infringing their patents or employing their proprietary technology without authorization.

Also, there may be third-party patents or patent applications with claims to materials, formulations, methods of manufacture or methods for treatment related to the use or manufacture of our vaccine candidates. Because patent applications can take many years to issue, there may be currently pending patent applications which may later result in issued patents that our vaccine candidates may infringe.

In addition, third parties may obtain patent rights in the future and claim that use of our technologies infringes upon rights. If any third-party patents were held by a court of competent jurisdiction to cover the manufacturing process of any of our vaccine candidates, any molecules formed during the manufacturing process or any final product itself, the holders of any such patents may be able to block our ability to commercialize such vaccine candidate unless we obtained a license under the applicable patents, or until such patents expire. Similarly, if any third-party patent were held by a court of competent jurisdiction to cover aspects of our formulations, processes for manufacture or methods of use, including combination therapy, the holders of any such patent may be able to block our ability to develop and commercialize the applicable vaccine candidate unless we obtained a license or until such patent expires. In either case, such a license may not be available on commercially reasonable terms or at all. In addition, we may be subject to claims that we are infringing other intellectual property rights, such as trademarks or copyrights, or misappropriating the trade secrets of others, and to the extent that our employees, consultants or contractors use intellectual property or proprietary information owned by others in their work for us, disputes may arise as to the rights in related or resulting know-how and inventions.

Parties making claims against us may obtain injunctive or other equitable relief, which could effectively block our ability to further develop and commercialize one or more of our vaccine candidates. Defense of these claims, regardless of their merit, would involve substantial litigation expense and would be a substantial diversion of employee resources from our business. In the event of a successful infringement or other intellectual property claim against us, we may have to pay substantial damages, including treble damages and attorneys' fees for willful infringement, obtain one or more licenses from third parties, pay royalties or redesign our affected products, which may be impossible or require substantial time and monetary expenditure. We cannot predict whether any such license would be available at all or whether it would be available on commercially reasonable terms.

Furthermore, as the vaccine patent landscape is crowded and highly competitive, even in the absence of litigation we may need to obtain licenses from third parties to advance our research or allow commercialization of our vaccine candidates, and we have done so from time to time. We may fail to obtain any of these licenses at a reasonable cost or on reasonable terms, if at all. In that event, we would be unable to further develop and commercialize one or more of our vaccine candidates, which could harm our business significantly. We cannot provide any assurances that third-party patents do not exist which might be enforced against vaccine candidates resulting in either an injunction prohibiting our sales, or, with respect to our sales, an obligation on our part to pay royalties or other forms of compensation to third parties.

***We may become involved in lawsuits to protect or enforce our patents, the patents of our licensors or our other intellectual property rights, which could be expensive, time consuming and unsuccessful.***

Competitors may infringe or otherwise violate our patents, the patents of our licensors or our other intellectual property rights. To counter infringement or unauthorized use, we may be required to file legal claims, which can be expensive and time-consuming. In addition, in an infringement proceeding, a court may decide that a patent of ours or our licensors is not valid or is unenforceable, or may refuse to stop the other party from using

the technology at issue on the grounds that our patents do not cover the technology in question. An adverse result in any litigation or defense proceedings could put one or more of our patents at risk of being invalidated or interpreted narrowly and could put our patent applications at risk of not issuing. The initiation of a claim against a third party may also cause the third party to bring counter claims against us such as claims asserting that our patents are invalid or unenforceable. In patent litigation in the United States, defendant counterclaims alleging invalidity or unenforceability are commonplace. Grounds for a validity challenge could be an alleged failure to meet any of several statutory requirements, including lack of novelty, obviousness, non-enablement or lack of statutory subject matter. Grounds for an unenforceability assertion could be an allegation that someone connected with prosecution of the patent withheld relevant material information from the USPTO, or made a materially misleading statement, during prosecution. Third parties may also raise similar validity claims before the USPTO in post-grant proceedings such as ex parte reexaminations, inter partes review or post-grant review, or oppositions or similar proceedings outside the United States, in parallel with litigation or even outside the context of litigation. The outcome following legal assertions of invalidity and unenforceability is unpredictable. We cannot be certain that there is no invalidating prior art, of which we and the patent examiner were unaware during prosecution. For the patents and patent applications that we have licensed, we may have limited or no right to participate in the defense of any licensed patents against challenge by a third party. If a defendant were to prevail on a legal assertion of invalidity or unenforceability, we would lose at least part, and perhaps all, of any future patent protection on our current or future vaccine candidates. Such a loss of patent protection could harm our business.

We may not be able to prevent, alone or with our licensors, misappropriation of our intellectual property rights, particularly in countries where the laws may not protect those rights as fully as in the United States. Our business could be harmed if in litigation the prevailing party does not offer us a license on commercially reasonable terms. Any litigation or other proceedings to enforce our intellectual property rights may fail, and even if successful, may result in substantial costs and distract our management and other employees.

Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure during this type of litigation. There could also be public announcements of the results of hearings, motions or other interim proceedings or developments. If securities analysts or investors perceive these results to be negative, it could have an adverse effect on the price of our common shares.

***Changes in U.S. patent law or the patent law of other countries or jurisdictions could diminish the value of patents in general, thereby impairing our ability to protect our products.***

The United States has enacted and implemented wide-ranging patent reform legislation. The U.S. Supreme Court has ruled on several patent cases in recent years, either narrowing the scope of patent protection available in certain circumstances or weakening the rights of patent owners in certain situations. In addition to increasing uncertainty with regard to our ability to obtain patents in the future, this combination of events has created uncertainty with respect to the value of patents, once obtained. Depending on actions by the U.S. Congress, the federal courts and the USPTO, the laws and regulations governing patents could change in unpredictable ways that would weaken our ability to obtain new patents or to enforce patents that we have licensed or that we might obtain in the future. Similarly, changes in patent law and regulations in other countries or jurisdictions or changes in the governmental bodies that enforce them or changes in how the relevant governmental authority enforces patent laws or regulations may weaken our ability to obtain new patents or to enforce patents that we have licensed or that we may obtain in the future.

***Any trademarks we may obtain may be infringed or successfully challenged, resulting in harm to our business.***

We expect to rely on trademarks as one means to distinguish any of our vaccine candidates that are approved for marketing from the products of our competitors. We have not yet selected trademarks for our

vaccine candidates and have not yet begun the process of applying to register trademarks for our current or any future vaccine candidates. Once we select trademarks and apply to register them, our trademark applications may not be approved. Third parties may oppose our trademark applications or otherwise challenge our use of the trademarks. In the event that our trademarks are successfully challenged, we could be forced to rebrand our products, which could result in loss of brand recognition and could require us to devote resources to advertising and marketing new brands. Our competitors may infringe our trademarks, and we may not have adequate resources to enforce our trademarks.

In addition, any proprietary name we propose to use with our current or any other vaccine candidate in the United States must be approved by the FDA, regardless of whether we have registered it, or applied to register it, as a trademark. The FDA typically conducts a review of proposed product names, including an evaluation of the potential for confusion with other product names. If the FDA objects to any of our proposed proprietary product names, we may be required to expend significant additional resources in an effort to identify a suitable proprietary product name that would qualify under applicable trademark laws, not infringe the existing rights of third parties and be acceptable to the FDA.

***We may not be able to protect our intellectual property rights throughout the world, which could impair our business.***

Filing, prosecuting and defending patents covering our current vaccine candidates and any future vaccine candidate throughout the world would be prohibitively expensive. Competitors may use our technologies in jurisdictions where we have not obtained patent protection to develop their own products and, further, may export otherwise infringing products to territories where we may obtain patent protection, but where patent enforcement is not as strong as that in the United States. These products may compete with our products in jurisdictions where we do not have any issued or licensed patents and any future patent claims or other intellectual property rights may not be effective or sufficient to prevent them from so competing.

***Our reliance on third parties requires us to share our trade secrets, which increases the possibility that a competitor will discover them or that our trade secrets will be misappropriated or disclosed.***

Because we expect to rely on third parties to manufacture SVX-24 and any future vaccine candidates, and we expect to collaborate with third parties on the development of SVX-24 and any future vaccine candidates, we must, at times, share trade secrets with them. We also conduct joint research and development programs that may require us to share trade secrets under the terms of our research and development partnerships or similar agreements. We seek to protect our proprietary technology in part by entering into confidentiality agreements and, if applicable, material transfer agreements, consulting agreements or other similar agreements with our advisors, employees, third-party contractors and consultants prior to beginning research or disclosing proprietary information. These agreements typically limit the rights of the third parties to use or disclose our confidential information, including our trade secrets. Despite the contractual provisions employed when working with third parties, the need to share trade secrets and other confidential information increases the risk that such trade secrets become known by our competitors, are inadvertently incorporated into the technology of others or are disclosed or used in violation of these agreements. Given that our proprietary position is based, in part, on our know-how and trade secrets, a competitor's discovery of our trade secrets or other unauthorized use or disclosure would impair our competitive position and may have an adverse effect on our business and results of operations.

In addition, these agreements typically restrict the ability of our advisors, employees, third-party contractors and consultants to publish data potentially relating to our trade secrets, although our agreements may contain certain limited publication rights. Despite our efforts to protect our trade secrets, our competitors may discover our trade secrets, either through breach of our agreements with third parties, independent development or publication of information by any of our third-party collaborators. A competitor's discovery of our trade secrets would impair our competitive position and have an adverse impact on our business.

***We may be subject to claims that our employees, consultants or independent contractors have wrongfully used or disclosed confidential information of their former employers or other third parties.***

We employ individuals who were previously employed at other biotechnology or pharmaceutical companies. Although we seek to protect our ownership of intellectual property rights by ensuring that our agreements with our employees, collaborators and other third parties with whom we do business include provisions requiring such parties to assign rights in inventions to us, we may be subject to claims that we or our employees, consultants or independent contractors have inadvertently or otherwise used or disclosed confidential information of our employees' former employers or other third parties. We may also be subject to claims that former employers or other third parties have an ownership interest in our patents. Litigation may be necessary to defend against these claims. There is no guarantee of success in defending these claims, and if we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights, such as exclusive ownership of, or right to use, valuable intellectual property. Even if we are successful, litigation could result in substantial cost and be a distraction to our management and other employees.

**Risks Related to This Offering and Ownership of Our Common Stock**

***We do not know whether an active, liquid and orderly trading market will develop for our common stock or what the market price of our common stock will be and as a result it may be difficult for you to sell your shares of our common stock.***

Prior to this offering there has been no public market for shares of our common stock. An active trading market for our shares may never develop or be sustained following this offering. You may not be able to sell your shares quickly or at the market price if trading in shares of our common stock is not active. The initial public offering price for our common stock will be determined through negotiations with the underwriters, and the negotiated price may not be indicative of the market price of the common stock after the offering. As a result of these and other factors, you may be unable to resell your shares of our common stock at or above the initial public offering price. Further, an inactive market may also impair our ability to raise capital by selling shares of our common stock and may impair our ability to enter into strategic partnerships or acquire companies or products by using our shares of common stock as consideration.

***The price of our stock may be volatile, and you could lose all or part of your investment.***

The trading price of our common stock following this offering is likely to be highly volatile and could be subject to wide fluctuations in response to various factors, some of which are beyond our control, including limited trading volume. In addition to the factors discussed in this "Risk Factors" section and elsewhere in this prospectus, these factors include:

- the commencement, enrollment or results of our planned or future preclinical studies or clinical trials of our vaccine candidates and those of our competitors;
- regulatory or legal developments in the United States and abroad;
- the success of competitive vaccines or technologies;
- developments or disputes concerning patent applications, issued patents or other proprietary rights;
- the level of expenses related to our vaccine candidates or preclinical and clinical development programs;
- the results of our efforts to develop additional vaccine candidates;

- actual or anticipated changes in estimates as to financial results, development timelines or recommendations or reports by securities analysts;
- the level of expenses and capital investment related to manufacturing out vaccine candidates;
- our inability to obtain or delays in obtaining adequate supply for any approved vaccine candidate;
- significant lawsuits, including patent or stockholder litigation;
- variations in our financial results or those of companies perceived to be similar to us;
- changes in the structure of healthcare payment systems, including coverage and adequate reimbursement for any approved vaccine;
- general economic, political and market conditions and overall fluctuations in the financial markets in the United States and abroad; and
- investors' general perception of us and our business.

In addition, the stock market in general, and the Nasdaq Global Market and biopharmaceutical companies in particular, have experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of these companies. Broad market and industry factors may negatively affect the market price of our common stock, regardless of our actual operating performance. In the past, securities class action litigation has often been instituted against companies following periods of volatility in the market price of a company's securities. If the market price of our common stock after this offering does not exceed the initial public offering price, you may not realize any return on your investment in us and may lose some or all of your investment. In the past, securities class action litigation has often been instituted against companies following periods of volatility in the market price of a company's securities. This type of litigation, if instituted, could result in substantial costs and a diversion of management's attention and resources, which would harm our business, operating results or financial condition.

***Our financial condition and results of operations may fluctuate from quarter to quarter and year to year, which makes them difficult to predict.***

We expect our financial condition and results of operations to fluctuate from quarter to quarter and year to year due to a variety of factors, many of which are beyond our control. Accordingly, you should not rely upon the results of any quarterly or annual periods as indications of future operating performance.

***We do not intend to pay dividends on our common stock so any returns will be limited to the value of our stock.***

We currently anticipate that we will retain future earnings for the development, operation and expansion of our business and do not anticipate declaring or paying any cash dividends for the foreseeable future. Any return to stockholders will therefore be limited to the appreciation of their stock.

***Our principal stockholders and management own a significant percentage of our stock and will be able to exert significant control over matters subject to stockholder approval.***

Prior to this offering, our executive officers, directors and 5% stockholders beneficially owned approximately % of our voting stock as of , and, upon the closing of this offering, that same group will continue to beneficially own a significant percentage of our outstanding voting stock. Accordingly, even after this offering, these stockholders will have the ability to influence us through this ownership position and

significantly affect the outcome of all matters requiring stockholder approval. For example, these stockholders may be able to significantly affect the outcome of elections of directors, amendments of our organizational documents or approval of any merger, sale of assets or other major corporate transaction. This may prevent or discourage unsolicited acquisition proposals or offers for our common stock that you may feel are in your best interest as one of our stockholders.

***If you purchase our common stock in this offering, you will incur immediate and substantial dilution in the book value of your shares.***

The initial public offering price is substantially higher than the pro forma as adjusted net tangible book value per share of our common stock. Investors purchasing common stock in this offering will pay a price per share that substantially exceeds the pro forma as adjusted book value of our tangible assets after subtracting our liabilities. Based on the assumed initial public offering price of $ per share, which is the midpoint of the estimated price range set forth on the cover page of this prospectus, you will experience immediate dilution of $ per share, representing the difference between our pro forma as adjusted net tangible book value per share after this offering and the initial public offering price per share. After this offering, we will also have outstanding options and a warrant to purchase common stock with exercise prices lower than the initial public offering price. To the extent these outstanding options or warrant are exercised, there will be further dilution to investors in this offering. See the section entitled "Dilution" for additional information.

***We are an emerging growth company, and we cannot be certain if the reduced reporting requirements applicable to emerging growth companies will make our common stock less attractive to investors.***

We are an emerging growth company, as defined in the Jumpstart Our Business Startups Act, or JOBS Act, enacted in April 2012. For as long as we continue to be an emerging growth company, we may take advantage of exemptions from various reporting requirements that are applicable to other public companies that are not emerging growth companies, including reduced disclosure obligations regarding executive compensation in this prospectus and our periodic reports and proxy statements and exemptions from the requirements of holding nonbinding advisory votes on executive compensation and stockholder approval of any golden parachute payments not previously approved. We could be an emerging growth company for up to five years following the year in which we complete this offering, although circumstances could cause us to lose that status earlier. We will remain an emerging growth company until the earlier of (1) the last day of the fiscal year (a) following the fifth anniversary of the completion of this offering, (b) in which we have total annual gross revenue of at least $1.07 billion or (c) in which we are deemed to be a large accelerated filer, which requires the market value of our common stock that is held by non-affiliates to exceed $700 million as of the prior June 30th, and (2) the date on which we have issued more than $1 billion in non-convertible debt during the prior three-year period.

Even after we no longer qualify as an emerging growth company, we may still qualify as a "smaller reporting company" which would allow us to take advantage of many of the same exemptions from disclosure requirements including not being required to comply for a period of time with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act of 2002, as amended, or Sarbanes-Oxley Act, and reduced disclosure obligations regarding executive compensation in this prospectus and our periodic reports and proxy statements. We cannot predict if investors will find our common stock less attractive because we may rely on these exemptions. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock and our stock price may be more volatile.

Under the JOBS Act, emerging growth companies can also delay adopting new or revised accounting standards until such time as those standards apply to private companies. We have elected to use this extended transition period for complying with new or revised accounting standards that have different effective dates for public and private companies until the earlier of the date we (i) are no longer an emerging growth company or (ii) affirmatively and irrevocably opt out of the extended transition period provided in the JOBS Act. As a result, our financial statements may not be comparable to companies that comply with new or revised accounting pronouncements as of public company effective dates.

***As a public company, we will be subject to more stringent federal and state law requirements.***

As a public company, we will be subject to the reporting requirements of the Securities Exchange Act of 1934, as amended, or the Exchange Act, the Sarbanes-Oxley Act, the Dodd–Frank Wall Street Reform and Consumer Protection Act, the listing requirements of The Nasdaq Stock Market LLC, or Nasdaq, and other applicable securities rules and regulations. Despite reforms made possible by the JOBS Act, compliance with these rules and regulations will nonetheless increase our legal and financial compliance costs, make some activities more difficult, time-consuming or costly and increase demand on our systems and resources, particularly after we are no longer an emerging growth company. The Exchange Act requires, among other things, that we file annual, quarterly and current reports with respect to our business and operating results.

As a result of disclosure of information in this prospectus and in filings required of a public company, our business and financial condition will become more visible, which we believe may result in threatened or actual litigation, including by competitors and other third parties. If such claims are successful, our business, results of operations, financial condition and prospects could be harmed, and even if the claims do not result in litigation or are resolved in our favor, these claims, and the time and resources necessary to resolve them, could divert the resources of our management and adversely affect our brand and reputation, business, results of operations, financial condition and prospects.

We also expect that being a public company and the associated rules and regulations will make it more expensive for us to obtain director and officer liability insurance, and we may be required to accept reduced coverage or incur substantially higher costs to obtain adequate coverage. These factors could also make it more difficult for us to attract and retain qualified members of our board of directors, particularly to serve on our audit committee and compensation committee, and qualified executive officers.

We may also be subject to more stringent state law requirements. For example, on September 30, 2018, California Governor Jerry Brown signed into law Senator Bill 826, which generally requires public companies with principal executive offices in California to have a minimum number of females on the company's board of directors. As of December 31, 2019, each public company with principal executive offices in California is required to have at least one female on its board of directors. By December 31, 2021, each public company will be required to have at least two females on its board of directors if the company has at least five directors, and at least three females on its board of directors if the company has at least six directors. The new law does not provide a transition period for newly listed companies. If we fail to comply with this new law, we could be fined by the California Secretary of State, with a $100,000 fine for the first violation and a $300,000 fine for each subsequent violation, and our reputation may be adversely affected.

***We will incur significant increased costs as a result of operating as a public company, and our management will be required to devote substantial time to new compliance initiatives.***

As a public company, and particularly after we are no longer an emerging growth company, we will incur significant legal, accounting, investor relations and other expenses that we did not incur as a private company. In addition, the Sarbanes-Oxley Act and rules subsequently implemented by the SEC and Nasdaq have imposed various requirements on public companies, including establishment and maintenance of effective disclosure and financial controls and corporate governance practices. Stockholder activism, the current political environment and the current high level of U.S. government intervention and regulatory reform may also lead to substantial new regulations and disclosure obligations, which may in turn lead to additional compliance costs and impact the manner in which we operate our business in ways we do not currently anticipate. Our management and other personnel will need to devote a substantial amount of time to comply with these requirements. Moreover, these requirements will increase our legal and financial compliance costs and will make some activities more time-consuming and costly. For example, we expect that these rules and regulations may make it more difficult and more expensive for us to obtain director and officer liability insurance. We cannot predict or estimate the amount or timing of additional costs we may incur to respond to these requirements.

***If we fail to maintain proper and effective internal control over financial reporting, our ability to produce accurate and timely financial statements could be impaired, investors may lose confidence in our financial reporting and the trading price of our common stock may decline.***

Pursuant to Section 404 of the Sarbanes-Oxley Act, we will be required to furnish a report by our management on our internal control over financial reporting, including an attestation report on internal control over financial reporting issued by our independent registered public accounting firm. However, while we remain an emerging growth company, we will not be required to include an attestation report on internal control over financial reporting issued by our independent registered public accounting firm. The rules governing the standards that must be met for management to assess our internal control over financial reporting are complex and require significant documentation, testing and possible remediation. To comply with the Sarbanes-Oxley Act, the requirements of being a reporting company under the Exchange Act and any complex accounting rules in the future, we may need to upgrade our information technology systems; implement additional financial and management controls, reporting systems and procedures; and hire additional accounting and finance staff. We are currently in the process of hiring additional accounting and finance staff as we grow our business. If we are unable to hire the additional accounting and finance staff necessary to comply with these requirements, we may need to retain additional outside consultants. If we or, if required, our auditors, are unable to conclude that our internal control over financial reporting is effective, investors may lose confidence in our financial reporting and the trading price of our common stock may decline.

There can be no assurance that there will not be material weaknesses in our internal control over financial reporting in the future. Any failure to maintain internal control over financial reporting could severely inhibit our ability to accurately report our financial condition, results of operations or cash flows. If we are unable to conclude that our internal control over financial reporting is effective, or if our independent registered public accounting firm determines that we have a material weakness in our internal control over financial reporting, investors may lose confidence in the accuracy and completeness of our financial reports, the market price of our common stock could decline and we could be subject to sanctions or investigations by Nasdaq, the SEC or other regulatory authorities. Failure to remedy any material weakness in our internal control over financial reporting, or to implement or maintain other effective control systems required of public companies, could also restrict our future access to the capital markets.

***Our reported financial results may be adversely affected by changes in accounting principles generally accepted in the United States.***

Generally accepted accounting principles in the United States are subject to interpretation by the Financial Accounting Standards Board, the SEC and various bodies formed to promulgate and interpret appropriate accounting principles. A change in these principles or interpretations could have a significant effect on our reported financial results, may retroactively affect previously reported results, could cause unexpected financial reporting fluctuations and may require us to make costly changes to our operational processes and accounting systems.

***Sales of a substantial number of shares of our common stock by our existing stockholders in the public market could cause our stock price to fall.***

If our existing stockholders sell, or indicate an intention to sell, substantial amounts of our common stock in the public market after the lock-up and other legal restrictions on resale discussed in this prospectus lapse, the trading price of our common stock could decline. Based on shares of common stock outstanding as of , upon the closing of this offering we will have outstanding a total of shares of common stock. Of these shares, only the shares of common stock sold in this offering by us, plus any shares sold upon exercise of the underwriters' option to purchase additional shares, will be freely tradable without restriction in the public market immediately following this offering. The underwriters, however, may, in their sole discretion, permit our officers, directors and other stockholders who are subject to these lock-up agreements to sell shares prior to the expiration of the lock-up agreements.

We expect that the lock-up agreements pertaining to this offering will expire 180 days from the date of this prospectus. In addition, shares of common stock that are either subject to outstanding options or reserved for future issuance under our 2020 Equity Incentive Plan will become eligible for sale in the public market to the extent permitted by the provisions of various vesting schedules, the lock-up agreements and Rule 144 and Rule 701 under the Securities Act of 1933, as amended, or the Securities Act. If these additional shares of common stock are sold, or if it is perceived that they will be sold, in the public market, the trading price of our common stock could decline.

After this offering, the holders of shares of our common stock will be entitled to rights with respect to the registration of their shares under the Securities Act, subject to the 180-day lock-up agreements described above. See the section entitled "Description of Capital Stock—Registration Rights." Registration of these shares under the Securities Act would result in the shares becoming freely tradable without restriction under the Securities Act, except for shares held by affiliates, as defined in Rule 144 under the Securities Act. Any sales of securities by these stockholders could have a material adverse effect on the trading price of our common stock.

***We have broad discretion in the use of the net proceeds from this offering and may not use them effectively.***

Our management will have broad discretion in the application of the net proceeds from this offering, including for any of the purposes described in the section entitled "Use of Proceeds," and you will not have the opportunity as part of your investment decision to assess whether the net proceeds are being used appropriately. Because of the number and variability of factors that will determine our use of the net proceeds from this offering, their ultimate use may vary substantially from their currently intended use. Our management might not apply our net proceeds in ways that ultimately increase the value of your investment. The failure by our management to apply these funds effectively could harm our business. Pending their use, we may invest the net proceeds from this offering in short- and intermediate-term, interest-bearing instruments, certificates of deposit or direct or guaranteed obligations of the U.S. government. These investments may not yield a favorable return to our stockholders. If we do not invest or apply the net proceeds from this offering in ways that enhance stockholder value, we may fail to achieve expected financial results, which could cause our stock price to decline.

***Provisions in our corporate charter documents and under Delaware law could make an acquisition of us, which may be beneficial to our stockholders, more difficult and may prevent attempts by our stockholders to replace or remove our current management.***

Provisions in our amended and restated certificate of incorporation and amended and restated bylaws that will become effective upon the closing of this offering may discourage, delay or prevent a merger, acquisition or other change in control of us that stockholders may consider favorable, including transactions in which you might otherwise receive a premium for your shares. These provisions also could limit the price that investors might be willing to pay in the future for shares of our common stock, thereby depressing the market price of our common stock. In addition, because our board of directors is responsible for appointing the members of our management team, these provisions may frustrate or prevent any attempts by our stockholders to replace or remove our current management by making it more difficult for stockholders to replace members of our board of directors. Among other things, these provisions:

- establish a classified board of directors such that not all members of the board are elected at one time;
- allow the authorized number of our directors to be changed only by resolution of our board of directors;
- limit the manner in which stockholders can remove directors from the board;

- establish advance notice requirements for stockholder proposals that can be acted on at stockholder meetings and nominations to our board of directors;
- require that stockholder actions must be effected at a duly called stockholder meeting and prohibit actions by our stockholders by written consent;
- prohibit our stockholders from calling a special meeting of our stockholders;
- authorize our board of directors to issue preferred stock without stockholder approval, which could be used to institute a stockholder rights plan, or so-called "poison pill," that would work to dilute the stock ownership of a potential hostile acquirer, effectively preventing acquisitions that have not been approved by our board of directors; and
- require the approval of the holders of at least 66 ⅔% of the votes that all our stockholders would be entitled to cast to amend or repeal certain provisions of our charter or bylaws.

Moreover, because we are incorporated in Delaware, we are governed by the provisions of Section 203 of the Delaware General Corporation Law, or DGCL, which prohibits a person who owns 15% or more of our outstanding voting stock from merging or combining with us for a period of three years after the date of the transaction in which the person acquired 15% or more of our outstanding voting stock, unless the merger or combination is approved in a prescribed manner. These provisions could discourage potential acquisition proposals and could delay or prevent a change in control transaction. They could also have the effect of discouraging others from making tender offers for our common stock, including transactions that may be in your best interests. These provisions may also prevent changes in our management or limit the price that investors are willing to pay for our stock.

***Claims for indemnification by our directors and officers may reduce our available funds to satisfy successful third-party claims against us and may reduce the amount of money available to us.***

Our amended and restated certificate of incorporation and amended and restated bylaws that will become effective upon the closing of this offering will provide that we will indemnify our directors and officers, in each case, to the fullest extent permitted by Delaware law. Delaware law provides that directors of a corporation will not be personally liable for monetary damages for any breach of fiduciary duties as directors, except liability for:

- any breach of the director's duty of loyalty to the corporation or its stockholders;
- any act or omission not in good faith or that involves intentional misconduct or a knowing violation of law;
- unlawful payments of dividends or unlawful stock repurchases or redemptions; or
- any transaction from which the director derived an improper personal benefit.

Such limitation of liability does not apply to liabilities arising under federal securities laws and does not affect the availability of equitable remedies such as injunctive relief or rescission.

Our amended and restated bylaws that will be in effect upon the closing of this offering will provide that we are required to indemnify our directors and officers to the fullest extent permitted by Delaware law and may indemnify our other employees and agents. Our amended and restated bylaws will also provide that, on satisfaction of certain conditions, we will advance expenses incurred by a director or officer in advance of the final disposition of any action or proceeding, and permit us to secure insurance on behalf of any officer, director,

employee or other agent for any liability arising out of his or her actions in that capacity regardless of whether we would otherwise be permitted to indemnify him or her under the provisions of Delaware law. We have entered and expect to continue to enter into agreements to indemnify our directors and executive officers. With certain exceptions, these agreements provide for indemnification for related expenses, including attorneys' fees, judgments, fines and settlement amounts incurred by any of these individuals in connection with any action, proceeding or investigation. We believe that these amended and restated certificate of incorporation and amended and restated bylaws provisions and indemnification agreements are necessary to attract and retain qualified persons as directors and officers.

While we maintain directors' and officers' liability insurance, such insurance may not be adequate to cover all liabilities that we may incur, which may reduce our available funds to satisfy third-party claims and may adversely impact our cash position.

***Our amended and restated certificate of incorporation that will become effective upon the closing of this offering provides that the Court of Chancery of the State of Delaware will be the exclusive forum for substantially all disputes between us and our stockholders, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers or employees.***

Our amended and restated certificate of incorporation will provide that the Court of Chancery of the State of Delaware (or, in the event that the Court of Chancery does not have jurisdiction, the federal district court for the District of Delaware or other state courts of the State of Delaware) is the exclusive forum for the following types of actions or proceedings under Delaware statutory or common law:

- any derivative action or proceeding brought on our behalf;
- any action or proceeding asserting a claim of breach of a fiduciary duty owed by any of our current or former directors, officers or other employees to us or our stockholders;
- any action or proceeding asserting a claim against us or any of our current or former directors, officers or other employees, arising out of or pursuant to any provision of the DGCL, our certificate of incorporation or our bylaws;
- any action or proceeding to interpret, apply, enforce or determine the validity of our certificate of incorporation or our bylaws; and
- any action asserting a claim against us by any of our directors, officers or other employees governed by the internal affairs doctrine.

This provision would not apply to suits brought to enforce a duty or liability created by the Exchange Act or any other claim for which the U.S. federal courts have exclusive jurisdiction. In addition, our amended and restated certificate of incorporation provides that the federal district courts of the United States will be the exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act, subject to and contingent upon a final adjudication in the State of Delaware of the enforceability of such exclusive forum provision.

These exclusive-forum provisions may limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us or our directors, officers or other employees, which may discourage these types of lawsuits. Furthermore, the enforceability of similar choice of forum provisions in other companies' certificates of incorporation has been challenged in legal proceedings, and it is possible that a court could find these types of provisions to be inapplicable or unenforceable. For example, the Court of Chancery of the State of Delaware recently determined that a provision stating that U.S. federal district courts are the exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act is not enforceable. However,

this decision may be reviewed and ultimately overturned by the Delaware Supreme Court. If a court were to find the exclusive-forum provision contained in our amended and restated certificate of incorporation to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving such action in other jurisdictions, which could harm our business.

***If securities or industry analysts do not publish research or publish inaccurate or unfavorable research about our business, our stock price and trading volume could decline.***

The trading market for our common stock will depend in part on the research and reports that securities or industry analysts publish about us or our business. Securities and industry analysts do not currently, and may never, publish research on our company. If no securities or industry analysts commence coverage of our company, the trading price for our stock would likely be negatively impacted. In the event securities or industry analysts initiate coverage, if one or more of the analysts who covers us downgrades our stock or publishes inaccurate or unfavorable research about our business, our stock price may decline. If one or more of these analysts ceases coverage of our company or fails to publish reports on us regularly, demand for our stock could decrease, which might cause our stock price and trading volume to decline.

## SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus contains forward-looking statements about us and our industry that involve substantial risks and uncertainties. All statements other than statements of historical facts contained in this prospectus, including statements regarding our future results of operations or financial condition, business strategy and plans and objectives of management for future operations, including our statements regarding the benefits and timing of the roll-out of new technology, are forward-looking statements. In some cases, you can identify forward-looking statements because they contain words such as “anticipate,” “believe,” “contemplate,” “continue,” “could,” “estimate,” “expect,” “intend,” “may,” “plan,” “potential,” “predict,” “project,” “should,” “target,” “will” or “would” or the negative of these words or other similar terms or expressions. Forward-looking statements in this prospectus include, but are not limited to, statements about:

- our use of the net proceeds from this offering;
- our expectations regarding the potential benefits, spectrum coverage and immunogenicity of our vaccine candidates;
- our expectations regarding our preclinical study results potentially being predictive of clinical study results;
- Our belief that our PCVs could receive regulatory approval based on a demonstration of non-inferiority to the standard of care using well-defined surrogate immune endpoints rather than requiring clinical field efficacy studies;
- the timing of the initiation, progress and expected results of our preclinical studies, clinical trials and our research and development programs;
- our ability to advance vaccine candidates into, and successfully complete, preclinical studies and clinical trials;
- the commercialization of our vaccine candidates, if approved;
- estimates of our total addressable market, future revenue, expenses, capital requirements and our needs for additional financing;
- our ability to compete effectively with existing competitors and new market entrants;
- our ability to establish and maintain intellectual property protection for our products or avoid claims of infringement;
- our manufacturing capabilities and the scalable nature of our manufacturing process;
- potential effects of extensive government regulation;
- the pricing, coverage and reimbursement of our vaccine candidates, if approved;
- our ability to hire and retain key personnel;
- our ability to obtain additional financing in this or future offerings;
- the volatility of the trading price of our common stock; and
- our expectation regarding the time during which we will be an emerging growth company under the JOBS Act.

You should not rely on forward-looking statements as predictions of future events. We have based the forward-looking statements contained in this prospectus primarily on our current expectations and projections about future events and trends that we believe may affect our business, financial condition and operating results. The outcome of the events described in these forward-looking statements is subject to risks, uncertainties and other factors described in the section entitled “Risk Factors” and elsewhere in this prospectus. Moreover, we operate in a very competitive and rapidly changing environment. New risks and uncertainties emerge from time to time, and it is not possible for us to predict all risks and uncertainties that could have an impact on the forward-looking statements contained in this prospectus. The results, events and circumstances reflected in the forward-looking statements may not be achieved or occur, and actual results, events or circumstances could differ materially from those described in the forward-looking statements.

In addition, statements that “we believe” and similar statements reflect our beliefs and opinions on the relevant subject. These statements are based on information available to us as of the date of this prospectus. While we believe that information provides a reasonable basis for these statements, that information may be limited or incomplete. Our statements should not be read to indicate that we have conducted an exhaustive inquiry into, or review of, all relevant information. These statements are inherently uncertain, and investors are cautioned not to unduly rely on these statements.

The forward-looking statements made in this prospectus relate only to events as of the date on which the statements are made. We undertake no obligation to update any forward-looking statements made in this prospectus to reflect events or circumstances after the date of this prospectus or to reflect new information or the occurrence of unanticipated events, except as required by law. We may not actually achieve the plans, intentions or expectations disclosed in our forward-looking statements, and you should not place undue reliance on our forward-looking statements. Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, joint ventures or investments.

## MARKET, INDUSTRY AND OTHER DATA

This prospectus contains industry, market and competitive position data from our own internal estimates and research as well as industry and general publications and research surveys and studies conducted by third parties. Industry publications, studies and surveys generally state that they have been obtained from sources believed to be reliable, although they do not guarantee the accuracy or completeness of such information. In some cases, we do not expressly refer to the sources from which this data is derived. Our internal data and estimates are based upon information obtained from trade and business organizations and other contacts in the markets in which we operate and our management's understanding of industry conditions. While we believe that each of these studies and publications is reliable, we have not independently verified market and industry data from third-party sources. While we believe our internal company research is reliable and the market definitions are appropriate, neither such research nor definitions have been verified by any independent source. All of the market and industry data used in this prospectus is inherently subject to uncertainties and involve a number of assumptions and limitations, and you are cautioned not to give undue weight to such information.

The industry in which we operate is subject to a high degree of uncertainty and risk due to a variety of factors, including those described in the section entitled "Risk Factors" and elsewhere in this prospectus. These and other factors could cause results to differ materially from those expressed in the estimates made by the independent parties and by us.

## USE OF PROCEEDS

We estimate that we will receive net proceeds from this offering of approximately $ million (or approximately $ million if the underwriters exercise their option to purchase additional shares in full), based on the assumed initial public offering price of $ per share of common stock, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

Each $1.00 increase (decrease) in the assumed initial public offering price of $ per share of common stock, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, would increase (decrease) the net proceeds to us from this offering by approximately $ million, assuming the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. Similarly, each increase (decrease) of 1.0 million shares in the number of shares of common stock offered by us would increase (decrease) the net proceeds to us from this offering by approximately $ million, assuming the assumed initial public offering price of $ per share of common stock remains the same, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

The principal purposes of this offering are to increase our capitalization and financial flexibility, create a public market for our common stock, facilitate future access to the public equity markets by us, our employees and our stockholders and increase our visibility in the marketplace. We currently intend to use the net proceeds we receive from this offering, together with our existing cash and cash equivalents, as follows:

- approximately $ million to fund completion of IND-enabling activities and our clinical development of SVX-24;
- approximately $ million to fund the ongoing development of our other vaccine candidates; and
- the remainder for general corporate purposes, including working capital, operating expenses and capital expenditures.

This expected use of the net proceeds from this offering represents our intentions based on our current plans and business conditions, which could change in the future as our plans and business conditions evolve. Further, due to the uncertainties inherent in the vaccine development process, it is difficult to estimate with certainty the exact amounts of the net proceeds from this offering that may be used for the above purposes. We cannot specify with certainty all of the particular uses for the remaining net proceeds to us from this offering. We may also use a portion of the net proceeds for acquisitions or strategic investments in complementary businesses, products, services or technologies. However, we do not have agreements or commitments to enter into any such acquisitions or investments at this time. We will have broad discretion over how to use the net proceeds to us from this offering, and our investors will be relying on the judgment of our management regarding the application of the net proceeds of this offering. The amounts and timing of our expenditures will depend upon numerous factors including the results of our research and development efforts, the timing and success of preclinical studies and any clinical trials we may commence in the future, the timing of regulatory submissions, and the amount of cash obtained through any future collaborations.

We estimate that the net proceeds from this offering, together with our current cash and cash equivalents, will be sufficient for us to fund our operating expenses and capital expenditure requirements through at least the next months, and including through for SVX-24. The expected net proceeds from this offering, together with our cash and cash equivalents, will not be sufficient for us to fund a pivotal clinical trial for any of our vaccine candidates, and we will need to raise additional capital to complete the development and commercialization of our vaccine candidates. We expect to finance our cash needs through

public or private equity or debt financings, government or other third-party funding, collaborations, strategic alliances and licensing arrangements, or a combination of these sources. We have based these estimates on assumptions that may prove to be incorrect, and we could expend our available capital resources at a rate greater than we currently expect.

We intend to invest the net proceeds to us from this offering that are not used as described above in short- and intermediate-term, interest-bearing obligations, investment-grade instruments, certificates of deposit or direct or guaranteed obligations of the U.S. government.

## DIVIDEND POLICY

We have never declared or paid cash dividends on our capital stock. We currently intend to retain all available funds and future earnings, if any, to fund the development and expansion of our business, and we do not anticipate paying any cash dividends in the foreseeable future. Any future determination regarding the declaration and payment of dividends will be at the discretion of our board of directors and will depend on then-existing conditions, including our financial condition, operating results, contractual restrictions, capital requirements, business prospects and other factors our board of directors may deem relevant. In addition, we may enter into agreements in the future that could contain restrictions on payments of cash dividends.

## CAPITALIZATION

The following table sets forth our cash and cash equivalents, and our capitalization as of December 31, 2018 as follows:

- on an actual basis;
- on a pro forma basis, giving effect to (i) the conversion of all outstanding shares of our redeemable convertible preferred stock as of December 31, 2018 into 28,175,226 shares of common stock upon the closing of this offering, (ii) the issuance of shares of our common stock as a result of the expected net exercise of an outstanding warrant to purchase 100,000 shares of our redeemable convertible preferred stock and the related reclassification of the redeemable convertible warrant liability to common stock and additional paid-in capital, assuming an initial public offering price of $ per share, which is the midpoint of the estimated price range set forth on the cover page of this prospectus; (iii) the issuance of shares of our common stock as a result of the expected net exercise of a warrant to purchase 53,744 shares of our common stock, assuming an initial public offering price of $ per share; (iv) the removal of gains or losses resulting from the re-measurement of the redeemable convertible preferred stock warrant liability as the warrants will be exercised for shares of common stock immediately prior to our IPO; and (v) the filing and effectiveness of our amended and restated certificate of incorporation that will be in effect upon the closing of this offering; and
- on a pro forma as adjusted basis, giving effect to (i) the pro forma adjustments set forth above and (ii) the issuance and sale of shares of common stock in this offering at the assumed initial public offering price of $ per share, after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

You should read this information in conjunction with our financial statements and the related notes included elsewhere in this prospectus and in the sections entitled “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and “Selected Financial Data.”

| | As of December 31, 2018 | | |
|---|---|---|---|
| | Actual | Pro Forma | Pro Forma As Adjusted(1) |
| | (in thousands, except share and per share data) | | |
| Cash and cash equivalents | $ 66,090 | $ | $ |
| Redeemable convertible preferred stock tranche liability | $ 3,185 | $ | $ |
| Redeemable convertible preferred stock warrant liability | 462 | | |
| Series A redeemable convertible preferred stock, $0.001 par value per share: 10,502,804 shares authorized; 10,502,804 shares issued and outstanding, actual; shares issued and outstanding, pro forma and pro forma as adjusted | 24,967 | | |
| Series B redeemable convertible preferred stock, $0.001 par value per share: 11,449,515 shares authorized; 11,449,510 shares issued and outstanding, actual; shares issued and outstanding, pro forma and pro forma as adjusted | 55,151 | | |
| Series C redeemable convertible preferred stock, $0.001 par value per share: 14,010,043 shares authorized; 6,222,912 shares issued and outstanding, actual; shares issued and outstanding, pro forma and pro forma as adjusted | 37,692 | | |

| | As of December 31, 2018 | | |
|---|---|---|---|
| | Actual | Pro Forma | Pro Forma As Adjusted(1) |
| | (in thousands, except share and per share data) | | |
| Stockholders' (deficit) equity: | | | |
| Preferred stock, $0.001 par value per share; no shares authorized, issued or outstanding, actual; no shares authorized, issued or outstanding, pro forma and pro forma as adjusted | | | |
| Common stock, $0.001 par value per share: 52,000,000 shares authorized, 6,338,763 shares issued and outstanding, actual; shares authorized, shares issued and outstanding, pro forma; shares authorized, shares issued and outstanding, pro forma as adjusted | 6 | | |
| Additional paid-in capital | 1,339 | | |
| Accumulated deficit | (59,073) | | |
| Total stockholders' equity (deficit) | (57,728) | | |
| Total capitalization | $ 63,729 | $ | $ |

(1) Each $1.00 increase (decrease) in the assumed initial public offering price of $ per share of common stock, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, would increase (decrease) the pro forma as adjusted amount of each of our cash and cash equivalents, additional paid-in capital, total stockholders' equity (deficit) and total capitalization by approximately $ , assuming that the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. Similarly, each increase (decrease) of 1.0 million shares in the number of shares offered by us at the assumed initial public offering price of $ per share of common stock would increase (decrease) the pro forma as adjusted amount of each of our cash and cash equivalents, additional paid-in capital, total stockholders' equity (deficit) and total capitalization by approximately $ , assuming the assumed initial public offering price remains the same, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. The pro forma and pro forma as adjusted information discussed above is illustrative only and will change based on the actual initial public offering price and other terms of this offering determined at pricing.

The outstanding share information in the table above is based on shares of our common stock (including (i) 28,175,226 shares of our redeemable convertible preferred stock on an as-converted basis, (ii) the issuance of shares of our common stock as a result of the expected net exercise of an outstanding warrant to purchase 100,000 shares of our redeemable convertible preferred stock and (iii) the issuance of shares of our common stock as a result of the expected net exercise of an outstanding warrant to purchase 53,744 shares of our common stock) outstanding as of December 31, 2018, and excludes:

- 5,117,067 shares of our common stock issuable upon the exercise of options to purchase shares of our common stock outstanding as of December 31, 2018, with a weighted-average exercise price of $1.05 per share;
- 965,760 shares of our common stock issuable upon the exercise of options to purchase shares of our common stock granted after December 31, 2018, with a weighted-average exercise price of $1.21 per share;
- shares of our common stock reserved for future issuance under our 2020 Plan (including up to shares of our common stock comprised of (i) the shares reserved and remaining available for issuance under our 2014 Plan that will be added to our 2020 Plan reserve upon its effectiveness plus (ii) the number of shares subject to stock options or other stock awards granted under our 2014 Plan that would have otherwise returned to our 2014 Plan, which will be added as they become available (e.g., due to forfeiture of the underlying 2014 Plan award)), which includes an annual evergreen increase and will become effective in connection with this offering; and
- shares of our common stock reserved for future issuance under our ESPP, which includes an annual evergreen increase and will become effective in connection with this offering.

## DILUTION

If you invest in our common stock in this offering, your ownership interest will be immediately diluted to the extent of the difference between the initial public offering price per share and the pro forma as adjusted net tangible book value per share of our common stock after this offering.

Our historical net tangible book value as of December 31, 2018 was $60.1 million, or $9.48 per share of our common stock. Our historical net tangible book deficit represents the amount of our total tangible assets (net of deferred offering costs) less our total liabilities and our redeemable convertible preferred stock, divided by the number of shares of our common stock outstanding as of December 31, 2018.

Our pro forma net tangible book value as of December 31, 2018 was $ million, or $ per share. Pro forma net tangible book value per share represents the amount of our total tangible assets (net of deferred offering costs) less our total liabilities, divided by the number of shares of our common stock outstanding as of December 31, 2018, after giving effect to (i) the conversion of all shares of our redeemable convertible preferred stock outstanding as of December 31, 2018 into 28,175,226 shares of our common stock, (ii) the issuance of shares of our common stock as a result of the expected net exercise of an outstanding warrant to purchase 100,000 shares of our redeemable convertible preferred stock and the related reclassification of the redeemable convertible warrant liability to common stock and additional paid-in capital, assuming an initial public offering price of $ per share, which is the midpoint of the estimated price range set forth on the cover page of this prospectus, (iii) the issuance of shares of our common stock as a result of the expected net exercise of a warrant to purchase 53,744 shares of our common stock, assuming an initial public offering price of $ per share, and (iv) the removal of gains or losses resulting from the re-measurement of the redeemable convertible preferred stock warrant liability.

After giving further effect to the sale of shares of common stock that we are offering at the assumed initial public offering price of $ per share, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us, our pro forma as adjusted net tangible book value as of December 31, 2018 would have been approximately $ million, or approximately $ per share. This amount represents an immediate increase in pro forma net tangible book value of $ per share to our existing stockholders and an immediate dilution in pro forma net tangible book value of approximately $ per share to new investors purchasing shares of common stock in this offering.

Dilution per share to new investors is determined by subtracting pro forma as adjusted net tangible book value per share after this offering from the initial public offering price per share paid by new investors. The following table illustrates this dilution (without giving effect to any exercise by the underwriters of their option to purchase additional shares):

| | | |
|---|---|---|
| Assumed initial public offering price per share | | $ |
| Historical net tangible book value per share as of December 31, 2018 | $9.48 | |
| Pro forma increase in net tangible book value per share as of December 31, 2018 attributable to the pro forma adjustment described above | | |
| Pro forma net tangible book value per share as of December 31, 2018 | | |
| Increase in pro forma net tangible book value per share attributable to this offering | | |
| Pro forma as adjusted net tangible book value per share after this offering | | |
| Dilution per share to new investors in this offering | | $ |

Each $1.00 increase (decrease) in the assumed initial public offering price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, would increase (decrease) the pro forma as adjusted net tangible book value per share after this offering by approximately $ ,

and dilution in pro forma net tangible book value per share to new investors by approximately $ , assuming that the number of shares of common stock offered by us, as set forth on the cover page of this prospectus, remains the same and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. Similarly, each increase of 1.0 million shares in the number of shares of common stock offered by us would increase our pro forma as adjusted net tangible book value per share after this offering by approximately $ per share and decrease the dilution to investors participating in this offering by approximately $ per share, assuming that the assumed initial public offering price remains the same, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. Each decrease of 1.0 million shares in the number of shares of common stock offered by us would decrease our pro forma as adjusted net tangible book value per share after this offering by approximately $ per share and increase the dilution to investors participating in this offering by approximately $ per share, assuming that the assumed initial public offering price remains the same, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. The pro forma as adjusted information is illustrative only, and we will adjust this information based on the actual initial public offering price and other terms of this offering determined at pricing.

If the underwriters exercise their option to purchase up to additional shares of our common stock in full, the pro forma as adjusted net tangible book value after the offering would be $ per share, the increase in pro forma net tangible book value per share to existing stockholders would be $ per share and the dilution per share to new investors would be $ per share, in each case assuming an initial public offering price of $ per share.

The following table summarizes on the pro forma as adjusted basis described above, as of December 31, 2018, the differences between the number of shares of common stock purchased from us by our existing stockholders and common stock by new investors purchasing shares in this offering, the total consideration paid to us in cash and the average price per share paid by existing stockholders for shares of common stock issued prior to this offering and the price to be paid by new investors for shares of common stock in this offering. The calculation below is based on the assumed initial public offering price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, before deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

| | Shares Purchased | | Total Consideration | | Weighted-Average Price Per Share |
|---|---|---|---|---|---|
| | Number | Percent | Amount | Percent | |
| Existing stockholders | | % | $ | % | $ |
| New investors | | | | | $ |
| Total | | 100% | $ | 100% | |

Each $1.00 increase (decrease) in the assumed initial public offering price of $ per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, would increase (decrease) the total consideration paid by new investors by $ million and, in the case of an increase, would increase the percentage of total consideration paid by new investors to % and, in the case of a decrease, would decrease the percentage of total consideration paid by new investors to %, assuming that the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same. Similarly, each increase (decrease) of 1.0 million shares in the number of shares offered by us, would increase or decrease, as applicable, the total consideration paid by new investors by $ million and, in the case of an increase, would increase the percentage of total consideration paid by new investors to % and, in the case of a decrease, would decrease the percentage of total consideration paid by new investors to %, assuming that the assumed initial public offering price of $ per share remains the same.

If the underwriters exercise their option to purchase up to additional shares of our common stock in full, our existing stockholders would own % and the investors purchasing shares of our common stock in

this offering would own % of the total number of shares of our common stock outstanding immediately after closing of this offering.

The outstanding share information in the table above is based on shares of our common stock (including (i) 28,175,226 shares of our redeemable convertible preferred stock on an as-converted basis, (ii) the issuance of shares of our common stock as a result of the expected net exercise of an outstanding warrant to purchase 100,000 shares of our redeemable convertible preferred stock and (iii) the issuance of shares of our common stock as a result of the expected net exercise of an outstanding warrant to purchase 53,744 shares of our common stock) outstanding as of December 31, 2018, and excludes:

- 5,117,067 shares of our common stock issuable upon the exercise of options to purchase shares of our common stock outstanding as of December 31, 2018, with a weighted-average exercise price of $1.05 per share;
- 965,760 shares of our common stock issuable upon the exercise of options to purchase shares of our common stock granted after December 31, 2018, with a weighted-average exercise price of $1.21 per share;
- shares of our common stock reserved for future issuance under our 2020 Plan (including up to shares of our common stock comprised of (i) the shares reserved and remaining available for issuance under our 2014 Plan that will be added to our 2020 Plan reserve upon its effectiveness plus (ii) the number of shares subject to stock options or other stock awards granted under our 2014 Plan that would have otherwise returned to our 2014 Plan, which will be added as they become available (e.g., due to forfeiture of the underlying 2014 Plan award)) which includes an annual evergreen increase and will become effective in connection with this offering; and
- shares of our common stock reserved for future issuance under our ESPP, which includes an annual evergreen increase and will become effective in connection with this offering.

To the extent any outstanding options or warrants are exercised, new options or other equity awards are issued under our equity incentive plans, or we issue additional equity or convertible debt securities in the future, there will be further dilution to new investors.

## SELECTED FINANCIAL DATA

The following tables set forth our selected statements of operations data for the years ended December 31, 2017 and 2018, and our selected balance sheet data as of December 31, 2017 and 2018, which have been derived from our audited financial statements included elsewhere in this prospectus. Our historical results are not necessarily indicative of the results that may be expected for any period in the future. You should read the following selected financial data together with the section entitled "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our financial statements and the related notes included elsewhere in this prospectus. The selected financial data included in this section are not intended to replace the financial statements and are qualified in their entirety by our financial statements and the related notes included elsewhere in this prospectus.

| | Year Ended December 31, | |
|---|---|---|
| | 2017 | 2018 |
| | (in thousands, except share and per share data) | |
| **Statements of Operations Data:** | | |
| Operating expenses: | | |
| Research and development | $ 12,785 | $ 30,145 |
| General and administrative | 5,048 | 5,388 |
| Total operating expenses | 17,833 | 35,533 |
| Loss from operations | (17,833) | (35,533) |
| Other income (expense), net: | | |
| Interest expense | (69) | (75) |
| Interest income | 233 | 903 |
| Foreign currency transaction gains (losses) | (9) | 42 |
| Change in fair value of the redeemable convertible preferred stock tranche liability | 440 | 5,178 |
| Total other income (expense), net | 595 | 6,048 |
| Net loss and comprehensive loss | $ (17,238) | $ (29,485) |
| Net loss per share attributable to common stockholders, basic and diluted | $ (2.87) | $ (4.80) |
| Weighted-average shares outstanding used in computing net loss per share attributable to common stockholders, basic and diluted(1) | 6,014,717 | 6,142,274 |
| Pro forma net loss per share, basic and diluted (unaudited)(1) | | $ |
| Weighted-average shares outstanding used in computing pro forma net loss per share, basic and diluted (unaudited)(1) | | |

(1) See Notes 2 and 12 to our financial statements included elsewhere in this prospectus for an explanation of the calculations of our basic and diluted net loss per share, basic and diluted pro forma net loss per share and the weighted-average number of shares used in the computation of the per share amounts.

| | As of December 31, | |
|---|---|---|
| | 2017 | 2018 |
| | (in thousands) | |
| **Balance Sheet Data:** | | |
| Cash and cash equivalents | $ 36,139 | $ 66,090 |
| Working capital(1) | 32,085 | 59,955 |
| Total assets | 39,631 | 70,802 |
| Redeemable convertible preferred stock warrant liability | — | 462 |
| Redeemable convertible preferred stock tranche liability | 3,760 | 3,185 |
| Series A redeemable convertible preferred stock | 24,967 | 24,967 |
| Series B redeemable convertible preferred stock | 35,101 | 55,151 |
| Series C redeemable convertible preferred stock | — | 37,692 |
| Total stockholders' deficit | (29,130) | (57,728) |

(1) Working capital is defined as total current assets less total current liabilities. See our financial statements and the related notes included elsewhere in this prospectus for further details regarding our current assets and current liabilities.

## MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

*You should read the following discussion and analysis of our financial condition and results of operations in conjunction with our financial statements and related notes and other financial information included elsewhere in this prospectus. This discussion and analysis and other parts of this prospectus contain forward-looking statements based upon our current plans and expectations that involve risks, uncertainties and assumptions, such as statements regarding our plans, objectives, expectations, intentions and beliefs. Our actual results and the timing of events could differ materially from those anticipated in these forward-looking statements as a result of various factors, including those set forth under the section entitled "Risk Factors" and elsewhere in this prospectus. You should carefully read the "Risk Factors" section of this prospectus to gain an understanding of the important factors that could cause actual results to differ materially from our forward-looking statements. Please also see the section entitled "Special Note Regarding Forward-Looking Statements."*

### Overview

We are a next-generation vaccine company seeking to improve global health by developing superior and novel vaccines designed to prevent or treat some of the most common and deadly infectious diseases worldwide. Our cell-free protein synthesis platform enables us to design and produce protein carriers and antigens, the critical building blocks of vaccines, in ways that we believe conventional vaccine technologies currently cannot. Our lead vaccine candidate, SVX-24, is a preclinical, 24-valent pneumococcal conjugate vaccine, or PCV, that we believe has the potential to become the standard of care in the $7 billion global pneumococcal vaccine market. We anticipate submitting our initial investigational new drug, or IND, application to the U.S. Food and Drug Administration, or FDA, in 2021 for SVX-24. Our second PCV, known as SVX-XP, leverages our scalable and modular platform and builds on the technical proof of concept established by SVX-24 and, if approved, would expand the breadth of coverage to 32 strains, including emerging strains responsible for invasive pneumococcal disease, or IPD, without compromising immunogenicity due to carrier suppression. In addition to our PCV franchise, we are developing a novel conjugate vaccine candidate for group A strep and a novel protein vaccine candidate targeting the keystone pathogen responsible for periodontitis. The following table summarizes our current vaccine candidate pipeline:

| Program | Profile/Type | Vaccine Description | Target Population | Disease | Status |
|---|---|---|---|---|---|
| SVX-24 | Superior Conjugate Vaccine | 24-valent PCV |  | Invasive Pneumococcal Disease | Preclinical POC vs Prevnar 13 and Polysaccharide/Alum[1] (IND-enabling stage) |
| | | |  | Invasive Pneumococcal Disease and Otitis Media | Preclinical POC vs Prevnar 13 (IND-enabling stage) |
| SVX-XP | Superior Conjugate Vaccine | Next-generation 32-valent PCV |  | Invasive Pneumococcal Disease | Preclinical POC vs Prevnar 13 and Polysaccharide/Alum[2] |
| | | |  | Invasive Pneumococcal Disease and Otitis Media | Preclinical POC vs Prevnar 13 |
| SVX-A1 | Novel Conjugate Vaccine | Monovalent conjugate / complex protein-based vaccine |  | Group A Strep Infections | Preclinical POC + Grant Funding |
| SVX-PG | Novel Protein Vaccine | Multiple complex protein-based therapeutic vaccine |  | Periodontitis | Preclinical POC |

 = Adults  = Children  = Infants

(1) *For the Polysaccharide/Alum comparator, we used 23 polysaccharides in Pneumovax 23 at an equivalent dose with the addition of strain 6A and alum as the objective of the study was to evaluate whether SVX-24 showed a conjugate-like response in all 24 strains.*

(2) *For the Polysaccharide/Alum comparator, we used 23 polysaccharides in Pneumovax 23 and 9 additional polysaccharides with alum for comparison.*

Since our inception in November 2013, we have devoted substantially all of our resources to performing research and development, undertaking preclinical studies and enabling manufacturing activities in support of our product development efforts, hiring personnel, acquiring and developing our technology and vaccine candidates, organizing and staffing our company, performing business planning, establishing our intellectual property portfolio and raising capital to support and expand such activities. We do not have any products approved for sale and have not generated any revenue from product sales. To date, we have financed our operations primarily with proceeds from the sales of our redeemable convertible preferred stock. Through December 31, 2018, we have raised approximately $124.9 million in gross proceeds from the sale of our redeemable convertible preferred stock. We will continue to require additional capital to develop our vaccine candidates and fund operations for the foreseeable future. Accordingly, until such time as we can generate significant revenue from sales of our vaccine candidates, if ever, we expect to finance our cash needs through public or private equity or debt financings, third-party (including government) funding and marketing and distribution arrangements, as well as other collaborations, strategic alliances and licensing arrangements, or any combination of these approaches.

We have incurred net losses in each year since inception and expect to continue to incur net losses in the foreseeable future. Our net losses may fluctuate significantly from quarter-to-quarter and year-to-year, depending in large part on the timing of our preclinical studies and clinical trials, and our expenditures on other research and development activities. Our net loss was $29.5 million for the year ended December 31, 2018. As of December 31, 2018, we had an accumulated deficit of $59.1 million. As of December 31, 2018, we had cash and cash equivalents of $66.1 million. Based upon our current operating plan, we believe that our existing cash and cash equivalents as of the date of this prospectus, together with the net proceeds from this offering, will enable us to fund our operating expenses and capital expenditure requirements through at least the next months from the date of this offering.

We do not expect to generate any revenue from commercial product sales unless and until we successfully complete development and obtain regulatory approval for one or more of our vaccine candidates, which we expect will take a number of years. We expect our expenses will increase substantially in connection with our ongoing activities, as we:

- advance vaccine candidates through preclinical studies and clinical trials;
- require the manufacture of supplies for our preclinical studies and clinical trials, in particular our lead vaccine candidate SVX-24;
- pursue regulatory approval of vaccine candidates;
- hire additional personnel;
- operate as a public company;
- acquire, discover, validate and develop additional vaccine candidates; and
- obtain, maintain, expand and protect our intellectual property portfolio.

We rely and will continue to rely on third parties in the conduct of our preclinical studies and clinical trials and for manufacturing and supply of our vaccine candidates. We have no internal manufacturing capabilities, and we will continue to rely on third parties, of which the main suppliers are single-source suppliers, for our preclinical and clinical trial materials. Given our stage of development, we do not yet have a marketing or sales organization or commercial infrastructure. Accordingly, if we obtain regulatory approval for any of our vaccine candidates, we also expect to incur significant commercialization expenses related to product sales, marketing, manufacturing and distribution.

Because of the numerous risks and uncertainties associated with vaccine development, we are unable to predict the timing or amount of increased expenses or when or if we will be able to achieve or maintain profitability. Even if we are able to generate revenues from the sale of our vaccines, we may not become profitable. If we fail to become profitable or are unable to sustain profitability on a continuing basis, then we may be unable to continue our operations at planned levels and may be forced to reduce our operations.

***Certain Significant Relationships***

*Sutro Biopharma*

SutroVax was formed through its relationship with Sutro Biopharma, Inc., or Sutro Biopharma, in 2013 by our three co-founders, Grant Pickering, Jeff Fairman and Ash Khanna, with the goal of utilizing Sutro Biopharma's proprietary XpressCF platform for protein synthesis in the field of vaccines addressing infectious disease.

In addition to receiving funding, we entered into a license agreement with Sutro Biopharma, or the Sutro License, on August 1, 2014. The Sutro License was amended in October 2015 and again on May 9, 2018 and May 29, 2018. Under this license, we received an exclusive, worldwide, royalty-bearing, sublicenseable license under Sutro Biopharma's patents and know-how relating to cell-free expression of proteins to (i) research, develop, use, sell, offer for sale, export, import and otherwise exploit specified vaccine compositions, such rights being sublicensable, for the treatment of prophylaxis of infectious diseases, excluding cancer vaccines, and (ii) to manufacture, or have manufactured by an approved contract manufacturing organization, such vaccine compositions from extracts supplied by Sutro Biopharma pursuant to the Sutro Biopharma Supply Agreement (as described below). We are obligated to use commercially reasonable efforts to develop, obtain regulatory approval for and commercialize the vaccine compositions. In consideration of the rights granted under the Sutro License, we are obligated to pay Sutro Biopharma a 4% royalty on worldwide aggregate net sales of vaccine compositions for human health use and a 2% royalty on such net sales of vaccine compositions for animal health use. Such royalty rates are subject to specified reductions, including standard reductions for third-party payments and for expiration of relevant patent claims. Royalties are payable on a vaccine composition-by-vaccine composition and country-by-country basis until the later of expiration of the last valid claim in the licensed patents covering such vaccine composition in such country and ten years after the first commercial sale of such vaccine composition. In addition, we are obligated to pay Sutro Biopharma a percentage of net sublicensing revenue received in the low teen percentages through mid-2020.

In May 2018, we entered into a supply agreement, which we refer to as the Sutro Biopharma Supply Agreement, with Sutro Biopharma pursuant to which we purchase from Sutro Biopharma extracts and custom reagents for use in manufacturing non-clinical and certain clinical supply of vaccine compositions utilizing the technology licensed under the Sutro License at prices not to exceed a specified percentage above Sutro Biopharma's fully burdened manufacturing cost. If any extracts or custom reagents do not meet the specifications and warranties provided, then we will not have an obligation to pay for the non-conforming product, and Sutro Biopharma will be obligated to replace the non-conforming product within the shortest possible time with conforming product at our cost.

For additional details regarding our relationship with Sutro Biopharma, see the section entitled "Business—Intellectual Property—Sutro Biopharma Agreements" and Note 14 to our financial statements included elsewhere in this prospectus.

*Lonza*

In October 2016, we entered into a development and manufacturing services agreement with Lonza, which we refer to, as amended, as the 2016 Lonza agreement, pursuant to which Lonza is obligated to perform manufacturing process development and clinical manufacture and supply of components for SVX-24, including

the manufacture of polysaccharide antigens, our proprietary eCRM protein carrier and conjugated drug substances.

In October 2018, we entered into a second development and manufacturing services agreement with Lonza, which we refer to as the 2018 Lonza Agreement, and together with the 2016 Lonza Agreement, as the Lonza Agreements, pursuant to which Lonza is obligated to perform manufacturing process development and clinical manufacture and supply of SVX-24 finished drug product.

In June 2018, we entered into a letter agreement, or the Lonza Letter Agreement, with Lonza, pursuant to which we agreed to certain terms for potential future equity payments as partial satisfaction of future obligations to Lonza under the Lonza Agreements. Specifically, we and Lonza agreed that the initial pre-IND cash payments made by us to Lonza are subject to a specified dollar cap, which we refer to as the Initial Cash Cap. After the Initial Cash Cap has been reached, then at our election, we can make any further pre-IND payments owed to Lonza under the Lonza Agreements in cash, equity at then market prevailing prices, or a combination of both. Lonza may elect to receive up to 25% of pre-IND payments in equity, up to a maximum of $2.5 million, and no more than $10 million of pre-IND payments may be satisfied by issuances of our common stock.

Under the Lonza Agreements, we will pay Lonza agreed upon fees for Lonza's performance of manufacturing services, and we will reimburse Lonza for its out-of-pocket costs associated with purchasing raw materials, plus a customary handling fee. Each Lonza Agreement is managed by a steering committee and any dispute at the steering committee will be resolved by senior executives of the parties.

For additional details regarding our relationship with Lonza, see the section entitled "Business— Manufacturing and Supply—Lonza Agreements" and Note 7 to our financial statements included elsewhere in this prospectus.

**Components of Results of Operations**

***Operating Expenses***

*Research and Development*

Research and development expenses represent costs incurred in performing research, development and manufacturing activities in support of our own product development efforts and include product and development costs, personnel-related costs (such as salaries, employee benefits and stock-based compensation) for our personnel in research and development functions, professional and consulting services costs, research and development consumables costs, facility and other allocated costs, laboratory supplies and equipment costs and other costs.

Research and development expenses are expensed as incurred. Non-refundable advance payments for services that will be used or rendered for future research and development activities are recorded as prepaid expenses and recognized as expenses as the related services are performed. We do not allocate our costs by vaccine candidates, as our vaccine candidates are at an early stage of development and our research and development expenses include internal costs, such as payroll and other personnel expenses, which are not tracked by vaccine candidate. In particular, with respect to internal costs, several of our departments support multiple vaccine candidate research and development programs.

We expect our research and development expenses to increase substantially in absolute dollars for the foreseeable future as we advance our vaccine candidates into and through preclinical studies and clinical trials, pursue regulatory approval of our vaccine candidates and expand our pipeline of vaccine candidates. The process of conducting the necessary preclinical and clinical research to obtain regulatory approval is costly and time-

consuming. The actual probability of success for our vaccine candidates may be affected by a variety of factors, including the safety and efficacy of our vaccine candidates, early clinical data, investment in our clinical programs, competition, manufacturing capability and commercial viability. We may never succeed in achieving regulatory approval for any of our vaccine candidates. As a result of the uncertainties discussed above, we are unable to determine the duration and completion costs of our research and development projects or when and to what extent we will generate revenue from the commercialization and sale of our vaccine candidates.

Our clinical development costs may vary significantly based on factors such as:

- the cost of clinical trials of our vaccine candidates being greater than we anticipate;
- changes in the standard of care on which a clinical development plan was based, which may require new or additional trials;
- the number of sites included in the trials;
- the countries in which the trials are conducted;
- delays in adding a sufficient number of trial sites and recruiting suitable patients to participate in our clinical trials;
- the number of patients that participate in the trials;
- the number of doses that patients receive;
- patients dropping out of a study;
- potential additional safety monitoring requested by regulatory agencies;
- the duration of patient participation in the trials and follow-up;
- the cost and timing of manufacturing our vaccine candidates;
- the phase of development of our vaccine candidates; and
- the efficacy and safety profile of our vaccine candidates.

*General and Administrative*

General and administrative expenses consist primarily of personnel-related costs (such as salaries, employee benefits and stock-based compensation) for our personnel in executive, legal, finance and accounting, human resources and other administrative functions. General and administrative expenses also include legal fees relating to intellectual property and corporate matters, professional fees paid for accounting, auditing, consulting and tax services, insurance costs and facility and other allocated costs not otherwise included in research and development expenses. We expect our general and administrative expenses to increase substantially in absolute dollars for the foreseeable future as we increase our headcount to support our continued research and development activities and grow our business. We also anticipate that we will incur increased expenses as a result of operating as a public company, including expenses related to audit, legal, regulatory and tax-related services associated with maintaining compliance with SEC rules and regulations and those of any national securities exchange on which our securities are traded, additional insurance expenses, investor relations activities and other administrative and professional services.

*Other Income (Expense), Net*

Other income (expense), net includes interest expense incurred on our capital leases for laboratory equipment, interest income earned from our cash and cash equivalents, foreign currency transaction gains (losses) incurred during the period related to our Swiss Franc cash and liability balances and changes in the fair value of our redeemable convertible preferred stock tranche liability (see the subsection entitled "—Critical Accounting Policies and Significant Judgments and Estimates" below and Notes 2, 4 and 8 to our financial statements included elsewhere in this prospectus for more detail).

**Results of Operations**

***Comparison of the Years Ended December 31, 2017 and 2018***

The following table summarizes our statements of operations and comprehensive loss for the periods indicated:

| | Year Ended December 31, | | Change | |
|---|---|---|---|---|
| | 2017 | 2018 | $ | % |
| | (in thousands, except share and per share data) | | | |
| Operating expenses: | | | | |
| Research and development | $ 12,785 | $ 30,145 | $ 17,360 | 135.8% |
| General and administrative | 5,048 | 5,388 | 340 | 6.7% |
| Total operating expenses | 17,833 | 35,533 | 17,700 | 99.3% |
| Loss from operations | (17,833) | (35,533) | (17,700) | 99.3% |
| Other income (expense), net: | | | | |
| Interest expense | (69) | (75) | (6) | 8.7% |
| Interest income | 233 | 903 | 670 | * |
| Foreign currency transaction gains (losses) | (9) | 42 | 51 | * |
| Change in fair value of the redeemable convertible preferred stock tranche liability | 440 | 5,178 | 4,738 | * |
| Total other income (expense), net | 595 | 6,048 | 5,453 | * |
| Net loss and comprehensive loss | $(17,238) | $(29,485) | $(12,247) | 71.0% |

* *not meaningful*

***Research and Development Expenses***

The following table summarizes our research and development expenses incurred during the periods indicated:

| | Year Ended December 31, | | Change | |
|---|---|---|---|---|
| | 2017 | 2018 | $ | % |
| | (in thousands) | | | |
| Product and clinical development(1) | $ 3,586 | $14,824 | $11,238 | 313.4% |
| Personnel-related expenses | 3,569 | 5,328 | 1,759 | 49.3% |
| Professional and consulting services | 2,799 | 3,567 | 768 | 27.4% |
| Research and development consumables | 664 | 2,435 | 1,771 | 266.7% |
| Facility and other allocated expenses | 1,310 | 1,962 | 652 | 49.8% |
| Laboratory supplies and equipment | 463 | 951 | 488 | 105.4% |
| Other expenses(2) | 394 | 1,078 | 684 | 173.6% |
| Total research and development expenses | $12,785 | $30,145 | $17,360 | 135.8% |

(1) Includes expenses related to third-party manufacturing, preclinical studies and outsourced assays.
(2) Includes travel-related expenses, warrant expense and other miscellaneous office expenses.

Research and development expenses increased by $17.4 million, or 135.8%, in 2018 compared to 2017. The increase was primarily attributable to an increase of $11.2 million in product and clinical development expenses mainly related to our lead vaccine candidate SVX-24, driven by a $10.3 million increase in costs related to outsourced manufacturing activities, an increase in personnel-related costs of $1.8 million resulting from an increase in the number of employees supporting our research and development programs and an increase of $1.8 million in research and development consumables resulting from increased purchases of extracts and reagents and other materials for our SVX-24 program.

***General and Administrative Expenses***

General and administrative expenses increased by $0.3 million, or 6.7%, in 2018 compared to 2017. The increase was primarily attributable to an increase in personnel-related costs of $0.9 million and an increase in facilities expense of $0.1 million, both resulting from an increase in the number of employees in our general and administrative function. These increases were largely offset by a $0.9 million legal settlement recorded in 2017.

***Other Income (Expense), Net***

Other income (expense), net increased by $5.5 million in 2018 compared to 2017. The increase was primarily attributable to an increase in change in the fair value of the redeemable convertible preferred stock tranche liability, or the tranche liability, of $4.7 million and an increase in interest income of $0.7 million due to higher weighted-average balance of cash and cash equivalents during 2018 compared to 2017.

More specifically, the $4.7 million increase in fair value of the tranche liability in 2018 was mainly due to the settlement of the Series B tranche liability during 2018 and the change in the fair value of the Series C tranche liability during 2018. The change in the fair value of the Series C tranche liability during 2018 is due to a reduction in the time to maturity.

**Liquidity and Capital Resources**

We have incurred losses since inception and have incurred negative cash flows from operations from inception through December 31, 2018. We have funded our operations to date primarily from the sale of

redeemable convertible preferred stock totaling approximately $124.9 million in aggregate proceeds ($124.2 million, net of financing costs). As of December 31, 2018, we had $66.1 million of cash and cash equivalents. As of December 31, 2018, we had an accumulated deficit of $59.1 million.

***Future Funding Requirements***

Our primary uses of cash are to fund our operations, which consist primarily of research and development expenditures related to our programs, and to a lesser extent, general and administrative expenditures. We anticipate that we will continue to incur significant expenses for the foreseeable future as we continue to advance our vaccine candidates, expand our corporate infrastructure, including the costs associated with being a public company, further our research and development initiatives for our vaccine candidates and scale our laboratory and manufacturing operations. We are subject to all of the risks typically related to the development of new drug candidates, and we may encounter unforeseen expenses, difficulties, complications, delays and other unknown factors that may adversely affect our business. Moreover, following the completion of this offering, we expect to incur additional costs associated with operating as a public company. We anticipate that we will need substantial additional funding in connection with our continuing operations.

We believe that our existing cash and cash equivalents as of the date of this prospectus, together with the net proceeds from this offering, will fund our current operating plans through at least the next months from the date of this offering. However, we will need to raise additional capital prior to commencing pivotal trials for any of our vaccine candidates. Until we can generate a sufficient amount of revenue from the commercialization of our vaccine candidates or from collaboration agreements with third parties, if ever, we expect to finance our future cash needs through public or private equity or debt financings, third-party (including government) funding and marketing and distribution arrangements, as well as other collaborations, strategic alliances and licensing arrangements, or any combination of these approaches. The sale of equity or convertible debt securities may result in dilution to our stockholders and, in the case of preferred equity securities or convertible debt, those securities could provide for rights, preferences or privileges senior to those of our common stock. Debt financings may subject us to covenant limitations or restrictions on our ability to take specific actions, such as incurring additional debt, making capital expenditures or declaring dividends. There can be no assurance that we will be successful in acquiring additional funding at levels sufficient to fund our operations or on terms favorable or acceptable to us. If we are unable to obtain adequate financing when needed or on terms favorable or acceptable to us, we may be forced to delay, reduce the scope of or eliminate one or more of our research and development programs.

Our future capital requirements will depend on many factors, including:

- the timing, progress and results of our ongoing preclinical studies for our vaccine candidates;
- the scope, progress, results and costs of research and development, testing, screening, manufacturing, preclinical development and clinical trials;
- the outcome, timing and cost of seeking and obtaining regulatory approvals from the FDA and comparable foreign regulatory authorities, including the potential for such authorities to require that we perform field efficacy studies for our PCV candidates, require more studies than those that we currently expect or change their requirements regarding the data required to support a marketing application;
- the cost of building a sales force in anticipation of any product commercialization;
- the costs of future commercialization activities, including product manufacturing, marketing, sales, royalties and distribution, for any of our vaccine candidates for which we receive marketing approval;

- our ability to maintain existing, and establish new, strategic collaborations, licensing or other arrangements and the financial terms of any such agreements, including the timing and amount of any future milestone, royalty or other payments due under any such agreement;
- any product liability or other lawsuits related to our products;
- the expenses needed to attract, hire and retain skilled personnel;
- the revenue, if any, received from commercial sales, or sales to foreign governments, of our vaccine candidates for which we may receive marketing approval;
- the costs to establish, maintain, expand, enforce and defend the scope of our intellectual property portfolio, including the amount and timing of any payments we may be required to make, or that we may receive, in connection with licensing, preparing, filing, prosecuting, defending and enforcing our patents or other intellectual property rights;
- expenses needed to attract, hire and retain skilled personnel; and
- the costs of operating as a public company.

A change in the outcome of any of these or other variables could significantly change the costs and timing associated with the development of our vaccine candidates. Furthermore, our operating plans may change in the future, and we may need additional funds to meet operational needs and capital requirements associated with such change.

***Cash Flows***

The following table summarizes our cash flows for the periods indicated:

| | Year Ended December 31, | |
|---|---|---|
| | 2017 | 2018 |
| | (in thousands) | |
| Net cash (used in) operating activities | $(14,963) | $(30,466) |
| Net cash (used in) investing activities | (1,116) | (1,773) |
| Net cash provided by financing activities | 43,859 | 62,190 |
| Net increase in cash and cash equivalents | $ 27,780 | $ 29,951 |

***Cash Flows Used in Operating Activities***

Net cash used in operating activities for the year ended December 31, 2018 was $30.5 million, which primarily resulted from a net loss of $29.5 million and non-cash charges of $2.9 million, partially offset by a net change in our operating assets and liabilities of $1.9 million. Non-cash charges primarily consisted of a $5.2 million decrease in the fair value of our redeemable convertible preferred stock tranche liabilities primarily related to the settlement of the Series B tranche liability, partially offset by $1.0 million of depreciation and amortization expense, $0.7 million of stock-based compensation expense and $0.5 million of warrant expense related to the preferred stock warrant issued to Sutro Biopharma in 2018. The net change in operating assets and liabilities of $1.9 million was primarily due to a $1.7 million increase in accrued liabilities resulting primarily from our commencement of manufacturing activities in 2018, a $1.3 million increase in accounts payable resulting primarily from increased contract manufacturing activities and a $0.5 million increase in accrued compensation. These increases were partially offset by the payment of a legal settlement of $0.9 million and a $0.4 million increase in prepaid expenses and other short-term and long-term assets.

Net cash used in operating activities for the year ended December 31, 2017 was $15.0 million, which primarily resulted from a net loss of $17.2 million, which amount was partially offset by a net change in our operating assets and liabilities of $1.7 million and non-cash charges of $0.6 million. Non-cash charges primarily consisted of $0.6 million of depreciation and amortization expense and $0.4 million of stock-based compensation expense, partially offset by a $0.4 million decrease in the fair value of our redeemable convertible preferred stock tranche liabilities. The net change in operating assets and liabilities of $1.7 million was primarily due to the accrual of a legal settlement of $0.9 million and a $0.7 million increase in accounts payable resulting mainly from increased contract manufacturing activities.

***Cash Flows Used in Investing Activities***

Cash used in investing activities for the years ended December 31, 2018 and 2017 was $1.8 million and $1.1 million, respectively, which was related primarily to purchases of property and equipment, mainly for laboratory equipment and leasehold improvements.

***Cash Flows from Financing Activities***

Cash provided by financing activities for the year ended December 31, 2018 was $62.2 million, which primarily consisted of net proceeds from the issuance of the first tranche of our Series C redeemable convertible preferred stock and the second tranche of our Series B redeemable convertible preferred stock of $42.3 million and $20.0 million, respectively.

Cash provided by financing activities for the year ended December 31, 2017 was $43.9 million, which primarily consisted of net proceeds from the issuance of the first tranche of our Series B redeemable convertible preferred stock of $39.9 million and net proceeds of $4.0 million from the issuance of the third tranche of our Series A redeemable convertible preferred stock.

**Contractual Obligations and Commitments**

The following table summarizes our contractual obligations and commitments at December 31, 2018:

| | Payments Due by Period | | | | |
|---|---|---|---|---|---|
| | Less than 1 Year | 1 - 3 Years | 3 - 5 Years | More than 5 Years | Total |
| | (in thousands) | | | | |
| Operating lease obligations[1] | $ 442 | $ 733 | $ — | $ — | $ 1,175 |
| Capital lease obligations | 340 | 169 | — | — | 509 |
| Total | $ 782 | $ 902 | $ — | $ — | $ 1,684 |

(1) Consists of our corporate headquarters lease consisting of office and laboratory space that expires in August 2021, and a small office in San Diego, California that automatically renews every three months. We have assumed we will renew the San Diego office through December 2019.

We have certain payment obligations under various license agreements. Under these agreements, we are required to make milestone payments upon successful completion and achievement of certain intellectual property, clinical, regulatory and sales milestones. The payment obligations under the license agreements are contingent upon future events such as our achievement of specified development, clinical, regulatory and commercial milestones, and we will be required to make development milestone payments and royalty payments in connection with the sale of products developed under these agreements. As the achievement and timing of these future milestone payments are not probable or estimable, such amounts have not been included in our balance sheet as of December 31, 2018, or in the contractual obligations table above. See Note 14, “Related Party Transactions” to the audited financial statements.

We enter into agreements in the normal course of business with vendors for preclinical studies, manufacturing and supply of our preclinical materials and for other services and products used for operating purposes. These contracts are generally cancelable following a certain period after written notice, and therefore, we believe that our non-cancelable obligations under these agreements are not material and have not been included in the table above.

**Legal Contingencies**

From time to time, we may become involved in legal proceedings arising from the ordinary course of business. We record a liability for such matters when it is probable that future losses will be incurred and that such losses can be reasonably estimated. Significant judgment by us is required to determine both probability and the estimated amount.

**Off-Balance Sheet Arrangements**

During the periods presented we did not have, nor do we currently have, any off-balance sheet arrangements as defined in the rules and regulations of the SEC.

**Critical Accounting Policies and Significant Judgments and Estimates**

Our management's discussion and analysis of our financial condition and results of operations are based on our financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States of America. The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenues and expenses and the disclosure of contingent assets and liabilities in our financial statements. On an ongoing basis, we evaluate our estimates and judgments, including those related to accrued expenses, redeemable convertible preferred stock tranche liabilities and stock-based compensation. We base our estimates on historical experience, known trends and events and various other factors that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

While our significant accounting policies are described in more detail in Note 2 to our financial statements included elsewhere in this prospectus, we believe the following accounting policies and estimates to be most critical to the judgments and estimates used in the preparation of our financial statements.

***Accrued Research and Development Expenses***

We entered into various agreements with contract manufacturing organizations, or CMOs, and may enter into contracts with clinical research organizations, or CROs, in the future. As part of the process of preparing our financial statements, we are required to estimate our accrued research and development expenses as of each balance sheet date. This process involves reviewing open contracts and purchase orders, communicating with our personnel to identify services that have been performed on our behalf and estimating the level of service performed and the associated cost incurred for the service when we have not yet been invoiced or otherwise notified of the actual cost. We make estimates of our accrued research and development expenses as of each balance sheet date based on facts and circumstances known to us at that time. We periodically confirm the accuracy of our estimates with the service providers and make adjustments, if necessary. The significant estimates in our accrued research and development expenses include the costs incurred for services performed by our vendors in connection with research and development activities for which we have not yet been invoiced.

We accrue for costs related to research and development activities based on our estimates of the services received and efforts expended pursuant to quotes and contracts with vendors, including CMOs, that conduct

research and development on our behalf. The financial terms of these agreements are subject to negotiation, vary from contract to contract and may result in uneven payment flows. There may be instances in which payments made to our vendors will exceed the level of services provided and result in a prepayment of the research and development expense. Advance payments for goods and services that will be used in future research and development activities are expensed when the activity has been performed or when the goods have been received. We make significant judgments and estimates in determining accrued research and development liabilities as of each reporting period based on the estimated time period over which services will be performed and the level of effort to be expended. If the actual timing of the performance of services or the level of effort varies from our estimate, we adjust the accrual or prepaid expense accordingly.

Although we do not expect our estimates to be materially different from amounts actually incurred, if our estimates of the status and timing of services performed differ from the actual status and timing of services performed, it could result in us reporting amounts that are too high or too low in any particular period. To date, there have been no material differences between our estimates of such expenses and the amounts actually incurred.

***Redeemable Convertible Preferred Stock Tranche Liability***

From time to time, we have entered into redeemable convertible preferred stock financings where, in addition to the initial closing, investors agree to buy, and we agree to sell, additional shares of that redeemable convertible preferred stock at a fixed price at a future date. We evaluate this purchase right and assess whether it meets the definition of a freestanding instrument and, if so, determine the fair value of the tranche liability and record it on our balance sheet with the remainder of the proceeds raised being allocated to redeemable convertible preferred stock. The tranche liability is revalued at each reporting period with changes in the fair value of the liability recorded as a component of other income (expense) in the statements of operations and comprehensive loss. The tranche liability is revalued right before settlement with the changes in the fair value of the liability recorded as a component of other income (expense) in the statement of operations and comprehensive loss. The estimated fair value of the preferred stock tranche liability is determined using valuation models which included significant estimates regarding the expected probability and time to exercise, volatility and discount rate, our cost of capital, consideration received for the redeemable convertible preferred stock, the number of shares to be issued to satisfy the preferred stock tranche liability and the probability of the consummation of an initial public offering, as applicable.

There are significant judgments and estimates inherent in the determination of the fair value of our tranche liability. If we had made different assumptions, the carrying value of our preferred stock, net loss and net loss per common share could have been significantly different.

***Redeemable Convertible Preferred Stock Warrant Liability***

Our redeemable convertible preferred stock warrant requires liability classification as the underlying redeemable convertible preferred stock is considered contingently redeemable and may obligate us to transfer assets to the holders at a future date upon the occurrence of a deemed liquidation event. The warrant is recorded at fair value upon issuance and is subject to re-measurement to fair value at each balance sheet date, with any changes in fair value recognized in the statements of operations and comprehensive loss. The expense related to the warrant, as well as the changes in the fair value of the warrant, is included in research and development expenses in the statements of operations and comprehensive loss. We will continue to adjust the warrant liability for changes in fair value until the earlier of the exercise or expiration of the redeemable convertible preferred stock warrant, occurrence of a deemed liquidation event or immediately prior to the closing of this offering. The warrant will be automatically net shares settled prior to expiration based on the fair market value of the shares on the date of exercise.

***Research and Development Expenses***

Research and development costs are expensed as incurred and include salaries, stock-based compensation and benefits of employees performing research and development activities, an allocation of facility and overhead expenses, expenses incurred under agreements with consultants, CMOs, CROs and investigative sites that conduct preclinical studies, other supplies and costs associated with product development efforts, preclinical activities and regulatory operations.

***Stock-Based Compensation Expense***

Stock-based compensation expense represents the cost of the grant date fair value of equity awards recognized over the requisite service period of the awards (usually the vesting period) on a straight-line basis. We estimate the fair value of equity awards using the Black-Scholes option pricing model and recognize forfeitures as they occur. Estimating the fair value of equity awards as of the grant date using valuation models, such as the Black-Scholes option pricing model, is affected by assumptions regarding a number of variables, including:

- *Fair Value of Common Stock*—See the subsection entitled "—Common Stock Valuations" for more information.

- *Expected Term*—Expected term represents the period that our stock-based awards are expected to be outstanding. For employee options, the expected term is calculated using the simplified method where there is insufficient historical data about exercise patterns and post-vesting employment termination behavior. The simplified method is based on the vesting period and the contractual term for each grant, or for each vesting-tranche for awards with graded vesting. The mid-point between the vesting date and the maximum contractual expiration date is used as the expected term under this method. For awards with multiple vesting-tranches, the time from grant until the mid-points for each of the tranches may be averaged to provide an overall expected term. The expected term for options issued to nonemployees is the remaining contractual term.

- *Expected Volatility*—Expected volatility is estimated from the average historical volatilities of publicly traded companies within the life sciences industry that are considered to be comparable to our business over a period approximately equal to the expected term for employees' options and the remaining contractual life for nonemployees' options. We will continue to apply this process until a sufficient amount of historical information regarding the volatility of our own stock price becomes available.

- *Expected Dividend*—We have not paid and do not anticipate paying any dividends in the near future. Accordingly, we have estimated the dividend yield to be zero.

- *Risk-Free Interest Rate*—The risk-free interest rate is based on the U.S. Treasury yield in effect at the time of grant for zero-coupon notes with remaining terms corresponding with the expected term of the option.

Changes in the assumptions can materially affect the fair value and ultimately how much stock-based compensation expense is recognized. These inputs are subjective and generally require significant analysis and judgment to develop. See Note 11 to our financial statements included elsewhere in this prospectus for information concerning certain of the specific assumptions we used in applying the Black-Scholes option pricing model to determine the estimated fair value of our stock options granted in the years ended December 31, 2017 and 2018. As of December 31, 2018, the unrecognized stock-based compensation expense related to stock options was $2.8 million and is expected to be recognized as expense over a weighted-average period of approximately 1.5 years. The intrinsic value of all outstanding stock options as of December 31, 2018 was approximately $ million, based on the assumed initial public offering price of $ per share, which is the

midpoint of the estimated offering price range set forth on the cover page of this prospectus, of which approximately $ million related to vested options and approximately $ million related to unvested options.

*Common Stock Valuations*

We are required to estimate the fair value of the common stock underlying our equity awards when performing fair value calculations. The fair value of the common stock underlying our equity awards was approved on each grant date by our board of directors, taking into account input from management and independent third-party valuation analyses. All options to purchase shares of our common stock are intended to be granted with an exercise price per share no less than the fair value per share of our common stock underlying those options on the date of grant, based on the information known to us on the date of grant. In the absence of a public trading market for our common stock, on each grant date we develop an estimate of the fair value of our common stock in order to determine an exercise price for the option grants. Our determinations of the fair value of our common stock were made using methodologies, approaches and assumptions consistent with the American Institute of Certified Public Accountants Accounting and Valuation Guide: *Valuation of Privately Held Company Equity Securities Issued as Compensation*, or the Practice Aid. Because our common stock shares are not publicly traded, estimating their fair values can be highly complex and subjective.

Management considered various objective and subjective factors to determine the fair value of our common stock, including:

- valuations of our common stock performed with the assistance of independent third-party valuation specialists;
- our stage of development and business strategy, including the status of research and development efforts of our vaccine candidates, and the material risks related to our business and industry;
- our results of operations and financial position, including our levels of available capital resources;
- the valuation of publicly traded companies in the life sciences and biotechnology sectors, as well as recently completed mergers and acquisitions of peer companies;
- the lack of marketability of our common stock;
- the prices of our redeemable convertible preferred stock sold to investors in arm’s length transactions and the rights, preferences and privileges of our redeemable convertible preferred stock relative to those of our common stock;
- the likelihood of achieving a liquidity event for the holders of our common and redeemable convertible preferred stock, such as an initial public offering or a sale of our company, given prevailing market conditions;
- trends and developments in our industry; and
- external market conditions affecting the life sciences and biotechnology industry sectors.

The Practice Aid prescribes several valuation approaches for setting the value of an enterprise, such as the cost, income and market approaches, and various methodologies for allocating the value of an enterprise to its common stock. The cost approach establishes the value of an enterprise based on the cost of reproducing or replacing the property less depreciation and functional or economic obsolescence, if present. The income approach establishes the value of an enterprise based on the present value of future cash flows that are reasonably

reflective of our future operations, discounting to the present value with an appropriate risk adjusted discount rate or capitalization rate. The market approach is based on the assumption that the value of an asset is equal to the value of a substitute asset with the same characteristics. Each valuation method was considered in our analysis.

For our valuations performed prior to June 30, 2019, we generally employed an Option Pricing Method, or OPM, based analysis, primarily the OPM Backsolve methodology, to determine the estimated fair value of our common stock. Within the OPM framework, the Backsolve method for inferring the total equity value implied by a recent financing transaction involves the construction of an allocation model that takes into account the company's capital structure and the rights and preferences of each class of stock, then assumes reasonable inputs for the other OPM variables (expected time to liquidity, volatility, risk-free rate, etc.). The total equity value is then iterated in the model until the model output value for the equity class sold in a recent financing round equals the price paid in that round. The OPM is generally utilized when specific future liquidity events are difficult to forecast, i.e., the enterprise has many choices and options available, and the enterprise's value depends on how well it follows an uncharted path through the various possible opportunities and challenges. In determining the estimated fair value of our common stock, management also considered the fact that our stockholders could not freely trade our common stock in the public markets. Accordingly, we applied discounts to reflect the lack of marketability of our common stock based on the weighted-average expected time to liquidity. The estimated fair value of our common stock at each grant date reflected a non-marketability discount partially based on the anticipated likelihood and timing of a future liquidity event.

For our valuations performed on or after June 30, 2019, we utilized a hybrid method that combines the Probability-Weighted Expected Return Method, or PWERM, an accepted valuation method described in the Practice Aid, and the OPM. The PWERM is a scenario-based analysis that estimates the value per share of common stock based on the probability-weighted present value of expected future equity values for the common stock, under various possible future liquidity event scenarios, considering the rights and preferences of each class of stock, discounted for a lack of marketability. Under the hybrid method, an OPM Backsolve was utilized to determine the fair value of our common stock in certain of the PWERM scenarios (capturing situations where our development path and future liquidity events were difficult to forecast) and potential initial public offering exit events were explicitly modeled in the other PWERM scenarios. A discount for lack of marketability was applied to the value derived under each scenario to account for a lack of access to an active public market.

Following the completion of this offering, the fair value of our common stock will be based on the closing quoted market price of our common stock as reported on the date of grant on the primary stock exchange on which our common stock is traded. Estimating the fair value of our common stock will not be necessary to determine the fair values of new awards once the underlying shares begin trading.

**Quantitative and Qualitative Disclosures About Market Risk**

***Interest Rate Risk***

Our cash and cash equivalents as of December 31, 2018 consisted of readily available checking and money market funds. Our primary exposure to market risk is interest rate sensitivity, which is affected by changes in the general level of U.S. interest rates. However, because of the nature of the instruments in our portfolio, a sudden change in market interest rates would not be expected to have a material impact on our financial condition or results of operations. We believe that our exposure to interest rate risks is not significant and that a hypothetical 1% movement in market interest rates would not have a significant impact on the total value of our portfolio or our interest income. In addition, we do not believe that our cash and cash equivalents have significant risk of default or illiquidity.

***Foreign Currency Risk***

We are exposed to market risk related to changes in foreign currency exchange rates, mainly relating to our contract with Lonza, our CMO in Switzerland. We have also entered into a limited number of contracts with

other parties with payments denominated in foreign currencies. Payments under these contracts are made in foreign currencies and are subject to fluctuations in foreign currency rates. We do not currently have a formal program in place to hedge foreign currency risks. However, from time to time, we buy Swiss Francs, or CHF, which is the majority of our foreign currency exposure, at market and are holding CHF in our bank accounts. As of December 31, 2017 and December 31, 2018, we had approximately $0.6 million and $16.8 million of CHF, respectively, held at two financial institutions. These CHF holdings help to mitigate our exposure related to our foreign currency denominated accounts payable and accrued expenses. As of December 31, 2017 and December 31, 2018, we had foreign currency denominated accounts payable and accrued expenses of $0.9 million and $3.6 million, respectively. To date, foreign currency transaction gains and losses have not been material to our financial statements. A 1% increase or decrease in current exchange rates would not have a material effect on our financial results.

As our foreign currency risk increases in the future, we will evaluate alternative strategies, including hedging, to mitigate our foreign currency exposure.

***Effects of Inflation***

Inflation generally affects us by increasing our cost of labor and research and development contract costs. Inflation did not have a material effect on our results of operations during the periods presented.

**Emerging Growth Company Status**

We are an emerging growth company, as defined in the Jumpstart Our Business Startups Act, or the JOBS Act. Under the JOBS Act, emerging growth companies can delay the adoption of new or revised accounting standards issued subsequent to the enactment of the JOBS Act until such time as those standards apply to private companies. Other exemptions and reduced reporting requirements under the JOBS Act for emerging growth companies include presentation of only two years of audited financial statements in a registration statement for an initial public offering, an exemption from the requirement to provide an auditor's report on internal controls over financial reporting pursuant to Section 404 of the Sarbanes-Oxley Act of 2002, as amended, an exemption from any requirement that may be adopted by the Public Company Accounting Oversight Board regarding mandatory audit firm rotation and less extensive disclosure about our executive compensation arrangements. We have elected to use the extended transition period for complying with new or revised accounting standards that have different effective dates for public and private companies until the earlier of the date that (i) we are no longer an emerging growth company or (ii) we affirmatively and irrevocably opt out of the extended transition period provided in the JOBS Act. However as described in Note 3 to our financial statements included elsewhere in this prospectus, we early adopted certain accounting standards, as the JOBS Act does not preclude an emerging growth company from adopting a new or revised accounting standard earlier than the time that such standard applies to private companies to the extent early adoption is permitted. As a result, our financial statements may not be comparable to companies that comply with the new or revised accounting pronouncements as of public company effective dates.

We will remain an emerging growth company until the earliest of (i) the last day of our first fiscal year in which we have total annual gross revenues of $1.07 billion or more, (ii) the last day of our fiscal year following the fifth anniversary of the completion of this offering, (iii) the date on which we are deemed to be a "large accelerated filer," under the rules of the SEC, which means the market value of equity securities that is held by non-affiliates exceeds $700.0 million as of the prior June 30th and (iv) the date on which we have issued more than $1.0 billion in non-convertible debt securities during the prior three-year period.

**Recently Adopted Accounting Pronouncements**

See Note 3 to our financial statements included elsewhere in this prospectus for more information.

# BUSINESS

## Overview

We are a next-generation vaccine company seeking to improve global health by developing superior and novel vaccines designed to prevent or treat some of the most common and deadly infectious diseases worldwide. Our cell-free protein synthesis platform enables us to design and produce protein carriers and antigens, the critical building blocks of vaccines, in ways that we believe conventional vaccine technologies currently cannot. Our lead vaccine candidate, SVX-24, is a 24-valent investigational broad-spectrum pneumococcal conjugate vaccine, or PCV, that we believe has the potential to become the standard of care in the $7 billion global pneumococcal vaccine market.

Our cell-free protein synthesis platform, which is comprised of the XpressCF platform exclusively licensed from Sutro Biopharma, Inc., or Sutro Biopharma, and our proprietary know-how, offers several advantages over conventional cell-based protein expression methods, which we believe enable us to generate more broad-spectrum and/or more immunogenic vaccines. In the context of conjugate vaccines, we believe we can add more antigenic strains without compromising the overall immune response. In particular, our ability to specify the attachment point of antigens, including polysaccharides on protein carriers represents a significant improvement over the random conjugation that occurs with conventional technologies. This site-specific conjugation is designed to ensure that B-cell and/or T-cell epitopes are optimally exposed, maximizing the immune response, whereas random conjugation blocks these critical immunogenic epitopes, dampening the immune response and causing a phenomenon known as carrier suppression. We believe this precise control of conjugation chemistry enables us to design broader-spectrum conjugate vaccine candidates using carrier-sparing conjugates that use less protein carrier without sacrificing immunogenicity. We are also able to design novel conjugate vaccine candidates using standard amounts of protein carrier to generate heightened immunogenicity. Beyond conjugate vaccines, we believe we can also design novel protein vaccine candidates based on well-appreciated but highly complex antigens that currently cannot be made with conventional technologies to address diseases for which there are no available vaccines. In addition, our platform enables us to rapidly screen vaccine candidates and produce conjugates, thereby dramatically accelerating the development cycle of designing, producing and testing vaccine candidates.

The global vaccine market was $36 billion in 2018 and is expected to grow at an 8% compound annual growth rate, or CAGR, to approximately $58 billion by 2025. The global pneumococcal vaccine market has grown rapidly over the last two decades, reaching $7 billion in sales in 2018, and is expected to grow to $10 billion by 2025. The two leading pneumococcal vaccine franchises, Pneumovax and Prevnar, have generated over $100 billion in combined sales and have been on the market for 42 years and 20 years, respectively. The major types of pneumococcal disease are pneumonia (lung infection), bacteremia (bloodstream infection) and meningitis (infection of the tissue surrounding the brain and spinal cord). According to the American Thoracic Society, pneumonia is the world's leading cause of death among children under five years of age, accounting for 16% of all deaths in the age group. Pneumonia is also the most common cause of unplanned hospitalization in the United States and affects both children and adults. While bacteremia and meningitis are less common than pneumonia, they are often more severe, with fatality rates reaching up to 60% among the elderly. There are currently more than 90 circulating strains of pneumococcus, of which approximately one-third are known to be pathogenic.

The current vaccine standard of care for pneumococcal disease includes the combination of Merck's Pneumovax 23 and Pfizer's Prevnar 13 for adults, and Pfizer's Prevnar 13 for infants. Pneumovax 23 is a polysaccharide vaccine that protects against 23 strains of pneumococcus but is not thought to protect against pneumonia and provides only transient protection against bacteremia in adults. Furthermore, Pneumovax 23 is neither boostable nor durable, which prevents it from being effective in infants. Prevnar 13 is a PCV that protects against only 13 strains of pneumococcus but offers significantly better immunogenicity, protects against pneumonia and is suitable for both adults and infants. Routine immunization with PCVs has been effective in

dramatically lowering the incidence of invasive pneumococcal disease, or IPD, in both adults and children in the United States and other industrialized nations. However, due to a phenomenon called serotype replacement, strains that are not covered by existing vaccines are increasing in prevalence. In 2015, over 75% of IPD incidence in both children and adults was caused by strains beyond the 13 strains covered by Prevnar 13. Efforts to improve upon current standard of care vaccines center around expanding the valency of PCVs to address the strains driving residual pneumococcal disease. However, limitations due to conventional conjugation chemistry and carrier suppression have complicated those efforts, and there remains a growing need for broader-spectrum PCVs, as evidenced by the fact that despite Prevnar 13's superior immunogenicity profile, Pneumovax 23 remains universally recommended in adults, given its broader-spectrum coverage.

The U.S. Centers for Disease Control, or CDC, its Advisory Committee on Immunization Practices, or ACIP, and similar international advisory bodies develop vaccine recommendations for both children and adults. New pediatric vaccines that receive ACIP preferred recommendations are almost universally adopted, and adult vaccines that receive a preferred recommendation are widely adopted. We believe that our PCVs will be well-positioned to obtain these preferred recommendations, by virtue of their broader-spectrum, which could drive rapid and significant market adoption.

We carefully select our target disease areas and vaccine candidates to address areas of significant unmet medical need based on the following criteria: well-defined commercial landscape and efficient market adoption, low biological risk and established clinical pathways. We are leveraging our scalable cell-free protein synthesis platform to develop potentially superior and novel conjugate and protein vaccine candidates for adult and pediatric indications using the above criteria. The following table summarizes our current pipeline:

| Program | Profile/Type | Vaccine Description | Target Population | Disease | Status |
|---|---|---|---|---|---|
| SVX-24 | Superior Conjugate Vaccine | 24-valent PCV |  | Invasive Pneumococcal Disease | Preclinical POC vs Prevnar 13 and Polysaccharide/Alum[1] (IND-enabling stage) |
| | | |  | Invasive Pneumococcal Disease and Otitis Media | Preclinical POC vs Prevnar 13 (IND-enabling stage) |
| SVX-XP | Superior Conjugate Vaccine | Next-generation 32-valent PCV |  | Invasive Pneumococcal Disease | Preclinical POC vs Prevnar 13 and Polysaccharide/Alum[2] |
| | | |  | Invasive Pneumococcal Disease and Otitis Media | Preclinical POC vs Prevnar 13 |
| SVX-A1 | Novel Conjugate Vaccine | Monovalent conjugate / complex protein-based vaccine |  | Group A Strep Infections | Preclinical POC + Grant Funding |
| SVX-PG | Novel Protein Vaccine | Multiple complex protein-based therapeutic vaccine |  | Periodontitis | Preclinical POC |

 = Adults  = Children  = Infants

(1) *For the Polysaccharide/Alum comparator, we used 23 polysaccharides in Pneumovax 23 at an equivalent dose with the addition of strain 6A and alum as the objective of the study was to evaluate whether SVX-24 showed a conjugate-like response in all 24 strains.*

(2) *For the Polysaccharide/Alum comparator, we used 23 polysaccharides in Pneumovax 23 and 9 additional polysaccharides with alum for comparison.*

Our lead vaccine candidate, SVX-24, is a preclinical, 24-valent PCV designed to provide the broad-spectrum coverage of Pneumovax 23 with an immunogenicity profile comparable to Prevnar 13. We believe SVX-24, if approved, has the potential to become the standard of care in the $7 billion global pneumococcal vaccine market. Our second PCV, known as SVX-XP, leverages our scalable and modular platform and builds on the technical proof of concept established by SVX-24 and would, if approved, expand the breadth of coverage to 32 strains, including emerging strains responsible for IPD and antibiotic resistance, without compromising immunogenicity due to carrier suppression.

With the broadest-spectrum PCV vaccine candidates in development to our knowledge, we believe we are well-positioned to create a long-lasting PCV franchise. Our preclinical proof of concept studies for SVX-24 measured serotype-specific IgG antibody responses, the surrogate endpoint for pediatrics, and opsonophagocytic activity, or OPA, responses, the surrogate endpoint for adults of our vaccine candidates against Prevnar 13 and Pneumovax 23. In these studies, our vaccine candidates have shown comparable responses to the 13 common strains in Prevnar 13 and superior responses to the 23 common strains in Pneumovax 23. We believe our preclinical study results may be predictive of clinical trial results based on our use of the same rabbit model used to develop each of the PCVs approved to date.

We believe our PCVs could receive regulatory approval based on a demonstration of non-inferiority to the standard of care using well-defined surrogate immune endpoints rather than requiring clinical field efficacy studies, consistent with how other PCVs have obtained regulatory approval in the past. We believe other purposeful similarities in our development process increase our chance for streamlined regulatory approval and commercial adoption. We expect to submit an investigational new drug, or IND, application for SVX-24 to the U.S. Food and Drug Administration, or FDA, in 2021.

In addition to our PCV franchise, we are developing a novel conjugate vaccine candidate for group A strep. Group A strep causes 700 million cases, the majority of which are of pharyngitis, commonly known as strep throat, worldwide each year and increases the risk for severe invasive infections, such as sepsis, necrotizing fasciitis and toxic shock syndrome. There is currently no vaccine against group A strep. In September 2019, we announced a grant of up to $15.1 million, awarded by CARB-X, a global non-profit partnership dedicated to accelerating antibacterial innovation to tackle the rising global threat of drug-resistant bacteria, to develop this vaccine candidate.

We are also developing a novel protein vaccine candidate targeting the keystone pathogen responsible for periodontitis, a chronic oral inflammatory disease affecting an estimated 65 million adults in the United States. Our initial goal is to develop a therapeutic vaccine to slow or stop disease progression; however, the results from clinical trials may inform the potential adoption of prophylactic immunization.

We believe that an efficient and high-quality manufacturing process is critical to our long-term success. We have strategically aligned with Lonza, a globally recognized contract development and manufacturing organization based in Switzerland, to develop a robust and scalable manufacturing process for SVX-24. We have partnered closely with Lonza to transfer technology, develop and optimize processes and prepare for both clinical trial and commercial requirements for SVX-24. With this ongoing partnership, we believe we are addressing the complexity of vaccine development and production, thus establishing barriers to entry to protect our PCV franchise.

SutroVax was formed in 2013 through its relationship with Sutro Biopharma by our three co-founders, Grant Pickering, Jeff Fairman and Ash Khanna, with the goal of utilizing Sutro Biopharma’s proprietary XpressCF platform in the field of vaccines to address infectious diseases. Since that time, we have assembled a distinguished group of executives, directors and advisors with extensive experience in vaccine development, manufacturing and commercialization. Our co-founder and Chief Executive Officer, Grant Pickering, played a prominent role in developing Provenge, the first therapeutic cancer vaccine to reach the market, and has served as Chief Executive Officer of multiple platform vaccines companies. Our co-founder and Vice President of

Research, Jeff Fairman, and our Senior Vice President of Process Development and Manufacturing, Paul Sauer, have been developing and industrializing vaccines and other biologics for over 20 and 30 years, respectively. We are supported by leading investors, including TPG Growth, Abingworth LLP, Longitude Capital, Frazier Healthcare Partners, Pivotal bioVenture Partners, Medicxi Ventures, Roche Venture Fund, CTI Life Sciences Fund and Foresite Capital. We also benefit from directors and advisors that have previously served as heads of research and development for GlaxoSmithKline, Merck and Sanofi-Pasteur, including our board chairman, Moncef Slaoui, who served as the chairman of GlaxoSmithKline Vaccines. Together, our executives, directors and advisors have made essential contributions to the development of many widely used preventative and therapeutic vaccines, including pneumococcal vaccines such as Prevnar, Prevnar 13, Synflorix and Pneumovax 23, as well as other vaccines, including Provenge, Gardasil, Cervarix, Shingrix, Zostavax, Rotateq, Rotarix and Bexsero, among others.

**Our Opportunity in Vaccines**

Vaccines are one of the most successful and cost-effective global health interventions and prevent two to three million deaths worldwide each year. Routine pediatric vaccinations are estimated to prevent 20 million cases of disease each year, saving over $180 billion in direct and societal costs in the United States alone. Adult vaccination rates are lower than pediatric vaccination rates, but new technologies are driving adult vaccine development, which in turn is fueling the growth of the overall vaccine market. Given the critical role vaccines play in preventing disease from childhood to adulthood, the global vaccine market is large, durable and growing. Nonetheless, there are areas of unmet medical need, including vaccines that can provide broader protection than currently marketed vaccines and novel vaccines that target pathogens for which there are no currently approved vaccines. We believe there is an opportunity for SutroVax to join the ranks of the major vaccine players by addressing these unmet needs in the adult and pediatric markets.

**Our Approach**

We carefully select the disease areas we target and are developing vaccine candidates based on the following criteria:

- *Well-defined commercial landscape and efficient market adoption:* We select vaccine targets that are characterized by an established patient population and significant unmet medical need. Our lead vaccine candidate, SVX-24, is a PCV aimed at significantly improving the current standard of care by expanding coverage to address the strains that cause the majority of disease today without sacrificing immunogenicity. We believe that by providing the broadest strain coverage for PCVs, as well as providing novel vaccines for diseases for which there are no currently approved vaccines, we can leverage ACIP and similar international advisory body recommendations to drive rapid and significant market adoption.

- *Low biological risk:* We choose vaccine targets with well-understood mechanisms of action and strong precedents for positive preclinical study results that translated to positive clinical trial results. For example, conjugate vaccines have demonstrated effectiveness in both preclinical and clinical trials against a range of bacteria, including pneumococcus, meningococcus and Haemophilus influenza B (Hib). There is consistent evidence that antibodies directed against these bacteria are protective against their respective diseases.

- *Established clinical pathways:* We pursue vaccine targets that we believe have clear and established clinical development pathways in order to accelerate the potential time to market. For example, we believe that our PCVs could receive regulatory approval based on successful completion of clinical studies utilizing well-defined surrogate immune endpoints rather than requiring clinical field efficacy studies, consistent with how other vaccines have obtained regulatory approval. For our novel vaccine candidates, where we believe clinical field efficacy studies will be necessary, we

select disease areas with high attack rates, such as group A strep, which may allow for more manageable study sizes. For novel protein-based therapeutic vaccine candidates, such as our periodontitis vaccine candidate, we select disease areas where we believe clinical efficacy may be evaluated based on disease progression rather than prevention, which could allow for smaller and faster trials relative to preventative vaccines.

**Our Platform**

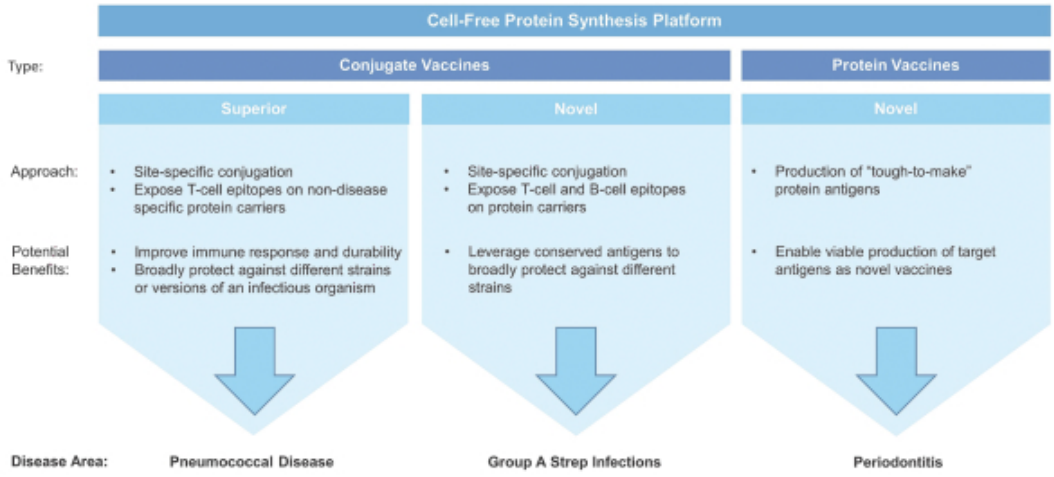
We are leveraging our scalable cell-free protein synthesis platform to develop potentially superior and novel conjugate and protein vaccine candidates for adult and pediatric indications using the above criteria by taking advantage of the following:

- *Site-Specific Conjugation.* We are able to specify the attachment point of antigens, including polysaccharides, on protein carriers to ensure optimal exposure of B-cell and/or T-cell epitopes, thereby creating protein carriers designed to have enhanced potency. We believe this precise control of conjugation chemistry enables us to create broader-spectrum conjugate vaccine candidates using carrier-sparing conjugates that use less protein carrier without sacrificing immunogenicity. We are also able to design novel conjugate vaccine candidates using standard amounts of protein carrier to generate heightened immunogenicity.

- *Production of Novel Protein Vaccines*. We can design novel protein vaccine candidates based on well-appreciated but highly complex antigens that currently cannot be made with conventional technologies to address diseases for which there are no available vaccines. We can design and produce these “tough-to-make” antigens that conform to the target pathogens, thereby increasing the likelihood that the vaccine will elicit a protective immune response.

- *Speed, Flexibility and Scalability of the Discovery Engine.* We are able to rapidly screen vaccine candidates and produce conjugates, thereby accelerating the process of making and testing vaccine candidates. Because cell viability is not required for cell-free protein synthesis, we can utilize a broader range of reaction conditions as we seek to optimize proteins. This flexibility enables us to develop novel vaccine candidates unachievable with current technologies. Furthermore, we believe our platform can scale linearly from discovery to commercial scale.

The table below illustrates how we utilize our platform to execute our approach to identify superior and novel conjugate and protein vaccine candidates in our initial three areas of disease focus:



**Our Pipeline**

We have utilized our cell-free protein synthesis platform to generate a pipeline of vaccine candidates that we believe, if approved, may offer important advantages over existing vaccines or for which there are no vaccines available today. The following table summarizes our current pipeline:

| Program | Profile/Type | Vaccine Description | Target Population | Disease | Status |
|---|---|---|---|---|---|
| SVX-24 | Superior Conjugate Vaccine | 24-valent PCV |  | Invasive Pneumococcal Disease | Preclinical POC vs Prevnar 13 and Polysaccharide/Alum[1] (IND-enabling stage) |
| | | |  | Invasive Pneumococcal Disease and Otitis Media | Preclinical POC vs Prevnar 13 (IND-enabling stage) |
| SVX-XP | Superior Conjugate Vaccine | Next-generation 32-valent PCV |  | Invasive Pneumococcal Disease | Preclinical POC vs Prevnar 13 and Polysaccharide/Alum[2] |
| | | |  | Invasive Pneumococcal Disease and Otitis Media | Preclinical POC vs Prevnar 13 |
| SVX-A1 | Novel Conjugate Vaccine | Monovalent conjugate / complex protein-based vaccine |  | Group A Strep Infections | Preclinical POC + Grant Funding |
| SVX-PG | Novel Protein Vaccine | Multiple complex protein-based therapeutic vaccine |  | Periodontitis | Preclinical POC |

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*(1) For the Polysaccharide/Alum comparator, we used 23 polysaccharides in Pneumovax 23 at an equivalent dose with the addition of strain 6A and alum as the objective of the study was to evaluate whether SVX-24 showed a conjugate-like response in all 24 strains.*

*(2) For the Polysaccharide/Alum comparator, we used 23 polysaccharides in Pneumovax 23 and 9 additional polysaccharides with alum for comparison.*

**Our Strategy**

Our goal is to become a leader in the vaccines industry by using our cell-free protein synthesis platform to develop superior and novel vaccines to prevent and treat serious infectious diseases. Key elements of our strategy include:

- **Rapidly advance SVX-24 through IND-enabling activities, clinical development and regulatory approval.** Our lead vaccine candidate, SVX-24, targets the pneumococcal vaccine market, a $7 billion market in 2018 that is expected to grow to $10 billion by 2025. We expect to advance SVX-24 along a well-understood clinical development pathway to obtain regulatory approval in adults and infants based on successful completion of clinical studies using previously established surrogate immune endpoints, potentially without the need to conduct a clinical field efficacy study, consistent with how other vaccines have obtained approval. We anticipate submitting our initial IND application to the FDA in 2021 and will seek to obtain clinical proof of concept in adults first because we believe clinical results are more easily attainable in the adult population.

- **Establish scalable production of SVX-24.** We believe high-quality and scalable manufacturing is critical to our long-term success. We have designed and developed a proprietary, scalable and portable manufacturing process that we believe can scale to supply clinical and commercial volumes of SVX-24 needed to serve both adult and pediatric populations. We have already made significant progress towards completing the production of Phase 1/2 clinical trial material for SVX-24 and are preparing for Phase 3 optimization and commercial scale-up activities. We have access to substantial manufacturing resources through Lonza that we believe can facilitate an independent path to market. Moreover, our next generation SVX-XP program will use the components and core manufacturing processes established for SVX-24.

- **Create a long-lasting PCV franchise by offering the broadest-spectrum PCV available.** The two leading pneumococcal vaccine franchises, Pneumovax and Prevnar, have generated over $100 billion in combined sales, have been on the market for 42 years and 20 years, respectively, and can attribute their success to being the broadest-spectrum vaccines on the market. If approved, we believe SVX-24 may obtain an ACIP preferred recommendation, replace both incumbents and potentially become the standard of care for pneumococcal disease prevention in both adult and pediatric populations because of its broader coverage. We designed SVX-24 to address the 13 pneumococcal strains covered by Prevnar 13 plus the incremental 11 strains that drive most pneumococcal disease today with the durable, boostable immune response of a conjugate vaccine. Further, we have designed SVX-XP to address these 24 strains plus 8 additional emerging strains expected to cause increasing pneumococcal disease and antibiotic resistance in the future. With these broad-spectrum vaccine candidates, we believe we are well-positioned to create a long-lasting PCV franchise.

- **Advance our novel vaccine candidates and expand our pipeline.** Our novel vaccine candidates include vaccines addressing group A strep and periodontitis, diseases for which no commercially available vaccines exist. Our group A strep vaccine candidate targets the pathogen causing 700 million cases of strep throat annually, while our periodontitis vaccine candidate targets the keystone pathogen causing disease in 65 million adults in the United States. We have established preclinical proof of concept for each of these vaccine candidates and plan to advance them into the clinic. We are also able to leverage our platform as a discovery engine given our ability to uniquely create building blocks to construct potential novel conjugate and protein vaccine candidates. We may selectively partner one or more of our novel vaccine candidates.

- **Continue to build a robust intellectual property portfolio.** We have developed and are continuing to develop a comprehensive intellectual property portfolio related to vaccine applications, including manufacturing, formulation and process applications as well as protection for our specific vaccine candidates. We currently have multiple pending patent applications in the United States and internationally that cover vaccine formulations, protein-antigen conjugates, methods of making conjugate vaccines with various protein-antigen conjugates and other processes, enhancements of immunogenicity and methods of use. Moreover, our exclusive license from Sutro Biopharma provides us access to a robust portfolio of patents and patent applications related to the XpressCF platform.

**Global Vaccine Market**

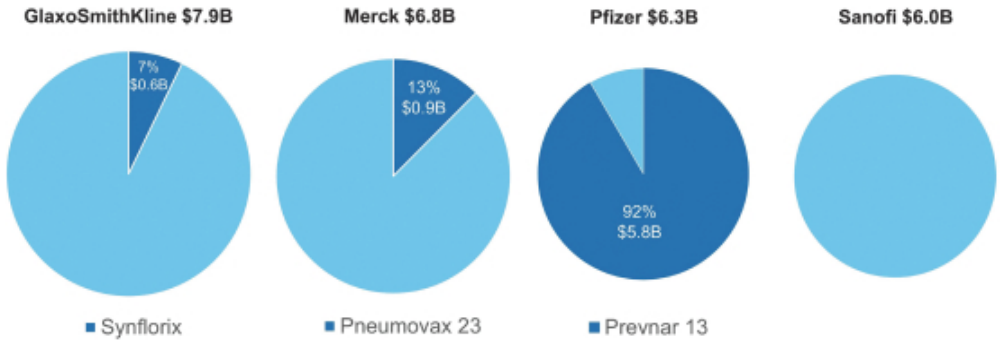
The global vaccine market was approximately $36 billion in 2018 and is expected to grow at an 8% CAGR to approximately $58 billion by 2025. The World Health Organization, or WHO, has reported that vaccine revenues have grown at nearly twice the rate of therapeutic products over the last two decades. Conjugate vaccines, including PCVs, represent the largest segment (approximately 39% in 2018) of the global vaccine market. Prevnar 13, currently the broadest-spectrum PCV, is the highest selling vaccine product in the world, accounting for approximately 16% of global vaccine sales in 2018.

The pediatric vaccine market is large and well-established in the United States and European Union and growing in emerging countries. The annual new birth cohort, which in the United States and Europe approached nine million in 2017, drives ongoing sales year after year. In the United States, once a new vaccine is approved by the FDA, the ACIP considers whether to recommend the use of the vaccine. New pediatric vaccines that receive a preferred recommendation from ACIP are nearly universally adopted by pediatricians and parents and are required by many schools, contributing to a national immunization rate for the diseases targeted by such vaccines of approximately 90%.

In addition, the adult vaccine market is currently undergoing rapid growth. Vaccination rates among adults have historically been lower and vary by disease, though strong initiatives are underway to increase awareness and utilization. Studies estimate that 40,000 to 80,000 adults in the United States die annually of vaccine-preventable diseases, and hundreds of thousands more are hospitalized. In recent years, manufacturers have started developing more vaccines for the adult market, with Pfizer's Prevnar 13 as the most successful example to date, with annual sales of $1.2 billion in the adult indication in the United States. A more recent example is GlaxoSmithKline's Shingrix vaccine for shingles (herpes zoster), which debuted with over $1 billion in sales in 2018 as it replaced Merck's incumbent vaccine, Zostavax, after receiving an ACIP preferred recommendation.

The complex development and production processes of vaccines create a high barrier to entry and long product lifecycles. Four multinational companies—GlaxoSmithKline, Merck, Pfizer and Sanofi—currently comprise approximately 75% of the global vaccine market. GlaxoSmithKline, Merck and Sanofi have broad vaccine portfolios, while Pfizer offers a narrower range of vaccines. Refer to Figure 1 below for an overview of the top vaccines companies globally based on 2018 sales, with their pneumococcal vaccines highlighted.

*Figure 1.*




**Pneumococcal Disease**

***Pneumococcal Disease Background***

Pneumococcal disease is caused by *Streptococcus pneumoniae* (*S. pneumoniae* or pneumococcus) bacteria and can result in a variety of illnesses. There are more than 90 circulating strains of pneumococcus, of which approximately one-third are pathogenic. Pneumococcal disease can be characterized as invasive or non-invasive. Invasive pneumococcal disease includes bacteremic pneumonia, bacteremia, sepsis, meningitis and osteomyelitis. Non-invasive pneumococcal disease includes non-bacteremic pneumonia, acute otitis media, commonly known as middle ear infections, bronchitis and sinusitis. Pneumococcal infection is most serious for infants, young children, older adults and those with immune deficiencies or certain chronic health conditions. Despite nearly universal vaccination in infants and widespread vaccination in older adults with Prevnar 13, there are approximately 900,000 people who get pneumococcal pneumonia in the United States each year, including as

many as 400,000 requiring hospitalization and approximately 28,000 deaths. Bacteremia is less common, with 5,000 annual cases but has a 20% fatality rate overall and a 60% fatality rate among older adults. There are over 2,000 annual cases of meningitis, with an 8% fatality rate in children and 22% fatality rate in adults. There are approximately 3.6 million cases of acute otitis media annually in U.S. children attributable to pneumococcal infection. Antibiotics are used to treat pneumococcal disease, but some strains of the bacteria have developed resistance to treatments. The morbidity and mortality due to pneumococcal disease are highly significant, particularly for young children and older adults, which underscores the need for a more broad-spectrum vaccine.

***Evolution of Pneumococcal Vaccines***

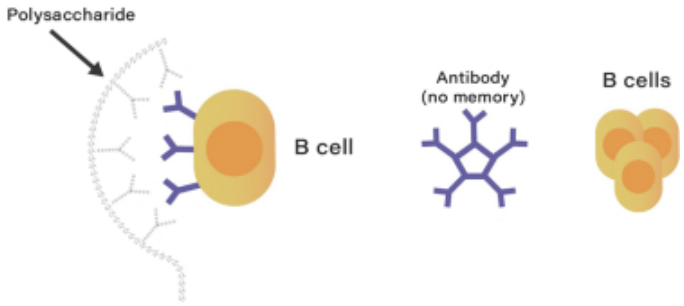
There are currently two types of vaccines targeting pneumococcal disease—polysaccharide-only vaccines and polysaccharide-conjugate vaccines. Polysaccharide vaccines contain polysaccharide antigens, which induce antibodies (B-cell responses) that bind to a bacteria's outer coating of polysaccharides and clear the bacteria. PCVs improve on polysaccharide vaccines by attaching, or conjugating, the polysaccharide antigen to a non-disease specific protein carrier. PCVs induce both an improved B-cell response and a T-cell response, resulting in a stronger and more durable immune response and longer-lasting protection, as compared to polysaccharide vaccines, which only induce a B-cell response.

*Pneumococcal Polysaccharide-Only Vaccines (Pneumovax)*

Pneumovax, manufactured and marketed by Merck, is the only pneumococcal polysaccharide vaccine widely available. Pneumovax is indicated for the prevention of pneumococcal disease in adults and was first approved in the United States in 1977, at which time it contained 14 different strains of pneumococcal bacteria. In 1983, it was replaced by the current version containing 23 different strains. Pneumovax 23 is routinely administered to adults to provide protection against bacteremia and generates sales of over $900 million per year.

Polysaccharide vaccines induce a B-cell response only and do not induce a T-cell dependent immune response. In the absence of immunological memory responses, the resulting antibody responses are transient and cannot be boosted. Without the ability to provide long-lasting durable immunity, polysaccharide vaccines are not effective in children below two years of age. In addition, the antibody responses primarily consist of immunoglobulin M, or IgM, antibodies that, due to their size, are restricted to blood and are unable to penetrate into lung tissue to protect against pneumonia. Therefore, polysaccharide vaccines such as Pneumovax are only thought to protect against blood-borne infections, such as bacteremia. Figure 2 below illustrates polysaccharide-induced T-cell independent antibody responses.

*Figure 2.*



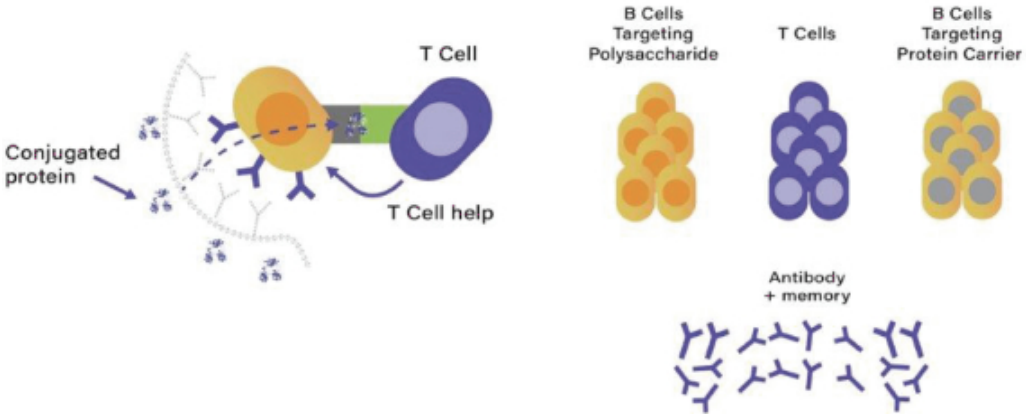

Polysaccharide vaccines also interfere with optimal use of PCVs, as they create a hyporesponsive immune effect. In particular, absent T-cell inducement, polysaccharide vaccines actually clear the memory B-cells that are formed following primary immunization with a PCV, thereby eliminating the ability to boost with subsequent vaccination. This is a significant drawback of the current standard of care in older adults, which

consists of the administration of a polysaccharide vaccine following the administration of a limited spectrum PCV. Despite these shortcomings, Pneumovax 23 continues to be widely used primarily to provide protection against circulating strains not contained in the currently available PCV.

*Pneumococcal Conjugate Vaccine (Prevnar)*

PCVs overcome the limitations of polysaccharide vaccines by conjugating the polysaccharide to a more immunogenic protein carrier containing T-cell epitopes. These T-cell epitopes provide $CD4^+$ help, which is critical to the conversion of a traditional B-cell dependent immune response to a more robust combined B-cell and T-cell dependent immune response. The T-cell response causes immediate class switching of the B-cells from more rudimentary IgM antibodies prevalent with polysaccharide vaccines to more refined IgG antibodies. IgG antibodies are refined enough to penetrate into lung tissues to prevent pneumonia. Furthermore, as polysaccharide strands attach to multiple copies of the protein carrier, they create an inter-strand cross-linked matrix structure, which the immune system easily recognizes as foreign. The T-cell dependent immune response also generates memory B-cells that can be re-stimulated, creating a prime-boost immune response and enabling a more robust and durable immune response, enabling the use of PCVs in young children. Figure 3 below illustrates this immune response:

*Figure 3.*




The first PCV, Prevnar, was a 7-valent vaccine that was launched in the United States in 2000. It included purified capsular polysaccharides of seven serotypes of *S. pneumoniae* (4, 6B, 9V, 14, 18C, 19F and 23F), each of which was individually conjugated to a T-cell-epitope-containing, nontoxic variant of diphtheria toxin known as $CRM_{197}$ to produce seven monovalent conjugates. These conjugates were mixed into a final vaccine formulation and then adsorbed to aluminum, or alum, which has been commonly used in vaccines since the 1930s to increase immune responses to vaccines. To obtain approval, a large field efficacy study was conducted that demonstrated the vaccine's efficacy in infants. Efficacy correlated with serological immune endpoints, as measured by IgG titers (a measurement of concentration) and a seroconversion threshold (or reference antibody concentration) of protection was defined. Prevnar is credited with tremendous medical and commercial success, having dramatically reduced circulating disease in children. However, after a number of years of widespread use, IPD incidence caused by strains not contained in the vaccine started to opportunistically rise, a phenomenon called serotype replacement, which led to the need for a broader-spectrum version of the vaccine.

In the race to develop a broader-spectrum PCV than Prevnar, two vaccines were successfully developed: Synflorix, a 10-valent PCV from GlaxoSmithKline, and Prevnar 13, a 13-valent PCV from Wyeth (subsequently acquired by Pfizer). Based on its broader coverage of then-emerging strains, Prevnar 13 was adopted as the standard of care in the United States and Europe. Synflorix continues to be used primarily in emerging countries.

Prevnar 13 contains the seven serotypes originally included in Prevnar plus six more serotypes of *S. pneumoniae* (1, 3, 5, 6A, 7F and 19A) and was developed and launched in the United States in 2010. Each polysaccharide is conjugated to $CRM_{197}$ to produce 13 monovalent conjugates, which are mixed into a final vaccine formulation and then adsorbed to alum. In 2010, Prevnar 13 obtained FDA approval for the prevention of IPD in infants based on non-inferior IgG antibody responses relative to Prevnar, using the surrogate immune endpoints established by the prior Prevnar field efficacy study. While Prevnar 13 failed to achieve non-inferiority on two of the common seven strains relative to Prevnar, it was granted approval across all 13 strains. Upon receipt of the ACIP preferred recommendation, Prevnar 13 replaced Prevnar in the infant market as the standard of care. This also created a “catch-up” population for those children previously vaccinated with Prevnar to provide protection against the incremental serotypes covered by Prevnar 13.

Prevnar 13 has also received accelerated approval for the prevention of IPD and pneumonia in adults in the United States based on non-inferior OPA responses as compared to Pneumovax 23. To fulfill a post-marketing commitment, a large-scale field efficacy study of adults in the Netherlands was completed in 2013, which showed protection against community-acquired pneumonia and concordance between OPA and protection from community-acquired pneumonia. Thus, OPA was established as a validated surrogate immune endpoint in adults to support future regulatory approvals. Prevnar 13 subsequently received an ACIP preferred recommendation for adults 65 years and older, and the standard of care was amended to first vaccinate with Prevnar 13, and then after a waiting period, Pneumovax 23. This dual vaccine regimen provides some protection against the circulating strains over and above Prevnar 13 but we believe creates coverage gaps and patient compliance and convenience challenges.

Prevnar 13 quickly became the highest selling product in the global vaccine market. However, at the time of ACIP’s recommendation in 2014, it was determined that the recommendation would be revisited in four years to evaluate the impact of Prevnar 13 on pneumococcal disease burden in older adults. In June 2019, the ACIP downgraded its recommendation of Prevnar 13 for older adults, given the lack of disease caused by the incorporated strains, and instead began directing physicians and patients to decide whether to vaccinate on a case-by-case basis while still recommending universal vaccination with Pneumovax 23 due to its broader coverage.

***Drawbacks for Current PCVs***

While vaccination with current PCVs has been effective in dramatically lowering the incidence of IPD in both adults and children in the United States and other industrialized nations, current PCVs suffer from the following drawbacks.

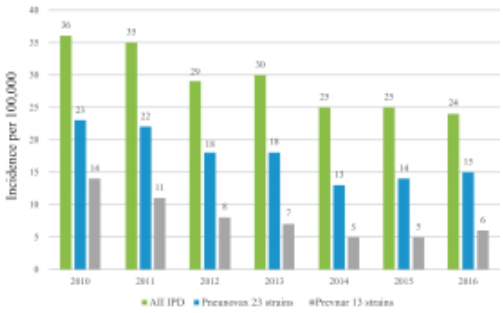
*Serotype Replacement*

Current PCVs do not address circulating strains causing the majority of pneumococcal disease. Since its introduction, there has been a decrease in the incidence of disease attributable to the serotypes covered by Prevnar 13 but an increase in incidence attributable to the incremental 11 strains that now cause most residual disease. Such change is driven by the void created when serotypes are taken out of circulation after widespread vaccination, which is a phenomenon known as serotype replacement. As a result of such change, broader-spectrum PCVs are required to maintain protection against historically pathogenic strains while expanding coverage to address current circulating and emerging strains.

To date, the most comprehensive pneumococcal disease surveillance has been conducted by the CDC in the United States and by the National Institute of Health and Care Excellence, in the United Kingdom. As shown in Figure 4, IPD cases in adults in the United States initially declined after the introduction of Prevnar 13 but have since plateaued. As of 2015, non-covered serotypes were responsible for over 75% of IPD incidence in both children and adults. The rate of serotype replacement has been more pronounced in the United Kingdom. Figure 5 shows the approximate IPD incidence rates in the United Kingdom caused by the incremental 11 strains over and above those in Prevnar 13, which have increased over the past three years.

*Figure 4.*

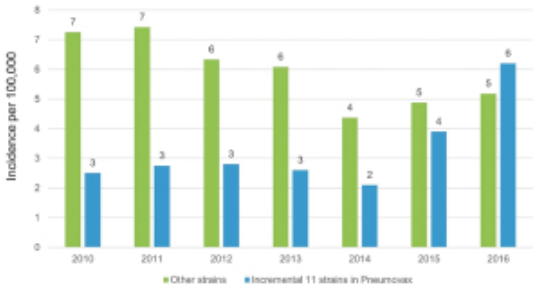
US IPD Incidence in Adults > 65[1]




[1] US CDC Active Bacterial Core Surveillance Annual Reports

*Figure 5.*

UK IPD Incidence[2]




[2] Incidence numbers are estimated calculations based on data analyzed in Houseman et al, Emerging inf Dis, Vol 1, January 2017

While these 11 strains are covered by Pneumovax 23, that vaccine only protects against blood-borne infections and not pneumonia, leaving patients vulnerable to infection. We believe the need for both strong efficacy and broad coverage creates an opportunity for new, improved vaccines.

*Carrier Suppression*

Technical constraints inherent to conventional conjugation chemistry limit the coverage of current PCVs due to a phenomenon known as carrier suppression. In particular, traditional conjugation methods cannot control where conjugation of the polysaccharide occurs on the protein carrier. The protein carrier used in Prevnar and Prevnar 13, is $CRM_{197}$, a diphtheria toxin with a single point mutation rendering it non-toxic. The $CRM_{197}$ protein contains 39 lysines, approximately 20% of which border relevant T-cell epitopes. Conventional conjugation chemistry randomly attaches the polysaccharide to any of the numerous lysines located on the protein carrier. When a polysaccharide is covalently bound to a protein carrier at a lysine residue that is co-resident with a T-cell epitope, it blocks the presentation of the T-cell epitope to the immune system, thus preventing the induction of a T-cell response. The masking of these critical epitopes prevents the conversion to a T-cell dependent immune response and negates the benefit of the protein carrier.

Meanwhile, the B-cell epitopes of both the protein carrier and the antigen are presented to the immune system, causing B-cells to the respective immunogens to compete with one another for the T-cell help engendered by unblocked T-cell epitopes. This competition for T-cell help diminishes the immune response to the polysaccharide antigen of interest, resulting in carrier suppression.

The result of carrier suppression is a decrease in the targeted immune response to the disease-specific polysaccharides, which intensifies with higher cumulative amounts of protein carrier. This phenomenon impedes the ability to expand coverage of current PCVs and has been shown consistently when broader-spectrum versions of conventional PCVs have been compared to lesser-valent versions. When Prevnar 13 was compared to Prevnar in a well-controlled Phase 3 study in infants, the IgG antibody responses directed against the polysaccharides of interest for all seven of the common strains in each vaccine were lower for Prevnar 13. More recently, Pfizer presented results of a well-controlled Phase 2 study in adults, aged 60 – 64, where they compared a 20-valent PCV development candidate to Prevnar 13. In that study, the OPA responses directed against the polysaccharides of interest for all thirteen of the common strains in each vaccine were lower for the 20-valent development candidate.

*Conventional Chemistry*

The problem of carrier suppression is compounded by conventional conjugation chemistry used to make PCVs, including Prevnar 13, which requires a higher amount of $CRM_{197}$ protein carrier than polysaccharide antigen to complete the conjugation reaction, as well as longer reaction times and harsh conditions that can damage the critical epitopes on the polysaccharide antigens. This results in a higher ratio of protein carrier to polysaccharide antigen in their monovalent conjugates (approximately 1.1 on average), as well as a much higher amount of cumulative protein carrier in the final formulation compared to the amount of any given polysaccharide antigen. For example, in the marketed Prevnar 13 formulation there are 34 micrograms of the protein carrier, $CRM_{197}$, relative to 2.2 micrograms of each polysaccharide (except serotype 6B at 4.4 micrograms). With substantially more protein carrier in the vaccine than polysaccharide antigen, the carrier suppression effect discussed above is exacerbated.

**Our Solution**

We are leveraging our cell-free protein synthesis platform to develop potentially superior conjugate vaccines for adult and pediatric indications. Our solution to the drawbacks with conventional conjugate vaccine techniques represents the first of three main applications of our platform.

***Platform Application One: Creating Superior Conjugate Vaccines***

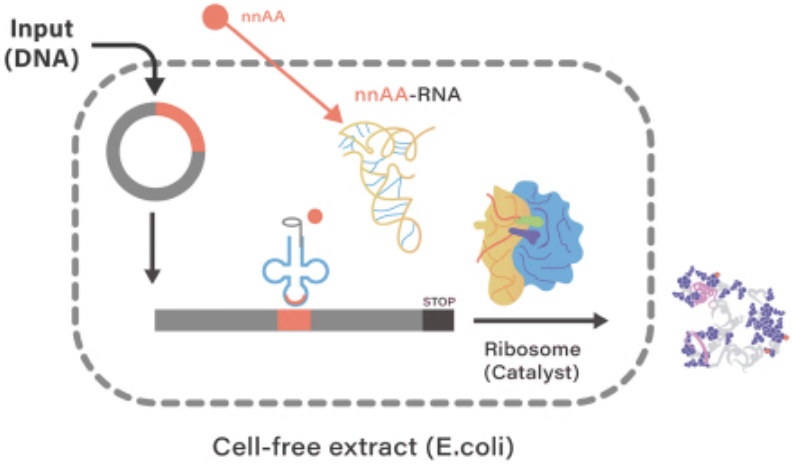
Using our cell-free protein synthesis platform, we are developing potentially superior PCVs designed to have broader-spectrum coverage in an effort to address current and future residual disease in ways that conventional technologies cannot. We are able to design our investigational PCVs using site-specific conjugation in an effort to ensure optimal exposure of targeted immunogenic T-cell epitopes on protein carriers. This enables us to create broader-spectrum conjugate vaccine candidates using carrier-sparing conjugates designed to avoid carrier suppression while maintaining protective immunogenicity.

Synthesizing proteins outside of a living cell host provides us greater freedom to design and produce specific proteins of interest under optimized conditions. We separate the precise cellular machinery required for transcription, translation and energy production—the critical components for protein production—into an *E. coli*-derived extract. We can then optimally express a single protein carrier by adding the plasmid-DNA encoding that protein into the extract mixture.

***Site-Specific Conjugation***

Within a protein carrier, we can substitute non-native amino acids, or nnAAs, for native amino acids at specific sites. These inserted nnAAs serve as conjugation anchors that permit the attachment of antigens, including polysaccharides, site-specifically on a protein carrier to ensure optimal exposure of B-cell and/or T-cell epitopes to induce the desired immune response. This precise site-specific linkage is not possible using conventional conjugation chemistry with conventional carrier proteins and affords an advantage to our conjugate vaccine candidates. Figure 6 below depicts our method of inserting nnAAs into a protein carrier, where the DNA sequence has been modified to permit nnAA incorporation into the protein at pre-selected sites using a nnAA-RNA permitting transcription and translation of the protein in the ribosome to yield the protein carrier with nnAAs site-specifically incorporated, facilitating conjugation to those sites.

*Figure 6.*




Most conjugate vaccines available today use a non-disease-specific protein carrier, $CRM_{197}$, in order to leverage T-cell epitopes to induce a T-cell dependent immune response. This traditional method produces a heterogeneous mixture of conjugates with blocked and unblocked T-cell epitopes in a large immunogenic cross-linked matrix structure. In contrast, the precision and flexibility of cell-free protein expression, together with our ability to insert nnAAs, allow us to construct our proprietary enhanced protein carrier, or eCRM, with pre-determined conjugation sites. Our method produces homogenous conjugates that provide for the consistent exposure of T-cell epitopes and likewise form a large, immunogenic cross-linked matrix structure. By precisely conjugating polysaccharides to eCRM in a way that provides for optimal exposure of T-cell epitopes to the immune system, we can heighten immunogenicity attainable with conjugate vaccines.

The figures below illustrate the site-specific conjugation process. Figure 7 shows site-specific conjugation of the polysaccharide to the protein carrier, avoiding the T-cell epitopes. Figure 8 shows the inter-strand cross-linked matrix, which is the structure of each monovalent conjugate included in the final vaccine.

*Figure 7.*

**Precise, Consistent & Optimal**
**Conjugation Sites**

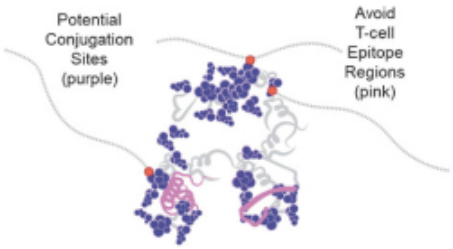
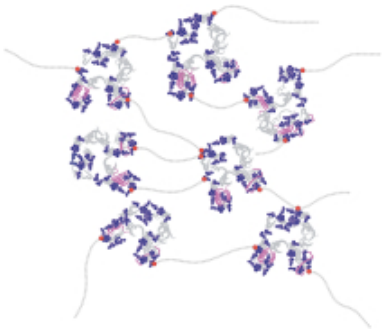



*Figure 8.*

**Final Product: Conjugates in**
**Customary Matrix Formation**



We believe consistent exposure of T-cell epitopes should translate to higher potency of the protein carrier on a weight-to-weight basis. To harness this potential potency advantage, we have elected to construct

conjugates with a lower ratio of protein carrier to polysaccharide than Prevnar 13. We have observed in animal models that despite having approximately half as much protein on average in each monovalent conjugate, SVX-24 had comparable immunogenicity relative to Prevnar 13 on a strain-by-strain basis. As a result, we believe we can incorporate more monovalent conjugates to create an even more broad-spectrum vaccine with less protein carrier per conjugate in order to minimize carrier suppression.

***Better Chemistry***

We also employ a rapid and less harsh chemistry method called copper-free click chemistry to site-specifically conjugate the polysaccharides to eCRM. We believe this distinctive technique is a better controlled, more efficient and faster method of conjugation relative to conventional chemistry used to make traditional PCVs. The click chemistry conjugation reaction is designed to cause less damage to the critical immunogenic epitopes on the protein carrier or the target antigen.

***Our PCV Franchise***

We are developing broad-spectrum investigational PCVs designed to minimize carrier suppression.

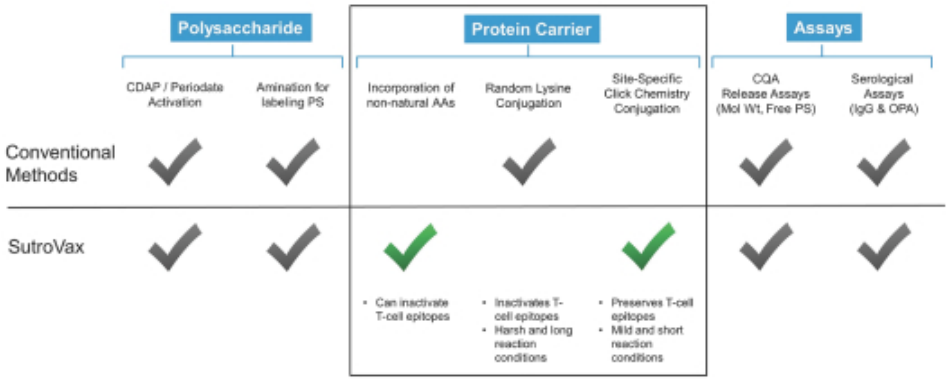
*SVX-24*

Our lead vaccine candidate, SVX-24, is designed to improve upon the standard of care by covering the additional strains that are responsible for the majority of residual pneumococcal disease currently in circulation. We achieved preclinical proof of concept for SVX-24 in 2017 by demonstrating that SVX-24 has the potential to protect against the pneumococcal strains collectively covered by Prevnar 13 and Pneumovax 23 and showed the durable, boostable immune response of a conjugate vaccine. The incremental 11 strains covered by SVX-24 and not covered by Prevnar 13 are responsible for the majority of circulating invasive pneumococcal disease in both the United States and European Union and are associated with high case-fatality rates, antibiotic resistance and/or meningitis.

SVX-24 includes 24 purified capsular polysaccharides of *Streptococcus pneumoniae* (1, 2, 3, 4, 5, 6A, 6B, 7F, 8, 9N, 9V, 10A, 11A, 12F, 14, 15B, 17F, 18C, 19A, 19F, 20, 22F, 23F and 33F), each of which is conjugated to eCRM to produce 24 monovalent conjugates. These conjugates are mixed into a final vaccine formulation and then adsorbed to alum.

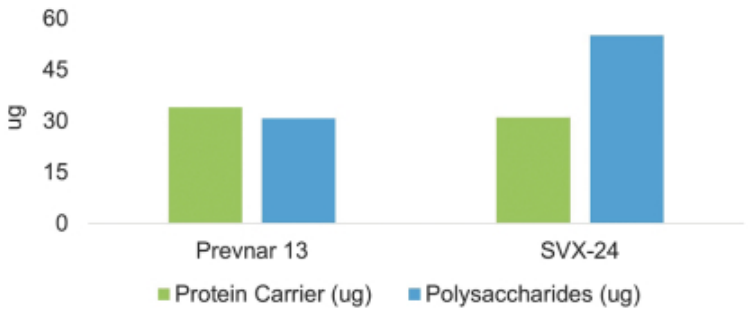
As shown in Figure 9 below, there are critical differences between SVX-24 and other currently available PCVs relating to the protein carrier, particularly the use of site-specific conjugation and the milder reaction conditions. We achieve site-specific conjugation through the insertion of multiple nnAAs, which is not possible with the conventional chemistry used for making other PCVs. The click chemistry we use for site-specific conjugation may also minimize damage to the critical immunogenic epitopes on the protein carrier and the polysaccharides through milder and shorter reactions, while other PCVs use conventional chemistries that involve harsher and longer reaction conditions.

*Figure 9.*




Furthermore, as shown in Figure 10 below, SVX-24, as tested in preclinical studies, showed nearly double the serotype spectrum of coverage of Prevnar 13, yet contains a similar amount of protein carrier. We believe the resulting decreased carrier burden per conjugate of SVX-24 is critical for avoiding carrier suppression and producing broader-spectrum pneumococcal vaccines without sacrificing immunogenicity.

*Figure 10.*




Where appropriate, we capitalize on the efficiencies of well-established clinical, manufacturing and regulatory precedents by leveraging conventional methods for the development of SVX-24.

For example, our polysaccharide antigens are primarily made using conventional fermentation and purification techniques and activated through conventional methods. They are also labeled through conventional amination methods prior to being conjugated to eCRM. In addition, we use the same Critical Quality Attribute assays for molecular weight and free polysaccharide that have served as the physicochemical measures of conjugates and also serve as predictors of their immunogenicity in vivo. We also use conventional IgG and OPA

serological assays to gauge the immunogenicity of our conjugates, which have served as surrogate immunological endpoints in clinical studies that enabled the approval of Prevnar 13 and other conjugate vaccines.

We have also leveraged the same animal models that were utilized in the development of approved PCVs. In particular, our preclinical studies utilized a recognized rabbit model that Pfizer used in its development of Prevnar and Prevnar 13, and that GlaxoSmithKline used in its development of Synflorix. To date, the rabbit model has shown consistent immunological responsiveness across all strains for which we have tested our conjugates and has differentiated conjugated versus unconjugated polysaccharide responses (i.e., T-cell dependent versus T-cell independent responses). We believe the demonstration of conjugate-like immune responses in rabbits that resulted in killing of bacteria via opsonophagocytosis is a key development milestone and is a critical readout for the development of PCVs. The rabbit model has also provided evidence regarding SVX-24's potential to generate a booster response.

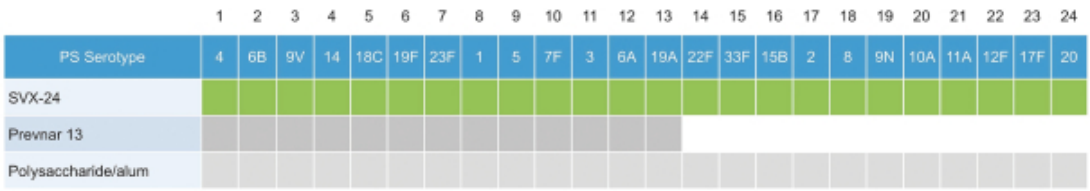
We expect to pursue a well-characterized clinical development path for SVX-24, consistent with other PCV developers. We anticipate that we will be able to conduct smaller and shorter clinical trials that target validated surrogate immune endpoints previously recognized by regulatory authorities. Pfizer previously applied this approach to the development of Prevnar 13 and is currently implementing the same approach to development of its 20-valent PCV vaccine candidate. Merck is also following this path for development of its 15-valent PCV vaccine candidate.

We expect to submit an IND application for SVX-24 to the FDA in 2021.

*Preclinical Data*

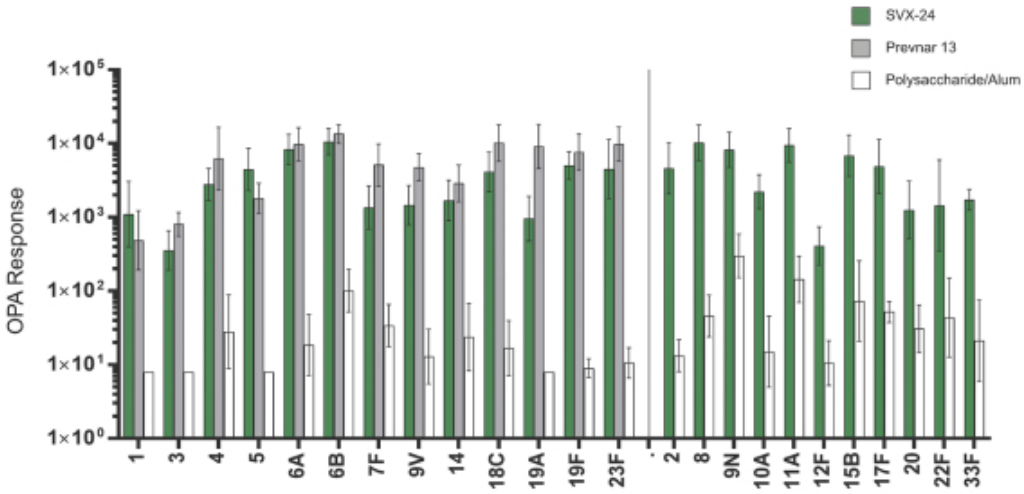
We have completed preclinical proof of concept studies of SVX-24 compared to Prevnar 13 and polysaccharide/alum in rabbits. For the polysaccharide/alum comparator, we used the strains in Pneumovax 23 at an equivalent dose with the addition of strain 6A and alum as the objective of the study was to evaluate whether SVX-24 showed a conjugate-like response in all 24 strains. The endpoints of the study were to measure, on a serotype-specific basis IgG antibody responses, the surrogate endpoint for pediatrics, and OPA responses, the surrogate endpoint for adults. The chart in Figure 11 reflects the strains covered by each of SVX-24, Prevnar 13, and polysaccharide/alum in this experiment.

*Figure 11.*



As a prerequisite for regulatory approval, we believe that any investigational PCV will have to be compared to the current standard of care, Prevnar 13 in infants and the combination of Prevnar 13 and Pneumovax 23 in adults. We believe a successful comparison would be based on demonstrating clinical non-inferiority of the immune response to Prevnar 13 for common serotypes and to Pneumovax 23 for the incremental 11. As reflected in Figure 12 below, in our preclinical proof of concept study of SVX-24 in rabbits, SVX-24 showed superior OPA responses as compared to polysaccharide/alum and comparable OPA responses to Prevnar 13:

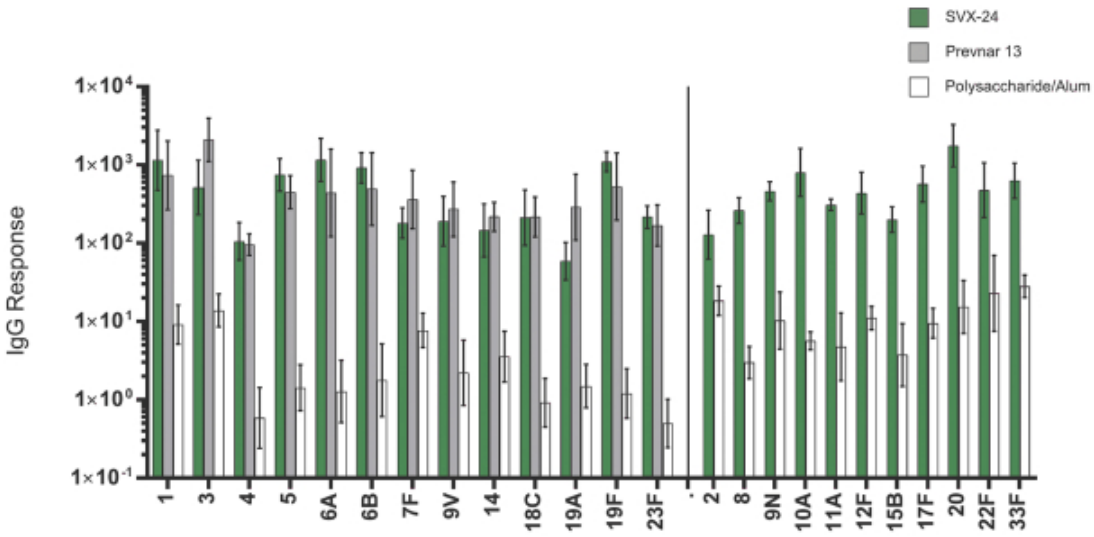
*Figure 12.*




+/-95% confidence interval

Similarly, as reflected in Figure 13 below, SVX-24 showed superior IgG antibody responses as compared to polysaccharide/alum and comparable IgG responses to Prevnar 13:

*Figure 13.*




+/-95% confidence interval

*SVX-24 Clinical Development Plan*

To accelerate our time to market, we intend to first pursue clinical proof of concept in the United States for adults and then pursue clinical development in the pediatric population. We believe the most expedient path to clinical proof of concept will be in the adult population where the standard of care involves the administration of a single dose and where an initial clinical trial could begin in the target population. We expect to initiate our pediatric development program in toddlers upon receipt of the Phase 1 safety data in adults. After completing such a toddler study, we would expect to commence clinical development in the infant population.

*Adult Indication*

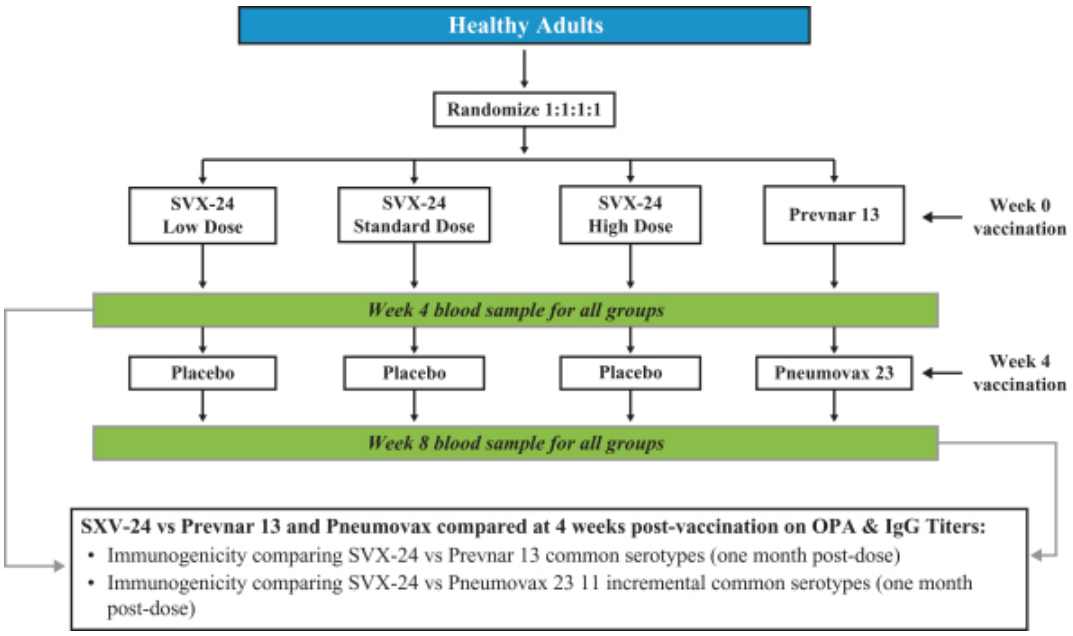
We expect our first-in-human trial to be a randomized, double-blind, controlled Phase 1/2a trial designed to evaluate the safety, tolerability and immunogenicity of SVX-24 in healthy adults over the age of 50. We intend to compare a single injection of SVX-24 at three different dose levels to the control regimen of Prevnar 13, followed by Pneumovax 23, administered four weeks apart. The trial is expected to be conducted in two identically designed stages in healthy adults over the age of 50. Following an interim analysis at the completion of the Phase 1 portion, we expect to select the dose formulations of SVX-24 to proceed to the Phase 2a portion of the trial. Our Phase 1/2a trial design is designed to evaluate SVX-24 dose levels for safety as well as for an immunogenicity comparison to each of the pneumococcal serotypes contained in Prevnar 13 and the 11 additional serotypes included in Pneumovax 23. To date, our preclinical immunogenicity data suggest that lower doses of SVX-24 as compared to Prevnar 13 may be used without affecting immunogenicity.

We expect to use OPA titers as the primary immunogenicity endpoint for the SVX-24 program in adults. OPA is believed to be the primary protective mechanism against pneumococcal disease. In addition, we expect to measure IgG responses as a secondary endpoint, as such responses may serve as supportive evidence of immunogenicity for comparison. We also expect to use OPA titers and IgG concentrations as endpoints in our other planned adult studies of SVX-24. We currently believe that these endpoints, if met, will be sufficient to obtain regulatory approval of SVX-24 and do not anticipate the need for a clinical efficacy trial. However, we have not yet obtained feedback from the FDA regarding our clinical development plans or the acceptability of our approach.

The FDA has previously approved pneumococcal vaccines upon the establishment of non-inferiority based on a head-to-head comparison using established surrogate immune endpoints in the target population. For adults, Prevnar 13 was approved based on the establishment of non-inferiority of OPA responses relative to Pneumovax 23, on a strain-by-strain basis, where non-inferiority was defined as greater than or equal to 0.50 of the lower limit of the two-sided 95% confidence interval of the OPA geometric mean titer ratio. We have designed our Phase 1/2a study to have greater than or equal to 80% power based on the strain with the highest variability in order to show a two-fold difference between treatment groups.

Figure 14 is a schematic of the overall study design of our planned Phase 1/2a study:

*Figure 14.*




PCVs, as well as all other polysaccharide-conjugate vaccines, have historically had an excellent safety profile, especially in comparison to other vaccines such as rotavirus and diphtheria-tetanus-pertussis or DTP.

Based on Pfizer's experience with Prevnar 13, we believe that SVX-24, if approved, will have the potential to serve as a "catch-up" or booster for those who have previously received Pneumovax 23 or a lower-valent PCV. We believe a study exploring serial vaccination with Prevnar 13 and/or Pneumovax 23 followed by SVX-24 at different intervals could generate valuable data supporting a recommendation for SVX-24 vaccination in previously vaccinated adults.

*Pediatric Indication*

We are also developing SVX-24 as a pediatric vaccine. If successful, we expect the data from the adult Phase 1 trial will inform the SVX-24 dose(s) to be evaluated and provide the safety data required to initiate a clinical study in pediatric populations. We plan to initially evaluate SVX-24 in an age de-escalation study. The initial Phase 2 trial would examine the safety, tolerability and immunogenicity of SVX-24 in two age groups of healthy children, those aged 2 to 5 years and those aged 12 to 15 months. A single dose, at the highest dose level planned for infants, would be administered initially to the 2 to 5-year age group. If SVX-24 is well-tolerated, the same SVX-24 dose would be administered to the 12 to 15-month age group as a replacement for the Prevnar 13 booster. For trials in the United States, toddlers would be expected to have been primed with a 3-dose primary infant series of Prevnar 13. Immune response data would reveal whether the boost achieved with SVX-24 is comparable to Prevnar 13 for the common serotypes, with the remaining 11 serotypes to be assessed for a single-dose primary immune response in the toddler age group.

If our initial Phase 2 trial in the pediatric population is completed successfully, we would expect to initiate a subsequent Phase 2 study to evaluate the safety and immunogenicity of SVX-24 administered as a

three-dose primary series to infants at 2, 4 and 6 months of age. We would also expect to give these infants a booster dose at 12 to 15 months for a complete four-dose series. The decision to incorporate dose-finding as part of this trial would be made based on data from ongoing or completed adult trials and the preliminary immunogenicity data generated in children.

We plan to collect both IgG and OPA data to evaluate whether the immune responses observed in infants following vaccination with SVX-24 are similar to those seen with other PCVs. If dose-finding is performed in infants, the data would inform on the dose levels for each of the conjugates in the final SVX-24 infant formulation. Consistent with the approval process for Prevnar 13 in infants, we do not anticipate that a clinical field efficacy trial will be required for SVX-24 in the pediatric population. We expect the clinical development of SVX-24 to follow the same approach utilized for Prevnar 13, where vaccine effectiveness against IPD was inferred from immunologic surrogates. Similar to the adult population, SVX-24 approval in the pediatric population is expected to be based on a non-inferiority comparison of IgG antibody responses to Prevnar 13. However, we have not yet obtained feedback from the FDA regarding our clinical development plans or the acceptability of our approach.

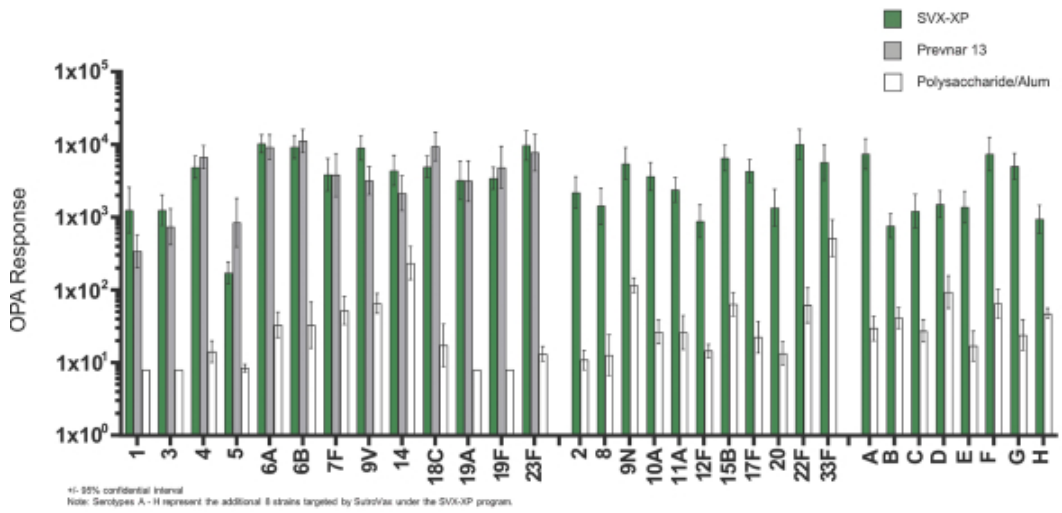
If our Phase 2 trials are completed successfully, we expect to conduct pivotal Phase 3 trials in the pediatric population that focus on evaluating non-inferiority to Prevnar 13 for immunogenicity and seroconversion or antibody concentration threshold; assessing U.S. routine vaccination responses following concomitant administration with SVX-24; and generating a sufficient safety database in infants. The Phase 3 non-inferiority results would then be used to seek approval of SVX-24 in the pediatric population. This approach is similar to the approach utilized to develop Prevnar 13, where the immunogenicity of Prevnar 13 was compared to the original 7-valent Prevnar product (standard of care at the time).

*SVX-XP*

SVX-XP is a franchise extension of SVX-24 that, if approved, would expand strain coverage to an anticipated 32 strains and demonstrate the scalable and modular nature of conjugate vaccines we can develop. SVX-XP is designed to protect against emerging strains causing significant IPD and antibiotic resistance. The serotypes in SVX-XP cover nearly 93% of the circulating pneumococcal disease in the United States, although we are not disclosing the specific incremental strains at this time.

We have completed preclinical proof of concept studies for SVX-XP in rabbit models compared to Prevnar 13, as well as 32 polysaccharides adjuvanted with alum. OPA responses in rabbits were superior to polysaccharide alone plus alum and comparable with Prevnar 13 in the common 13 strains as illustrated in the figure below. The relatively higher OPA response observed in this study across the common 24 conjugates between SVX-XP and SVX-24 was driven by advancements in our manufacturing processes, which we plan to carry forward to our Phase 1/2a clinical trial for SVX-24.

*Figure 15.*




+/-95% confidence interval

***Platform Application Two: Novel Conjugate Vaccine Opportunities***

We are also developing novel conjugate vaccine candidates for other diseases for which there are no existing vaccines. By leveraging our platform, we have been able to generate novel protein carriers with site-specific incorporation of nnAAs designed to provide optimal exposure of both B-cell and T-cell epitopes on the carrier. Using these novel protein carriers, we can produce highly stable conjugate vaccine candidates through site-specific conjugation of antigens, including polysaccharides. Functionally, one significant advantage of using carriers may be the additional protective immunity that the protein itself can provide beyond the conjugated antigen itself.

*Group A Strep Disease Background and Market Opportunity*

*Streptococcus pyogenes* (*S. pyogenes* or group A strep), is a well-known pathogen causing 700 million cases, the majority of which are pharyngitis, commonly known as strep throat, worldwide each year. Pharyngitis is highly prevalent in school-age children and a significant source of antibiotic prescriptions and is contributing to the growing problem of antibiotic resistance globally. Group A strep also increases the risk of severe invasive infections, such as sepsis, necrotizing fasciitis and toxic shock syndrome, and is responsible for post-infectious, immune-mediated rheumatic heart disease, or RHD, a leading cause of mortality in emerging countries. Some 30 million people are currently affected by RHD, with over 300,000 deaths in 2015 and 10.5 million disability-adjusted life years lost. The high prevalence of group A strep also contributes to a high economic burden due to missed days of school and work.

It has been established that the repeated natural infection of children with group A strep results in immune responses which are protective against subsequent group A strep infection. We believe this observation justifies the development of a rationally designed vaccine for group A strep that is focused on conserved antigens expressed by all strains of the bacteria.

*SVX-A1*

We have developed a conjugate vaccine candidate designed to confer broad protection against subtypes of group A strep by virtue of polyrhamnose, a conserved polysaccharide, conjugated to an immunogenic protein

carrier using our site-specific conjugation technology. The resulting conjugate is designed to ensure optimal exposure of both the B-cell and T-cell epitopes on the protein carrier to confer robust, boostable and durable protective immune responses. We believe this single conjugate could potentially cover all group A strep strains.

Our SVX-A1 vaccine development program is 50% funded by a grant obtained from CARB-X, a global non-profit partnership dedicated to accelerating antibacterial innovation to tackle the rising global threat of drug-resistant bacteria. The award commits initial funding of up to $1.6 million and up to $15.1 million in total funding available upon achievement of development milestones through Phase 1 human clinical trials.

***Platform Application Three: Protein Vaccine Opportunities***

We believe we can also develop novel protein vaccine candidates constructed using “tough-to-make” protein antigens uniquely able to be expressed using the platform. In particular, the lack of a cellular membrane in our platform allows for the exogenous addition of components to manipulate transcription, translation and folding by modification of reaction conditions. Furthermore, removal of the typical restriction to maintain cell viability also creates unique avenues for optimizing and promoting protein production for antigens that might be cytotoxic to a cell-based system or require non-physiological conditions for optimal protein folding. Thus, utilizing these advantages, we believe we are able to express and purify important protein targets to generate unique candidates that are beyond the scope of traditional production systems. Our therapeutic periodontitis vaccine candidate is the first example of a “tough-to-make” protein-based vaccine.

*Periodontitis Disease Background and Market Opportunity*

Periodontal disease is a highly complex, chronic oral inflammatory disease that leads to the destruction of the soft and hard tissues supporting the teeth. The subgingival niche (below the gum margin of teeth) is populated by a diverse polymicrobial plaque. It is increasingly understood that the shift from periodontal health to disease is associated with changes in the microbial composition of the subgingival plaque, including activities of bacteria such as *Porphyromonas gingivalis* (*P. gingivalis*). Development of precise approaches to control this keystone pathogen, such as a vaccine, could then positively impact the periodontal disease burden.

Those with periodontitis also have an increased risk for heart attack, stroke and other serious cardiovascular events. In addition to gum and tooth disease, periodontal inflammation and infection with *P. gingivalis* have been linked to atherosclerotic heart disease mediated by *P. gingivalis* residing in atherosclerotic plaque. While we are focused on the treatment of periodontal disease with this vaccine candidate, if *P. gingivalis* is found to be causative in other chronic disorders, our vaccine candidate could be a highly effective treatment and allow disease intervention at a much earlier stage of the disease. For example, recent research has suggested the potential for a link between *P. gingivalis* and Alzheimer’s disease.

Neither the natural host immune response nor currently available treatments are curative for periodontal disease. Existing treatment includes highly aggressive and invasive procedures, including scaling and root planing and surgical intervention, coupled with antibiotic use. Despite these types of aggressive treatments, diseased sites frequently progress, leading to tooth loss. Thus, the development of an effective vaccine for periodontitis would be highly desirable.

In the United States alone, an estimated 65 million adults suffer from periodontal disease. Globally, severe periodontal disease afflicts 10% to 15% of the adult population, resulting in productivity losses estimated at nearly $54 billion in 2010.

*SVX-PG*

We are developing a novel protein vaccine candidate targeting *P. gingivalis* that incorporates protein antigens that we believe are uniquely enabled with our technology. Our initial goal is to develop a therapeutic vaccine to slow or stop disease progression; however, the results from clinical trials may inform the potential adoption of prophylactic immunization.

SVX-PG, which includes cell-free produced *P. gingivalis* virulence factors, including gingipains, were tested in a preclinical model that mimics periodontal disease. The vaccine elicited protein-specific IgG response following immunization and protected mice from *P. gingivalis*-elicited oral bone loss.

Upon completion of the preclinical development program and IND-enabling activities for SVX-PG, we intend to conduct a multi-center, randomized, placebo-controlled Phase 1/2a study in adults with mild to moderate chronic periodontal disease. The primary objectives of the initial clinical trial will be to evaluate safety and tolerability. Secondary exploratory endpoints will be to measure IgG immune response to the vaccine antigens and to evaluate the ability of the antibodies produced in response to vaccination to inhibit the formation of the poly-microbial biofilm, which is characteristic of periodontal disease.

**Manufacturing and Supply**

We have designed and developed a proprietary, scalable and portable manufacturing process for SVX-24 that we believe can scale to address clinical and commercial vaccine supply needed to serve both adult and pediatric populations. We have completed process development and technology transfer to Lonza for the critical components of the SVX-24 conjugates. We currently do not own or operate any manufacturing facilities, but our strategic partnership with Lonza provides us with access to substantial resources to facilitate an independent supply path to the market. Lonza is a leading global contract manufacturer with deep domain expertise and experience in large and small-scale production of clinical, as well as commercial-stage products. We have entered into agreements with Lonza to secure capacity, technical expertise and resources to support the production of SVX-24 clinical material and processes that are intended to scale to commercial scale. In addition, we have entered into an agreement with Sutro Biopharma to supply us with extracts and custom reagents for use in manufacturing preclinical and certain clinical supply of vaccine compositions. We have established alignment to ensure establishment of the manufacturing process and the delivery of the clinical material to support the IND application for SVX-24. The conjugates in SVX-24 are designed to serve as the foundation for our next generation SVX-XP program.

***Process***

The manufacturing process for our SVX-24 vaccine candidate consists of four key components: a) our proprietary eCRM protein carrier; b) the 24 pneumococcal polysaccharides; c) the 24 conjugate drug substances and d) the mixture of these 24 drug substances into the final drug product.

*eCRM*

Our proprietary eCRM protein carrier is produced using our cell-free protein synthesis platform. eCRM contains multiple copies of non-native *para* azido-methyl-phenylalanine, or pAMF, amino acid, exclusively licensed from Sutro Biopharma. The pAMF amino acids have a specific structure that enables eCRM to participate in the site-specific click chemistry conjugation reaction with activated pneumococcal polysaccharides.

The cell-free reaction is performed in a manner analogous to traditional fermentation but without the cells. The first step in the production of eCRM is the manufacture of critical raw materials, namely E. coli extracts and lysates that contain the cellular machinery required for in vitro DNA transcription and translation. The eCRM protein is then manufactured by combining these E. coli extracts and lysates with classic media components such as amino acids, minerals and salts, with the in vitro reaction driven by the addition of plasmid DNA coding for the eCRM protein's amino acid sequence. This cell-free reaction takes place in a standard fermenter, followed by standard protein purification chromatographic and filtration processes. The manufacturing process has consistently yielded a product of the desired quality.

*Pneumococcal Polysaccharides*

Each of the 24 pneumococcal polysaccharides are individually isolated from *Streptococcus pneumoniae* bacterial strains. Each individual *S. pneumoniae* strain is cultured in a bioreactor using a single standardized

fed-batch bioreactor process and a single standardized downstream purification process. Overall, this standardized upstream and downstream process is simple and robust, thereby reducing manufacturing cost of goods and providing an efficient path of progression for the program from process characterization and validation through to commercialization, if our vaccine candidates are approved.

*Conjugate Drug Substances*

Each of the 24 conjugate drug substances is manufactured individually, as monovalent conjugates, by conjugating each of the 24 pneumococcal polysaccharide strains, one at a time, to the eCRM carrier protein. Click chemistry provides for a conjugation reaction that is quick, consistent and high-yielding, and which we optimized to be standardized across the various polysaccharides. Through statistical design of experiment, or DoE, studies, we have gained a significant understanding of which variables to adjust to maximize product quality and, accordingly, immunogenicity in rabbit models.

*SVX-24 PCV Drug Product*

All 24 conjugate drug substances are mixed, formulated with appropriate excipients and adjuvanted with alum. Clinical doses are filled in vials and stored refrigerated.

*Achievements to Date*

To date, we have achieved several IND-enabling chemistry, manufacturing and controls, or CMC, deliverables with additional work ongoing. For eCRM protein carrier, we have transferred process technology to Lonza, completed development batches and have scaled production. For polysaccharide antigens, we have established research and master cell banks for all 24 pneumococcal serotypes, completed development batches and initiated GMP production. For drug substance conjugates, we have conducted an extensive DoE study to define and optimize conjugation process parameters for all 24 serotypes and transferred this process technology to Lonza.

***Lonza Agreements***

In October 2016, we entered into a development and manufacturing services agreement with Lonza, which we refer to, as amended, as the 2016 Lonza Agreement, pursuant to which Lonza is obligated to perform manufacturing process development and clinical manufacture and supply of components for SVX-24, including the manufacture of polysaccharide antigens, our proprietary eCRM protein carrier and conjugated drug substances.

In October 2018, we entered into a second development and manufacturing services agreement with Lonza, which we refer to as the 2018 Lonza Agreement, and together with the 2016 Lonza Agreement, as the Lonza Agreements, pursuant to which Lonza is obligated to perform manufacturing process development and clinical manufacture and supply of SVX-24 finished drug product.

Under the Lonza Agreements, we will pay Lonza for its manufacturing services and reimburse Lonza for its out-of-pocket costs associated with purchasing raw materials, plus a customary handling fee.

In June 2018, we entered into a letter agreement, or the Lonza Letter Agreement, with Lonza, pursuant to which we agreed to certain terms for potential issuances of our common stock as partial satisfaction of future obligations to Lonza under the Lonza Agreements. Specifically, we and Lonza agreed that the initial pre-IND cash payments made by us to Lonza would be subject to a specified dollar cap, which we refer to as the Initial Cash Cap. After the Initial Cash Cap has been reached, then at our election, we can make any further pre-IND payments owed to Lonza under the Lonza Agreements in cash, equity at then market prevailing prices or a combination of both. Lonza may elect to receive up to 25% of pre-IND payments in equity, up to a maximum of

$2.5 million, and no more than $10 million of pre-IND payments may be satisfied by issuances of our common stock. We also granted Lonza a right of first negotiation for manufacturing services for the commercial supply of SVX-24.

Under each Lonza Agreement, we will own all right, title and interest in and to any and all Intellectual Property (as defined in each Lonza Agreement) that Lonza and/or its affiliates, the External Laboratories (as defined in each Lonza Agreement) or other contractors or agents of Lonza develops, conceives, invents, first reduces to practice or makes, solely or jointly with us or others, in the performance of the Services (as defined in each Lonza Agreement), to the extent such Intellectual Property (the New Customer Intellectual Property) is a direct derivative of or improvement to collectively the Product, Customer Materials, Customer Information and/or Customer Background Intellectual Property (all as defined in each Lonza Agreement). Lonza shall own all right, title and interest in Intellectual Property that Lonza and/or its Affiliates, the External Laboratories or other contractors or agents of Lonza, solely or jointly with Customer, develops, conceives, invents or first reduces to practice or makes in the course of performance of the Services to the extent such Intellectual Property (New General Application Intellectual Property) (i) is generally applicable to the development or manufacture of chemical or biological products or product components, and could reasonably have been made without the use of the Customer Materials, Customer Information or Customer Background Intellectual Property and (ii) is an improvement of, or direct derivative of, any Lonza Background Intellectual Property. Additionally, under each Lonza Agreement, Lonza grants us a non-exclusive, world-wide, fully paid-up, irrevocable, transferable license under all New General Application Intellectual Property, with the right to grant sublicenses, to research, develop, make, have made, use, sell and import SVX-24. We also grant Lonza a non-exclusive right to use New Customer Intellectual Property during the term of the agreement solely for the purposes of fulling its obligations to us.

We have the right, at our cost, to receive a technology transfer under each Lonza Agreement or have an approved third-party manufacturer receive a technology transfer of any manufacturing process developed by Lonza. For any technology transfer that includes transfer of Lonza's Background Intellectual Property or Lonza Confidential Information (each as defined in the applicable Lonza agreement), we will be obligated to pay Lonza reasonable royalties and/or licensing fees.

Unless earlier terminated, each Lonza Agreement will remain in place for a period of five years. Either party has the right to terminate each Lonza Agreement upon a six-month notice period, provided that Lonza may not exercise such right until a specified future date. Either party has the right to terminate each Lonza Agreement if the other party commits a material breach under the applicable agreement and does not cure such breach within a given time period, for specified bankruptcy events or if a party receives a notice from the other party or otherwise becomes aware that a debarment, suspension, exclusion, sanction or declaration of ineligibility action has been brought against the other party, and we may terminate each Lonza Agreement for an extended force majeure event.

**Competition**

The global vaccine market is highly concentrated among a small number of multinational pharmaceutical companies. Pfizer, Merck, GlaxoSmithKline and Sanofi together control approximately 75% of the global vaccine market. Other pharmaceutical and biotechnology companies, academic institutions, governmental agencies and public and private research institutions are also working towards new solutions given the continuing unmet need globally.

Within the current PCV market, Pfizer, Merck and GlaxoSmithKline dominate, with Pfizer's Prevnar 13, Merck's Pneumovax 23 and GlaxoSmithKline's Synflorix controlling approximately 72%, 11% and 7%, respectively, of the 2018 global PCV sales. While Prevnar 13 covers fewer pneumococcal strains than Pneumovax 23, it delivers a stronger and more durable immune response than Pneumovax 23. Prevnar 13 is the current standard of care in children and the first vaccine offered under the current standard of care in adults. If approved, we believe SVX-24 may obtain an ACIP preferred recommendation, replace both incumbents and

become the standard of care for pneumococcal disease prevention in both adult and pediatric populations because of its broader coverage.

Existing vaccine makers, as well as new entrants, are competing to develop the next generation of PCV vaccines. We are aware that both Pfizer and Merck have PCV candidates under development that could surpass the performance of Prevnar 13. Pfizer's PF-06482077 is a 20-valent vaccine while Merck's V114 is a 15-valent vaccine and each is under development. Astellas and Affinivax, as well as Sanofi and SK Chemicals, have also partnered to develop PCVs. We believe success will ultimately be based on the combination of immunogenicity and the broadest coverage of serotypes, leading to an ACIP recommendation. Safety, convenience and pricing may also be factors. Both Pfizer and Merck have already initiated Phase 3 trials and may obtain FDA approval and commercially launch before SVX-24. However, if approved, we believe SVX-24 should compare favorably to these PCV candidates as a 24-valent alternative. Based on our unique site-specific conjugation and carrier-sparing technology, we also believe SVX-XP has the potential to compete favorably in the PCV market.

The competitive landscape for vaccine development for group A strep was dormant for more than three decades. However, the FDA lifted a 30-year ban on group A strep vaccine clinical trials in 2005, and research has slowly started to resurface in academic institutions. However, we are not aware of other group A strep vaccines in clinical development that would cover all strains of the bacteria. Additionally, we are not aware of any other vaccines under clinical development to treat periodontitis. We believe the success of our vaccine candidates in these areas will be based on efficacy, safety, convenience and pricing. We are aware of some companies developing treatments for other diseases that target the same underlying pathogens that cause group A strep and periodontitis. For example, Cortexyme is developing an Alzheimer's treatment that targets *P. gingivalis.*

Our commercial opportunity could be reduced or eliminated if our competitors develop and commercialize vaccines that are safer, more effective, more convenient, less expensive or with a more favorable label than SVX-24, SVX-XP or any other vaccine we may develop. Many of the companies against which we compete have significantly greater financial resources, and expertise in research and development, manufacturing, preclinical testing, conducting clinical trials, obtaining regulatory approvals and marketing approved drugs than we do.

**Intellectual Property**

We have developed, and are continuing to develop, a comprehensive intellectual property portfolio related to vaccine applications, including manufacturing, formulation and process applications as well as protection for our specific vaccine candidates.

Our success depends in part on our ability to obtain and maintain proprietary protection for our vaccine candidates, technology and know-how, to operate without infringing the proprietary rights of others and to prevent others from infringing our proprietary rights. Our policy is to seek to protect our proprietary position by, among other methods, pursuing and obtaining patent protection in the United States and in jurisdictions outside of the United States related to our proprietary technology, inventions, improvements and vaccine candidates that are important to the development and implementation of our business. Our patent portfolio is intended to cover our vaccine candidates and components thereof, their methods of use and processes for their manufacture, our proprietary reagents and assays and any other inventions that are commercially important to our business. We also rely on trademarks, trade secrets and know-how to develop and maintain our proprietary position.

Generally, issued patents are granted a term of 20 years from the earliest claimed non-provisional filing date. In certain instances, patent term can be adjusted to recapture a portion of delay by the U.S. Patent and Trademark Office, or USPTO, in examining the patent application or extended to account for term effectively lost as a result of the FDA regulatory review period, or both. In addition, we cannot provide any assurance that any patents will be issued from our pending or future applications or that any issued patents will adequately protect our vaccine candidates.

Our patent portfolio as of September 4, 2019 contains approximately three pending U.S. patent applications and four pending patent cooperation treaty applications that are solely owned by us, as well as and certain foreign counterparts of a subset of these patent applications in foreign countries, including Australia, Brazil, Canada, China, India, Israel, Japan, South Korea, Mexico, New Zealand, the Philippines, Singapore, South Africa and countries within the European Patent Convention and the Eurasian Patent Organization. These applications are directed to vaccine formulations, protein-antigen conjugates, methods of making protein-antigen conjugates and the promotion of immunogenicity using the protein-antigen conjugates and vaccines. If issued, the 20-year term expiration dates of our patents will expire between 2037 and 2039, not including any extension of the patent term that may be available in certain jurisdictions. We continue to seek to maximize the scope of our patent protection for all our programs.

In addition to patents, we also rely upon trademarks, trade secrets, know-how and continuing technological innovation to develop and maintain our competitive position. We maintain and are seeking both registered and common law trademarks. Common law trademark protection typically continues where and for as long as the mark is used. Registered trademarks continue in each country for as long as the trademark is registered. We believe that we have certain know-how and trade secrets relating to our technology and vaccine candidates. We rely on trade secrets to protect certain aspects of our technology related to our current and future vaccine candidates. However, trade secrets can be difficult to protect. We seek to protect our proprietary information, including trade secrets, in part, by using confidentiality agreements with our commercial partners, collaborators, employees and consultants, and invention assignment agreements with our employees. We also have confidentiality agreements or invention assignment agreements with our commercial partners and selected consultants. These agreements may be breached, and we may not have adequate remedies for any breach. In addition, our trade secrets may otherwise become known or be independently discovered by competitors. We also seek to preserve the integrity and confidentiality of our data and trade secrets by maintaining the physical security of our premises and physical and electronic security of our information technology systems. To the extent that our commercial partners, collaborators, employees and consultants use intellectual property owned by others in their work for us, disputes may arise as to the rights in related or resulting know-how and inventions.

Obtaining patents does not guarantee our right to practice the patented technology or commercialize the patented product. Third parties may have or obtain rights to patents that could be used to prevent or attempt to prevent us from commercializing our vaccine candidates. If third parties prepare and file patent applications in the United States or other jurisdictions that also claim technology to which we have rights, we may have to participate in interference or derivation proceedings in the USPTO or similar proceedings in other jurisdictions to determine the priority of invention.

*Sutro Biopharma Agreements*

Sutro Biopharma is a clinical stage, publicly-traded (Nasdaq: STRO) drug discovery, development and manufacturing company using precise protein engineering and rational design (enabled by Sutro Biopharma's proprietary XpressCF platform technology) to advance next-generation oncology therapeutics. Following our corporate formation, SutroVax acquired an exclusive license to Sutro Biopharma's proprietary cell-free protein synthesis platform, XpressCF, for the discovery, development and sale of vaccines for the treatment or prevention of infectious diseases, excluding cancer vaccines. Under a related supply agreement with Sutro Biopharma, we have an exclusive relationship in our field to buy extract and certain custom reagents for use in manufacturing the vaccine compositions covered by the exclusive license, which we use to produce our protein carriers and certain of our antigens. Sutro Biopharma will receive a 4% royalty on aggregate worldwide net sales of our vaccine products marketed for human health and a 2% royalty on such net sales of vaccines marketed for animal health.

**Amended and Restated Agreement with Sutro Biopharma**

We are party to a license agreement with Sutro Biopharma, or the Sutro Biopharma License Agreement, which was originally entered into in October 2015.

Under that agreement, we received an exclusive, worldwide, royalty-bearing license under Sutro Biopharma's patents and know-how relating to XpressCF to research, develop, use, sell, offer for sale, export, import and otherwise exploit vaccine compositions for the treatment and prophylaxis of infectious diseases, excluding cancer vaccines, such rights being sublicenseable, and to manufacture, or have manufactured by an approved contract manufacturing organization, such vaccine compositions from extracts supplied by Sutro Biopharma pursuant to the Sutro Biopharma Supply Agreement (as described below).

In consideration of the rights granted under the Sutro Biopharma License Agreement, we are obligated to pay Sutro Biopharma a 4% royalty on worldwide aggregate net sales of vaccine compositions for human health and a 2% royalty on net sales of vaccine compositions for animal health use. Such royalty rates are subject to specified reductions, including standard reductions for third-party payments and for expiration of relevant patent claims. We are also obligated to pay Sutro Biopharma any royalties due to Stanford University (the upstream licensor of Sutro Biopharma), to the extent the royalties payable by Sutro Biopharma to Stanford University are greater than the royalties payable by us to Sutro Biopharma. Royalties are payable on a vaccine composition-by-vaccine composition and country-by-country basis until the later of expiration of the last valid claim in the licensed patents covering such vaccine composition in such country and ten years after the first commercial sale of such vaccine composition. In addition, we are obligated to pay Sutro Biopharma a percentage of net sublicensing revenue received in the low teen percentages. In addition, in the event we sublicense our non-manufacturing rights under the Sutro Biopharma License Agreement before a specified date, we are obligated to pay Sutro Biopharma a percentage, in the low double-digits, of the sublicensing revenue we receive under such agreement.

The Sutro Biopharma License Agreement will remain in effect until terminated. The agreement may be terminated by either party for the other party's material breach uncured within 60 days' notice, by us at will with 60 days' notice, or by Sutro Biopharma if we challenge Sutro Biopharma's patents or if we undergo a change of control with a specified competitor of Sutro Biopharma.

In connection with our formation and the entry into the Sutro License, we issued to Sutro Biopharma 3,000,000 shares of common stock, valued at a price per share of $0.001 per share.

**Supply Agreement with Sutro Biopharma**

We are party to a supply agreement with Sutro Biopharma, or the Sutro Biopharma Supply Agreement, which is dated May 2018 and pursuant to which we purchase from Sutro Biopharma extracts and custom reagents for use in manufacturing the non-clinical and Phase 1 and Phase 2 clinical supply of vaccine compositions utilizing the technology licensed under the Sutro License at prices not to exceed a specified percentage above Sutro Biopharma's fully burdened manufacturing cost.

The Sutro Biopharma Supply Agreement will remain in effect until the later of July 31, 2021, or the date the parties enter into and commence activities under a separate agreement for the supply of extracts and custom reagents for use in manufacturing vaccine compositions for Phase 3 and commercial purposes. The Sutro Biopharma Supply Agreement may be terminated by either party for the other party's material breach uncured within 60 days' notice, by us at will with 60 days' notice, or by mutual agreement of the parties.

*University of California, San Diego License Agreement*

We are party to a license agreement with the University of California, San Diego, or the UCSD License, dated February 2019 whereby we are the exclusive licensee of a pending U.S. patent application related to a non-cross reactive group A strep carbohydrate antigen and methods of producing the antigen. We license this technology for the development of our group Strep A vaccine candidate.

Upon execution of the UCSD License, we made an upfront payment of $10,000, and each year during the term we are obligated to pay an annual license maintenance fee in the single digit thousands. We are also

obligated to pay UCSD up to approximately $1 million in development and regulatory milestone payments for each licensed product under the agreement. Additionally, we are obligated to pay UCSD a fixed royalty on net sales of licensed products in the low single digits. Such royalty rate is subject standard reductions for third-party payments. Royalties are payable until expiration of the last licensed patent. Additionally, in the event we sublicense commercial rights under the UCSD License, we are obligated to pay UCSD a percentage of all sublicensing revenue received in the low double digit percentages up to a specified cap.

We are obligated to use commercially reasonable efforts to diligently develop, manufacture and sell licensed products and to achieve specified research and clinical development milestone events. If we are unable to meet our diligence obligations and do not agree with UCSD to modify such obligations or do not cure such obligations, then UCSD may terminate the license or convert the license to non-exclusive.

The UCSD License will remain in effect until the expiration of the last licensed patent. The UCSD License may be terminated by us at will with 90 days' notice or by UCSD for our breach uncured within 90 days' notice or if we challenge the licensed patents.

*Other Partners*

In addition to those listed above, we seek to partner with various academic, governmental and public or private research institutions as needed to advance the discovery or development of our vaccine candidates.

**Coverage and Reimbursement**

Sales of our products in the United States will depend, in part, on the extent to which the costs of the products are covered by third-party payors, such as government health programs, commercial insurance and managed health care organizations. The process for determining whether a third-party payor will provide coverage for a pharmaceutical or biological product is typically separate from the process for setting the price of such a product or for establishing the reimbursement rate that the payor will pay for the product once coverage is approved. As a result, a third-party payor's decision to provide coverage for a pharmaceutical or biological product does not imply that the reimbursement rate will be adequate.

Further, no uniform policy for coverage and reimbursement exists in the United States, and coverage and reimbursement can differ significantly from payor to payor. Third-party payors often rely upon Medicare coverage policy and payment limitations in setting their own reimbursement rates, but also have their own methods and approval process apart from Medicare determinations. As such, one third-party payor's decision to cover a particular medical product or service does not ensure that other payors will also provide coverage for the medical product or service or will provide coverage at an adequate reimbursement rate.

**Government Regulation**

Government authorities in the United States, at the federal, state and local level, and other countries extensively regulate, among other things, the research, development, testing, safety, effectiveness, manufacture, quality control, approval, post-approval monitoring and reporting, labeling, packaging, storage, record-keeping, promotion, advertising, distribution, marketing and export and import of products such as those we are developing. A new biological product must be licensed by the FDA through the approval of a Biologics License Application, or BLA, before it may be legally marketed in the United States.

In the United States, pharmaceutical products are regulated by the FDA under the Federal Food, Drug and Cosmetic Act and other laws, including, in the case of biologics, the Public Health Service Act, or PHS Act. We expect our products to be regulated by the FDA as biologics and to be reviewed by the FDA's Center for Biologics Evaluation and Research.

We anticipate our vaccine candidates will require the submission of a BLA and approval by the FDA before being marketed in the United States. Failure to comply with FDA requirements, both before and after product approval, may subject us or our partners, contract manufacturers and suppliers to administrative or judicial sanctions, including FDA refusal to approve applications, warning letters, product recalls, product seizures, total or partial suspension of production or distribution, fines and/or criminal prosecution.

The steps required before a biologic may be approved for marketing of an indication in the United States generally include:

- completion of preclinical laboratory tests, animal studies, formulation studies conducted in accordance with good laboratory practices and other applicable regulations;
- submission to the FDA of an IND, which must be active before human clinical trial commencement;
- approval by an institutional review board, or IRB, or ethics committee at each clinical site before a clinical trial is commenced;
- completion of adequate and well-controlled human clinical trials in accordance with good clinical practice, or GCP, requirements to establish that the biological product is "safe, pure and potent," which is analogous to the safety and efficacy approval standard for a chemical drug product for its intended use;
- preparation and submission to the FDA of a BLA for marketing approval that includes substantive evidence of safety, purity and potency from results of nonclinical testing and clinical trials;
- a determination by the FDA within 60 days of its receipt of a BLA to file the application for review;
- satisfactory completion of an FDA pre-approval inspection of the manufacturing facility or facilities at which the product is produced to assess compliance with applicable current food manufacturing practices, or cGMPs, to assure that the facilities, methods and controls are adequate to preserve the products identify, strength, quality and purity;
- potential FDA audit of the nonclinical and clinical trial sites that generated the data in support of the BLA; and
- FDA review of the BLA and issuance of a biologics license, which is the approval necessary to market a vaccine.

Before conducting studies in humans, laboratory evaluation of product chemistry, toxicity and formulation, as well as animal studies to assess the potential safety and efficacy of the biologic candidate, must be conducted. Preclinical toxicology studies in animals must be conducted in compliance with FDA regulations. The results of the preclinical tests, together with manufacturing information, known as CMC, and analytical data, are submitted to the FDA as part of an IND application. Some preclinical testing may continue even after the IND application is submitted. In addition to including the results of the preclinical testing, the IND application will also include a protocol detailing, among other things, the objectives of the clinical trial, the parameters to be used in monitoring safety and the effectiveness criteria to be evaluated if the first phase or phases of the clinical trial lend themselves to an efficacy determination. The IND application will automatically become effective 30 days after receipt by the FDA unless the FDA within the 30-day time period places the IND application on clinical hold because of safety concerns about the vaccine candidate or the conduct of the trial described in the clinical protocol included in the IND application. The IND application sponsor and the FDA must resolve any outstanding concerns before clinical trials can begin. Submission of an IND application therefore may or may not result in FDA authorization to begin a clinical trial.

All clinical trials for new drugs and biologics must be conducted under the supervision of one or more qualified principal investigators in accordance with GCPs, which include the requirement that all research subjects provide their informed consent for their participation in any clinical trial. They must be conducted under protocols detailing, among other things, the objectives of the applicable phase of the trial, dosing procedures, research subject selection, exclusion criteria and the safety and effectiveness criteria to be evaluated. Each protocol must be submitted to the FDA as part of the IND application, and progress reports detailing the status of the clinical trials must be submitted to the FDA annually. Sponsors must also report to the FDA within specified timeframes, serious and unexpected adverse reactions, any clinically significant increase in the rate of a serious suspected adverse reaction over that listed in the protocol or investigator's brochure or any findings from other studies or animal or in vitro testing that suggest a significant risk in humans exposed to the vaccine candidate. An IRB at each institution participating in the clinical trial must review and approve the protocol before a clinical trial commences at that institution, approve the information regarding the trial and the consent form that must be provided to each research subject or the subject's legal representative and monitor the trial until completed.

Clinical trials are typically conducted in three sequential phases, but the phases may overlap, and different trials may be initiated with the same vaccine candidate within the same phase of development in similar or differing patient populations.

- *Phase 1:* Clinical trials may be conducted in a limited number of patients or healthy volunteers, as appropriate. The vaccine candidate is initially tested for safety and, as appropriate, for absorption, metabolism, distribution, excretion, pharmacodynamics and pharmacokinetics.

- *Phase 2*: The vaccine candidate is evaluated in a limited patient population to identify possible adverse effects and safety risks, to preliminarily evaluate the efficacy of the product for specific targeted diseases and to determine dosage tolerance, optimal dosage and dosing schedule.

- *Phase 3*: Clinical trials are undertaken to further evaluate dosage, clinical efficacy, potency and safety in an expanded patient population at geographically dispersed clinical trial sites. These clinical trials are intended to establish the overall risk/benefit ratio of the product and provide an adequate basis for product labeling.

In some cases, the FDA may require, or companies may voluntarily pursue, additional clinical trials after a product is approved to gain more information about the product. These so-called Phase 4 studies may also be made a condition to approval of the BLA. These clinical trials are used to gain additional experience from the treatment of patients in the intended therapeutic indication, particularly for long-term safety follow-up.

During all phases of clinical development, regulatory agencies require extensive monitoring and auditing of all clinical activities, clinical data and clinical trial investigators. Annual progress reports detailing the results of the clinical trials must be submitted to the FDA. Written IND application safety reports must be promptly submitted to the FDA and the investigators for serious and unexpected adverse events, any findings from other studies, tests in laboratory animals or in vitro testing that suggest a significant risk for human subjects or any clinically relevant increase in the rate of a serious suspected adverse reaction over that listed in the protocol or investigator brochure. The sponsor must submit an IND application safety report within 15 calendar days after the sponsor determines that the information qualifies for reporting. The sponsor also must notify the FDA of any unexpected fatal or life-threatening suspected adverse reaction within seven calendar days after the sponsor's initial receipt of the information. Phase 1, Phase 2 and Phase 3 clinical trials may not be completed successfully within any specified period, if at all. The FDA or the sponsor or its data safety monitoring board may suspend a clinical trial at any time on various grounds, including a finding that the research subjects or patients are being exposed to an unacceptable health risk. Similarly, an IRB can suspend or terminate approval of a clinical trial at its institution if the clinical trial is not being conducted in accordance with the IRB's requirements or if the biological product has been associated with unexpected serious harm to patients.

Assuming successful completion of all required testing in accordance with applicable regulatory requirements, the results of the preclinical studies and clinical trials, together with other detailed information, including information on the manufacture and composition of the vaccine candidate, are submitted to the FDA as part of a BLA requesting approval to market the vaccine candidate for a proposed indication or indications. The BLA must include all relevant data available from preclinical and clinical trials, including negative or ambiguous results as well as positive findings, together with detailed information relating to the product's CMC and proposed labeling, among other things. Under the Prescription Drug User Fee Act, the fees payable to the FDA for reviewing a BLA, as well as annual program user fees for approved products, can be substantial but are subject to certain limited deferrals, waivers and reductions that may be available. Additionally, no user fees are assessed on BLAs for products designated as orphan drugs, unless the product also includes a non-orphan indication. Each BLA submitted to the FDA for approval is reviewed for administrative completeness and reviewability within 60 days following receipt by the FDA of the application. If the BLA is found complete, the FDA will file the BLA, triggering a full review of the application. The FDA may refuse to file any BLA that it deems incomplete or not properly reviewable at the time of submission. The FDA's established goal is to review 90% of priority BLAs within six months after the application is accepted for filing and 90% of standard BLAs within 10 months of the acceptance date, whereupon a review decision is to be made. Priority review will direct overall attention and resources to the evaluation of applications for products that, if approved, would be significant improvements in the safety or effectiveness of the treatment, diagnosis or prevention of serious conditions. In both standard and priority reviews, the review process is often significantly extended by FDA requests for additional information or clarification. The FDA reviews a BLA to determine, among other things, whether a product is safe, pure and potent and the facility in which it is manufactured, processed, packed or held meets standards designed to assure the product's continued safety, purity and potency. The FDA may also convene an advisory committee to provide clinical insight on application review questions. The FDA is not bound by recommendations of an advisory committee, but it considers such recommendations when making decisions regarding approval.

Before approving a BLA, the FDA will typically inspect the facility or facilities where the product is manufactured. The FDA will not approve an application unless it determines that the manufacturing processes and facilities are in compliance with cGMP and adequate to assure consistent production of the product within required specifications. Additionally, before approving a BLA, the FDA will typically inspect one or more clinical sites to assure compliance with GCP. If the FDA determines that the application, manufacturing process or manufacturing facilities are not acceptable, it will outline the deficiencies in the submission and often will request additional testing or information. Notwithstanding the submission of any requested additional information, the FDA ultimately may decide that the application does not satisfy the regulatory criteria for approval.

After the FDA evaluates a BLA and conducts inspections of manufacturing facilities where the investigational product and/or its drug substance will be produced, the FDA may issue an approval letter or a Complete Response Letter. An approval letter authorizes commercial marketing of the product with specific prescribing information for specific indications. A Complete Response Letter will describe all of the deficiencies that the FDA has identified in the BLA, except that where the FDA determines that the data supporting the application are inadequate to support approval, the FDA may issue the Complete Response Letter without first conducting required inspections, testing submitted product lots and/or reviewing proposed labeling. In issuing the Complete Response Letter, the FDA may recommend actions that the applicant might take to place the BLA in condition for approval, including requests for additional information or clarification. The FDA may delay or refuse approval of a BLA if applicable regulatory criteria are not satisfied, require additional testing or information and/or require post-marketing testing and surveillance to monitor the safety or efficacy of a product.

If a product is approved, the approval may impose limitations on the uses for which the product may be marketed, may require that warning statements be included in the product labeling, may require that additional studies be conducted following approval as a condition of the approval and may impose restrictions and conditions on product distribution, prescribing or dispensing in the form of a Risk Evaluation and Mitigation

Strategy, or REMS, or otherwise limit the scope of any approval. A REMS is a safety strategy to manage a known or potential serious risk associated with a medicine and to enable patients to have continued access to such medicines by managing their safe use, and could include medication guides, physician communication plans or elements to assure safe use, such as restricted distribution methods, patient registries and other risk minimization tools. The FDA also may condition approval on, among other things, changes to proposed labeling or the development of adequate controls and specifications. In most cases, the FDA must approve a BLA supplement or a new BLA before a product may be marketed for other uses or before specific manufacturing or other changes may be made to the approved product. As a condition of approval, the FDA may also require one or more Phase 4 post-market studies and surveillance to further assess and monitor the product's safety and effectiveness after commercialization, and may limit further marketing of the product based on the results of these post-marketing studies. Also, product approvals may be withdrawn if compliance with regulatory standards is not maintained or if safety or manufacturing problems occur following initial marketing. In addition, new government requirements may be established that could delay or prevent regulatory approval of our vaccine candidates under development.

Both before and after the FDA approves a product, the manufacturer and the holder or holders of the BLA for the product are subject to comprehensive regulatory oversight. For example, quality control and manufacturing procedures must conform, on an ongoing basis, to cGMP requirements, and the FDA periodically inspects manufacturing facilities to assess compliance with cGMPs. Accordingly, manufacturers must continue to spend time, money and effort to maintain cGMP compliance.

*Post-Approval Requirements*

Any drug products manufactured or distributed by us or our partners pursuant to FDA approvals will be subject to pervasive and continuing regulation by the FDA, including, among other things, record-keeping requirements, reporting of adverse experiences with the drug, providing the FDA with updated safety and efficacy information, distribution requirements, complying with individual electronic records and signature requirements and complying with FDA promotion and advertising requirements. Once approval is granted, the FDA may withdraw the approval if compliance with regulatory standards is not maintained or if problems occur after the product reaches the market. After approval, most changes to the approved product, such as adding new indications, specific manufacturing changes and additional labeling claims, are subject to further FDA review and approval. Biologic manufacturers, their subcontractors and other entities involved in the manufacture and distribution of approved drugs are required to register their establishments with the FDA and certain state agencies and are subject to periodic unannounced inspections by the FDA and certain state agencies for compliance with cGMP regulations and other laws and regulations. Changes to the manufacturing process are strictly regulated and, depending on the significance of the change, may require prior FDA approval before being implemented. FDA regulations also require investigation and correction of any deviations from cGMP and impose reporting requirements upon us and any third-party manufacturers that we may decide to use. Accordingly, manufacturers must continue to expend time, money and effort in the area of production and quality control to maintain compliance with cGMP and other aspects of regulatory compliance.

Discovery of previously unknown problems, including adverse events of unanticipated severity or frequency, or the failure to comply with the applicable regulatory requirements may result in restrictions on the marketing of a product or withdrawal of the product from the market as well as possible civil or criminal sanctions. Failure to comply with the applicable U.S. requirements at any time during the product development process, approval process or after approval, may subject an applicant or manufacturer to administrative or judicial civil or criminal sanctions and adverse publicity. FDA sanctions could include refusal to approve pending applications, withdrawal or suspension of an approval or license, clinical holds, warning or untitled letters, product recalls, product seizures, safety alerts, Dear Healthcare Provider letters, total or partial suspension of production or distribution, injunctions, fines, refusals of government contracts, mandated corrective advertising or communications with doctors, debarment, restitution, disgorgement of profits, consent decrees or civil or criminal penalties.

The FDA strictly regulates labeling, advertising, promotion and other types of information on products that are placed on the market and imposes requirements and restrictions on drug manufacturers, such as those related to direct-to-consumer advertising, the prohibition on promoting products for uses or inpatient populations that are not described in the product's approved labeling (known as "off-label use"), industry-sponsored scientific and educational activities and promotional activities involving the internet. Failure to comply with these requirements can result in, among other things, adverse publicity, warning letters, corrective advertising and potential civil and criminal penalties. Physicians may prescribe legally available products for uses that are not described in the product's labeling and that differ from those tested by us and approved by the FDA. Such off-label uses are common across medical specialties. Physicians may believe that such off-label uses are the best treatment for many patients in varied circumstances. The FDA does not regulate the behavior of physicians in their choice of treatments. The FDA does, however, restrict the manufacturer's communications on the subject of off-label use of their products.

*Disclosure of Clinical Trial Information*

Sponsors of clinical trials of FDA-regulated products, including biological products, are required to register and disclose certain clinical trial information on clinicaltrials.gov. Information related to the product, patient population, phase of the investigation, trial sites and investigators and other aspects of the clinical trial is then made public as part of the registration. Sponsors are also obligated to discuss the results of their clinical trials after completion. Disclosure of the results of these trials can be delayed in certain circumstances for up to two years after the date of completion of the trial. Competitors may use this publicly available information to gain knowledge regarding the progress of development programs.

*Additional Controls for Biologics*

To help reduce the increased risk of the introduction of adventitious agents, the PHS Act emphasizes the importance of manufacturing controls for products whose attributes cannot be precisely defined. The PHS Act also provides authority to the FDA to immediately suspend licenses in situations where there exists a danger to public health, to prepare or procure products in the event of shortages and critical public health needs, and to authorize the creation and enforcement of regulations to prevent the introduction or spread of communicable diseases in the United States and between states.

After a BLA is approved, the product may also be subject to official lot release as a condition of approval. As part of the manufacturing process, the manufacturer is required to perform specific tests on each lot of the product before it is released for distribution. If the product is subject to an official release by the FDA, the manufacturer submits samples of each lot of product to the FDA together with a release protocol showing a summary of the history of the manufacture of the lot and the results of all the manufacturer's tests performed on the lot. The FDA may also perform specific confirmatory tests on lots of some products, such as viral vaccines, before releasing the lots for distribution by the manufacturer. In addition, the FDA conducts laboratory research related to the regulatory standards on the safety, purity, potency and effectiveness of biological products. As with drugs, after approval of biologics, manufacturers must address any safety issues that arise, are subject to recalls or a halt in manufacturing and are subject to periodic inspection after approval.

*Expedited Development and Review Programs*

A sponsor may seek approval of its vaccine candidate under programs designed to accelerate the FDA's review and approval of new drugs and biological products that meet certain criteria. Specifically, new drugs and biological products are eligible for fast track designation if they are intended to treat a serious or life-threatening disease or condition and demonstrate the potential to address unmet medical needs for the disease or condition. For a fast track product, the FDA may consider sections of the BLA for review on a rolling basis before the complete application is submitted, if the sponsor provides a schedule for the submission of the sections of the application, the FDA agrees to accept sections of the application and determines that the schedule is acceptable

and the sponsor pays any required user fees upon submission of the first section of the application. A fast track designated vaccine candidate may also qualify for priority review, under which the FDA sets the target date for FDA action on the BLA at six months after the FDA accepts the application for filing. Priority review is granted when there is evidence that the proposed product would be a significant improvement in the safety or effectiveness of the treatment, diagnosis or prevention of a serious disease or condition. If criteria are not met for priority review, the application is subject to the standard FDA review period of 10 months after FDA accepts the application for filing. Priority review designation does not change the scientific/medical standard for approval or the quality of evidence necessary to support approval.

Under the accelerated approval program, the FDA may approve a BLA on the basis of either a surrogate endpoint that is reasonably likely to predict clinical benefit, or on a clinical endpoint that can be measured earlier than irreversible morbidity or mortality, that is reasonably likely to predict an effect on irreversible morbidity or mortality or other clinical benefit, taking into account the severity, rarity or prevalence of the condition and the availability or lack of alternative treatments. Post-marketing studies or completion of ongoing studies after marketing approval are generally required to verify the biologic's clinical benefit in relationship to the surrogate endpoint or ultimate outcome in relationship to the clinical benefit. In addition, the FDA currently requires as a condition for accelerated approval pre-approval of promotional materials, which could adversely impact the timing of the commercial launch of the product. FDA may withdraw approval of a drug or indication approved under accelerated approval if, for example, the confirmatory trial fails to verify the predicted clinical benefit of the product.

In addition, a sponsor may seek FDA designation of its vaccine candidate as a breakthrough therapy if the vaccine candidate is intended, alone or in combination with one or more other drugs or biologics, to treat a serious or life-threatening disease or condition and preliminary clinical evidence indicates that the therapy may demonstrate substantial improvement over existing therapies on one or more clinically significant endpoints, such as substantial treatment effects observed early in clinical development. If the FDA designates a product as a breakthrough therapy, it may take actions appropriate to expedite the development and review of the application, which may include holding meetings with the sponsor and the review team throughout the development of the therapy; providing timely advice to, and interactive communication with, the sponsor regarding the development of the drug to ensure that the development program to gather the nonclinical and clinical data necessary for approval is as efficient as practicable; involving senior managers and experienced review staff, as appropriate, in a collaborative, cross-disciplinary review; assigning a cross-disciplinary project lead for the FDA review team to facilitate an efficient review of the development program and to serve as a scientific liaison between the review team and the sponsor; and considering alternative clinical trial designs when scientifically appropriate, which may result in smaller trials or more efficient trials that require less time to complete and may minimize the number of patients exposed to a potentially less efficacious treatment. Breakthrough therapy designation comes with all of the benefits of fast track designation.

Even if a drug or biologic qualifies for one or more of these programs, the FDA may later decide that the drug no longer meets the conditions for qualification or that the time period for FDA review or approval will be shortened.

*Biosimilars and Exclusivity*

The Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act of 2010, or collectively, ACA, includes a subtitle called the Biologics Price Competition and Innovation Act of 2009, or BPCIA, which created an abbreviated approval pathway for biological products that are biosimilar to or interchangeable with an FDA-licensed reference biological product. The FDA has issued several guidance documents outlining an approach to review and approval of biosimilars. Biosimilarity, which requires that there be no clinically meaningful differences between the biological product and the reference product in terms of safety, purity and potency, can be shown through analytical studies, animal studies and a clinical trial or trials. Interchangeability requires that a product is biosimilar to the reference product and the

product must demonstrate that it can be expected to produce the same clinical results as the reference product in any given patient and, for products that are administered multiple times to an individual, the biologic and the reference biologic may be alternated or switched after one has been previously administered without increasing safety risks or risks of diminished efficacy relative to exclusive use of the reference biologic. However, complexities associated with the larger, and often more complex, structures of biological products, as well as the processes by which such products are manufactured, pose significant hurdles to implementation of the abbreviated approval pathway that are still being worked out by the FDA.

Under the BPCIA, an application for a biosimilar product may not be submitted to the FDA until four years following the date that the reference product was first licensed by the FDA. In addition, the approval of a biosimilar product may not be made effective by the FDA until 12 years from the date on which the reference product was first licensed. During this 12-year period of exclusivity, another company may still market a competing version of the reference product if the FDA approves a full BLA for the competing product containing that applicant's own preclinical data and data from adequate and well-controlled clinical trials to demonstrate the safety, purity and potency of its product. The BPCIA also created certain exclusivity periods for biosimilars approved as interchangeable products. At this juncture, it is unclear whether products deemed "interchangeable" by the FDA will, in fact, be readily substituted by pharmacies, which are governed by state pharmacy law. A biological product can also obtain pediatric market exclusivity in the United States. Pediatric exclusivity, if granted, adds six months to existing exclusivity periods and patent terms. This six-month exclusivity, which runs from the end of other exclusivity protection or patent term, may be granted based on the voluntary completion of a pediatric study in accordance with an FDA-issued "Written Request" for such a study.

The BPCIA is complex and continues to be interpreted and implemented by the FDA. In addition, government proposals have sought to reduce the 12-year reference product exclusivity period. Other aspects of the BPCIA, some of which may impact the BPCIA exclusivity provisions, have also been the subject of recent litigation. As a result, the ultimate impact and implementation of the BPCIA are subject to significant uncertainty.

*United States Healthcare Reform*

In the United States, there has been and continues to be, several legislative and regulatory changes and proposed changes regarding the healthcare system that could, among other things, prevent or delay marketing approval of vaccine candidates, restrict or regulate post-approval activities and affect the profitable sale of vaccine candidates.

Among policymakers and payors in the United States, there is significant interest in promoting changes in healthcare systems with the stated goals of containing healthcare costs, improving quality and/or expanding access. In the United States, the pharmaceutical industry has been a particular focus of these efforts and has been significantly affected by major legislative initiatives. For example, in March 2010, the ACA was passed, which substantially changed the way healthcare is financed by both the government and private insurers and significantly impacts the U.S. pharmaceutical industry. The ACA, among other things: (1) increased the minimum Medicaid rebates owed by manufacturers under the Medicaid Drug Rebate Program and extended the rebate program to individuals enrolled in Medicaid managed care organizations; (2) created a new methodology by which rebates owed by manufacturers under the Medicaid Drug Rebate Program are calculated for certain drugs and biologics that are inhaled, infused, instilled, implanted or injected; (3) established an annual, nondeductible fee on any entity that manufactures or imports certain specified branded prescription drugs and biologic agents apportioned among these entities according to their market share in specific government healthcare programs; (4) expanded the eligibility criteria for Medicaid programs; (5) created a new Patient-Centered Outcomes Research Institute to oversee, identify priorities in, and conduct comparative clinical effectiveness research, along with funding for such research; (6) created a new Medicare Part D coverage gap discount program, in which manufacturers must now agree to offer 70% point-of-sale discounts off negotiated prices of applicable brand drugs to eligible beneficiaries during their coverage gap period, as a condition for the

manufacturer's outpatient drugs to be covered under Medicare Part D; and (7) established a Center for Medicare & Medicaid Innovation at the Centers for Medicare & Medicaid Services, or CMS, to test innovative payment and service delivery models to lower Medicare and Medicaid spending, potentially including prescription drugs.

Some of the provisions of the ACA have yet to be implemented, and there have been judicial and political challenges to certain aspects of the ACA, as well as recent efforts by the Trump administration to repeal or replace certain aspects of the ACA. For example, since January 2017, President Trump has signed two Executive Orders and other directives designed to delay the implementation of specific provisions of the ACA or otherwise circumvent some of the requirements for health insurance mandated by the ACA. Concurrently, Congress has considered legislation that would repeal or repeal and replace all or part of the ACA. While Congress has not passed comprehensive repeal legislation, two bills affecting the implementation of individual taxes under the ACA have been signed into law. The Tax Cuts and Jobs Act of 2017, or the Tax Act, includes a provision repealing, effective January 1, 2019, the tax-based shared responsibility payment imposed by the ACA on specific individuals who fail to maintain qualifying health coverage for all or part of a year that is commonly referred to as the "individual mandate." The Bipartisan Budget Act of 2018, among other things, amends the ACA, effective January 1, 2019, to close the coverage gap in most Medicare drug plans, commonly referred to as the "donut hole." More recently, in December 2018, CMS published a new final rule permitting further collections and payments to and from specific ACA qualified health plans and health insurance issuers under the ACA risk adjustment program. On December 14, 2018, a U.S. District Court Judge in the Northern District of Texas, ruled that the individual mandate is a critical and inseverable feature of the ACA, and therefore, because it was repealed as part of the Tax Act, the remaining provisions of the ACA are invalid as well. While the Trump Administration and CMS have both stated that the ruling will have no immediate effect, it is unclear how this decision, subsequent appeals and other efforts to repeal and replace the ACA will impact the ACA.

Other legislative changes have been proposed and adopted since the ACA was enacted. For example, on August 2, 2011, the Budget Control Act of 2011 was signed into law, which, among other things, resulted in aggregate reductions of Medicare payments to providers of 2% per fiscal year, which went into effect on April 1, 2013 and, due to subsequent legislative amendments to the statute, including the BBA, will remain in effect through 2027 unless additional Congressional action is taken. On January 2, 2013, the American Taxpayer Relief Act of 2012 was signed into law, which, among other things, reduced Medicare payments to several providers, including hospitals, and increased the statute of limitations period for the government to recover overpayments to providers from three to five years.

Moreover, there has recently been heightened governmental scrutiny over the manner in which manufacturers set prices for their marketed products, which has resulted in several Congressional inquiries and proposed and enacted federal and state legislation designed to, among other things, bring more transparency to product pricing, review the relationship between pricing and manufacturer patient programs and reform government program reimbursement methodologies for drug products. At the federal level, the Trump administration's budget proposals for fiscal years 2019 and 2020 contain further drug price control measures that could be enacted during the budget process or in other future legislation, including, for example, measures to permit Medicare Part D plans to negotiate the price of certain drugs under Medicare Part B, to allow some states to negotiate drug prices under Medicaid and to eliminate cost-sharing for generic drugs for low-income patients. Additionally, the Trump administration released a "Blueprint" to lower drug prices and reduce out of pocket costs of drugs that contains additional proposals to increase manufacturer competition, increase the negotiating power of specific federal healthcare programs, incentivize manufacturers to lower the list price of their products and reduce the out of pocket costs of drug products paid by consumers. The U.S. Department of Health and Human Services has begun soliciting feedback on some of these measures and, at the same time, is implementing others under its existing authority. Although some measures may require additional authorization to become effective, Congress and the Trump administration have each indicated that it will continue to seek new legislative and/or administrative measures to control drug costs. At the state level, legislatures have increasingly passed legislation and implemented regulations designed to control pharmaceutical product pricing, including price or

patient reimbursement constraints, discounts, restrictions on specific product access and marketing cost disclosure and transparency measures and, in some cases, designed to encourage importation from other countries and bulk purchasing.

*United States Healthcare Fraud and Abuse Laws and Compliance Requirements*

Federal and state healthcare laws and regulations restrict certain business practices in the biopharmaceutical industry, including anti-kickback and false claims laws and regulations, data privacy and security laws and regulations and transparency laws and regulations.

The federal Anti-Kickback Statute prohibits, among other things, individuals or entities from knowingly and willfully offering, paying, soliciting or receiving remuneration, directly or indirectly, overtly or covertly, in cash or in-kind to induce or in return for purchasing, leasing, ordering or arranging for or recommending the purchase, lease or order of any item or service reimbursable under Medicare, Medicaid or other federal healthcare programs. A person or entity does not need to have actual knowledge of this statute or specific intent to violate it in order to have committed a violation. In addition, the government may assert that a claim including items or services resulting from a violation of the federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the civil False Claims Act and the civil monetary penalties statute.

The federal civil and criminal false claims laws, including the civil False Claims Act, and civil monetary penalties laws, prohibit, among other things, any individual or entity from knowingly presenting, or causing to be presented, a false claim for payment to the federal government or knowingly making, using or causing to be made or used a false record or statement material to a false or fraudulent claim to the federal government. Private individuals, commonly known as “whistleblowers,” can bring civil False Claims Act *qui tam* actions, on behalf of the government and such individuals and may share in amounts paid by the entity to the government in recovery or settlement.

The federal Health Insurance Portability and Accountability Act of 1996, or HIPAA, created additional federal civil and criminal statutes that prohibit, among other things, knowingly and willfully executing a scheme to defraud any healthcare benefit program. Similar to the federal Anti-Kickback Statute, a person or entity does not need to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation. In addition, HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act, and their implementing regulations, imposes specific requirements relating to the privacy, security and transmission of protected health information on HIPAA covered entities, which include certain healthcare providers, health plans and healthcare clearinghouses and their business associates who conduct certain activities for or on their behalf involving protected health information on their behalf.

The federal Physician Payments Sunshine Act requires certain manufacturers of drugs, devices, biologics and medical supplies for which payment is available under Medicare, Medicaid or the Children’s Health Insurance Program, with specific exceptions, to report annually to CMS information related to payments or other transfers of value made to physicians and teaching hospitals, and applicable manufacturers and applicable group purchasing organizations to report annually to CMS ownership and investment interests held by physicians and their immediate family members.

Similar state, local and foreign healthcare laws and regulations may also restrict business practices in the pharmaceutical industry, such as state anti-kickback and false claims laws, which may apply to business practices, including but not limited to, research, distribution, sales and marketing arrangements and claims involving healthcare items or services reimbursed by non-governmental third-party payors, including private insurers, or by patients themselves; state laws that require pharmaceutical companies to comply with the pharmaceutical industry’s voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government, or otherwise restrict payments that may be made to healthcare providers and other potential referral sources; state laws and regulations that require drug manufacturers to file reports relating to

pricing and marketing information or which require tracking gifts and other remuneration and items of value provided to physicians, other healthcare providers and entities; state and local laws that require the registration of pharmaceutical sales representatives; and state and local laws governing the privacy and security of health information in some circumstances, many of which differ from each other in significant ways and often are not preempted by HIPAA, thus complicating compliance efforts.

Efforts to ensure compliance with applicable healthcare laws and regulations can involve substantial costs. Violations of healthcare laws can result in significant penalties, including the imposition of significant civil, criminal and administrative penalties, damages, monetary fines, disgorgement, individual imprisonment, possible exclusion from participation in Medicare, Medicaid and other U.S. healthcare programs, integrity oversight and reporting obligations, contractual damages, reputational harm, diminished profits and future earnings and curtailment or restructuring of operations.

*Foreign Regulation*

In addition to regulations in the United States, we expect to be subject to a variety of foreign regulations governing clinical trials and commercial sales and distribution of our vaccine candidates. Whether or not we obtain FDA approval for a vaccine candidate, we must obtain approval from the comparable regulatory authorities of foreign countries or economic areas, such as the European Union, before we may commence clinical trials or market products in those countries or areas. The approval process and requirements governing the conduct of clinical trials, product licensing, pricing and reimbursement vary greatly from place to place, and the time may be longer or shorter than that required for FDA approval.

Certain countries outside of the United States have a process that requires the submission of a clinical trial application, much like an IND prior to the commencement of human clinical trials. In Europe, for example, a clinical trial application, or CTA, must be submitted to the competent national health authority and to independent ethics committees in each country in which a company intends to conduct clinical trials. Once the CTA is approved in accordance with a country's requirements, clinical trial development may proceed in that country. In all cases, the clinical trials must be conducted in accordance with GCPs and other applicable regulatory requirements.

The requirements and process governing the conduct of clinical trials, product licensing, pricing and reimbursement vary from country to country. In all cases, the clinical trials are conducted in accordance with GCP and the applicable regulatory requirements and the ethical principles that have their origin in the Declaration of Helsinki.

Under European Union regulatory systems, a company may submit marketing authorization applications either under a centralized or decentralized procedure. The centralized procedure is compulsory for medicinal products produced by biotechnology or those medicinal products containing new active substances for specific indications such as the treatment of AIDS, cancer, neurodegenerative disorders, diabetes, viral diseases and designated orphan medicines, and optional for other medicines which are highly innovative. Under the centralized procedure, a marketing application is submitted to the European Medicines Agency, or EMA, where it will be evaluated by the Committee for Medicinal Products for Human Use, and a favorable opinion typically results in the grant by the European Commission of a single marketing authorization that is valid for all European Union member states within 67 days of receipt of the opinion. The initial marketing authorization is valid for five years, but once renewed is usually valid for an unlimited period.

To market a medicinal product in the European Economic Area, or EEA, (which is comprised of the 28 Member States of the EU plus Norway, Iceland and Liechtenstein), we must obtain a Marketing Authorization, or MA. There are two types of marketing authorizations:

- The Community MA, which is issued by the European Commission through the Centralized Procedure, based on the opinion of the Committee for Medicinal Products for Human Use of the

EMA, and which is valid throughout the entire territory of the European Economic Area, or EEA. The Centralized Procedure is mandatory for certain types of products, such as biotechnology medicinal products, orphan medicinal products, advanced therapy products and medicinal products containing a new active substance indicated for the treatment certain diseases, such as AIDS, cancer, neurodegenerative disorders, diabetes, auto-immune and viral diseases. The Centralized Procedure is optional for products containing a new active substance not yet authorized in the EEA, or for products that constitute a significant therapeutic, scientific or technical innovation or which are in the interest of public health in the EU; and

- National MAs, which are issued by the competent authorities of the Member States of the EEA and only cover their respective territory, are available for products not falling within the mandatory scope of the Centralized Procedure. Where a product has already been authorized for marketing in a Member State of the EEA, this National MA can be recognized in another Member State through the Mutual Recognition Procedure. If the product has not received a National MA in any Member State at the time of application, it can be approved simultaneously in the various Member States through the Decentralized Procedure.

Under the above-described procedures, before granting the MA, the EMA, or the competent authorities of the Member States of the EEA make an assessment of the risk-benefit balance of the product on the basis of scientific criteria concerning its quality, safety and efficacy.

If we fail to comply with applicable foreign regulatory requirements, we may be subject to, among other things, fines, suspension or withdrawal of regulatory approvals, product recalls, seizure of products, operating restrictions and criminal prosecution.

*Additional Regulation*

We are also subject to regulation under the Occupational Safety and Health Act, the Environmental Protection Act, the Toxic Substances Control Act, the Resource Conservation and Recovery Act and other present and potential federal, state or local regulations. These and other laws govern our use, handling and disposal of various biological and chemical substances used in, and waste generated by our operations. Our research and development involve the controlled use of hazardous materials, chemicals, bacteria and viruses. Although we believe that our safety procedures for handling and disposing of such materials comply with the standards prescribed by state and federal regulations, the risk of accidental contamination or injury from these materials cannot be completely eliminated. In the event of such an accident, we could be held liable for any damages that result and any such liability could exceed our resources.

There have been a number of federal and state proposals during the last few years regarding the pricing of pharmaceutical and biological products, government control and other changes to the healthcare system of the United States. It is uncertain what legislative proposals will be adopted or what actions federal, state or private payers for medical goods and services may take in response to any healthcare reform proposals or legislation. We cannot predict the effect medical or healthcare reforms may have on our business, and no assurance can be given that any such reforms will not have a material adverse effect.

**Privacy and Data Protection Laws**

We are also subject to laws and regulations in non-U.S. countries covering data privacy and the protection of health-related and other personal information. EU member states and other jurisdictions have adopted data protection laws and regulations, which impose significant compliance obligations. Laws and regulations in these jurisdictions apply broadly to the collection, use, storage, disclosure, processing and security of personal information that identifies or may be used to identify an individual, such as names, contact information and sensitive personal data such as health data. These laws and regulations are subject to frequent revisions and differing interpretations and have generally become more stringent over time.

As of May 25, 2018, Regulation 2016/676, known as the General Data Protection Regulation, or GDPR, replaced the Data Protection Directive with respect to the processing of personal data in the European Union. The GDPR imposes many requirements for controllers and processors of personal data, including, for example, higher standards for obtaining consent from individuals to process their personal data, more robust disclosures to individuals and a strengthened individual data rights regime, shortened timelines for data breach notifications, limitations on retention and secondary use of information, increased requirements pertaining to health data and pseudonymised (i.e., key-coded) data and additional obligations when we contract third-party processors in connection with the processing of the personal data. The GDPR allows EU member states to make new laws and regulations further limiting the processing of genetic, biometric, or health data. Failure to comply with the requirements of GDPR and the applicable national data protection laws of the EU member states may result in fines of up to €20,000,000 or up to 4% of the total worldwide annual turnover of the preceding financial year, whichever is higher, and other administrative penalties.

**Employees**

As of September 30, 2019, we had 36 full-time employees, 12 of whom have Ph.D. degrees. None of our employees are represented by labor unions or covered by collective bargaining agreements. We consider our relationship with our employees to be good.

**Properties & Facilities**

Our corporate headquarters and secondary space are located in Foster City, California, where we currently lease approximately 22,000 square feet of office and laboratory space. We use our corporate headquarters primarily for corporate, research, development, regulatory, manufacturing and quality functions. Our primary lease for this facility expires in September 2021, and our secondary space lease expires in October 2021. We anticipate that we will need additional facility space as we move forward with our development and clinical programs. We believe that suitable additional alternative spaces will be available in the future on commercially reasonable terms.

**Legal Proceedings**

We are not currently subject to any legal proceedings. From time to time, we may be involved in legal proceedings or subject to claims incident to the ordinary course of business. Regardless of the outcome, such proceedings or claims can have an adverse impact on us because of defense and settlement costs, diversion of resources and other factors, and there can be no assurances that favorable outcomes will be obtained.

## MANAGEMENT

The following table sets forth information for our executive officers and directors as of September 30, 2019:

| Name | Age | Position |
|---|---|---|
| ***Executive Officers*** | | |
| Grant E. Pickering | 52 | President, Chief Executive Officer and Director |
| Elaine Sun | 48 | Chief Financial Officer and Chief Strategy Officer |
| Paul Sauer | 58 | Senior Vice President, Process Development and Manufacturing |
| Jane Wright-Mitchell | 50 | General Counsel |
| Jeff Fairman | 55 | Vice President, Research |
| ***Non-Employee Directors*** | | |
| Moncef Slaoui, Ph.D. | 60 | Chairman of the Board |
| Kurt von Emster | 52 | Director |
| Patrick Enright | 57 | Director |
| Patrick Heron | 49 | Director |
| Peter Hirth, Ph.D. | 68 | Director |
| Rob Hopfner, Ph.D. | 47 | Director |
| Heath Lukatch, Ph.D. | 52 | Director |
| William J. Newell | 62 | Director |

(1) Member of the audit committee.
(2) Member of the compensation committee.
(3) Member of the nominating and corporate governance committee.

### Executive Officers

***Grant E. Pickering.*** Mr. Pickering is our co-founder and has served as our President and Chief Executive Officer and as a member of our board of directors since November 2013. From May 2013 to April 2015, Mr. Pickering served as Strategic Advisor at Atreca, Inc., a biotechnology company. Prior to joining SutroVax, he was Chief Executive Officer of Mymetics Corporation, a developer of virosomal vaccines for infectious diseases. Prior to that, Mr. Pickering was an Executive-in-Residence at Kleiner Perkins, a venture capital firm, and Senior Vice President of Operations of Dendreon Corporation, a biopharmaceutical company. Since March 2008, Mr. Pickering has served as Chief Executive Officer of Juvaris BioTherapeutics, Inc., a biopharmaceutical company. Mr. Pickering holds a B.S. in Marketing from Penn State University and an M.B.A. from Georgetown University. Mr. Pickering was selected to serve on our board of directors because of the perspective and experience he brings as our Chief Executive Officer and his operating and management experience in the healthcare industry.

***Elaine Sun.*** Ms. Sun has served as our Chief Financial Officer since January 2017 and also as our Chief Strategy Officer since January 2019. From January 2013 to December 2016, Ms. Sun served as an independent strategic and financial advisory consultant to private equity, venture capital and venture-backed biotechnology companies. Ms. Sun previously served as a Managing Director and head of West Coast Healthcare for Evercore Partners, an independent investment banking advisory firm. Prior to Evercore, Ms. Sun served as a Managing Director at Merrill Lynch & Co., an independent investment banking advisory firm, in its Healthcare Investment Banking Group. Ms. Sun also serves on the board of directors of Cirius Therapeutics, a biopharmaceutical company, and also serves as chair of the audit committee. Ms. Sun holds a B.A. in Economics and Japanese Studies from Wellesley College and an M.B.A. from Harvard Business School.

***Paul Sauer.*** Mr. Sauer has served as our Senior Vice President, Process Development and Manufacturing since April 2016. From January 2015 to March 2016, Mr. Sauer served as a Principal at Sauer

Biotech Consulting, a development and manufacturing consulting services firm. From July 2011 to December 2014, Mr. Sauer served as Vice President, Process Sciences and Manufacturing at Igencia Biotherapeutics, Inc., a biotechnology company. Mr. Sauer holds a B.S. in Genetics and a B.A. in Psychology from the University of California, Davis and an M.B.A. from Santa Clara University.

***Jane Wright-Mitchell.*** Ms. Wright-Mitchell has served as our General Counsel since January 2019. From November 2017 to December 2018, Ms. Wright-Mitchell served as Chief Legal Officer at Steep Hill, Inc., a cannabis testing and analytics company. From July 2014 to November 2017, Ms. Wright-Mitchell served as Chief Legal Officer at AcelRx Pharmaceuticals, Inc., a pharmaceutical company. Ms. Wright-Mitchell holds a B.S. in Biological Sciences from Clemson University, a PharmD from the University of Illinois at Chicago and a J.D. from Chicago-Kent College of Law, Illinois Institute of Technology.

***Jeff Fairman.*** Mr. Fairman is our co-founder and has served as our Vice President, Research since December 2013. From July 2011 to December 2013, Mr. Fairman served as Vice President, Research at Colby Pharmaceuticals, a biopharmaceutical company. Mr. Fairman also founded Juvaris BioTherapeutics, Inc., a biopharmaceutical company, and served as its Vice President, Research from February 2002 to September 2011. Mr. Fairman is a member of the American Association of Immunologists and the Infectious Diseases Society of America. Mr. Fairman holds a B.S. in Chemistry from Northwest Missouri State University and a Ph.D. in Chemistry from the University of Arkansas.

**Non-Employee Directors**

***Moncef Slaoui, Ph.D.*** Dr. Slaoui has served on our board of directors since July 2017 and has served as Chairman of the Board since May 2018. Dr. Slaoui currently serves as a Partner at Medicxi Ventures, a venture capital firm. From June 2009 to June 2017, Dr. Slaoui served as the Chairman of Vaccines at GlaxoSmithKline plc, a multinational pharmaceutical company, and from June 2003 to June 2006, he served as head of Worldwide Business Development at GlaxoSmithKline. Dr. Slaoui currently serves on the board of directors of Moderna, Inc., a biotechnology company, as well as on the boards of directors of private biotechnology companies. From 1984 to 1988, Dr. Slaoui served as a professor of Immunology at the University of Mons, Belgium. Dr. Slaoui holds a Ph.D. in Molecular Biology and Immunology from the Université Libre de Bruxelles, Belgium. Dr. Slaoui was selected to serve on our board of directors because of his depth of vaccine industry and public company experience.

***Kurt von Emster.*** Mr. von Emster has served on our board of directors since July 2015. Since January 2015, Mr. von Emster has served as a Managing Partner at Abingworth LLP, a venture capital firm. Mr. von Emster also founded venBio LLC, an investment advisory firm, and served as Founding Partner from May 2009 to January 2015. Mr. von Emster currently serves on the board of directors of CymaBay Therapeutics, Inc., a biotechnology company, and has held board positions in several public and private life sciences companies. Mr. von Emster holds a B.S. in Business and Economics from the University of California, Santa Barbara and is a Chartered Financial Analyst. Mr. von Emster was selected to serve on our board of directors because of his experience in advising public and private life sciences companies and his expertise in finance and accounting as audit member and audit chairman for several biotechnology companies.

***Patrick Enright.*** Mr. Enright has served on our board of directors since July 2015. Since January 2006, Mr. Enright has served as a Managing Partner at Longitude Capital, a healthcare venture capital firm. Mr. Enright currently serves on the boards of directors of Aptinyx Inc., a clinical-stage pharmaceutical company, Aimmune Therapeutics, Inc., a clinical-stage biopharmaceutical company, and Jazz Pharmaceuticals plc, a pharmaceutical company, as well as on the boards of directors of private life sciences companies. Mr. Enright holds a B.S. in Biologics Sciences from Stanford University and an M.B.A. from the Wharton School at the University of Pennsylvania. Mr. Enright was selected to serve on our board of directors because of his experience as a venture capital investor focused on life sciences companies and his pharmaceutical industry operations experience.

***Patrick Heron*.** Mr. Heron has served on our board of directors since March 2017. Since August 1999, Mr. Heron has served as a Managing General Partner at Frazier Healthcare Partners, a venture capital firm. Mr. Heron currently serves on the boards of directors of Iterum Therapeutics plc, a pharmaceutical company, and Mirum Pharmaceuticals, Inc., a pharmaceutical company, as well as on the boards of directors of several private life sciences companies. Mr. Heron holds a B.A. in Political Science from the University of North Carolina at Chapel Hill and an M.B.A. from Harvard Business School. Mr. Heron was selected to serve on our board of directors because of his experience in advising public and private life sciences companies.

***Peter Hirth, Ph.D.*** Dr. Hirth has served on our board of directors since September 2016. In 2001, Dr. Hirth founded Plexxikon, Inc., a pharmaceutical company, and served as its Chief Executive Officer until April 2013. Dr. Hirth currently serves on the boards of directors of several private life sciences companies. Dr. Hirth holds a Ph.D. in Molecular Genetics from Heidelberg University, Germany. Dr. Hirth was selected to serve on our board of directors because of his extensive experience as an investor in and advisor to many private life sciences companies.

***Rob Hopfner, Ph.D.*** Dr. Hopfner has served on our board of directors since December 2017. Since October 2017, Dr. Hopfner has served as a Managing Partner at Pivotal bioVenture Partners, a venture capital firm. Dr. Hopfner also served as a Principal at Bay City Capital, a venture capital firm, from June 2007 to October 2009 and as a Managing Director and Partner from October 2009 to September 2017. Dr. Hopfner currently serves on the boards of directors of private life sciences companies. Dr. Hopfner holds a B.Sc. in Pharmacy and a Ph.D. in Pharmacology from the University of Saskatchewan and an M.B.A. from the University of Chicago. Dr. Hopfner was selected to serve on our board of directors because of his experience in advising public and private life sciences companies, as well as his research in the pharmaceutical field.

***Heath Lukatch, Ph.D.*** Dr. Lukatch has served on our board of directors since May 2018. Since May 2015, Dr. Lukatch has served as a Partner at TPG Capital, a private equity investment firm. Dr. Lukatch currently serves on the boards of directors of Flexion Therapeutics, Inc., a biopharmaceutical company, and Inogen, Inc., a medical technology company, as well as on the boards of directors of several private life sciences companies. Dr. Lukatch holds a B.A. in Biochemistry from the University of California, Berkeley and a Ph.D. in Neuroscience from Stanford University. Dr. Lukatch was selected to serve on our board of directors because of his extensive experience as an investor in and advisor to several biopharmaceutical and healthcare companies.

***William J. Newell*.** Mr. Newell has served on our board of directors since November 2013. Since February 2009, Mr. Newell has served as Chief Executive Officer at Sutro Biopharma, a biotechnology company. From January 2006 to August 2007, Mr. Newell served as President and as Executive Vice President at Aerovance, Inc., a venture-backed company developing clinical assets for respiratory diseases. Mr. Newell holds an A.B. in Government from Dartmouth College and a J.D. from the University of Michigan. Mr. Newell was selected to serve on our board of directors because of his decades of senior management experience in the biotechnology industry.

**Composition of Our Board of Directors**

Our business and affairs are managed under the direction of our board of directors. We currently have nine directors. The current members of our board of directors were elected pursuant to our current certificate of incorporation, as amended, and under the provisions of our amended and restated voting agreement, which requires the stockholders who are party to the agreement to vote their respective shares of our capital stock to elect directors as follows:

- Grant E. Pickering, as the individual serving as our Chief Executive Officer and elected by the holders of our common stock;
- William J. Newell, as the individual serving as the Chief Executive Officer of Sutro Biopharma, Inc. and elected by the holders of our common stock;

- Kurt von Emster, as the individual designated by Abingworth LLP and elected by the holders of our Series A preferred stock;
- Patrick Enright, as the individual designated by Longitude Venture Partners II, L.P. and elected by the holders of our Series A preferred stock;
- Rob Hopfner, as the individual designated by Pivotal bioVenture Partners Fund I L.P. and elected by the holders of our Series B preferred stock;
- Patrick Heron, as the individual designated by Frazier Life Sciences VIII, L.P. and elected by the holders of our Series B preferred stock;
- Heath Lukatch, as the individual designated by TPG Growth IV Switcheroo, L.P. and elected by the holders of our Series C preferred stock; and
- Moncef Slaoui and Peter Hirth, as independent individuals designated by our board of directors and elected by the holders of our capital stock.

The provisions of our amended and restated voting agreement relating to the election of our directors will terminate and the provisions of our current certificate of incorporation by which our directors were elected will be amended and restated in connection with this offering. After the closing of this offering, the number of directors will be fixed by our board of directors, subject to the terms of our amended and restated certificate of incorporation and amended and restated bylaws that will become effective upon the closing of this offering. Each of our current directors will continue to serve as a director until the election and qualification of their successor, or until their earlier death, resignation or removal.

Our board of directors may establish the authorized number of directors from time to time by resolution. In accordance with our amended and restated certificate of incorporation that will be in effect upon the closing of this offering, immediately after this offering our board of directors will be divided into three classes with staggered three-year terms. At each annual general meeting of stockholders, the successors to directors whose terms then expire will be elected to serve from the time of election and qualification until the third annual meeting following election. Our directors will be divided among the three classes as follows:

- the Class I directors will be and , and their terms will expire at our first annual meeting of stockholders following this offering;
- the Class II directors will be and , and their terms will expire at our second annual meeting of stockholders following this offering; and
- the Class III directors will be , and , and their terms will expire at our third annual meeting of stockholders following this offering.

We expect that any additional directorships resulting from an increase in the number of directors will be distributed among the three classes so that, as nearly as possible, each class will consist of one third of the directors. The division of our board of directors into three classes with staggered three-year terms may delay or prevent a change of our management or a change in control.

**Director Independence**

Our board of directors has undertaken a review of the independence of each director. Based on information provided by each director concerning his background, employment and affiliations, our board of directors has determined that , and do not have relationships that would interfere

with the exercise of independent judgment in carrying out the responsibilities of a director and that each of these directors is "independent" as that term is defined under the applicable listing standards. In making these determinations, our board of directors considered the current and prior relationships that each non-employee director has with our company and all other facts and circumstances our board of directors deemed relevant in determining their independence, including the beneficial ownership of our shares held by each non-employee director and the transactions described in the section entitled "Certain Relationships and Related Person Transactions."

**Committees of Our Board of Directors**

Our board of directors has established an audit committee, a compensation committee and a nominating and corporate governance committee. The composition and responsibilities of each of the committees of our board of directors are described below. Members serve on these committees until their resignation or until otherwise determined by our board of directors. Our board of directors may establish other committees as it deems necessary or appropriate from time to time.

***Audit Committee***

Our audit committee consists of , and . Our board of directors has determined that each member of the audit committee satisfies the independence requirements under the Nasdaq listing standards and Rule 10A-3(b)(1) of the Exchange Act. The chair of our audit committee is . Our board of directors has determined that is an "audit committee financial expert" within the meaning of SEC regulations. Each member of our audit committee can read and understand fundamental financial statements in accordance with applicable requirements. In arriving at these determinations, our board of directors has examined each audit committee member's scope of experience and the nature of their employment.

The primary purpose of the audit committee is to discharge the responsibilities of our board of directors with respect to our corporate accounting and financial reporting processes, systems of internal control and financial statement audits, and to oversee our independent registered public accounting firm. Specific responsibilities of our audit committee include:

- helping our board of directors oversee our corporate accounting and financial reporting processes;
- managing the selection, engagement, qualifications, independence and performance of a qualified firm to serve as the independent registered public accounting firm to audit our financial statements;
- discussing the scope and results of the audit with the independent registered public accounting firm, and reviewing, with management and the independent accountants, our interim and year-end operating results;
- developing procedures for employees to submit concerns anonymously about questionable accounting or audit matters;
- reviewing related person transactions;
- obtaining and reviewing a report by the independent registered public accounting firm at least annually that describes our internal quality control procedures, any material issues with such procedures and any steps taken to deal with such issues when required by applicable law; and
- approving or, as permitted, pre-approving, audit and permissible non-audit services to be performed by the independent registered public accounting firm.

Our audit committee will operate under a written charter, to be effective prior to the closing of this offering, that satisfies the applicable listing standards of Nasdaq.

***Compensation Committee***

Our compensation committee consists of , and . The chair of our compensation committee is . Our board of directors has determined that each member of the compensation committee is independent under the listing standards of Nasdaq, and a "non-employee director" as defined in Rule 16b-3 promulgated under the Exchange Act.

The primary purpose of our compensation committee is to discharge the responsibilities of our board of directors in overseeing our compensation policies, plans and programs and to review and determine the compensation to be paid to our executive officers, directors and other senior management, as appropriate. Specific responsibilities of our compensation committee include:

- reviewing and recommending to our board of directors the compensation of our chief executive officer and other executive officers;
- reviewing and recommending to our board of directors the compensation of our directors;
- administering our equity incentive plans and other benefit programs;
- reviewing, adopting, amending and terminating incentive compensation and equity plans, severance agreements, profit sharing plans, bonus plans, change-of-control protections and any other compensatory arrangements for our executive officers and other senior management; and
- reviewing and establishing general policies relating to compensation and benefits of our employees, including our overall compensation philosophy.

Our compensation committee will operate under a written charter, to be effective prior to the closing of this offering, that satisfies the applicable listing standards of Nasdaq.

***Nominating and Corporate Governance Committee***

Our nominating and corporate governance committee consists of and . The chair of our nominating and corporate governance committee is . Our board of directors has determined that each member of the nominating and corporate governance committee is independent under the listing standards of Nasdaq.

Specific responsibilities of our nominating and corporate governance committee include:

- identifying and evaluating candidates, including the nomination of incumbent directors for reelection and nominees recommended by stockholders, to serve on our board of directors;
- considering and making recommendations to our board of directors regarding the composition and chairmanship of the committees of our board of directors;
- developing and making recommendations to our board of directors regarding corporate governance guidelines and matters; and
- overseeing periodic evaluations of the board of directors' performance, including committees of the board of directors.

Our nominating and corporate governance committee will operate under a written charter, to be effective prior to the closing of this offering, that satisfies the applicable listing standards of Nasdaq.

**Code of Business Conduct and Ethics**

We have adopted a code of business conduct and ethics that applies to our directors, officers and employees, including our principal executive officer, principal financial officer, principal accounting officer or controller or persons performing similar functions. Upon the closing of this offering, our code of business conduct and ethics will be available under the Corporate Governance section of our website at https://www.sutrovax.com. In addition, we intend to post on our website all disclosures that are required by law or the listing standards of Nasdaq concerning any amendments to, or waivers from, any provision of the code. The reference to our website address does not constitute incorporation by reference of the information contained at or available through our website, and you should not consider it to be a part of this prospectus.

**Compensation Committee Interlocks and Insider Participation**

None of the members of the compensation committee is currently or has been at any time one of our officers or employees. None of our executive officers currently serves, or has served during the last year, as a member of the board of directors or compensation committee of any entity that has one or more executive officers serving as a member of our board of directors or compensation committee.

**Non-Employee Director Compensation**

The following table sets forth information regarding the compensation earned by or paid to our directors during the year ended December 31, 2019, other than Grant E. Pickering, our President and Chief Executive Officer, who is also a member of our board of directors but did not receive any additional compensation for service as a director. The compensation of Mr. Pickering as a named executive officer is set forth below in the subsection entitled "—Executive Compensation—Summary Compensation Table."

**2019 Director Compensation**

| Name | Fees Earned or Paid in Cash ($) | Option Awards ($)(1) | Total ($) |
|---|---|---|---|
| Moncef Slaoui | | | |
| Kurt von Emster | | | |
| Patrick Enright | | | |
| Patrick Heron | | | |
| Peter Hirth | | | |
| Rob Hopfner | | | |
| Heath Lukatch | | | |
| William J. Newell | | | |

(1) The amounts reported represent the aggregate grant date fair value of the stock options granted during fiscal year 2019 under our 2014 Plan, computed in accordance with Financial Accounting Standard Board Accounting Standards Codification, Topic 718, or ASC Topic 718. The assumptions used in calculating the grant date fair value of the stock options reported in this column are set forth in Note 11 to our financial statements included elsewhere in this prospectus. This amount does not reflect the actual economic value that may be realized by the non-employee director.

In addition, we have reimbursed and will continue to reimburse all of our non-employee directors for their reasonable out-of-pocket expenses incurred in attending board of directors and committee meetings.

We intend to approve and implement a compensation policy for our non-employee directors, to be effective in connection with the consummation of this offering.

## EXECUTIVE COMPENSATION

Our named executive officers for the fiscal year ended December 31, 2019, consisting of our principal executive officer and the next two most highly compensated executive officers, were:

- Grant E. Pickering, our President and Chief Executive Officer;
- Elaine Sun, our Chief Financial Officer and Chief Strategy Officer; and
- Jane Wright-Mitchell, our General Counsel.

### 2019 Summary Compensation Table

The following table presents all of the compensation awarded to, earned by or paid to our named executive officers during the fiscal year ended December 31, 2019.

| Name | Year | Salary ($) | Bonus ($) | Option Awards ($)(1) | Non-Equity Incentive Plan Compensation ($) | All Other Compensation ($) | Total ($) |
|---|---|---|---|---|---|---|---|
| Grant E. Pickering<br>*President and Chief Executive Officer* | 2019 | | | | | | |
| Elaine Sun<br>*Chief Financial Officer and Chief Strategy Officer* | 2019 | | | | | | |
| Jane Wright-Mitchell<br>*General Counsel* | 2019 | | | | | | |

(1) The amounts disclosed represent the aggregate grant date fair value of the stock options granted to our named executive officers during fiscal year 2019 under our 2014 Plan, computed in accordance with ASC Topic 718. The assumptions used in calculating the grant date fair value of the stock options are set forth in Note 11 to our audited financial statements included elsewhere in this prospectus. This amount does not reflect the actual economic value that may be realized by the named executive officer.

### Corporate Incentive Bonus Plan

We maintain a Corporate Incentive Bonus Plan which provides for the opportunity to earn cash bonuses based on performance against corporate and department goals, subject to the approval of our board of directors or a committee of our board of directors. The amounts shown in the column entitled “Non-Equity Incentive Plan Compensation” of the Summary Compensation Table above represent the amounts earned in the fiscal year ended December 31, 2019 under the Corporate Incentive Bonus Plan.

### Employment Agreements

We have entered into an employment agreement or offer letter with each of our named executive officers. Prior to the closing of this offering, we will enter into revised employment agreements with each of our named executive officers setting forth the terms and conditions of such executive’s employment with us. In addition, each of our named executive officers has executed our standard proprietary information and invention assignment agreement. Any potential payments and benefits due upon a termination of employment or change in control are described and quantified below in the subsection entitled “—Potential Payments upon Termination or Change in Control.”

***Grant E. Pickering***

We entered into an initial employment agreement with Mr. Pickering, our President and Chief Executive Officer, dated January 21, 2016, which set forth the initial terms and conditions of his employment with us. Prior to the closing of this offering, we will enter into a revised employment agreement with Mr. Pickering, which will replace and supersede Mr. Pickering's prior employment agreement. Pursuant to the new agreement, Mr. Pickering's base salary will be $ per year. Mr. Pickering's employment is at will and may be terminated at any time, with or without cause.

***Elaine Sun***

We entered into an initial employment agreement with Ms. Sun, our Chief Financial Officer and Chief Strategy Officer, dated January 1, 2017, which set forth the initial terms and conditions of her employment with us. Prior to the closing of this offering, we will enter into an employment agreement with Ms. Sun, which will replace and supersede Ms. Sun's prior employment agreement. Pursuant to the new agreement, Ms. Sun's base salary will be $ per year. Ms. Sun's employment is at will and may be terminated at any time, with or without cause.

***Jane Wright-Mitchell***

We entered into an initial offer letter with Jane Wright-Mitchell, our General Counsel, dated December 6, 2018, which set forth the initial terms and conditions of her employment with us. Prior to the closing of this offering, we will enter into an employment agreement with Ms. Wright-Mitchell, which will replace and supersede Ms. Wright-Mitchell's prior employment agreement. Pursuant to the new agreement, Ms. Wright-Mitchell's base salary will be $ per year. Ms. Wright-Mitchell's employment is at will and may be terminated at any time, with or without cause.

**Potential Payments upon Termination or Change in Control**

Regardless of the manner in which a named executive officer's service terminates, each named executive officer is entitled to receive amounts earned during his or her term of service, including unpaid salary and unused vacation.

Prior to the completion of this offering, we did not have a formal plan with respect to severance benefits payable to our named executive officers and other key employees. From time to time, we granted equity awards to, or entered into employment agreements with, certain key employees, including our named executive officers, that provide for accelerated vesting of equity awards in the event such key employee's employment was involuntarily terminated under certain circumstances.

In addition, each of our named executive officers' stock options are subject to the terms of the 2014 Plan and form of share option agreement thereunder. A description of the termination and change in control provisions in the 2014 Plan and stock options granted thereunder is provided below in the subsection entitled "—Employee Benefit and Stock Plans—Amended and Restated 2014 Equity Incentive Plan."

**Outstanding Equity Awards as of December 31, 2019**

The following table presents the outstanding equity incentive plan awards held by each named executive officer as of December 31, 2019.

| | Option Awards(1) | | | | |
|---|---|---|---|---|---|
| Name | Grant Date | Number of Securities Underlying Unexercised Options Exercisable (#) | Number of Securities Underlying Unexercised Options Unexercisable (#) | Option Exercise Price Per Share ($)(2) | Option Expiration Date |
| Grant E. Pickering | | | | | |
| Elaine Sun | | | | | |
| Jane Wright-Mitchell | | | | | |

(1) All of the option awards were granted under the 2014 Plan, the terms of which plan is described below in the subsection entitled "—Employee Benefit and Stock Plans—Amended and Restated 2014 Equity Incentive Plan."

(2) All of the option awards were granted with a per share exercise price equal to the fair market value of one share of our common stock on the date of grant, as determined in good faith by our board of directors or compensation committee.

We may in the future, on an annual basis or otherwise, grant additional equity awards to our executive officers pursuant to our 2020 Plan, the terms of which are described below in the subsection entitled "—Employee Benefit and Stock Plans—2020 Equity Incentive Plan."

**Other Compensation and Benefits**

All of our current named executive officers are eligible to participate in our employee benefit plans, including our medical, dental, vision, life, disability and accidental death and dismemberment insurance plans, in each case on the same basis as all of our other employees. We pay the premiums for the life, disability, accidental death and dismemberment insurance for all of our employees, including our named executive officers. We generally do not provide perquisites or personal benefits to our named executive officers.

Our named executive officers did not participate in, or earn any benefits under, a nonqualified deferred compensation plan sponsored by us during the fiscal year ended December 31, 2019. Our board of directors may elect to provide our officers and other employees with nonqualified defined contribution or other nonqualified deferred compensation benefits in the future if it determines that doing so is in our best interests.

Our named executive officers did not participate in, or otherwise receive any benefits under, any defined benefit pension or retirement plan sponsored by us during fiscal 2019.

**Employee Benefit and Stock Plans**

The principal features of our equity incentive plans and 401(k) plan are summarized below. These summaries are qualified in their entirety by reference to the actual text of the plans, which, other than the 401(k) plan, are filed as exhibits to the registration statement of which this prospectus is a part.

***2020 Equity Incentive Plan***

Our board of directors adopted our 2020 Plan in 2020, and we expect our stockholders to approve our 2020 Plan prior to the completion of this offering. Our 2020 Plan is a successor to and continuation of our 2014 Plan. Our 2020 Plan will become effective on the date of the underwriting agreement related to this offering. The 2020 Plan came into existence upon its adoption by our board of directors, but no grants will be made under the 2020 Plan prior to its effectiveness. Once the 2020 Plan is effective, no further grants will be made under the 2014 Plan.

*Awards.* Our 2020 Plan provides for the grant of incentive stock options, or ISOs, within the meaning of Section 422 of the Internal Revenue Code, or the Code, to employees, including employees of any parent or subsidiary, and for the grant of nonstatutory stock options, or NSOs, stock appreciation rights, restricted stock awards, restricted stock unit awards, performance awards and other forms of awards to employees, directors and consultants, including employees and consultants of our affiliates.

*Authorized Shares.* Initially, the maximum number of shares of our common stock that may be issued under our 2020 Plan after it becomes effective will not exceed shares of our common stock, which is the sum of (i) new shares, plus (ii) an additional number of shares not to exceed , consisting of (A) shares that remain available for the issuance of awards under our 2014 Plan as of immediately prior to the time our 2020 Plan becomes effective and (B) shares of our common stock subject to outstanding stock options or other stock awards granted under our 2014 Plan that, on or after the 2020 Plan becomes effective, terminate or expire prior to exercise or settlement; are not issued because the award is settled in cash; are forfeited because of the failure to vest; or are reacquired or withheld (or not issued) to satisfy a tax withholding obligation or the purchase or exercise price, if any, as such shares become available from time to time. In addition, the number of shares of our common stock reserved for issuance under our 2020 Plan will automatically increase on January 1 of each calendar year, starting on January 1, 2021 through January 1, 2030, in an amount equal to (i) % of the total number of shares of our common stock outstanding on December 31 of the fiscal year before the date of each automatic increase, or (ii) a lesser number of shares determined by our board of directors prior to the applicable January 1. The maximum number of shares of our common stock that may be issued on the exercise of ISOs under our 2020 Plan is shares.

Shares subject to stock awards granted under our 2020 Plan that expire or terminate without being exercised in full or that are paid out in cash rather than in shares do not reduce the number of shares available for issuance under our 2020 Plan. Shares withheld under a stock award to satisfy the exercise, strike or purchase price of a stock award or to satisfy a tax withholding obligation do not reduce the number of shares available for issuance under our 2020 Plan. If any shares of our common stock issued pursuant to a stock award are forfeited back to or repurchased or reacquired by us (i) because of a failure to meet a contingency or condition required for the vesting of such shares, (ii) to satisfy the exercise, strike or purchase price of an award or (iii) to satisfy a tax withholding obligation in connection with an award, the shares that are forfeited or repurchased or reacquired will revert to and again become available for issuance under the 2020 Plan. Any shares previously issued which are reacquired in satisfaction of tax withholding obligations or as consideration for the exercise or purchase price of a stock award will again become available for issuance under the 2020 Plan.

*Plan Administration.* Our board of directors, or a duly authorized committee of our board of directors, will administer our 2020 Plan and is referred to as the "plan administrator" herein. Our board of directors may also delegate to one or more of our officers the authority to (i) designate employees (other than officers) to receive specified stock awards and (ii) determine the number of shares subject to such stock awards. Under our 2020 Plan, our board of directors has the authority to determine award recipients, grant dates, the numbers and types of stock awards to be granted, the applicable fair market value, and the provisions of each stock award, including the period of exercisability and the vesting schedule applicable to a stock award.

*Stock Options.* ISOs and NSOs are granted under stock option agreements adopted by the plan administrator. The plan administrator determines the exercise price for stock options, within the terms and conditions of the 2020 Plan, provided that the exercise price of a stock option generally cannot be less than 100% of the fair market value of our common stock on the date of grant. Options granted under the 2020 Plan vest at the rate specified in the stock option agreement as determined by the plan administrator.

The plan administrator determines the term of stock options granted under the 2020 Plan, up to a maximum of 10 years. Unless the terms of an optionholder's stock option agreement, or other written agreement between us and the recipient approved by the plan administrator, provide otherwise, if an optionholder's service relationship with us or any of our affiliates ceases for any reason other than disability, death or cause, the

optionholder may generally exercise any vested options for a period of three months following the cessation of service. This period may be extended in the event that exercise of the option is prohibited by applicable securities laws. If an optionholder's service relationship with us or any of our affiliates ceases due to death, or an optionholder dies within a certain period following cessation of service, the optionholder or a beneficiary may generally exercise any vested options for a period of 18 months following the date of death. If an optionholder's service relationship with us or any of our affiliates ceases due to disability, the optionholder may generally exercise any vested options for a period of 12 months following the cessation of service. In the event of a termination for cause, options generally terminate upon the termination date. In no event may an option be exercised beyond the expiration of its term.

Acceptable consideration for the purchase of common stock issued upon the exercise of a stock option will be determined by the plan administrator and may include (i) cash, check, bank draft or money order, (ii) a broker-assisted cashless exercise, (iii) the tender of shares of our common stock previously owned by the optionholder, (iv) a net exercise of the option if it is an NSO or (v) other legal consideration approved by the plan administrator.

Unless the plan administrator provides otherwise, options or stock appreciation rights generally are not transferable except by will or the laws of descent and distribution. Subject to approval of the plan administrator or a duly authorized officer, an option may be transferred pursuant to a domestic relations order, official marital settlement agreement or other divorce or separation instrument.

*Tax Limitations on ISOs.* The aggregate fair market value, determined at the time of grant, of our common stock with respect to ISOs that are exercisable for the first time by an award holder during any calendar year under all of our stock plans may not exceed $100,000. Options or portions thereof that exceed such limit will generally be treated as NSOs. No ISO may be granted to any person who, at the time of the grant, owns or is deemed to own stock possessing more than 10% of our total combined voting power or that of any of our parent or subsidiary corporations unless (i) the option exercise price is at least 110% of the fair market value of the stock subject to the option on the date of grant and (ii) the term of the ISO does not exceed five years from the date of grant.

*Restricted Stock Unit Awards.* Restricted stock unit awards are granted under restricted stock unit award agreements adopted by the plan administrator. Restricted stock unit awards may be granted in consideration for any form of legal consideration that may be acceptable to our board of directors and permissible under applicable law. A restricted stock unit award may be settled by cash, delivery of stock, a combination of cash and stock as deemed appropriate by the plan administrator or in any other form of consideration set forth in the restricted stock unit award agreement. Additionally, dividend equivalents may be credited in respect of shares covered by a restricted stock unit award. Except as otherwise provided in the applicable award agreement, or other written agreement between us and the recipient approved by the plan administrator, restricted stock unit awards that have not vested will be forfeited once the participant's continuous service ends for any reason.

*Restricted Stock Awards.* Restricted stock awards are granted under restricted stock award agreements adopted by the plan administrator. A restricted stock award may be awarded in consideration for cash, check, bank draft or money order, past or future services to us or any other form of legal consideration that may be acceptable to our board of directors and permissible under applicable law. The plan administrator determines the terms and conditions of restricted stock awards, including vesting and forfeiture terms. If a participant's service relationship with us ends for any reason, we may receive any or all of the shares of common stock held by the participant that have not vested as of the date the participant terminates service with us through a forfeiture condition or a repurchase right.

*Stock Appreciation Rights.* Stock appreciation rights are granted under stock appreciation right agreements adopted by the plan administrator. The plan administrator determines the purchase price or strike price for a stock appreciation right, which generally cannot be less than 100% of the fair market value of our

common stock on the date of grant. A stock appreciation right granted under the 2020 Plan vests at the rate specified in the stock appreciation right agreement as determined by the plan administrator. Stock appreciation rights may be settled in cash or shares of common stock or in any other form of payment as determined by the Board and specified in the stock appreciation right agreement.

The plan administrator determines the term of stock appreciation rights granted under the 2020 Plan, up to a maximum of 10 years. If a participant's service relationship with us or any of our affiliates ceases for any reason other than cause, disability or death, the participant may generally exercise any vested stock appreciation right for a period of three months following the cessation of service. This period may be further extended in the event that exercise of the stock appreciation right following such a termination of service is prohibited by applicable securities laws. If a participant's service relationship with us, or any of our affiliates, ceases due to disability or death, or a participant dies within a certain period following cessation of service, the participant or a beneficiary may generally exercise any vested stock appreciation right for a period of 12 months in the event of disability and 18 months in the event of death. In the event of a termination for cause, stock appreciation rights generally terminate immediately upon the occurrence of the event giving rise to the termination of the individual for cause. In no event may a stock appreciation right be exercised beyond the expiration of its term.

*Performance Awards.* The 2020 Plan permits the grant of performance awards that may be settled in stock, cash or other property. Performance awards may be structured so that the stock or cash will be issued or paid only following the achievement of certain pre-established performance goals during a designated performance period. Performance awards that are settled in cash or other property are not required to be valued in whole or in part by reference to, or otherwise based on, the common stock.

The performance goals may be based on any measure of performance selected by the board of directors. The performance goals may be based on company-wide performance or performance of one or more business units, divisions, affiliates or business segments, and may be either absolute or relative to the performance of one or more comparable companies or the performance of one or more relevant indices. Unless specified otherwise by the board of directors at the time the performance award is granted, the board will appropriately make adjustments in the method of calculating the attainment of performance goals as follows: (i) to exclude restructuring and/or other nonrecurring charges; (ii) to exclude exchange rate effects; (iii) to exclude the effects of changes to generally accepted accounting principles; (iv) to exclude the effects of any statutory adjustments to corporate tax rates; (v) to exclude the effects of items that are "unusual" in nature or occur "infrequently" as determined under generally accepted accounting principles; (vi) to exclude the dilutive effects of acquisitions or joint ventures; (vii) to assume that any portion of our business which is divested achieved performance objectives at targeted levels during the balance of a performance period following such divestiture; (viii) to exclude the effect of any change in the outstanding shares of our common stock by reason of any stock dividend or split, stock repurchase, reorganization, recapitalization, merger, consolidation, spin-off, combination or exchange of shares or other similar corporate change or any distributions to common stockholders other than regular cash dividends; (ix) to exclude the effects of stock based compensation and the award of bonuses under our bonus plans; (x) to exclude costs incurred in connection with potential acquisitions or divestitures that are required to be expensed under generally accepted accounting principles; and (xi) to exclude the goodwill and intangible asset impairment charges that are required to be recorded under generally accepted accounting principles.

*Other Stock Awards.* The plan administrator may grant other awards based in whole or in part by reference to our common stock. The plan administrator will set the number of shares under the stock award (or cash equivalent) and all other terms and conditions of such awards.

*Non-Employee Director Compensation Limit.* The aggregate value of all compensation granted or paid to any non-employee director with respect to any calendar year, including awards granted and cash fees paid by us to such non-employee director, will not exceed $ in total value; provided that such amount will increase to for the first year for newly appointed or elected non-employee directors.

*Changes to Capital Structure.* In the event there is a specified type of change in our capital structure, such as a stock split, reverse stock split or recapitalization, appropriate adjustments will be made to (i) the class and maximum number of shares reserved for issuance under the 2020 Plan, (ii) the class and maximum number of shares by which the share reserve may increase automatically each year, (iii) the class and maximum number of shares that may be issued on the exercise of ISOs and (iv) the class and number of shares and exercise price, strike price or purchase price, if applicable, of all outstanding stock awards.

*Corporate Transactions.* The following applies to stock awards under the 2020 Plan in the event of a corporate transaction (as defined in the 2020 Plan), unless otherwise provided in a participant's stock award agreement or other written agreement with us or one of our affiliates or unless otherwise expressly provided by the plan administrator at the time of grant.

In the event of a corporate transaction, any stock awards outstanding under the 2020 Plan may be assumed, continued or substituted for by any surviving or acquiring corporation (or its parent company), and any reacquisition or repurchase rights held by us with respect to the stock award may be assigned to the successor (or its parent company). If the surviving or acquiring corporation (or its parent company) does not assume, continue or substitute for such stock awards, then (i) with respect to any such stock awards that are held by participants whose continuous service has not terminated prior to the effective time of the corporate transaction, or current participants, the vesting (and exercisability, if applicable) of such stock awards will be accelerated in full to a date prior to the effective time of the corporate transaction (contingent upon the effectiveness of the corporate transaction), and such stock awards will terminate if not exercised (if applicable) at or prior to the effective time of the corporate transaction, and any reacquisition or repurchase rights held by us with respect to such stock awards will lapse (contingent upon the effectiveness of the corporate transaction), and (ii) any such stock awards that are held by persons other than current participants will terminate if not exercised (if applicable) prior to the effective time of the corporate transaction, except that any reacquisition or repurchase rights held by us with respect to such stock awards will not terminate and may continue to be exercised notwithstanding the corporate transaction.

In the event a stock award will terminate if not exercised prior to the effective time of a corporate transaction, the plan administrator may provide, in its sole discretion, that the holder of such stock award may not exercise such stock award but instead will receive a payment equal in value to the excess (if any) of (i) the per share amount payable to holders of common stock in connection with the corporate transaction over (ii) any per share exercise price payable by such holder, if applicable. In addition, any escrow, holdback, earn out or similar provisions in the definitive agreement for the corporate transaction may apply to such payment to the same extent and in the same manner as such provisions apply to the holders of common stock.

*Change in Control.* Awards granted under the 2020 Plan may be subject to acceleration of vesting and exercisability upon or after a change in control (as defined in the 2020 Plan) as may be provided in the applicable stock award agreement or in any other written agreement between us or any affiliate and the participant, but in the absence of such provision, no such acceleration will automatically occur.

*Plan Amendment or Termination.* Our board of directors has the authority to amend, suspend or terminate our 2020 Plan, provided that such action does not materially impair the existing rights of any participant without such participant's written consent. Certain material amendments also require the approval of our stockholders. No ISOs may be granted after the tenth anniversary of the date our board of directors adopts our 2020 Plan. No stock awards may be granted under our 2020 Plan while it is suspended or after it is terminated.

***2020 Employee Stock Purchase Plan***

Our board of directors adopted our ESPP in and we expect our stockholders to approve our 2020 Plan prior to the completion of this offering. The ESPP will become effective immediately prior to and

contingent upon the date of the underwriting agreement related to this offering. The purpose of the ESPP is to secure the services of new employees, to retain the services of existing employees and to provide incentives for such individuals to exert maximum efforts toward our success and that of our affiliates. The ESPP includes two components. One component is designed to allow eligible U.S. employees to purchase our common stock in a manner that may qualify for favorable tax treatment under Section 423 of the Code. In addition, purchase rights may be granted under a component that does not qualify for such favorable tax treatment because of deviations necessary to permit participation by eligible employees who are foreign nationals or employed outside of the U.S. while complying with applicable foreign laws.

*Share Reserve*. Following this offering, the ESPP authorizes the issuance of shares of our common stock under purchase rights granted to our employees or to employees of any of our designated affiliates. The number of shares of our common stock reserved for issuance will automatically increase on January 1 of each calendar year, beginning on January 1, 2021 through January 1, 2030, by the lesser of (i) % of the total number of shares of our common stock outstanding on the last day of the fiscal year before the date of the automatic increase and (ii) shares; provided that before the date of any such increase, our board of directors may determine that such increase will be less than the amount set forth in clauses (i) and (ii). As of the date hereof, no shares of our common stock have been purchased under the ESPP.

*Administration*. Our board of directors administers the ESPP and may delegate its authority to administer the ESPP to our compensation committee. The ESPP is implemented through a series of offerings under which eligible employees are granted purchase rights to purchase shares of our common stock on specified dates during such offerings. Under the ESPP, we may specify offerings with durations of not more than 27 months, and may specify shorter purchase periods within each offering. Each offering will have one or more purchase dates on which shares of our common stock will be purchased for employees participating in the offering. An offering under the ESPP may be terminated under certain circumstances.

*Payroll Deductions*. Generally, all regular employees, including executive officers, employed by us or by any of our designated affiliates, may participate in the ESPP and may contribute, normally through payroll deductions, up to 15% of their earnings (as defined in the ESPP) for the purchase of our common stock under the ESPP. Unless otherwise determined by our board of directors, common stock will be purchased for the accounts of employees participating in the ESPP at a price per share that is at least the lesser of (i) 85% of the fair market value of a share of our common stock on the first date of an offering or (ii) 85% of the fair market value of a share of our common stock on the date of purchase.

*Limitations*. Employees may have to satisfy one or more of the following service requirements before participating in the ESPP, as determined by our board of directors, including: (i) being customarily employed for more than 20 hours per week, (ii) being customarily employed for more than five months per calendar year or (iii) continuous employment with us or one of our affiliates for a period of time (not to exceed two years). No employee may purchase shares under the ESPP at a rate in excess of $25,000 worth of our common stock based on the fair market value per share of our common stock at the beginning of an offering for each calendar year such a purchase right is outstanding. Finally, no employee will be eligible for the grant of any purchase rights under the ESPP if immediately after such rights are granted, such employee has voting power over 5% or more of our outstanding capital stock measured by vote or value under Section 424(d) of the Code.

*Changes to Capital Structure*. In the event that there occurs a change in our capital structure through such actions as a stock split, merger, consolidation, reorganization, recapitalization, reincorporation, stock dividend, dividend in property other than cash, large nonrecurring cash dividend, liquidating dividend, combination of shares, exchange of shares, change in corporate structure or similar transaction, the board of directors will make appropriate adjustments to: (1) the class(es) and maximum number of shares reserved under the ESPP, (2) the class(es) and maximum number of shares by which the share reserve may increase automatically each year, (3) the class(es) and number of shares subject to and purchase price applicable to outstanding offerings and purchase rights and (4) the class(es) and number of shares that are subject to purchase limits under ongoing offerings.

*Corporate Transactions*. In the event of certain significant corporate transactions, any then-outstanding rights to purchase our stock under the ESPP may be assumed, continued or substituted for by any surviving or acquiring entity (or its parent company). If the surviving or acquiring entity (or its parent company) elects not to assume, continue or substitute for such purchase rights, then the participants' accumulated payroll contributions will be used to purchase shares of our common stock within 10 business days before such corporate transaction, and such purchase rights will terminate immediately after such purchase.

Under the ESPP, a corporate transaction is generally the consummation of: (i) a sale of all or substantially all of our assets, (ii) the sale or disposition of more than 50% of our outstanding securities, (iii) a merger or consolidation where we do not survive the transaction and (iv) a merger or consolidation where we do survive the transaction but the shares of our common stock outstanding immediately before such transaction are converted or exchanged into other property by virtue of the transaction.

*ESPP Amendment or Termination*. Our board of directors has the authority to amend or terminate our ESPP, provided that except in certain circumstances such amendment or termination may not materially impair any outstanding purchase rights without the holder's consent. We will obtain stockholder approval of any amendment to our ESPP as required by applicable law or listing requirements.

***Amended and Restated 2014 Equity Incentive Plan***

Our board of directors adopted our 2014 Plan in January 2014, and our stockholders approved our 2014 Plan in May 2014. Our 2014 Plan has been periodically amended, most recently in May 2018. Our 2014 Plan will be terminated prior to the closing of this offering, and thereafter we will not grant any additional awards under our 2014 Plan. However, our 2014 Plan will continue to govern the terms and conditions of the outstanding awards previously granted thereunder, which include options and restricted stock awards.

*Share Reserve*. As of December 31, 2018, stock options covering 5,004,067 shares with a weighted-average exercise price of $1.06 per share and no shares of restricted stock were outstanding under our 2014 Plan, and shares of our common stock remained available for the future grant of awards under our 2014 Plan. Any shares of our common stock remaining available for issuance under our 2014 Plan at the time our 2020 Plan becomes effective will become available for issuance under our 2020 Plan. In addition, any shares subject to options that expire or terminate prior to exercise or are withheld to satisfy tax withholding obligations with respect to or the exercise price of an option, and any shares of restricted stock that are forfeited to or repurchased by us due to failure to vest, will be added to the number of shares then available for issuance under our 2020 Plan.

*Administration*. Our board of directors or a committee delegated by our board of directors administers our 2014 Plan. Subject to the terms of our 2014 Plan, the administrator has the power to, among other things, determine who will be granted awards, to determine the terms and conditions of each award (including the number of shares, exercise price, if any, and any vesting conditions), to lower or reduce the exercise price of outstanding options, to accelerate the time(s) when an award may vest or be exercised and to construe and interpret the terms of our 2014 Plan and awards granted thereunder.

*Options and Restricted Stock*. Options and restricted stock granted under our 2014 Plan are subject to terms and conditions generally similar to those described above with respect to options and restricted stock that may be granted under our 2020 Plan.

*Changes to Capital Structure*. In the event of any dividend or other distribution, recapitalization, stock split, reverse stock split, reorganization, merger, consolidation, split-up, spin-off, combination, repurchase or exchange of shares or other change in our corporate structure affecting our shares, the plan administrator will adjust the number and class of shares that may be delivered under the 2014 Plan and/or the number, class and price of shares covered by each outstanding award in order to prevent diminution or enlargement of benefits or potential benefits intended to be made under the 2014 Plan.

*Corporate Transactions.* In the event of a merger or a change in control, each outstanding award will be treated as the plan administrator determines, without a participant's consent, which may include, without limitation, a determination that:

- awards will be assumed or substituted by the acquiring or succeeding corporation with appropriate adjustments;
- upon written notice to the participant, the participant's awards will terminate upon or immediately prior to the consummation of such merger or change in control;
- outstanding awards will vest and become exercisable, realizable or payable, or restrictions applicable to an award will lapse, in whole or in part prior to or upon consummation of such merger or change in control and, to the extent the plan administrator determines, terminate upon or immediately prior to the effectiveness of such merger or change in control;
- an award will terminate in exchange for an amount of cash and/or property, if any, equal to the amount that would have been attained upon the exercise of such award or realization of the participant's rights as of the date of the occurrence of the transaction or an award will be replaced with other rights or property selected by the plan administrator in its sole discretion; or
- any combination of the foregoing.

The administrator is not obligated to treat all awards, even those that are of the same type, in the same manner.

In the event that the successor corporation in a merger or change in control does not assume or substitute an award, the award will fully vest and become exercisable and with respect to awards with performance-based vesting, all performance goals or other vesting criteria will be deemed achieved at 100% of target levels and all other terms and conditions met. If the award is an option, it will be exercisable for a period of time determined by the plan administrator and will terminate upon the expiration of such period.

*Change in Control.* The administrator may provide, in an individual award agreement or in any other written agreement between a participant and us that the award will be subject to additional acceleration of vesting and exercisability upon or after a change in control. Under our 2014 Plan, a change in control is generally defined to mean the occurrence of any of the following events: (i) a change in our ownership that occurs on the date that any one person, or more than one person acting as a group, acquires ownership of our stock that, together with the stock held by such person, constitutes more than 50% of our stockholders' total voting power, except as a result of a private financing approved by the board of directors; (ii) if we have a class of securities registered pursuant to Section 12 of the Exchange Act, a change in the effective control of the Company that occurs on the date that a majority of our directors on the board of directors are replaced during any 12 month period by directors whose appointment or election is not endorsed by a majority of the members of the board of directors prior to the date of the appointment or election or (iii) a change in the ownership of a substantial portion of our assets that occurs on the date that any person acquires assets from us that have a total gross fair market value equal to or more than 50% of the total gross fair market value of all of our assets immediately prior to such acquisition.

*Plan Amendment or Termination*. Our board of directors may amend, alter, suspend or terminate our 2014 Plan at any time, subject to stockholder approval to the extent required by applicable law. No amendment to our 2014 Plan may impair the rights of any award holder unless mutually agreed otherwise between the award holder and us. As discussed above, we will terminate our 2014 Plan prior to the closing of this offering and no new awards will be granted thereunder following such termination.

***401(k) Plan***

We maintain a 401(k) plan that provides eligible U.S. employees with an opportunity to save for retirement on a tax advantaged basis. Eligible employees are able to defer eligible compensation up to certain

Code limits, which are updated annually. We have the ability to make matching and discretionary contributions to the 401(k) plan. Currently, we do not make matching contributions or discretionary contributions to the 401(k) plan. The 401(k) plan is intended to be qualified under Section 401(a) of the Code, with the related trust intended to be tax exempt under Section 501(a) of the Code. As a tax-qualified retirement plan, contributions to the 401(k) plan are deductible by us when made, and contributions and earnings on those amounts are not generally taxable to the employees until withdrawn or distributed from the 401(k) plan.

**Limitations of Liability and Indemnification Matters**

Upon the closing of this offering, our amended and restated certificate of incorporation will contain provisions that limit the liability of our current and former directors for monetary damages to the fullest extent permitted by Delaware law. Delaware law provides that directors of a corporation will not be personally liable for monetary damages for any breach of fiduciary duties as directors, except liability for:

- any breach of the director's duty of loyalty to the corporation or its stockholders;
- any act or omission not in good faith or that involves intentional misconduct or a knowing violation of law;
- unlawful payments of dividends or unlawful stock repurchases or redemptions; or
- any transaction from which the director derived an improper personal benefit.

Such limitation of liability does not apply to liabilities arising under federal securities laws and does not affect the availability of equitable remedies such as injunctive relief or rescission.

Our amended and restated certificate of incorporation that will be in effect upon the closing of this offering will authorize us to indemnify our directors, officers, employees and other agents to the fullest extent permitted by Delaware law. Our amended and restated bylaws that will be in effect upon the closing of this offering will provide that we are required to indemnify our directors and officers to the fullest extent permitted by Delaware law and may indemnify our other employees and agents. Our amended and restated bylaws that will be in effect upon the closing of this offering will also provide that, on satisfaction of certain conditions, we will advance expenses incurred by a director or officer in advance of the final disposition of any action or proceeding, and permit us to secure insurance on behalf of any officer, director, employee or other agent for any liability arising out of his or her actions in that capacity regardless of whether we would otherwise be permitted to indemnify him or her under the provisions of Delaware law. We have entered and expect to continue to enter into agreements to indemnify our directors and executive officers. With certain exceptions, these agreements provide for indemnification for related expenses, including attorneys' fees, judgments, fines and settlement amounts incurred by any of these individuals in connection with any action, proceeding or investigation. We believe that these amended and restated certificate of incorporation and amended and restated bylaw provisions and indemnification agreements are necessary to attract and retain qualified persons as directors and officers. We also maintain customary directors' and officers' liability insurance.

The limitation of liability and indemnification provisions in our amended and restated certificate of incorporation and amended and restated bylaws may discourage stockholders from bringing a lawsuit against our directors for breach of their fiduciary duty. They may also reduce the likelihood of derivative litigation against our directors and officers, even though an action, if successful, might benefit us and other stockholders. Further, a stockholder's investment may be adversely affected to the extent that we pay the costs of settlement and damage awards against directors and officers as required by these indemnification provisions.

Insofar as indemnification for liabilities arising under the Securities Act may be permitted for directors, executive officers or persons controlling us, we have been informed that, in the opinion of the SEC, such indemnification is against public policy as expressed in the Securities Act and is therefore unenforceable.

## CERTAIN RELATIONSHIPS AND RELATED PERSON TRANSACTIONS

Other than compensation arrangements for our directors and executive officers, which are described elsewhere in this prospectus, below we describe transactions since January 1, 2016 and each currently proposed transaction in which:

- we have been or are to be a participant;
- the amounts involved exceeded or will exceed $120,000; and
- any of our directors, executive officers or holders of more than 5% of our outstanding capital stock, or any immediate family member of, or person sharing the household with, any of these individuals or entities, had or will have a direct or indirect material interest.

### Series C Convertible Preferred Stock Financing

In May 2018, we sold an aggregate of 6,222,912 shares of our Series C convertible preferred stock at a purchase price of $6.8296 per share, for an aggregate purchase price of $42.5 million. The following table summarizes purchases of our Series C convertible preferred stock by related persons:

| Stockholder | Shares of Series C Convertible Preferred Stock | Total Purchase Price |
|---|---|---|
| TPG Growth IV Switcheroo, L.P.(1) | 2,928,429 | $ 19,999,999 |
| Medicxi Ventures(2) | 1,464,215 | $ 10,000,003 |
| Abingworth Bioventures VI LP(3) | 383,634 | $ 2,620,067 |
| Longitude Venture Partners II, L.P.(4) | 335,680 | $ 2,292,560 |
| Roche Finance Ltd(5) | 239,772 | $ 1,637,547 |
| Frazier Life Sciences VIII, L.P.(6) | 190,831 | $ 1,303,299 |
| Pivotal bioVentures Fund I L.P.(7) | 190,831 | $ 1,303,299 |

(1) TPG Growth IV Switcheroo, L.P. beneficially owned more than 5% of our outstanding capital stock at the time of the Series C convertible preferred stock financing. Dr. Lukatch, a member of our board of directors, is a Partner and Managing Director at TPG Biotechnology Partners, which is an affiliate of TPG Growth IV Switcheroo, L.P.
(2) Entities associated with Medicxi Ventures holding our securities whose shares are aggregated for purposes of reporting share ownership information are Medicxi Ventures I LP and Medicxi Co-Invest I LP. Moncef Slaoui, a member of our board of directors, is a partner at Medicxi Ventures.
(3) Abingworth Bioventures VI LP beneficially owned more than 5% of our outstanding capital stock at the time of the Series C convertible preferred stock financing. Mr. von Emster, a member of our board of directors, is a Managing Partner of Abingworth LP, which is an affiliate of Abingworth Bioventures VI LP.
(4) Longitude Venture Partners II, LP beneficially owned more than 5% of our outstanding capital stock at the time of the Series C convertible preferred stock financing. Mr. Enright, a member of our board of directors, is a Managing Partner of Longitude Capital which is an affiliate of Longitude Venture Partners II, LP.
(5) Roche Finance Ltd beneficially owned more than 5% of our outstanding capital stock at the time of the Series C convertible preferred stock financing.
(6) Frazier Life Sciences VIII, L.P. beneficially owned more than 5% of our outstanding capital stock at the time of the Series C convertible preferred stock financing. Mr. Heron, a member of our board of directors, is a Managing General Partner of Frazier Healthcare Partners, which is an affiliate of Frazier Life Sciences VIII, L.P.
(7) Pivotal bioVentures Fund I L.P. beneficially owned more than 5% of our outstanding capital stock at the time of the Series C convertible preferred stock financing.

In addition, the stock purchase agreement for the Series C convertible preferred stock financing includes a second closing to occur on or after December 1, 2019, in which we will sell an aggregate of 6,222,912 shares of our Series C convertible preferred stock at a purchase price of $6.8296 per share, for an aggregate purchase price of $42.5 million.

The following table summarizes the shares of our Series C convertible preferred stock that will be purchased by related persons in the second closing:

| Stockholder | Shares of Series C Convertible Preferred Stock | Total Purchase Price |
|---|---|---|
| TPG Growth IV Switcheroo, L.P.(1) | 2,928,429 | $ 19,999,999 |
| Medicxi Ventures (2) | 1,464,215 | $ 10,000,003 |
| Abingworth Bioventures VI LP | 383,634 | $ 2,620,067 |
| Longitude Venture Partners II, L.P. | 335,680 | $ 2,292,560 |
| Roche Finance Ltd | 239,772 | $ 1,637,547 |
| Frazier Life Sciences VIII, L.P. | 190,831 | $ 1,303,299 |
| Pivotal bioVentures Fund I L.P. | 190,831 | $ 1,303,299 |

(1) TPG Growth IV Switcheroo, L.P. beneficially owned more than 5% of our outstanding capital stock at the time of the Series C convertible preferred stock financing. Dr. Lukatch, a member of our board of directors, is a Partner and Managing Director at TPG Biotechnology Partners, which is an affiliate of TPG Growth IV Switcheroo, L.P.
(2) Entities associated with Medicxi Ventures holding our securities whose shares are aggregated for purposes of reporting share ownership information are Medicxi Ventures I LP and Medicxi Co-Invest I LP. Moncef Slaoui, a member of our board of directors, is a partner at Medicxi Ventures.
(3) Abingworth Bioventures VI LP beneficially owned more than 5% of our outstanding capital stock at the time of the Series C convertible preferred stock financing. Mr. von Emster, a member of our board of directors, is a Managing Partner of Abingworth LP, which is an affiliate of Abingworth Bioventures VI LP.
(4) Longitude Venture Partners II, LP beneficially owned more than 5% of our outstanding capital stock at the time of the Series C convertible preferred stock financing. Mr. Enright, a member of our board of directors, is a Managing Member of Longitude Capital which is an affiliate of Longitude Venture Partners II, LP.
(5) Roche Finance Ltd beneficially owned more than 5% of our outstanding capital stock at the time of the Series C convertible preferred stock financing.
(6) Frazier Life Sciences VIII, L.P. beneficially owned more than 5% of our outstanding capital stock at the time of the Series C convertible preferred stock financing. Mr. Heron, a member of our board of directors, is a Managing General Partner of Frazier Healthcare Partners, which is an affiliate of Frazier Life Sciences VIII, L.P.
(7) Pivotal bioVentures Fund I L.P. beneficially owned more than 5% of our outstanding capital stock at the time of the Series C convertible preferred stock financing.

**Series B Convertible Preferred Stock Financing**

From March 2017 to May 2018, we sold an aggregate of 11,449,510 shares of our Series B convertible preferred stock at a purchase price of $5.2535 per share, for an aggregate purchase price of $60.1 million. The following table summarizes purchases of our Series B convertible preferred stock by related persons:

| Stockholder | Shares of Series B Convertible Preferred Stock | Total Purchase Price |
|---|---|---|
| Pivotal bioVentures Fund I L.P.(1) | 2,855,239 | $ 14,999,998 |
| Frazier Life Sciences VIII, L.P.(2) | 2,855,239 | $ 14,999,998 |
| Abingworth Bioventures VI LP(3) | 2,053,206 | $ 10,786,518 |
| Longitude Venture Partners II, L.P.(4) | 1,796,556 | $ 9,438,207 |
| Roche Finance Ltd(5) | 1,283,254 | $ 6,741,575 |

(1) Pivotal bioVentures Fund I L.P. beneficially owned more than 5% of our outstanding capital stock at the time of the Series C convertible preferred stock financing.
(2) Frazier Life Sciences VIII, L.P. beneficially owned more than 5% of our outstanding capital stock at the time of the Series C convertible preferred stock financing. Mr. Heron, a member of our board of directors, is a Managing General Partner of Frazier Healthcare Partners, which is an affiliate of Frazier Life Sciences VIII, L.P.
(3) Abingworth Bioventures VI LP beneficially owned more than 5% of our outstanding capital stock at the time of the Series C convertible preferred stock financing. Mr. von Emster, a member of our board of directors, is a Managing Partner of Abingworth LP, which is an affiliate of Abingworth Bioventures VI LP.
(4) Longitude Venture Partners II, LP beneficially owned more than 5% of our outstanding capital stock at the time of the Series C convertible preferred stock financing. Mr. Enright, a member of our board of directors, is a Managing Member of Longitude Capital which is an affiliate of Longitude Venture Partners II, LP.

(5) Roche Finance Ltd beneficially owned more than 5% of our outstanding capital stock at the time of the Series C convertible preferred stock financing.

**Series C Warrant**

In May 2018, we issued a warrant to purchase 100,000 shares of our Series C convertible preferred stock with an exercise price of $6.8296 per share, or the Sutro Warrant, in a private placement to Sutro Biopharma. The Sutro Warrant will be automatically net exercised immediately prior to the closing of this offering unless Sutro Biopharma elects to allow the Sutro Warrant to expire unexercised. Dr. Newell, a member of our board of directors, was at the time and is currently the Chief Executive Officer of Sutro Biopharma.

**Sutro Biopharma License**

In May 2018, we amended our license agreement, or the Sutro Biopharma License Agreement, with Sutro Biopharma. Pursuant to that agreement, we received an exclusive, worldwide, royalty-bearing license under Sutro Biopharma's patents and know-how relating to the cell-free expression of proteins to (i) research, develop, use, sell, offer for sale, export, import and otherwise exploit specified vaccine compositions for the treatment or prophylaxis of infectious diseases, excluding cancer vaccines compositions, such rights being sublicensable, and (ii) manufacture, or have manufactured by an approved contract manufacturing organization, such vaccine compositions from extracts supplied by Sutro Biopharma pursuant to the Sutro Biopharma Supply Agreement (as described below). In consideration of the rights granted under the license, we are obligated to pay Sutro Biopharma a 4% royalty on worldwide aggregate net sales of vaccine compositions for human health and a 2% royalty on such net sales of vaccine compositions for animal health. Mr. Newell, a member of our board of directors, was at the time and is currently the Chief Executive Officer of Sutro Biopharma. For the fiscal year ended December 31, 2018, there were no amounts paid pursuant to the Sutro Biopharma License Agreement. For a further description of the Sutro Biopharma License Agreement, see the section entitled "Business—Intellectual Property—Sutro Biopharma Agreements—Amended and Restated Agreement with Sutro Biopharma."

**Sutro Biopharma Supply Agreement**

In May 2018, we entered into a supply agreement, or the Sutro Biopharma Supply Agreement, with Sutro Biopharma. Pursuant to that supply agreement, we purchase from Sutro Biopharma extracts and custom reagents for use in manufacturing non-clinical and certain clinical supply of vaccine compositions utilizing the technology licensed under the Sutro License at prices not to exceed a specified percentage above Sutro Biopharma's fully burdened manufacturing cost. Mr. Newell, a member of our board of directors, was at the time and is currently the Chief Executive Officer of Sutro Biopharma. For the fiscal year ended December 31, 2018, we incurred $1.4 million of expenses pursuant to the Sutro Biopharma Supply Agreement. For a further description of the Sutro Supply Agreement, see the section entitled "Business—Intellectual Property—Sutro Biopharma Agreements—Supply Agreement with Sutro Biopharma."

**Investor Rights Agreement**

We are party to an amended and restated investor rights agreement, or IRA, with certain holders of our capital stock, including the holders of more than 5% of our outstanding capital stock. The IRA provides the holders of our redeemable convertible preferred stock with certain registration rights, including the right to demand that we file a registration statement or request that their shares be covered by a registration statement that we are otherwise filing. The IRA also provides these stockholders with information rights, which will terminate on the closing of this offering, and a right of first refusal with regard to certain issuances of our capital stock, which will not apply to the shares issued pursuant to this offering and which will terminate on the closing of this offering. In connection with this offering, the holders of up to 28,175,226 shares of our common stock issuable on conversion of outstanding preferred stock, will be entitled to rights with respect to the registration of their shares under the Securities Act under this agreement. For a description of these registration rights, see the section entitled "Description of Capital Stock—Registration Rights."

**Voting Agreement**

We are party to an amended and restated voting agreement under which certain holders of our capital stock, including the holders of more than 5% of our outstanding capital stock have agreed as to the manner in which they will vote their shares of our capital stock on certain matters, including with respect to the election of directors. On the closing of this offering, the amended and restated voting agreement will terminate, and none of our stockholders will have any special rights regarding the election or designation of members of our board of directors.

**Indemnification Agreements**

Our amended and restated certificate of incorporation that will be in effect upon the closing of this offering will contain provisions limiting the liability of directors, and our amended and restated bylaws that will be in effect upon the closing of this offering will provide that we will indemnify each of our directors and officers to the fullest extent permitted under Delaware law. Our amended and restated certificate of incorporation and amended and restated bylaws that will be in effect upon the closing of this offering will also provide our board of directors with discretion to indemnify our employees and other agents when determined appropriate by the board.

In addition, we have entered into an indemnification agreement with each of our directors and executive officers, which requires us to indemnify them. For more information regarding these agreements, see the section entitled “Executive Compensation—Limitations of Liability and Indemnification Matters.”

**Policies and Procedures for Related Person Transactions**

Prior to the closing of this offering, our board of directors will adopt a related person transaction policy setting forth the policies and procedures for the identification, review and approval or ratification of related person transactions. This policy covers, with certain exceptions set forth in Item 404 of Regulation S-K under the Securities Act, any transaction, arrangement or relationship, or any series of similar transactions, arrangements or relationships, in which we and a related person were or will be participants and the amount involved exceeds $120,000, including purchases of goods or services by or from the related person or entities in which the related person has a material interest, indebtedness and guarantees of indebtedness. In reviewing and approving any such transactions, our audit committee will consider all relevant facts and circumstances as appropriate, such as the purpose of the transaction, the availability of other sources of comparable products or services, whether the transaction is on terms comparable to those that could be obtained in an arm’s length transaction, management’s recommendation with respect to the proposed related person transaction, and the extent of the related person’s interest in the transaction.

## PRINCIPAL STOCKHOLDERS

The following table sets forth information with respect to the beneficial ownership of our capital stock as of September 30, 2019, as adjusted to reflect the sale of our common stock offered by us in this offering assuming no exercise of the underwriters' option to purchase additional shares, for:

- each of our named executive officers;
- each of our directors;
- all of our executive officers and directors as a group; and
- each person or group of affiliated persons known by us to beneficially own more than 5% of our common stock.

We have determined beneficial ownership in accordance with the rules and regulations of the SEC, and the information is not necessarily indicative of beneficial ownership for any other purpose. Except as indicated by the footnotes below, we believe, based on information furnished to us, that the persons and entities named in the table below have sole voting and sole investment power with respect to all shares that they beneficially own, subject to applicable community property laws.

Applicable percentage ownership before the offering is based on shares of common stock outstanding as of September 30, 2019, assuming the conversion of all outstanding shares of our redeemable convertible preferred stock into shares of common stock on the closing of this offering. Applicable percentage ownership after the offering is based on shares of common stock outstanding immediately after the closing of this offering, assuming no exercise by the underwriters of their option to purchase additional shares. In computing the number of shares beneficially owned by a person and the percentage ownership of such person, we deemed to be outstanding all shares subject to options held by the person that are currently exercisable, or exercisable within 60 days of September 30, 2019. However, except as described above, we did not deem such shares outstanding for the purpose of computing the percentage ownership of any other person.

Unless otherwise indicated, the address of each beneficial owner listed below is c/o SutroVax, Inc., 353 Hatch Drive, Foster City, California 94404. We believe, based on information provided to us, that each of the stockholders listed below has sole voting and investment power with respect to the shares beneficially owned by the stockholder unless noted otherwise, subject to community property laws where applicable.

| | Shares Beneficially Owned Prior to Offering | | Shares Beneficially Owned After Offering | |
|---|---|---|---|---|
| Name of Beneficial Owner | Number | Percentage | Number | Percentage |
| ***5% Stockholders*** | | | | |
| Abingworth Bioventures VI, LP(1) | | % | | % |
| Longitude Venture Partners II, L.P.(2) | | | | |
| Roche Finance Ltd(3) | | | | |
| Grant E. Pickering(4) | | | | |
| TPG Growth IV Switcheroo, L.P.(5) | | | | |
| Frazier Life Sciences VIII, L.P.(6) | | | | |
| Pivotal bioVenture Partners Fund I, L.P.(7) | | | | |
| Sutro Biopharma(8) | | | | |
| ***Directors and Named Executive Officers*** | | | | |
| Grant E. Pickering(4) | | | | |
| Elaine Sun(9) | | | | |
| Jane Wright-Mitchell(10) | | | | |
| Moncef Slaoui(11) | | | | |
| Kurt von Emster(1) | | | | |

| Name of Beneficial Owner | Shares Beneficially Owned Prior to Offering | | Shares Beneficially Owned After Offering | |
|---|---|---|---|---|
| | Number | Percentage | Number | Percentage |
| Patrick Enright(2) | | | | |
| Peter Hirth(12) | | | | |
| Rob Hopfner(7) | | | | |
| Heath Lukatch | | | | |
| William J. Newell(13) | | | | |
| All directors and executive officers as a group (12 persons) (14) | | | | |

(1) The shares are held by Abingworth Bioventures VI, LP ("ABV VI"). Abingworth Bioventures VI GP LP ("Abingworth GP") serves as the general partner of ABV VI. Abingworth General Partner VI LLP, serves as the general partner of Abingworth GP. Abingworth (acting by its general partner Abingworth GP, acting by its general partner Abingworth General Partner VI LLP) has delegated to Abingworth LLP, all investment and dispositive power. Mr. von Emster is a Managing Partner of Abingworth LLP. The address for each of these entities is c/o Abingworth LLP, Princes House, 38 Jermyn Street, London, England SW1Y 6DN.

(2) The shares are held by Longitude Venture Partners II, L.P. ("Longitude II"). Longitude Capital Partners II, LLC, ("LCP2"), the general partner of Longitude II, may be deemed to share voting and investment power with respect to the shares held by Longitude II. Patrick G. Enright and Juliet Tammenoms Bakker are managing members of LCP2 and may be deemed to share voting and investment power over the shares held by Longitude II. The address of LCP2 is 2740 Sand Hill Road, Menlo Park, CA 94025.

(3) The shares are held by Roche Finance Ltd ("Roche Finance"). Roche Finance is a wholly owned subsidiary of Roche Holding Ltd. ("Roche Holding"), a publicly-held corporation. The address of Roche Finance is Grenzacherstrasse 122, Basel, 4070 Switzerland and the address of Roche Holding is Grenzacherstrasse 124, Basel, 4070 Switzerland.

(4) Includes (i) shares of common stock held by Mr. Pickering and (ii) shares of common stock issuable upon exercise of outstanding stock options held by Mr. Pickering, which are exercisable within 60 days of September 30, 2019.

(5) The shares are held by TPG Growth IV Switcheroo, L.P. ("TPGGIV"). The general partner of TPGGIV is , whose general partner is . and are of and may therefore be deemed to be the beneficial owners of the shares held by TPGGIV. The addres of TPGGIV is c/o

(6) The shares are held by Frazier Life Sciences VIII, L.P. ("FLS VIII"). FHM Life Sciences VIII, LP ("FHM LP") is the general partner of FLS VIII and FHM Life Sciences VIII, LLC ("FHM LLC") is the general partner of FHM Life Sciences VIII, LP. James Topper and Patrick J. Heron may be deemed to beneficially own the shares which are held by FLS VIII as they are the sole members of FHM LLC and therefore share voting and investment power over the shares held by FLS VIII. The address for Frazier Life Sciences VIII, L.P. is 601 Union Street, Suite 3200, Seattle, Washington 98101.

(7) The shares are held by Pivotal bioVenture Partners Fund I, L.P. ("Pivotal"). The general partner of Pivotal is Pivotal bioVenture Partners Fund I G.P., L.P., ("Pivotal GP"). The general partner of Pivotal GP is Pivotal bioVenture Partners Fund I U.G.P., Ltd, (the "Ultimate General Partner"). The board of directors of the Ultimate General Partner may, along with the Ultimate General Partner, be deemed to have shared voting and dispositive power over the shares owned by Pivotal. The principal business address of Pivotal is 1700 Owens Street, Suite 595, San Francisco, CA 94158.

(8) Includes (i) shares of common stock held by Sutro Biopharma and (ii) shares issuable upon the exercise of warrants exercisable within 60 days of September 30, 2019.

(9) Includes (i) shares of common stock held by Elaine Sun and (ii) shares of common stock issuable upon exercise of outstanding stock options held by Ms. Sun, which are exercisable within 60 days of September 30, 2019.

(10) Includes (i) shares of common stock held by Jane Wright-Mitchell and (ii) shares of common stock issuable upon exercise of outstanding stock options held by Dr. Wright-Mitchell, which are exercisable within 60 days of September 30, 2019.

(11) Includes (i) shares of common stock held by Moncef Slaoui and (ii) shares of common stock issuable upon exercise of outstanding stock options held by Dr. Slaoui, which are exercisable within 60 days of September 30, 2019.

(12) Includes (i) shares of common stock held by Hirth Enterprises, LLC and (ii) shares of common stock issuable upon exercise of outstanding stock options held by Dr. Hirth, which are exercisable within 60 days of September 30, 2019. Dr. Hirth exercises voting power over the shares of common stock held by Hirth Enterprises, LLC and, as a result, may be deemed to be the beneficial owner of such shares.

(13) Includes (i) shares of common stock held by William J. Newell, Ph.D., (ii) shares held by Mr. Newell's spouse, (iii) shares of common stock held by Sutro Biopharma and (iv) shares issuable upon the exercise of warrants exercisable within 60 days of September 30, 2019 held by Sutro Biopharma. Mr. Newell is the Chief Executive Officer of Sutro Biopharma, a public company.

(14) Includes (i) shares held by our current directors and executive officers, and (ii) shares subject to options exercisable within 60 days of September 30, 2019.

# DESCRIPTION OF CAPITAL STOCK

## General

The following is a summary of the rights of our common and preferred stock and some of the provisions of our amended and restated certificate of incorporation and amended and restated bylaws, which will each become effective upon the closing of this offering, our investor rights agreement and relevant provisions of the Delaware General Corporation Law, or DGCL. The descriptions herein are qualified in their entirety by our amended and restated certificate of incorporation, amended and restated bylaws and investor rights agreement, copies of which have been filed as exhibits to the registration statement of which this prospectus is a part, as well as the relevant provisions of the DGCL.

Upon the closing of this offering, our authorized capital stock will consist of shares, all with a par value of $0.001 per share, of which:

- shares are designated as common stock; and
- shares are designated as preferred stock.

## Common Stock

As of December 31, 2018, there were 34,513,989 shares of our common stock outstanding and held of record by 78 stockholders, assuming the conversion of all outstanding shares of our preferred stock into shares of common stock, which will automatically occur upon the closing of this offering.

Holders of our common stock are entitled to one vote for each share held on all matters submitted to a vote of stockholders, including the election of directors, and do not have cumulative voting rights. Subject to preferences that may be applicable to any then outstanding preferred stock, holders of common stock are entitled to receive ratably those dividends, if any, as may be declared by the board of directors out of legally available funds. In the event of our liquidation, dissolution or winding up, the holders of common stock will be entitled to share ratably in the assets legally available for distribution to stockholders after the payment of or provision for all of our debts and other liabilities, subject to the prior rights of any preferred stock then outstanding. Holders of common stock have no preemptive or conversion rights or other subscription rights and there are no redemption or sinking funds provisions applicable to the common stock. All outstanding shares of common stock are, and the common stock to be outstanding upon the closing of this offering will be, duly authorized, validly issued, fully paid and nonassessable. All authorized but unissued shares of our common stock will be available for issuance by our board of directors without any further stockholder action, except as required by the listing standards of Nasdaq. The rights, preferences and privileges of holders of common stock are subject to and may be adversely affected by the rights of the holders of shares of any series of preferred stock that we may designate and issue in the future.

## Preferred Stock

As of December 31, 2018, there were 28,175,226 shares of redeemable convertible preferred stock outstanding. Immediately upon the closing of this offering, each outstanding share of redeemable convertible preferred stock will convert into one share of common stock, and no shares of preferred stock will be outstanding.

Upon the closing of this offering, our board of directors may, without further action by our stockholders, fix the rights, preferences, privileges and restrictions of up to an aggregate of shares of redeemable convertible preferred stock in one or more series and authorize their issuance. These rights, preferences and privileges could include dividend rights, conversion rights, voting rights, terms of redemption, liquidation

preferences, sinking fund terms and the number of shares constituting any series or the designation of such series, any or all of which may be greater than the rights of our common stock. The issuance of our redeemable convertible preferred stock could adversely affect the voting power of holders of our common stock, and the likelihood that such holders will receive dividend payments and payments upon liquidation. In addition, the issuance of preferred stock could have the effect of delaying, deferring or preventing a change of control or other corporate action.

**Options**

As of December 31, 2018, we had outstanding options under our equity compensation plans to purchase an aggregate of 5,117,067 shares of our common stock with a weighted-average exercise price of $1.05 per share.

**Warrants**

As of December 31, 2018, we had outstanding one warrant to purchase an aggregate of up to 53,744 shares of our common stock with an exercise price of $0.47 per share.

As of December 31, 2018, we had outstanding one warrant to purchase an aggregate of up to 100,000 shares of our preferred stock with an exercise price of $6.8296 per share.

Each of the above warrants has a net exercise provision under which the holder may, in lieu of payment of the exercise price in cash, surrender the warrant and receive a net amount of shares based on the fair market value of our common stock at the time of the net exercise of the warrant after deduction of the aggregate exercise price. These warrants also contain provisions for the adjustment of the exercise price and the aggregate number of shares issuable upon the exercise of the warrants in the event of stock dividends, stock splits, reorganizations and reclassifications and consolidations. Each of the above warrants will be automatically net exercised immediately prior to the closing of this offering unless the holder of the warrants elects to allow the warrants to expire unexercised.

**Registration Rights**

We are party to an amended and restated investor rights agreement that provides that certain stockholders, including certain holders of our preferred stock, including certain holders of at least 5% of our outstanding capital stock, have certain registration rights as set forth below. The registration of shares of our common stock by the exercise of registration rights described below would enable the holders to sell these shares without restriction under the Securities Act when the applicable registration statement is declared effective. We will pay the registration expenses, other than underwriting discounts and commissions, of the shares registered pursuant to the demand, piggyback and Form S-3 registration rights described below.

Generally, in an underwritten offering, the managing underwriter, if any, has the right, subject to specified conditions, to limit the number of shares such holders may include. The demand, piggyback and Form S-3 registration rights described below will expire three years after the closing of this offering, of which this prospectus is a part, or with respect to any particular stockholder, such time after the closing of this offering that such stockholder can sell all of its shares entitled to registration rights under Rule 144 of the Securities Act during any 90-day period.

***Demand Registration Rights***

The holders of an aggregate of 28,175,226 shares of our common stock will be entitled to certain demand registration rights. At any time beginning the 180 days after the closing of this offering, the holders of a majority of these shares may request that we register all or a portion of their shares. We are obligated to effect only two such registrations. Such request for registration must cover shares with an anticipated aggregate offering price, net of underwriting discounts and commissions, of at least $10.0 million.

***Piggyback Registration Rights***

In connection with this offering, the holders of an aggregate of 28,175,226 shares of our common stock were entitled to, and the necessary percentage of holders waived, their rights to notice of this offering and to include their shares of registrable securities in this offering. After this offering, in the event that we propose to register any of our securities under the Securities Act, either for our own account or for the account of other security holders, the holders of these shares will be entitled to certain piggyback registration rights allowing the holder to include their shares in such registration, subject to certain marketing and other limitations. As a result, whenever we propose to file a registration statement under the Securities Act, other than with respect to (i) a registration statement relating to any employee benefit plans, (ii) a registration relating to a corporate reorganization or other Rule 145 transaction, (iii) a registration relating to the offer and sale of debt securities or (iv) a registration on any registration form that does not permit secondary sales, the holders of these shares are entitled to notice of the registration and have the right to include their shares in the registration, subject to limitations that the underwriters may impose on the number of shares included in the offering.

***Form S-3 Registration Rights***

The holders of an aggregate of 28,175,226 shares of common stock will be entitled to certain Form S-3 registration rights. The holders of these shares can make a request that we register their shares on Form S-3 if we are qualified to file a registration statement on Form S-3 and if the reasonably anticipated aggregate gross proceeds of the shares offered would equal or exceed $1.0 million. We will not be required to effect more than three registrations on Form S-3 within any 12-month period.

**Anti-Takeover Effects of Delaware Law and Our Certificate of Incorporation and Bylaws**

Some provisions of Delaware law, our amended and restated certificate of incorporation and our amended and restated bylaws contain or will contain provisions that could make the following transactions more difficult: an acquisition of us by means of a tender offer; an acquisition of us by means of a proxy contest or otherwise; or the removal of our incumbent officers and directors. It is possible that these provisions could make it more difficult to accomplish or could deter transactions that stockholders may otherwise consider to be in their best interest or in our best interests, including transactions which provide for payment of a premium over the market price for our shares.

These provisions, summarized below, are intended to discourage coercive takeover practices and inadequate takeover bids. These provisions are also designed to encourage persons seeking to acquire control of us to first negotiate with our board of directors. We believe that the benefits of the increased protection of our potential ability to negotiate with the proponent of an unfriendly or unsolicited proposal to acquire or restructure us outweigh the disadvantages of discouraging these proposals because negotiation of these proposals could result in an improvement of their terms.

***Stockholder Meetings***

Our amended and restated bylaws will provide that a special meeting of stockholders may be called only by our chairman of the board, chief executive officer or president, or by a resolution adopted by a majority of our board of directors.

***Requirements for Advance Notification of Stockholder Nominations and Proposals***

Our amended and restated bylaws will establish advance notice procedures with respect to stockholder proposals to be brought before a stockholder meeting and the nomination of candidates for election as directors, other than nominations made by or at the direction of the board of directors or a committee of the board of directors.

***Elimination of Stockholder Action by Written Consent***

Our amended and restated certificate of incorporation and amended and restated bylaws will eliminate the right of stockholders to act by written consent without a meeting.

***Staggered Board***

Our board of directors will be divided into three classes. The directors in each class will serve for a three-year term, one class being elected each year by our stockholders. For more information on the classified board, see the section entitled "Management—Composition of Our Board of Directors." This system of electing and removing directors may tend to discourage a third party from making a tender offer or otherwise attempting to obtain control of us, because it generally makes it more difficult for stockholders to replace a majority of the directors.

***Removal of Directors***

Our amended and restated certificate of incorporation will provide that no member of our board of directors may be removed from office by our stockholders except for cause and, in addition to any other vote required by law, upon the approval of not less than two thirds of the total voting power of all of our outstanding voting stock then entitled to vote in the election of directors.

***Stockholders Not Entitled to Cumulative Voting***

Our amended and restated certificate of incorporation will not permit stockholders to cumulate their votes in the election of directors. Accordingly, the holders of a majority of the outstanding shares of our common stock entitled to vote in any election of directors can elect all of the directors standing for election, if they choose, other than any directors that holders of our preferred stock may be entitled to elect.

***Delaware Anti-Takeover Statute***

We are subject to Section 203 of the DGCL, which prohibits persons deemed to be "interested stockholders" from engaging in a "business combination" with a publicly held Delaware corporation for three years following the date these persons become interested stockholders unless the business combination is, or the transaction in which the person became an interested stockholder was, approved in a prescribed manner or another prescribed exception applies. Generally, an "interested stockholder" is a person who, together with affiliates and associates, owns, or within three years prior to the determination of interested stockholder status did own, 15% or more of a corporation's voting stock. Generally, a "business combination" includes a merger, asset or stock sale, or other transaction resulting in a financial benefit to the interested stockholder. The existence of this provision may have an anti-takeover effect with respect to transactions not approved in advance by the board of directors.

***Choice of Forum***

Our amended and restated certificate of incorporation will provide that, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware (or, in the event that the Court of Chancery does not have jurisdiction, the federal district court for the District of Delaware or other state courts of the State of Delaware) will be the exclusive forum for the following types of actions or proceedings under Delaware statutory or common law: (i) any derivative action or proceeding brought on our behalf; (ii) any action or proceeding asserting a claim of breach of a fiduciary duty owed by any of our current or former directors, officers, or employees to us or our stockholders; (iii) any action or proceeding asserting a claim against us or any of our current or former directors, officers or employees arising pursuant to any provision of the DGCL or our certificate of incorporation or bylaws; (iv) any action or proceeding to interpret, apply, enforce or

determine the validity of our certificate of incorporation or bylaws; (v) any action or proceeding as to which the DGCL confers jurisdiction to the Court of Chancery of the State of Delaware; or (vi) any action asserting a claim against us or any of our current or former directors, officers or employees governed by the internal affairs doctrine. This provision would not apply to suits brought to enforce a duty or liability created by the Exchange Act or any other claim for which the U.S. federal courts have exclusive jurisdiction. Our amended and restated certificate of incorporation further provides that the federal district courts of the United States of America will be the exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act, subject to and contingent upon a final adjudication in the State of Delaware of the enforceability of such exclusive forum provision. Our amended and restated certificate of incorporation will also provide that any person or entity purchasing or otherwise acquiring any interest in shares of our capital stock will be deemed to have notice of and to have consented to these choice of forum provisions. It is possible that a court of law could rule that the choice of forum provisions to be contained in our amended and restated certificate of incorporation are inapplicable or unenforceable if they are challenged in a proceeding or otherwise. If a court were to find the choice of forum provision that will be contained in our amended and restated certificate of incorporation to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving such action in other jurisdictions.

***Amendment of Charter Provisions***

The amendment of any of the above provisions would require approval by holders of at least two-thirds of the total voting power of all of our outstanding voting stock.

The provisions of Delaware law, our amended and restated certificate of incorporation and our amended and restated bylaws could have the effect of discouraging others from attempting hostile takeovers and, as a consequence, they may also inhibit temporary fluctuations in the market price of our common stock that often result from actual or rumored hostile takeover attempts. These provisions may also have the effect of preventing changes in the composition of our board and management. It is possible that these provisions could make it more difficult to accomplish transactions that stockholders may otherwise deem to be in their best interests.

**Transfer Agent and Registrar**

The transfer agent and registrar for our common stock upon the closing of this offering will be . The transfer agent and registrar's address is .

**Exchange Listing**

Our common stock is currently not listed on any securities exchange. We intend to apply to have our common stock listed on the Nasdaq Global Market under the symbol " ."

## SHARES ELIGIBLE FOR FUTURE SALE

Prior to this offering, there has been no public market for our common stock. Future sales of substantial amounts of common stock in the public market, or the perception that such sales may occur, could adversely affect the market price of our common stock. Although we intend to apply to have our common stock listed on Nasdaq, we cannot assure you that there will be an active public market for our common stock.

Following the closing of this offering, based on the number of shares of our common stock outstanding as of December 31, 2018 and assuming (i) the issuance of shares of common stock in this offering, (ii) the conversion of all outstanding shares of our convertible preferred stock into 28,175,226 shares of our common stock, which will automatically occur upon the closing of the offering, (iii) the issuance of shares of our common stock as a result of the expected net exercise of an outstanding warrant to purchase 100,000 shares of our redeemable convertible preferred stock, (iv) the issuance of shares of our common stock as a result of the expected net exercise of an outstanding warrant to purchase 53,744 shares of our common stock and (v) no exercise of the underwriters' option to purchase additional shares, we will have an aggregate of approximately shares of common stock outstanding.

Of these shares, all shares of common stock sold in this offering will be freely tradable without restriction or further registration under the Securities Act, except for any shares of common stock purchased by our "affiliates," as that term is defined in Rule 144 under the Securities Act. Shares purchased by our affiliates would be subject to the Rule 144 resale restrictions described below, other than the holding period requirement.

The remaining shares of common stock outstanding after this offering will be "restricted securities," as that term is defined in Rule 144 under the Securities Act. These restricted securities are eligible for public sale only if they are registered under the Securities Act or if they qualify for an exemption from registration under Rule 144 or Rule 701 under the Securities Act, each of which is summarized below. We expect that all of these shares will be subject to a 180-day lock-up period under the lock-up and market stand-off agreements described below.

We may issue shares of common stock from time to time as consideration for future acquisitions, investments or other corporate purposes. In the event any such acquisition, investment or other transaction is significant, the number of shares of common stock that we may issue may also be significant. We may also grant registration rights covering those shares of common stock issued in connection with any such acquisition, investment or other transaction.

In addition, shares of common stock that are either subject to outstanding options or warrants or reserved for future issuance under our equity incentive plans will become eligible for sale in the public market to the extent permitted by the provisions of various vesting schedules, the lock-up agreements described below and Rules 144 and 701 under the Securities Act.

### Lock-Up Agreements

We, along with our directors, executive officers and substantially all of our other stockholders and optionholders, have agreed with the underwriters that for a period of 180 days, after the date of this prospectus, subject to specified exceptions as detailed further in the section entitled "Underwriting," we or they will not, except with the prior written consent of BofA Securities, Inc. and Jefferies LLC, offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to sale of, or otherwise dispose of or transfer any shares of common stock or any securities convertible into or exercisable or exchangeable for shares of common stock, request or demand that we file a registration statement related to our common stock or enter into any swap or other agreement that transfers to another, in whole or in part, directly or indirectly, the economic consequence of ownership of the common stock. All of our stockholders are subject to a market stand-off agreement with us which imposes similar restrictions.

Upon expiration of the lock-up period, certain of our stockholders will have the right to require us to register their shares under the Securities Act. See the subsection entitled "—Registration Rights" below and the section entitled "Description of Capital Stock—Registration Rights."

Upon the expiration of the lock-up period, substantially all of the shares subject to such lock-up restrictions will become eligible for sale, subject to the limitations discussed above.

**Rule 144**

In general, under Rule 144 as currently in effect, once we have been subject to public company reporting requirements of Section 13 or Section 15(d) of the Exchange Act for at least 90 days, an eligible stockholder is entitled to sell such shares without complying with the manner of sale, volume limitation or notice provisions of Rule 144, subject to compliance with the public information requirements of Rule 144. To be an eligible stockholder under Rule 144, such stockholder must not be deemed to have been one of our affiliates for purposes of the Securities Act at any time during the 90 days preceding a sale and must have beneficially owned the shares proposed to be sold for at least six months, including the holding period of any prior owner other than our affiliates. If such a person has beneficially owned the shares proposed to be sold for at least one year, including the holding period of any prior owner other than our affiliates, then such person is entitled to sell such shares without complying with any of the requirements of Rule 144, subject to the expiration of the lock-up agreements described above.

In general, under Rule 144, as currently in effect, our affiliates or persons selling shares on behalf of our affiliates are entitled to sell shares on expiration of the lock-up agreements described above. Beginning 90 days after the date of this prospectus, within any three-month period, such stockholders may sell a number of shares that does not exceed the greater of:

- 1% of the number of shares of our common stock then outstanding, which will equal approximately shares immediately after this offering; or
- the average weekly trading volume in our common stock on Nasdaq during the four calendar weeks preceding the filing of a notice on Form 144 with respect to such sale.

Sales under Rule 144 by our affiliates or persons selling shares on behalf of our affiliates are also subject to certain manner of sale provisions and notice requirements and to the availability of current public information about us. Notwithstanding the availability of Rule 144, the holders of substantially all of our restricted securities have entered into lock-up agreements as referenced above and their restricted securities will become eligible for sale (subject to the above limitations under Rule 144) upon the expiration of the restrictions set forth in those agreements.

**Rule 701**

Rule 701 generally allows a stockholder who was issued shares under a written compensatory plan or contract and who is not deemed to have been an affiliate of our company during the immediately preceding 90 days, to sell these shares in reliance on Rule 144, but without being required to comply with the public information, holding period, volume limitation or notice provisions of Rule 144. Rule 701 also permits affiliates of our company to sell their Rule 701 shares under Rule 144 without complying with the holding period requirements of Rule 144. All holders of Rule 701 shares, however, are required by that rule to wait until 90 days after the date of this prospectus before selling those shares under Rule 701, subject to the expiration of the lock-up agreements described above.

**Form S-8 Registration Statement**

We intend to file one or more registration statements on Form S-8 under the Securities Act to register all shares of common stock subject to outstanding stock options and common stock issued or issuable under the

2014 Plan, the 2020 Plan and the ESPP. We expect to file the registration statement covering shares offered pursuant to these stock plans shortly after the date of this prospectus, permitting the resale of such shares by non-affiliates in the public market without restriction under the Securities Act and the sale by affiliates in the public market subject to compliance with the resale provisions of Rule 144.

**Registration Rights**

As of December 31, 2018, holders of up to 28,175,226 shares of our common stock, which includes all of the shares of common stock issuable upon the conversion of our redeemable convertible preferred stock upon the closing of this offering, or their transferees, will be entitled to various rights with respect to the registration of these shares under the Securities Act upon the closing of this offering and the expiration of lock-up agreements. Registration of these shares under the Securities Act would result in these shares becoming fully tradable without restriction under the Securities Act immediately upon the effectiveness of the registration, except for shares purchased by affiliates. See the section entitled “Description of Capital Stock—Registration Rights” for additional information. Shares covered by a registration statement will be eligible for sale in the public market upon the expiration or release from the terms of the lock-up agreement.

## MATERIAL U.S. FEDERAL INCOME TAX CONSEQUENCES TO NON-U.S. HOLDERS OF OUR COMMON STOCK

The following summary describes the material U.S. federal income tax consequences of the acquisition, ownership, and disposition of our common stock acquired in this offering by Non-U.S. Holders (as defined below). This discussion is not a complete analysis of all potential U.S. federal income tax consequences relating thereto, and does not deal with foreign, state and local consequences that may be relevant to Non-U.S. Holders in light of their particular circumstances, nor does it address U.S. federal tax consequences (such as gift and estate taxes) other than income taxes. Special rules different from those described below may apply to certain Non-U.S. Holders that are subject to special treatment under the Internal Revenue Code of 1986, as amended, or the Code, such as financial institutions, insurance companies, tax-exempt organizations, broker-dealers and traders in securities, U.S. expatriates, "controlled foreign corporations," "passive foreign investment companies," corporations that accumulate earnings to avoid U.S. federal income tax, corporations organized outside of the United States, any state thereof or the District of Columbia that are nonetheless treated as U.S. taxpayers for U.S. federal income tax purposes, persons that hold our common stock as part of a "straddle," "hedge," "conversion transaction," "synthetic security" or integrated investment or other risk reduction strategy, persons who acquire our common stock through the exercise of an option or otherwise as compensation, persons subject to the alternative minimum tax or federal Medicare contribution tax on net investment income, persons subject to special tax accounting rules under Section 451(b) of the Code, "qualified foreign pension funds" as defined in Section 897(l)(2) of the Code and entities all of the interests of which are held by qualified foreign pension funds, partnerships and other pass-through entities or arrangements, and investors in such pass-through entities or arrangements. Such Non-U.S. Holders are urged to consult their own tax advisors to determine the U.S. federal, state, local and other tax consequences that may be relevant to them. Furthermore, the discussion below is based upon the provisions of the Code, and Treasury Regulations, rulings and judicial decisions thereunder as of the date hereof, and such authorities may be repealed, revoked, or modified, perhaps retroactively, so as to result in U.S. federal income tax consequences different from those discussed below. We have not requested a ruling from the U.S. Internal Revenue Service, or the IRS, with respect to the statements made and the conclusions reached in the following summary, and there can be no assurance that the IRS will agree with such statements and conclusions. This discussion assumes that the Non-U.S. Holder holds our common stock as a "capital asset" within the meaning of Section 1221 of the Code (generally, property held for investment).

This discussion is for informational purposes only and is not tax advice. Persons considering the purchase of our common stock pursuant to this offering should consult their own tax advisors concerning the U.S. federal income, estate, and other tax consequences of acquiring, owning and disposing of our common stock in light of their particular situations as well as any consequences arising under the laws of any other taxing jurisdiction, including any state, local or foreign tax consequences.

For the purposes of this discussion, a "Non-U.S. Holder" is, for U.S. federal income tax purposes, a beneficial owner of common stock that is neither a U.S. Holder, nor a partnership (or other entity treated as a partnership for U.S. federal income tax purposes regardless of its place of organization or formation). A "U.S. Holder" means a beneficial owner of our common stock that is for U.S. federal income tax purposes any of the following:

- an individual who is a citizen or resident of the United States;
- a corporation or other entity treated as a corporation for U.S. federal income tax purposes created or organized in or under the laws of the U.S., any state thereof or the District of Columbia;
- an estate the income of which is subject to U.S. federal income taxation regardless of its source; or
- a trust if it (i) is subject to the primary supervision of a court within the U.S. and one or more U.S. persons have the authority to control all substantial decisions of the trust or (ii) has a valid election in effect under applicable U.S. Treasury regulations to be treated as a U.S. person.

**Distributions**

As described in the section entitled "Dividend Policy," we have never declared or paid any cash dividends on our capital stock and do not anticipate paying any cash dividends in the foreseeable future. Distributions, if any, made on our common stock to a Non-U.S. Holder to the extent made out of our current or accumulated earnings and profits (as determined under U.S. federal income tax principles) generally will constitute dividends for U.S. tax purposes and will be subject to withholding tax at a 30% rate or such lower rate as may be specified by an applicable income tax treaty, subject to the discussions below regarding effectively connected income, backup withholding, and foreign accounts. To obtain a reduced rate of withholding under a treaty, a Non-U.S. Holder generally will be required to provide us with a properly executed IRS Form W-8BEN (in the case of individuals) or IRS Form W-8BEN-E (in the case of entities), or other appropriate form, certifying the Non-U.S. Holder's entitlement to benefits under that treaty. This certification must be provided to us or our paying agent prior to the payment of dividends and must be updated periodically. In the case of a Non-U.S. Holder that is an entity, Treasury Regulations and the relevant tax treaty provide rules to determine whether, for purposes of determining the applicability of a tax treaty, dividends will be treated as paid to the entity or to those holding an interest in that entity. If a Non-U.S. Holder holds stock through a financial institution or other agent acting on the holder's behalf, the holder will be required to provide appropriate documentation to such agent. The holder's agent will then be required to provide certification to us or our paying agent, either directly or through other intermediaries. If you are eligible for a reduced rate of U.S. federal withholding tax under an income tax treaty and you do not timely file the required certification, you may be able to obtain a refund or credit of any excess amounts withheld by timely filing an appropriate claim for a refund with the IRS.

We generally are not required to withhold tax on dividends paid to a Non-U.S. Holder that are effectively connected with the Non-U.S. Holder's conduct of a trade or business within the United States (and, if required by an applicable income tax treaty, are attributable to a permanent establishment or fixed base that such holder maintains in the United States) if a properly executed IRS Form W-8ECI, stating that the dividends are so connected, is furnished to us (or, if stock is held through a financial institution or other agent, to such agent). In general, such effectively connected dividends will be subject to U.S. federal income tax, on a net income basis at the regular rates applicable to U.S. residents. A corporate Non-U.S. Holder receiving effectively connected dividends may also be subject to an additional "branch profits tax," which is imposed, under certain circumstances, at a rate of 30% (or such lower rate as may be specified by an applicable treaty) on the corporate Non-U.S. Holder's effectively connected earnings and profits, subject to certain adjustments. Non-U.S. Holders should consult their tax advisors regarding any applicable income tax treaties that may provide for different rules.

To the extent distributions on our common stock, if any, exceed our current and accumulated earnings and profits, they will first reduce the Non-U.S. Holder's adjusted basis in our common stock, but not below zero, and then will be treated as gain to the extent of any excess amount distributed, and taxed in the same manner as gain realized from a sale or other disposition of common stock as described in the next section.

**Gain on Disposition of Our Common Stock**

Subject to the discussions below regarding backup withholding and foreign accounts, a Non-U.S. Holder generally will not be subject to U.S. federal income tax with respect to gain realized on a sale or other disposition of our common stock unless (i) the gain is effectively connected with a trade or business of such holder in the United States (and, if required by an applicable income tax treaty, is attributable to a permanent establishment or fixed base that such holder maintains in the United States), (ii) the Non-U.S. Holder is a nonresident alien individual and is present in the United States for 183 or more days in the taxable year of the disposition and certain other conditions are met, or (iii) we are or have been a "United States real property holding corporation" within the meaning of Code Section 897(c)(2) at any time within the shorter of the five-year period preceding such disposition or such holder's holding period. In general, we would be a United States real property holding

corporation if our interests in U.S. real estate comprise (by fair market value) at least half of our business assets. We believe that we have not been and we are not, and do not anticipate becoming, a United States real property holding corporation. Even if we are treated as a United States real property holding corporation, gain realized by a Non-U.S. Holder on a disposition of our common stock will not be subject to U.S. federal income tax so long as (1) the Non-U.S. Holder owned, directly, or indirectly and constructively, no more than 5% of our common stock at all times within the shorter of (A) the five-year period preceding the disposition or (B) the holder's holding period and (2) our common stock is regularly traded on an established securities market. There can be no assurance that our common stock will continue to qualify as regularly traded on an established securities market. If any gain on your disposition is taxable because we are a United States real property holding corporation and your ownership of our common stock exceeds 5%, you will be taxed on such disposition generally in the manner as gain that is effectively connected with the conduct of a U.S. trade or business (subject to the provisions under an applicable income tax treaty), except that the branch profits tax generally will not apply.

If you are a Non-U.S. Holder described in (i) above, you will be required to pay tax on the net gain derived from the sale at regular U.S. federal income tax rates, and corporate Non-U.S. Holders described in (a) above may be subject to the additional branch profits tax at a 30% rate or such lower rate as may be specified by an applicable income tax treaty. Gain described in (ii) above will be subject to U.S. federal income tax at a flat 30% rate or such lower rate as may be specified by an applicable income tax treaty, which gain may be offset by certain U.S.-source capital losses (even though you are not considered a resident of the United States), provided that the Non-U.S. Holder has timely filed U.S. federal income tax returns with respect to such losses.

**Information Reporting Requirements and Backup Withholding**

Generally, we must report information to the IRS with respect to any dividends we pay on our common stock (even if the payments are exempt from withholding), including the amount of any such dividends, the name and address of the recipient, and the amount, if any, of tax withheld. A similar report is sent to the holder to whom any such dividends are paid. Pursuant to tax treaties or certain other agreements, the IRS may make its reports available to tax authorities in the recipient's country of residence.

Dividends paid by us (or our paying agents) to a Non-U.S. Holder may also be subject to U.S. backup withholding. U.S. backup withholding generally will not apply to a Non-U.S. Holder who provides a properly executed IRS Form W-8BEN, IRS Form W-8BEN-E, or IRS Form W-ECI, or otherwise establishes an exemption. Notwithstanding the foregoing, backup withholding may apply if the payor has actual knowledge, or reason to know, that the holder is a U.S. person who is not an exempt recipient.

U.S. information reporting and backup withholding requirements generally will apply to the proceeds of a disposition of our common stock effected by or through a U.S. office of any broker, U.S. or foreign, except that information reporting and such requirements may be avoided if the holder provides a properly executed IRS Form W-8BEN or IRS Form W-8BEN-E or otherwise meets documentary evidence requirements for establishing non-U.S. person status or otherwise establishes an exemption. Generally, U.S. information reporting and backup withholding requirements will not apply to a payment of disposition proceeds to a Non-U.S. Holder where the transaction is effected outside the United States through a non-U.S. office of a non-U.S. broker. Information reporting and backup withholding requirements may, however, apply to a payment of disposition proceeds if the broker has actual knowledge, or reason to know, that the holder is, in fact, a U.S. person. For information reporting purposes, certain brokers with substantial U.S. ownership or operations will generally be treated in a manner similar to U.S. brokers.

Backup withholding is not an additional tax. Any amounts withheld under the backup withholding rules may be credited against the tax liability of persons subject to backup withholding, provided that the required information is timely furnished to the IRS.

**Foreign Accounts**

Sections 1471 through 1474 of the Code (commonly referred to as FATCA) impose a U.S. federal withholding tax of 30% on certain payments, including dividends paid on, and, subject to the proposed Treasury Regulations discussed below, the gross proceeds of a disposition of, our common stock paid to a foreign financial institution (as specifically defined by applicable rules) unless such institution enters into an agreement with the U.S. government to withhold on certain payments and to collect and provide to the U.S. tax authorities identifying information regarding certain U.S. account holders of such institution (which includes certain equity holders of such institution, as well as certain account holders that are foreign entities with U.S. owners). FATCA also generally imposes a federal withholding tax of 30% on certain payments, including dividends paid on, and, subject to the proposed Treasury Regulations discussed below, the gross proceeds of a disposition of, our common stock to a non-financial foreign entity unless such entity provides the withholding agent with either a certification that it does not have any substantial direct or indirect U.S. owners or provides information regarding substantial direct and indirect U.S. owners of the entity. An intergovernmental agreement between the United States and an applicable foreign country may modify those requirements. The withholding tax described above will not apply if the foreign financial institution or non-financial foreign entity otherwise qualifies for an exemption from the rules.

The U.S. Treasury Department recently released proposed regulations which, if finalized in their present form, would eliminate the federal withholding tax of 30% applicable to the gross proceeds of a disposition of our common stock. In its preamble to such proposed regulations, the U.S. Treasury Department stated that taxpayers may generally rely on the proposed regulations until final regulations are issued. Holders are encouraged to consult with their own tax advisors regarding the possible implications of FATCA on their investment in our common stock.

**EACH PROSPECTIVE INVESTOR SHOULD CONSULT ITS OWN TAX ADVISOR REGARDING THE TAX CONSEQUENCES OF PURCHASING, HOLDING, AND DISPOSING OF OUR COMMON STOCK, INCLUDING THE CONSEQUENCES OF ANY RECENT OR PROPOSED CHANGE IN APPLICABLE LAW.**

## UNDERWRITING

BofA Securities, Inc., Jefferies LLC and Evercore Group L.L.C. are acting as representatives of each of the underwriters named below. Subject to the terms and conditions set forth in an underwriting agreement among us and the underwriters, we have agreed to sell to the underwriters, and each of the underwriters has agreed, severally and not jointly, to purchase from us, the number of shares of common stock set forth opposite its name below.

| Underwriter | Number of Shares |
|---|---|
| BofA Securities, Inc. | |
| Jefferies LLC | |
| Evercore Group L.L.C. | |
| Cantor Fitzgerald & Co. | |
| Needham & Company, LLC | |
| Total | |

Subject to the terms and conditions set forth in the underwriting agreement, the underwriters have agreed, severally and not jointly, to purchase all of the shares sold under the underwriting agreement if any of these shares are purchased. If an underwriter defaults, the underwriting agreement provides that the purchase commitments of the nondefaulting underwriters may be increased or the underwriting agreement may be terminated.

We have agreed to indemnify the several underwriters against certain liabilities, including liabilities under the Securities Act, or to contribute to payments the underwriters may be required to make in respect of those liabilities.

The underwriters are offering the shares, subject to prior sale, when, as and if issued to and accepted by them, subject to approval of legal matters by their counsel, including the validity of the shares, and other conditions contained in the underwriting agreement, such as the receipt by the underwriters of officer's certificates and legal opinions. The underwriters reserve the right to withdraw, cancel or modify offers to the public and to reject orders in whole or in part.

### Commissions and Discounts

The representatives have advised us that the underwriters propose initially to offer the shares to the public at the public offering price set forth on the cover page of this prospectus and to dealers at that price less a concession not in excess of $ per share. After the initial offering, the public offering price, concession or any other term of the offering may be changed.

The following table shows the public offering price, underwriting discount and proceeds before expenses to us. The information assumes either no exercise or full exercise by the underwriters of their option to purchase additional shares.

| | Per Share | Without Option | With Option |
|---|---|---|---|
| Public offering price | $ | $ | $ |
| Underwriting discount | $ | $ | $ |
| Proceeds, before expenses, to us | $ | $ | $ |

The expenses of the offering, not including the underwriting discount, are estimated at $ and are payable by us. We have also agreed to reimburse the underwriters for their expenses relating to clearance of this offering with the Financial Industry Regulatory Authority.

**Option to Purchase Additional Shares**

We have granted an option to the underwriters, exercisable for 30 days after the date of this prospectus, to purchase up to additional shares at the public offering price, less the underwriting discount. If the underwriters exercise this option, each will be obligated, subject to conditions contained in the underwriting agreement, to purchase a number of additional shares proportionate to that underwriter's initial amount reflected in the above table.

**No Sales of Similar Securities**

We, our executive officers and directors, and our other existing security holders have agreed not to sell or transfer any common stock or securities convertible into, exchangeable for, exercisable for or repayable with common stock, for 180 days after the date of this prospectus without first obtaining the written consent of BofA Securities, Inc. and Jefferies LLC. Specifically, we and these other persons have agreed, with certain limited exceptions, not to directly or indirectly

- offer, pledge, sell or contract to sell any common stock,
- sell any option or contract to purchase any common stock,
- purchase any option or contract to sell any common stock,
- grant any option, right or warrant for the sale of any common stock,
- transfer or otherwise dispose of any common stock,
- request or demand that we file or make a confidential submission of a registration statement related to the common stock, or
- enter into any swap or other agreement that transfers, in whole or in part, the economic consequence of ownership of any common stock whether any such swap or transaction is to be settled by delivery of shares or other securities, in cash or otherwise.

This lock-up provision applies to common stock and to securities convertible into or exchangeable or exercisable for or repayable with common stock. It also applies to common stock owned now or acquired later by the person executing the agreement or for which the person executing the agreement later acquires the power of disposition. If the representatives, in their sole discretion, agree to release or waive the restrictions set forth in a lock-up provisions for an officer or director of the company and provides the company with notice of the impending release or waiver at least three business days before the effective date of the release or waiver, the company agrees to announce the impending release or waiver by a press release through a major news service at least two business days before the effective date of the release or waiver.

**Nasdaq Global Market Listing**

We expect the shares to be approved for listing on the Nasdaq Global Market, subject to notice of issuance, under the symbol " ."

Before this offering, there has been no public market for our common stock. The initial public offering price will be determined through negotiations between us and the representatives. In addition to prevailing market conditions, the factors to be considered in determining the initial public offering price are:

- the valuation multiples of publicly traded companies that the representatives believe to be comparable to us,

- our financial information,
- the history of, and the prospects for, our company and the industry in which we compete,
- an assessment of our management, its past and present operations and the prospects for, and timing of, our future revenues,
- the present state of our development, and
- the above factors in relation to market values and various valuation measures of other companies engaged in activities similar to ours.

An active trading market for the shares may not develop. It is also possible that after the offering the shares will not trade in the public market at or above the initial public offering price.

The underwriters do not expect to sell more than 5% of the shares in the aggregate to accounts over which they exercise discretionary authority.

**Price Stabilization, Short Positions and Penalty Bids**

Until the distribution of the shares is completed, SEC rules may limit underwriters and selling group members from bidding for and purchasing our common stock. However, the representatives may engage in transactions that stabilize the price of the common stock, such as bids or purchases to peg, fix or maintain that price.

In connection with the offering, the underwriters may purchase and sell our common stock in the open market. These transactions may include short sales, purchases on the open market to cover positions created by short sales and stabilizing transactions. Short sales involve the sale by the underwriters of a greater number of shares than they are required to purchase in the offering. “Covered” short sales are sales made in an amount not greater than the underwriters’ option to purchase additional shares described above. The underwriters may close out any covered short position by either exercising their option to purchase additional shares or purchasing shares in the open market. In determining the source of shares to close out the covered short position, the underwriters will consider, among other things, the price of shares available for purchase in the open market as compared to the price at which they may purchase shares through the option granted to them. “Naked” short sales are sales in excess of such option. The underwriters must close out any naked short position by purchasing shares in the open market. A naked short position is more likely to be created if the underwriters are concerned that there may be downward pressure on the price of our common stock in the open market after pricing that could adversely affect investors who purchase in the offering. Stabilizing transactions consist of various bids for or purchases of shares of common stock made by the underwriters in the open market prior to the completion of the offering.

The underwriters may also impose a penalty bid. This occurs when a particular underwriter repays to the underwriters a portion of the underwriting discount received by it because the representatives have repurchased shares sold by or for the account of such underwriter in stabilizing or short covering transactions.

Similar to other purchase transactions, the underwriters’ purchases to cover the syndicate short sales may have the effect of raising or maintaining the market price of our common stock or preventing or retarding a decline in the market price of our common stock. As a result, the price of our common stock may be higher than the price that might otherwise exist in the open market. The underwriters may conduct these transactions on The Nasdaq Global Market, in the over-the-counter market or otherwise.

Neither we nor any of the underwriters make any representation or prediction as to the direction or magnitude of any effect that the transactions described above may have on the price of our common stock. In addition, neither we nor any of the underwriters make any representation that the representatives will engage in these transactions or that these transactions, once commenced, will not be discontinued without notice.

**Electronic Distribution**

In connection with the offering, certain of the underwriters or securities dealers may distribute prospectuses by electronic means, such as e-mail.

**Other Relationships**

The underwriters and their respective affiliates are full service financial institutions engaged in various activities, which may include sales and trading, commercial and investment banking, advisory, investment management, investment research, principal investment, hedging, market making, brokerage and other financial and non-financial activities and services. Some of the underwriters and their affiliates have engaged in, and may in the future engage in, investment banking and other commercial dealings in the ordinary course of business with us or our affiliates. They have received, or may in the future receive, customary fees and commissions for these transactions.

In addition, in the ordinary course of their business activities, the underwriters and their affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (including bank loans) for their own account and for the accounts of their customers. Such investments and securities activities may involve securities and/or instruments of ours or our affiliates. The underwriters and their affiliates may also make investment recommendations and/or publish or express independent research views in respect of such securities or financial instruments and may hold, or recommend to clients that they acquire, long and/or short positions in such securities and instruments.

**Notice to Prospective Investors in the European Economic Area**

In relation to each Member State of the European Economic Area, or Member State, no shares have been offered or will be offered pursuant to this offering to the public in that Member State prior to the publication of a prospectus in relation to the shares which has been approved by the competent authority in that Member State or, where appropriate, approved in another Member State and notified to the competent authority in that Member State, all in accordance with the Prospectus Regulation, except that offers of shares may be made to the public in that Member State at any time under the following exemptions under the Prospectus Regulation:

(i) to any legal entity which is a qualified investor as defined under the Prospectus Regulation;

(ii) to fewer than 150 natural or legal persons (other than qualified investors as defined under the Prospectus Regulation), subject to obtaining the prior consent of the representatives for any such offer; or

(iii) in any other circumstances falling within Article 1(4) of the Prospectus Regulation,

provided that no such offer of shares shall require the Company or any representative to publish a prospectus pursuant to Article 3 of the Prospectus Regulation or supplement a prospectus pursuant to Article 23 of the Prospectus Regulation.

Each person in a Member State who initially acquires any shares or to whom any offer is made will be deemed to have represented, acknowledged and agreed to and with the Company and the representatives that it is a qualified investor within the meaning of the Prospectus Regulation.

In the case of any shares being offered to a financial intermediary as that term is used in Article 5(1) of the Prospectus Regulation, each such financial intermediary will be deemed to have represented, acknowledged and agreed that the shares acquired by it in the offer have not been acquired on a non-discretionary basis on behalf of, nor have they been acquired with a view to their offer or resale to, persons in circumstances which may

give rise to an offer to the public other than their offer or resale in a Relevant Member State to qualified investors, in circumstances in which the prior consent of the representatives has been obtained to each such proposed offer or resale.

We, the representatives and their affiliates will rely upon the truth and accuracy of the foregoing representations, acknowledgements and agreements.

For the purposes of this provision, the expression an "offer to the public" in relation to any shares in any Member State means the communication in any form and by any means of sufficient information on the terms of the offer and any shares to be offered so as to enable an investor to decide to purchase or subscribe for any shares, and the expression "Prospectus Regulation" means Regulation (EU) 2017/1129.

The above selling restriction is in addition to any other selling restrictions set out below.

**Notice to Prospective Investors in the United Kingdom**

In addition, in the United Kingdom, this document is being distributed only to, and is directed only at, and any offer subsequently made may only be directed at persons who are "qualified investors" (as defined in the Prospectus Directive) (i) who have professional experience in matters relating to investments falling within Article 19 (5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005, as amended, or the Order, and/or (ii) who are high net worth companies (or persons to whom it may otherwise be lawfully communicated) falling within Article 49(2)(a) to (d) of the Order (all such persons together being referred to as "relevant persons"). This document must not be acted on or relied on in the United Kingdom by persons who are not relevant persons. In the United Kingdom, any investment or investment activity to which this document relates is only available to, and will be engaged in with, relevant persons.

**Notice to Prospective Investors in Switzerland**

The shares may not be publicly offered in Switzerland and will not be listed on the SIX Swiss Exchange, or SIX, or on any other stock exchange or regulated trading facility in Switzerland. This document has been prepared without regard to the disclosure standards for issuance prospectuses under art. 652a or art. 1156 of the Swiss Code of Obligations or the disclosure standards for listing prospectuses under art. 27 ff. of the SIX Listing Rules or the listing rules of any other stock exchange or regulated trading facility in Switzerland. Neither this document nor any other offering or marketing material relating to the shares or the offering may be publicly distributed or otherwise made publicly available in Switzerland.

Neither this document nor any other offering or marketing material relating to the offering, the Company, or the shares have been or will be filed with or approved by any Swiss regulatory authority. In particular, this document will not be filed with, and the offer of shares will not be supervised by, the Swiss Financial Market Supervisory Authority FINMA, or FINMA, and the offer of shares has not been and will not be authorized under the Swiss Federal Act on Collective Investment Schemes, or CISA. The investor protection afforded to acquirers of interests in collective investment schemes under the CISA does not extend to acquirers of shares.

**Notice to Prospective Investors in the Dubai International Financial Centre**

This prospectus relates to an Exempt Offer in accordance with the Offered Securities Rules of the Dubai Financial Services Authority, or DFSA. This prospectus is intended for distribution only to persons of a type specified in the Offered Securities Rules of the DFSA. It must not be delivered to, or relied on by, any other person. The DFSA has no responsibility for reviewing or verifying any documents in connection with Exempt Offers. The DFSA has not approved this prospectus nor taken steps to verify the information set forth herein and has no responsibility for the prospectus. The shares to which this prospectus relates may be illiquid and/or subject

to restrictions on their resale. Prospective purchasers of the shares offered should conduct their own due diligence on the shares. If you do not understand the contents of this prospectus you should consult an authorized financial advisor.

**Notice to Prospective Investors in Australia**

No placement document, prospectus, product disclosure statement or other disclosure document has been lodged with the Australian Securities and Investments Commission, or ASIC, in relation to the offering. This prospectus does not constitute a prospectus, product disclosure statement or other disclosure document under the Corporations Act 2001, or the Corporations Act, and does not purport to include the information required for a prospectus, product disclosure statement or other disclosure document under the Corporations Act.

Any offer in Australia of the shares may only be made to persons, which we refer to as the Exempt Investors, who are "sophisticated investors" (within the meaning of section 708(8) of the Corporations Act), "professional investors" (within the meaning of section 708(11) of the Corporations Act) or otherwise pursuant to one or more exemptions contained in section 708 of the Corporations Act so that it is lawful to offer the shares without disclosure to investors under Chapter 6D of the Corporations Act.

The shares applied for by Exempt Investors in Australia must not be offered for sale in Australia in the period of 12 months after the date of allotment under the offering, except in circumstances where disclosure to investors under Chapter 6D of the Corporations Act would not be required pursuant to an exemption under section 708 of the Corporations Act or otherwise or where the offer is pursuant to a disclosure document which complies with Chapter 6D of the Corporations Act. Any person acquiring shares must observe such Australian on-sale restrictions.

This prospectus contains general information only and does not take account of the investment objectives, financial situation or particular needs of any particular person. It does not contain any securities recommendations or financial product advice. Before making an investment decision, investors need to consider whether the information in this prospectus is appropriate to their needs, objectives and circumstances, and, if necessary, seek expert advice on those matters.

**Notice to Prospective Investors in Hong Kong**

The shares have not been offered or sold and will not be offered or sold in Hong Kong, by means of any document, other than (i) to "professional investors" as defined in the Securities and Futures Ordinance (Cap. 571) of Hong Kong and any rules made under that Ordinance; or (ii) in other circumstances which do not result in the document being a "prospectus" as defined in the Companies Ordinance (Cap. 32) of Hong Kong or which do not constitute an offer to the public within the meaning of that Ordinance. No advertisement, invitation or document relating to the shares has been or may be issued or has been or may be in the possession of any person for the purposes of issue, whether in Hong Kong or elsewhere, which is directed at, or the contents of which are likely to be accessed or read by, the public of Hong Kong (except if permitted to do so under the securities laws of Hong Kong) other than with respect to Securities which are or are intended to be disposed of only to persons outside Hong Kong or only to "professional investors" as defined in the Securities and Futures Ordinance and any rules made under that Ordinance.

**Notice to Prospective Investors in Japan**

The shares have not been and will not be registered under the Financial Instruments and Exchange Law of Japan (Law No. 25 of 1948, as amended) and, accordingly, will not be offered or sold, directly or indirectly, in Japan, or for the benefit of any Japanese Person or to others for re-offering or resale, directly or indirectly, in Japan or to any Japanese Person, except in compliance with all applicable laws, regulations and ministerial guidelines promulgated by relevant Japanese governmental or regulatory authorities in effect at the relevant time. For the purposes of this paragraph, "Japanese Person" shall mean any person resident in Japan, including any corporation or other entity organized under the laws of Japan.

**Notice to Prospective Investors in Singapore**

This prospectus has not been registered as a prospectus with the Monetary Authority of Singapore. Accordingly, the shares were not offered or sold or caused to be made the subject of an invitation for subscription or purchase and will not be offered or sold or caused to be made the subject of an invitation for subscription or purchase, and this prospectus or any other document or material in connection with the offer or sale, or invitation for subscription or purchase, of the shares, has not been circulated or distributed, nor will it be circulated or distributed, whether directly or indirectly, to any person in Singapore other than (i) to an institutional investor (as defined in Section 4A of the Securities and Futures Act (Chapter 289) of Singapore, as modified or amended from time to time, or the SFA) pursuant to Section 274 of the SFA, (ii) to a relevant person (as defined in Section 275(2) of the SFA) pursuant to Section 275(1) of the SFA, or any person pursuant to Section 275(1A) of the SFA, and in accordance with the conditions specified in Section 275 of the SFA, or (iii) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA.

Where the shares are subscribed or purchased under Section 275 of the SFA by a relevant person which is:

(i) a corporation (which is not an accredited investor (as defined in Section 4A of the SFA)) the sole business of which is to hold investments and the entire share capital of which is owned by one or more individuals, each of whom is an accredited investor; or

(ii) a trust (where the trustee is not an accredited investor) whose sole purpose is to hold investments and each beneficiary of the trust is an individual who is an accredited investor,

securities or securities-based derivatives contracts (each term as defined in Section 2(1) of the SFA) of that corporation or the beneficiaries' rights and interest (howsoever described) in that trust shall not be transferred within six months after that corporation or that trust has acquired the shares pursuant to an offer made under Section 275 of the SFA except:

(1) to an institutional investor or to a relevant person, or to any person arising from an offer referred to in Section 275(1A) or Section 276(4)(i)(B) of the SFA;

(2) where no consideration is or will be given for the transfer;

(3) where the transfer is by operation of law; or

(4) as specified in Section 276(7) of the SFA.

**Notice to Prospective Investors in Canada**

The shares may be sold only to purchasers purchasing, or deemed to be purchasing, as principal that are accredited investors, as defined in National Instrument 45-106 *Prospectus Exemptions* or subsection 73.3(1) of the *Securities Act* (Ontario), and are permitted clients, as defined in National Instrument 31-103 *Registration Requirements, Exemptions and Ongoing Registrant Obligations*. Any resale of the shares must be made in accordance with an exemption from, or in a transaction not subject to, the prospectus requirements of applicable securities laws.

Securities legislation in certain provinces or territories of Canada may provide a purchaser with remedies for rescission or damages if this prospectus (including any amendment thereto) contains a misrepresentation, provided that the remedies for rescission or damages are exercised by the purchaser within the time limit prescribed by the securities legislation of the purchaser's province or territory. The purchaser should refer to any applicable provisions of the securities legislation of the purchaser's province or territory for particulars of these rights or consult with a legal advisor.

Pursuant to section 3A.3 (or, in the case of securities issued or guaranteed by the government of a non-Canadian jurisdiction, section 3A.4) of National Instrument 33-105 *Underwriting Conflicts* (NI 33-105), the underwriters are not required to comply with the disclosure requirements of NI 33-105 regarding underwriter conflicts of interest in connection with this offering.

## LEGAL MATTERS

The validity of the shares of common stock being offered by this prospectus will be passed upon for us by Cooley LLP, San Francisco, California. Latham & Watkins LLP, Menlo Park, California, has acted as counsel to the underwriters in connection with this offering.

## EXPERTS

The financial statements as of December 31, 2017 and December 31, 2018 and for each of the two years in the period ended December 31, 2018 included in this prospectus have been audited by Deloitte & Touche LLP, an independent registered public accounting firm, as stated in their report appearing herein. Such financial statements are included in reliance upon the report of such firm given upon their authority as experts in accounting and auditing.

## WHERE YOU CAN FIND MORE INFORMATION

We have filed with the SEC a registration statement on Form S-1, including exhibits and schedules, under the Securities Act, with respect to the shares of common stock being offered by this prospectus. This prospectus, which constitutes part of the registration statement, does not contain all of the information in the registration statement and its exhibits. For further information with respect to us and the common stock offered by this prospectus, we refer you to the registration statement and its exhibits. Statements contained in this prospectus as to the contents of any contract or any other document referred to are not necessarily complete, and in each instance, we refer you to the copy of the contract or other document filed as an exhibit to the registration statement. Each of these statements is qualified in all respects by this reference.

You can read our SEC filings, including the registration statement, over the Internet at the SEC's website at www.sec.gov.

Upon the closing of this offering, we will be subject to the information reporting requirements of the Securities Exchange Act and we will file reports, proxy statements and other information with the SEC. These reports, proxy statements and other information will be available for inspection at the web site of the SEC referred to above. We also maintain a website at https://www.sutrovax.com, at which, following the closing of this offering, you may access these materials free of charge as soon as reasonably practicable after they are electronically filed with, or furnished to, the SEC. Information contained on or accessible through our website is not a part of this prospectus, and the inclusion of our website address in this prospectus is an inactive textual reference only.

**SUTROVAX, INC.**

**INDEX TO FINANCIAL STATEMENTS**

## REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the stockholders and the Board of Directors of SutroVax, Inc.

**Opinion on the Financial Statements**

We have audited the accompanying balance sheets of SutroVax, Inc. (the "Company") as of December 31, 2017 and 2018, the related statements of operations and comprehensive loss, redeemable convertible preferred stock and stockholders' deficit, and cash flows, for each of the two years in the period ended December 31, 2018, and the related notes (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2017 and 2018, and the results of its operations and its cash flows for each of the two years in the period ended December 31, 2018, in conformity with accounting principles generally accepted in the United States of America.

**Basis for Opinion**

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB and in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits, we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ Deloitte & Touche LLP
San Francisco, California
October 11, 2019

We have served as the Company's auditor since 2017.

**SUTROVAX, INC.**
**Balance Sheets**
*(in thousands, except share and per share data)*

| | December 31, 2017 | December 31, 2018 |
|---|---|---|
| **Assets** | | |
| Current assets: | | |
| Cash and cash equivalents | $ 36,139 | $ 66,090 |
| Prepaid expenses and other current assets | 209 | 578 |
| Total current assets | 36,348 | 66,668 |
| Property and equipment, net | 2,972 | 3,411 |
| Other assets | 311 | 723 |
| Total noncurrent assets | 3,283 | 4,134 |
| Total assets | $ 39,631 | $ 70,802 |
| **Liabilities, Redeemable Convertible Preferred Stock and Stockholders' Deficit** | | |
| Current liabilities: | | |
| Accounts payable | $ 1,808 | $ 2,830 |
| Accrued compensation | 647 | 1,189 |
| Accrued expenses (including related party accrual of $33 and $49, respectively) | 675 | 2,394 |
| Accrued legal settlement | 850 | — |
| Deferred rent—current portion | — | 3 |
| Lease liability—current portion | 283 | 297 |
| Total current liabilities | 4,263 | 6,713 |
| Deferred rent—long-term portion | 36 | 33 |
| Lease liability—long-term portion | 458 | 161 |
| Redeemable convertible preferred stock warrant liability | — | 462 |
| Redeemable convertible preferred stock tranche liability | 3,760 | 3,185 |
| Other liabilities | 176 | 166 |
| Total liabilities | 8,693 | 10,720 |
| Commitments and contingencies (Note 7) | | |
| **Redeemable Convertible Preferred Stock** | | |
| Series A redeemable convertible preferred stock, $0.001 par value; 10,502,804 shares authorized; 10,502,804 shares issued and outstanding as of December 31, 2017 and 2018; liquidation value of $26,887 as of December 31, 2017 and 2018 | 24,967 | 24,967 |
| Series B redeemable convertible preferred stock, $0.001 par value; 11,449,515 shares authorized; 7,633,008 and 11,449,510 shares issued and outstanding as of December 31, 2017 and 2018, respectively; liquidation value of $40,101 and $60,150 at December 31, 2017 and 2018, respectively | 35,101 | 55,151 |
| Series C redeemable convertible preferred stock, $0.001 par value; 14,010,043 shares authorized; zero and 6,222,912 shares issued and outstanding as of December 31, 2017 and 2018, respectively; liquidation value of zero and $42,500 at December 31, 2017 and 2018, respectively | — | 37,692 |
| **Stockholders' Deficit** | | |
| Common stock, $0.001 par value—52,000,000 shares authorized at December 31, 2017 and 2018; 6,193,397 and 6,338,763 shares issued and outstanding at December 31, 2017 and 2018, respectively | 6 | 6 |
| Additional paid-in capital | 452 | 1,339 |
| Accumulated deficit | (29,588) | (59,073) |
| Total stockholders' deficit | (29,130) | (57,728) |
| Total liabilities, redeemable convertible preferred stock and stockholders' deficit | $ 39,631 | $ 70,802 |

The accompanying notes are an integral part of these financial statements.

**SUTROVAX, INC.**
**Statements of Operations and Comprehensive Loss**
*(in thousands, except share and per share data)*

| | Year Ended December 31, | |
|---|---|---|
| | 2017 | 2018 |
| Operating expenses: | | |
| Research and development | $ 12,785 | $ 30,145 |
| General and administrative | 5,048 | 5,388 |
| Total operating expenses | 17,833 | 35,533 |
| Loss from operations | (17,833) | (35,533) |
| Other income (expense), net: | | |
| Interest expense | (69) | (75) |
| Interest income | 233 | 903 |
| Foreign currency transaction gains (losses) | (9) | 42 |
| Change in fair value of the redeemable convertible preferred stock tranche liability | 440 | 5,178 |
| Total other income (expense), net | 595 | 6,048 |
| Net loss and comprehensive loss | $ (17,238) | $ (29,485) |
| Net loss per share attributable to common stockholders, basic and diluted | $ (2.87) | $ (4.80) |
| Weighted-average shares outstanding used in computing net loss per share attributable to common stockholders, basic and diluted | 6,014,717 | 6,142,274 |
| Pro forma net loss per share, basic and diluted (unaudited) | | $ |
| Weighted-average shares outstanding used in computing pro forma net loss per share, basic and diluted (unaudited) | | |

The accompanying notes are an integral part of these financial statements.

**SUTROVAX, INC.**
**Statements of Redeemable Convertible Preferred Stock and Stockholders' Deficit**
*(in thousands, except share data)*

| | Series A Redeemable Convertible Preferred Stock | | Series B Redeemable Convertible Preferred Stock | | Series C Redeemable Convertible Preferred Stock | | Common Stock | | Additional Paid-in Capital | Accumulated Deficit | Total Stockholders' Deficit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Shares | Amount | Shares | Amount | Shares | Amount | Shares | Amount | | | |
| **Balance—January 1, 2017** | 8,940,306 | $ 20,342 | — | $ — | — | $ — | 6,003,958 | $ 6 | $ 61 | $ (12,350) | $ (12,283) |
| Issuance of Series B redeemable convertible preferred stock, net of issuance costs of $229,388 and fair value of redeemable convertible preferred stock tranche liability of $4,769,202 | — | — | 7,633,008 | 35,101 | — | — | — | — | — | — | — |
| Issuance of Series A redeemable convertible preferred stock, net of issuance costs of $0 | 1,562,498 | 4,000 | — | — | — | — | — | — | — | — | — |
| Settlement of redeemable convertible preferred stock tranche liability upon issuance of Series B preferred stock | — | 625 | — | — | — | — | — | — | — | — | — |
| Exercise of stock options | — | — | — | — | — | — | 23,100 | 0 | 0 | — | 0 |
| Issuance of common stock related to early exercised stock options | — | — | — | — | — | — | 166,339 | — | — | — | — |
| Stock-based compensation expense | | | | | | | — | — | 390 | — | 390 |
| Net loss | — | — | — | — | — | — | — | — | — | (17,238) | (17,238) |
| **Balances—December 31, 2017** | 10,502,804 | 24,967 | 7,633,008 | 35,101 | — | — | 6,193,397 | 6 | 452 | (29,588) | (29,130) |
| Net loss | — | — | — | — | — | — | — | — | — | — | — |
| Issuance of Series C redeemable convertible preferred stock, net of issuance costs of $205,522 and fair value of redeemable convertible preferred stock tranche liability of $4,602,405 | — | — | — | — | 6,222,912 | 37,692 | — | — | — | — | — |
| Issuance of Series B redeemable convertible preferred stock, net of issuance costs of $0 | — | — | 3,816,502 | 20,050 | — | — | — | — | — | — | — |
| Exercise of stock options | — | — | — | — | — | — | 29,246 | 0 | 5 | — | 5 |
| Issuance of common stock related to early exercised stock options | — | — | — | — | — | — | 116,120 | — | — | — | — |
| Vesting of early exercised stock options | — | — | — | — | — | — | — | 0 | 133 | — | 133 |
| Stock-based compensation expense | — | — | — | — | — | — | — | — | 749 | — | 749 |
| Net loss | — | | | | | | | | | (29,485) | (29,485) |
| **Balance—December 31, 2018** | 10,502,804 | $ 24,967 | 11,449,510 | $ 55,151 | 6,222,912 | $ 37,692 | 6,338,763 | $ 6 | $ 1,339 | $ (59,073) | $ (57,728) |

The accompanying notes are an integral part of these financial statements.

**SUTROVAX, INC.**
**Statements of Cash Flows**
*(in thousands)*

| | Year Ended December 31, 2017 | 2018 |
|---|---|---|
| **Cash flows from operating activities:** | | |
| Net loss | $ (17,238) | $ (29,485) |
| **Adjustments to reconcile net loss to net cash used in operating activities:** | | |
| Depreciation and amortization | 625 | 1,037 |
| Stock-based compensation expense | 390 | 749 |
| Expense on issuance of redeemable convertible preferred stock warrant | — | 465 |
| Change in fair value of redeemable convertible preferred stock warrant | — | (3) |
| Change in fair value of redeemable convertible preferred stock tranche liabilities | (440) | (5,178) |
| Loss (gain) on disposal of fixed assets | (21) | 54 |
| **Changes in operating assets and liabilities:** | — | — |
| Prepaid expenses and other current assets | (132) | (378) |
| Other assets | (63) | (412) |
| Accounts payable | 721 | 1,266 |
| Accrued compensation | 110 | 541 |
| Accrued expenses | 220 | 1,719 |
| Accrued legal settlement | 850 | (850) |
| Deferred rent and other long-term liabilities | 15 | 9 |
| Net cash used in operating activities | (14,963) | (30,466) |
| **Cash flows from investing activities:** | | |
| Purchases of property and equipment | (1,222) | (1,774) |
| Proceeds from sale of property and equipment | 106 | 1 |
| Net cash used in investing activities | (1,116) | (1,773) |
| **Cash flows from financing activities:** | | |
| Payments of capital lease obligations | (188) | (283) |
| Proceeds from issuance of redeemable convertible preferred stock, net of issuance costs | 43,871 | 62,345 |
| Proceeds from exercise of common stock options | — | 5 |
| Proceeds from issuance of common stock related to early exercised stock options | 176 | 123 |
| Net cash provided by financing activities | 43,859 | 62,190 |
| Net increase in cash and cash equivalents | 27,780 | 29,951 |
| Cash and cash equivalents, beginning of year | 8,359 | 36,139 |
| Cash and cash equivalents, end of year | $ 36,139 | $ 66,090 |
| **Supplemental disclosure of cash flow information:** | | |
| Cash paid for interest | $ 69 | $ 75 |
| **Supplemental disclosures of non-cash investing and financing activities:** | | |
| Purchases of property and equipment recorded in accounts payable | $ 246 | $ 3 |
| Assets acquired under capital lease | $ 686 | $ — |
| Settlement of convertible preferred stock call tranche liability | $ 625 | $ — |

The accompanying notes are an integral part of these financial statements.

**SUTROVAX, INC.**
**Notes to Financial Statements**

## 1. Company Organization and Nature of Business

SutroVax, Inc. ("the Company" or "SutroVax") was incorporated in the state of California on November 27, 2013, and is headquartered in Foster City, California. The Company is a next-generation vaccine company seeking to improve global health by developing superior and novel vaccines designed to prevent some of the most common and deadly infectious diseases worldwide. The Company's cell-free protein synthesis platform enables the Company to design and produce optimized protein carriers and antigens, the critical building blocks of vaccines, in ways that are beyond the reach of conventional technology. The Company's lead vaccine candidate, SVX-24, is a broad-spectrum pneumococcal conjugate vaccine ("PCV") with the potential to become the standard of care in the $7 billion global pneumococcal vaccine market. The Company's primary activities since incorporation have been to perform research and development, undertake preclinical studies and enable manufacturing activities in support of the Company's product development efforts, organize and staff the Company, plan for the business and establish the Company's intellectual property portfolio, and raise capital to support and expand such activities.

## 2. Basis of Presentation and Summary of Significant Accounting Policies

### *Basis of Presentation*

These financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America ("U.S. GAAP").

### *Pro Forma Net Loss Per Share*

The unaudited pro forma basic and diluted net loss per share for the year ended December 31, 2018 has been computed to give effect to (i) the conversion of all outstanding shares of redeemable convertible preferred stock into shares of common stock, (ii) the net exercise of the redeemable convertible preferred stock warrants into shares of common stock, based on an estimated offering price of $ per share, which is the midpoint of the estimated price range, (iii) the net exercise of the common stock warrants into shares of common stock, based on an estimated offering price of $ per share, which is the midpoint of the estimated price range; (iv) the removal of gains or losses resulting from the re-measurement of the redeemable convertible preferred stock warrant liability as the warrants will be exercised for shares of common stock immediately prior to the Company's planned IPO; and (v) the filing and effectiveness of the Company's amended and restated certificate of incorporation that will be in effect immediately prior to the closing of this offering. Stock-based compensation expense associated with the vesting of the service and performance-based awards is excluded from the pro forma net loss basic and diluted per share presentation.

The shares of common stock expected to be issued and the related net proceeds expected to be received in connection with the planned IPO are excluded from such pro forma information.

### *Use of Estimates*

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of expenses during the reporting period. On an ongoing basis, the Company evaluates its estimates and assumptions, including those related to the fair value of tranche commitments related to redeemable convertible preferred stock, determination

of the fair value of the redeemable convertible preferred stock warrant liability, determination of the fair value of common stock and related stock-based compensation expense, accruals for certain research and development costs, the valuation of deferred tax assets, and income taxes. Management bases its estimates on historical experience and on various other assumptions that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ materially from those estimates.

***Concentration of Credit Risk and Other Uncertainties***

Cash and cash equivalents are financial instruments that potentially subject the Company to concentrations of credit risk. Substantially all of the Company's cash and cash equivalents are deposited in accounts with major financial institutions and amounts may exceed federally insured limits. Management believes that the Company is not exposed to significant credit risk due to the financial strength of the depository institutions in which the cash and cash equivalents are held. The Company has not experienced any losses on its deposits of cash and cash equivalents.

The Company is subject to certain risks and uncertainties, including, but not limited to, changes in any of the following areas that the Company believes could have a material adverse effect on the future financial position or results of operations: ability to obtain future financing; regulatory clearance and market acceptance of, and reimbursement for, the Company's vaccine candidates; reliance upon third-party manufacturers; performance of third-party clinical research organizations; competition from pharmaceutical companies with greater financial resources or expertise; protection of the intellectual property; litigation or claims against the Company based on intellectual property or other factors; and the Company's ability to attract and retain employees necessary to support its growth.

Since inception, the Company has incurred significant losses from operations and expects losses to continue for the foreseeable future. The accumulated loss was $59.1 million at December 31, 2018 and net loss was $29.5 million for the year ended December 31, 2018. The Company's success depends primarily on the ability to successfully develop and obtain regulatory approval of its PCV program and pipeline, the ability to manufacture or source clinical and commercial supply and meet regulatory requirements, and the ability to successfully commercialize its products. Until such time, if ever, as the Company generates substantial product revenues, it expects to raise additional funds through a combination of equity offerings and debt financing.

***Segment and Geographical Information***

The Company operates and manages its business as one reportable and operating segment. The Company's chief executive officer, who is the chief operating decision maker, reviews financial information on an aggregate basis for purposes of allocating resources and evaluating financial performance. All of the Company's long-lived assets are based in the United States. Long-lived assets are comprised of property and equipment.

***Cash and Cash Equivalents***

The Company considers all highly liquid investments purchased with a maturity of three months or less at the date of purchase to be cash equivalents. As of December 31, 2017 and 2018, cash and cash equivalents consisted of cash and investments in short-term money market funds. Interest income reflected in the statements of operations consists primarily of interest received on the money market funds.

***Property and Equipment, Net***

Property and equipment are stated at cost, less accumulated depreciation and amortization. Depreciation is computed using the straight-line method over the estimated useful lives of the assets, generally three to five

years. Leasehold improvements are amortized over the shorter of the expected life or lease term. Repairs and maintenance expenditures, which are not considered improvements and do not extend the useful life of property and equipment, are expensed as incurred. When assets are retired or otherwise disposed of, the cost and related accumulated depreciation and amortization are removed from the balance sheet and the resulting gain or loss is reflected in the statements of operations and comprehensive loss in the period realized.

***Impairment of Long-Lived Assets***

The Company reviews long-lived assets for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Recoverability is measured by comparing the carrying amount to the future undiscounted net cash flows which the assets are expected to generate. If such assets are considered to be impaired, the impairment to be recognized is measured as the amount by which the carrying amount of the assets exceeds the projected discounted future net cash flows generated by the assets. There have been no such impairments of long-lived assets in the years ended December 31, 2017 and 2018.

***Redeemable Convertible Preferred Stock***

The Company records shares of redeemable convertible preferred stock at their respective fair values on the dates of issuance, net of issuance costs. The redeemable convertible preferred stock is recorded outside of permanent equity because while it is not mandatorily redeemable, redemption is contingent upon the occurrence of certain events considered not solely within the Company's control. The Company has not adjusted the carrying values of the redeemable convertible preferred stock to the liquidation preferences of such shares because it is uncertain whether or when a deemed liquidation event would occur that would obligate the Company to pay the liquidation preferences to holders of shares of redeemable convertible preferred stock. Subsequent adjustments to the carrying values to the liquidation preferences will be made only when it becomes probable that such a deemed liquidation event will occur.

***Redeemable Convertible Preferred Stock Tranche Liability***

The Company has determined that its obligation to issue additional shares of redeemable convertible preferred stock upon the occurrence of certain events represents a freestanding financial instrument. The instrument is classified as a liability on the balance sheets and is subject to re-measurement at each balance sheet date and any change in fair value is recognized through other income (expense) in the statements of operations and comprehensive loss. The tranche liability is revalued right before settlement with the changes in the fair value of the liability recorded as a component of other income (expense) in the statement of operations and comprehensive loss.

***Redeemable Convertible Preferred Stock Warrant***

The Company's redeemable convertible preferred stock warrant ("warrant") requires liability classification as the underlying redeemable convertible preferred stock is considered contingently redeemable and may obligate the Company to transfer assets to the holders at a future date upon occurrence of a deemed liquidation event. The warrant is recorded at fair value upon issuance and is subject to re-measurement to fair value at each balance sheet date, with any changes in fair value recognized in the statements of operations and comprehensive loss. The Company will continue to adjust the warrant liability for changes in fair value until the earlier of the exercise or expiration of the redeemable convertible preferred stock warrant, occurrence of a deemed liquidation event or immediately prior to the closing of a firm commitment underwritten initial public offering of the Company's common stock registered under the Securities Act of 1933, as amended. The warrant will be automatically net shares settled prior to expiration based on the fair market value of the shares on the date of exercise.

***Fair Value Measurements***

Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. As such, fair value is a market-based measurement that should be determined based on assumptions that market participants would use in pricing an asset or liability. The carrying amounts of the Company's financial instruments, including cash and cash equivalents, prepaid and other current assets, accounts payable, accrued expenses, and other liabilities, approximate fair value due to their short-term maturities. The redeemable convertible preferred stock tranche liability and redeemable convertible preferred stock warrant are carried at fair value (see Note 4).

***Research and Development***

Research and development costs are expensed as incurred. Research and development costs include salaries, stock-based compensation, and benefits of employees performing research and development activities, an allocation of facility and overhead expenses, expenses incurred under agreements with consultants, contract manufacturing organizations ("CMOs"), contract research organizations ("CROs") and investigative sites that conduct preclinical studies, other supplies and costs associated with product development efforts, preclinical activities, and regulatory operations.

***Accrued Research and Development***

The Company has entered into various agreements with CROs and CMOs. The Company's research and development accruals are estimated based on the level of services performed, progress of the studies, including the phase or completion of events, and contracted costs. The estimated costs of research and development provided, but not yet invoiced, are included in accrued expenses on the balance sheet. If the actual timing of the performance of services or the level of effort varies from the original estimates, the Company will adjust the accrual accordingly. Payments made to CROs or CMOs under these arrangements in advance of the performance of the related services are recorded as prepaid expenses and other current assets until the services are rendered. To date, there have been no material differences between our estimates of such expenses and the amounts actually incurred.

***Income Taxes***

The Company accounts for income taxes using the asset and liability method. The Company recognizes deferred tax assets and liabilities for the expected future tax consequences of events that have been included in the financial statements or tax returns. Deferred tax assets and liabilities are determined based on the difference between the financial statements and tax basis of assets and liabilities using enacted tax rates in effect for the year in which the differences are expected to reverse.

In evaluating the ability to recover its deferred income tax assets, the Company considers all available positive and negative evidence, including its operating results, ongoing tax planning, and forecasts of future taxable income on a jurisdiction-by-jurisdiction basis. In the event the Company determines that it would be able to realize its deferred income tax assets in the future in excess of their net recorded amount, it would make an adjustment to the valuation allowance that would reduce the provision for income taxes. Conversely, in the event that all or part of the net deferred tax assets are determined not to be realizable in the future, an adjustment to the valuation allowance would be charged to earnings in the period when such determination is made. As of December 31, 2017 and 2018, the Company has recorded a full valuation allowance on its deferred tax assets.

Tax benefits related to uncertain tax positions are recognized when it is more likely than not that a tax position will be sustained during an audit. Interest and penalties related to unrecognized tax benefits are included within the provision for income tax.

***Stock-Based Compensation Expense***

Stock-based compensation expense related to awards to employees is measured at the grant date based on the fair value of the award. The fair value of the award that is ultimately expected to vest is recognized as expense on a straight-line basis over the requisite service period, which is generally the vesting period, net of the impact of actual forfeitures recorded in the period in which they occur.

Stock-based compensation expense related to awards to nonemployees is recognized based on the then-current fair value at each measurement date over the associated service period of the award, which is generally the vesting term, using the straight-line method. The fair value of nonemployee stock options is estimated using the Black-Scholes valuation model with assumptions generally consistent with those used for employee stock options, with the exception of the expected term, which is the remaining contractual life at each measurement date. Refer to Note 12 for more information on assumptions used in estimating stock-based compensation expense.

The Company uses the Black-Scholes option-pricing model ("Black-Scholes") as the method for determining the estimated fair value of certain financial instruments, which requires the input of the following assumptions:

*Fair Value of Common Stock*

The fair value of the Company's common stock is determined by the Board of Directors with assistance from management and external appraisers. Management's approach to estimate the fair value of the Company's common stock is consistent with the methods outlined in the American Institute of Certified Public Accountants' Practice Aid, *Valuation of Privately-Held-Company Equity Securities Issued as Compensation* (the "Practice Aid"), considering a number of objective and subjective factors including: valuations of the Company's common stock performed with the assistance of independent third-party valuation specialists; the Company's stage of development and business strategy, including the status of research and development efforts of the Company's vaccine candidates, and the material risks related to the Company's business and industry; the Company's results of operations and financial position, including its levels of available capital resources; the valuation of publicly traded companies in the life sciences and biotechnology sectors, as well as recently completed mergers and acquisitions of peer companies; the lack of marketability of the Company's common stock; the prices of the Company's redeemable convertible preferred stock sold to investors in arm's length transactions and the rights, preferences, and privileges of the Company's redeemable convertible preferred stock relative to those of its common stock; the likelihood of achieving a liquidity event for the holders of the Company's common and redeemable convertible preferred stock, such as an initial public offering or a sale, given prevailing market conditions; trends and developments in the Company's industry; and external market conditions affecting the life sciences and biotechnology industry sectors. The fair value of the common stock shall be approved by the Board of Directors until such time as the Company's common stock is listed on an established stock exchange or national market system.

The valuation assumptions were determined as follows:

*Expected Term*

Expected term represents the period that the Company's stock-based awards are expected to be outstanding. The expected term for employee stock options is calculated using the simplified method where there is insufficient historical data about exercise patterns and post-vesting employment termination behavior. The simplified method is based on the vesting period and the contractual term for each grant, or for each vesting-tranche for awards with graded vesting. The mid-point between the vesting date and the maximum contractual expiration date is used as the expected term under this method. For awards with multiple vesting-tranches, the time from grant until the mid-points for each of the tranches may be averaged to provide an overall expected term. The expected term for nonemployee stock options is the remaining contractual term.

*Expected Volatility*

Expected volatility is estimated from the average historical volatilities of publicly traded companies within the life sciences industry that are considered to be comparable to the Company's business over a period approximately equal to the expected term for employees' options and the remaining contractual life for nonemployees' options. The Company will continue to apply this process until a sufficient amount of historical information regarding the volatility of its own stock price becomes available.

*Expected Dividend*

The Company has not paid and does not anticipate paying any dividends in the near future. Accordingly, the Company has estimated the dividend yield to be zero.

*Risk-Free Interest Rate*

The risk-free interest rate is based on the U.S. Treasury yield in effect at the time of grant for zero-coupon notes with remaining terms corresponding with the expected term of the option.

***Comprehensive Loss***

Comprehensive loss includes all changes in equity (net assets) during a period from non-owner sources. There have been no items qualifying as other comprehensive income or loss, and as such, comprehensive loss was the same as net loss for the periods presented.

***Foreign Currency Transactions***

Transactions denominated in foreign currencies are initially measured in U.S. dollars using the exchange rate on the date of the transaction. Foreign currency denominated monetary assets and liabilities are subsequently re-measured at the end of each reporting period using the exchange rate at that date, with the corresponding foreign currency transaction gain or loss recorded in the statements of operations and comprehensive loss and statements of cash flows. Nonmonetary assets and liabilities are not subsequently re-measured.

***Net Loss Per Share***

Basic net loss per common share is calculated by dividing the net loss attributable to common stockholders by the weighted-average number of common stock outstanding during the period, without consideration of potentially dilutive securities. Diluted net loss per share is computed by dividing the net loss attributable to common stockholders by the weighted-average number of common stock and potentially dilutive securities outstanding for the period. For purposes of the diluted net loss per share calculation, redeemable convertible preferred stock, redeemable convertible preferred stock warrant, common stock subject to repurchase, and stock options are considered to be potentially dilutive securities.

Basic and diluted net loss attributable to common stockholders per share is presented in conformity with the two-class method required for participating securities as the redeemable convertible preferred stock is considered a participating security. The Company's participating securities do not have a contractual obligation to share in the Company's losses. As such, the net loss was attributed entirely to common stockholders. Because the Company has reported a net loss for all periods presented, diluted net loss per common share is the same as basic net loss per common share for those periods.

**3. Adopted and Recent Accounting Pronouncements**

***Recently Adopted Accounting Pronouncements***

In March 2016, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") No. 2016-09, *Improvements to Employee Share-Based Payment Accounting*, which simplifies the accounting for employee share-based transactions. The amendments in this update cover such areas as the recognition of excess tax benefits and deficiencies, the classification of those excess tax benefits on the statements of cash flows, accounting policy election for forfeitures, the amount an employer can withhold to cover income taxes and still qualify for equity classification and the classification of those taxes paid on the statements of cash flows. The Company early adopted this ASU as of January 1, 2018. The Company has elected to account for forfeitures as they occur. The adoption of the ASU had no material impact on the Company's financial statements or disclosures.

In May 2017, the FASB issued ASU No. 2017-09, *Scope of Modification Accounting*. The amended standard specifies the modification accounting applicable to any entity which changes the terms or conditions of a share-based payment award. This standard does not change the accounting for modifications but clarifies that modification accounting guidance should only be applied if there is a change to the value, vesting conditions, or award classification and would not be required if the changes are considered non-substantive. The new standard became effective for the Company on January 1, 2018 and there was no impact on the Company's financial statements or disclosures.

***Recently Issued Accounting Pronouncements—Not Yet Adopted***

In August 2018, the FASB issued ASU No. 2018-13, *Fair Value Measurement (Topic 820) Disclosure Framework—Changes to the Disclosure Requirements for Fair Value Measurement.* The standard eliminates certain disclosure requirements for fair value measurements for all entities, requires public entities to disclose certain new information, and modifies certain disclosure requirements. The new standard is effective for fiscal years and interim periods beginning after December 15, 2019. Early adoption is permitted upon issuance of this ASU. Entities making the election to early adopt are permitted to early adopt the eliminated or modified disclosure requirements and delay the adoption of the new disclosure requirements until their effective date. The Company is currently evaluating the impact that the standard will have on its financial statements and related disclosures.

In June 2018, the FASB issued No. ASU 2018-07, *Improvements to Nonemployee Share-Based Payment Accounting*, which simplifies the accounting for share-based payments granted to nonemployees for goods and services. This standard expands the scope of Topic 718, *Compensation—Stock Compensation*, which currently includes share-based payments to employees, to include share-based payments issued to nonemployees for goods or services. Consequently, the accounting for share-based payments to nonemployees and employees will be substantially aligned. The ASU supersedes Subtopic 505-50, *Equity—Equity-Based Payments to Non-Employees*. This standard will be effective for fiscal years beginning after December 15, 2019 and for interim periods within fiscal years beginning after December 15, 2020. The new standard will be effective for the Company on January 1, 2020. The standard should be adopted on a modified retrospective basis which recognizes a cumulative-effect adjustment to the opening balance of retained earnings in the period of adoption. Early adoption is permitted. The Company has not yet determined whether it will elect early adoption and it is currently evaluating the impact of the adoption of this update on its financial statements and related disclosures.

In August 2016, the FASB issued ASU No. 2016-15, *Classification of Certain Cash Receipts and Cash Payments*, which clarifies the presentation and classification of certain cash receipts and cash payments in the statement of cash flows. The new standard became effective for the Company on January 1, 2019 and there was no impact on the Company's financial statements or disclosures.

In February 2016, the FASB issued ASU No. 2016-02, *Leases*, which is intended to increase the transparency and comparability in the reporting of leasing arrangements by generally requiring leased assets and liabilities to be recorded in the balance sheet. The new standard is effective for fiscal years beginning after December 15, 2019 and interim periods within fiscal years beginning after December 15, 2020, with early adoption permitted. In July 2018, the FASB issued ASU 2018-11, *Targeted Improvements*, an update which provides another transition method in addition to the existing modified retrospective transition method by allowing entities to initially apply the new lease standard at the adoption date and recognize a cumulative-effect adjustment to the opening balance of retained earnings in the period of adoption. The Company has not yet determined the method of adoption and the potential effect the new standard will have on the Company's financial statements and related disclosures.

**4. Fair Value Measurements and Fair Value of Financial Instruments**

Assets and liabilities recorded at fair value on a recurring basis in the balance sheets, as well as assets and liabilities measured at fair value on a non-recurring basis or disclosed at fair value, are categorized based upon the level of judgment associated with inputs used to measure their fair values. The accounting guidance for fair value provides a framework for measuring fair value, and requires certain disclosures about how fair value is determined. Fair value is defined as the price that would be received upon the sale of an asset or paid to transfer a liability (an exit price) in an orderly transaction between market participants at the reporting date. The accounting guidance also establishes a three-level valuation hierarchy that prioritizes the inputs to valuation techniques used to measure fair value based upon whether such inputs are observable or unobservable. Observable inputs reflect market data obtained from independent sources, while unobservable inputs reflect market assumptions made by the reporting entity. The three-level hierarchy for the inputs to valuation techniques is briefly summarized as follows:

***Level 1*—** Inputs are unadjusted, quoted prices in active markets for identical assets or liabilities at the measurement date;

***Level 2*—**Inputs are observable, unadjusted quoted prices in active markets for similar assets or liabilities, unadjusted quoted prices for identical or similar assets or liabilities in markets that are not active, or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the related assets or liabilities; and

***Level 3*—**Unobservable inputs that are significant to the measurement of the fair value of the assets or liabilities that are supported by little or no market data.

Assets and liabilities measured at fair value are classified in their entirety based on the lowest level of input that is significant to the fair value measurement. The Company's assessment of the significance of a particular input to the fair value measurement in its entirety requires management to make judgments and consider factors specific to the asset or liability. Changes in the ability to observe valuation inputs may result in a reclassification of levels of certain securities within the fair value hierarchy. The Company recognizes transfers into and out of levels within the fair value hierarchy in the period in which the actual event or change in circumstances that caused the transfer occurs.

Level 1 securities consist of highly liquid money market funds for which the carrying amounts approximate their fair values due to their short maturities. Level 3 liabilities that are measured at fair value on a recurring basis include the redeemable convertible preferred stock tranche liability and redeemable convertible preferred stock warrant. The redeemable convertible preferred stock tranche liability and the redeemable convertible preferred stock warrant are measured using the option pricing method by estimating the value using the Black-Scholes model. The inputs used in the Black-Scholes model includes the value of the redeemable convertible preferred stock, the risk-free interest rate, the expected term of the instrument and the expected volatility.

Below are inputs used for the two Level 3 liabilities as of December 31, 2017 and December 31, 2018:

| | December 31, 2017 | December 31, 2018 | |
|---|---|---|---|
| | Redeemable Convertible Preferred Stock Tranche Liability | Redeemable Convertible Preferred Stock Tranche Liability | Redeemable Convertible Preferred Stock Warrant |
| Value of Series C Preferred Stock per share | $ 5.04 | $ 5.55 | $ 5.55 |
| Risk-free rate | 1.86% | 2.63% | 2.67% |
| Volatility | 38.20% | 40.0% | 85.4% |
| Term (in years) | 1.75 | 1.0 | 9.42 |

During the periods presented, the Company has not changed the manner in which it values liabilities that are measured at estimated fair value using Level 3 inputs. There were no transfers within the hierarchy during the years ended December 31, 2017 and 2018.

The following table sets forth the Company's financial instruments that were measured at fair value on a recurring basis by level within the fair value hierarchy at December 31, 2017:

| | Fair Value Measurements | | | |
|---|---|---|---|---|
| | Total | Level 1 | Level 2 | Level 3 |
| | | (in thousands) | | |
| **Assets:** | | | | |
| Money market funds(1) | $ 36,139 | $ 36,139 | $ — | $ — |
| **Liabilities:** | | | | |
| Redeemable convertible preferred stock tranche liability | $ 3,760 | $ — | $ — | $ 3,760 |

(1) Included within cash and cash equivalents on the balance sheet.

The following table sets forth the Company's financial instruments that were measured at fair value on a recurring basis by level within the fair value hierarchy at December 31, 2018:

| | Fair Value Measurements | | | |
|---|---|---|---|---|
| | Total Fair Value | Level 1 | Level 2 | Level 3 |
| | | (in thousands) | | |
| **Assets:** | | | | |
| Money market funds(1) | $ (682) | $ (682) | $ — | $ — |
| **Liabilities:** | | | | |
| Redeemable convertible preferred stock warrant liability | $ 462 | $ — | $ — | $ 462 |
| Redeemable convertible preferred stock Tranche liability | $ 3,185 | $ — | $ — | $ 3,185 |

(1) Included within cash and cash equivalents on the balance sheet.

The following table provides a summary of changes in the estimated fair value of the Company's Level 3 financial instruments:

| | Redeemable Convertible Preferred Stock Tranche Liability | Warrant Liability |
|---|---|---|
| | (in thousands) | |
| Balance—December 31, 2016 | $ 56 | $ — |
| Fair value of the Series B redeemable convertible preferred stock tranche liability issued in 2017 | 4,769 | — |
| Exercise of the Series A third redeemable convertible preferred stock tranche liability | (625) | — |
| Change in fair value recorded in research and development expense—net | (440) | — |
| Balance—December 31, 2017 | $ 3,760 | $ — |
| Fair value of the Series C redeemable convertible preferred stock tranche liability issued in 2018 | 4,603 | — |
| Issuance of redeemable convertible preferred stock warrant | — | 465 |
| Change in fair value recorded in research and development expense—net | (5,178) | (3) |
| Balance—December 31, 2018 | $ 3,185 | $ 462 |

## 5. Property and Equipment, Net

Property and equipment, net as of December 31, 2017 and 2018, consist of the following:

| | December 31, | |
|---|---|---|
| | 2017 | 2018 |
| | (in thousands) | |
| Furniture and equipment | $ 256 | $ 307 |
| Computers | 134 | 137 |
| Lab equipment | 1,149 | 2,299 |
| Construction in progress | 268 | — |
| Leasehold improvements | 993 | 1,458 |
| Capital lease—lab equipment | 961 | 961 |
| | 3,761 | 5,162 |
| Less: accumulated depreciation and amortization | (789) | (1,751) |
| Total property and equipment, net | $ 2,972 | $ 3,411 |

Depreciation and amortization expense for the years ended December 31, 2017 and 2018, was $0.6 million and $1.0 million, respectively.

## 6. Accrued Expenses

Accrued expenses as of December 31, 2017 and 2018, consist of the following:

| | December 31, | |
|---|---|---|
| | 2017 | 2018 |
| | (in thousands) | |
| Preclinical studies | $ 425 | $ 2,070 |
| Professional fees | 175 | 240 |
| Other accrued expenses | 75 | 84 |
| Total accrued expenses | $ 675 | $ 2,394 |

**7. Commitments and Contingencies**

***Capital Leases***

The Company entered into several capital lease obligations to purchase equipment used for operations. The terms of the leases are 36 months with interest rates ranging from 6.9% - 15.0%. Interest expense was $0.1 million for each of the years ended December 31, 2017 and 2018.

The present value of the annual rental payments, including guaranteed residual value, is equal to 90% of the fair market value of the assets at the lease inception dates. The underlying assets and related amortization were included in the appropriate fixed asset category and related amortization account, respectively.

Property and equipment, net at December 31, 2017 and 2018, include the following amounts for leases that have been capitalized:

| | Useful Life (in years) | December 31, 2017 | December 31, 2018 |
|---|---|---|---|
| | | (in thousands) | |
| Capital lease equipment | 3 - 5 | $ 961 | $ 961 |
| Less accumulated amortization | | (171) | (440) |
| | | $ 790 | $ 521 |

Future minimum payments required under capital leases as of December 31, 2018, are as follows:

| For the year ending December 31, | (in thousands) |
|---|---|
| 2019 | $ 340 |
| 2020 | 169 |
| Total future payments | 509 |
| Less amounts representing interest | 51 |
| Present value of future minimum payments | 458 |
| Less current portion | 297 |
| Long-term portion | $ 161 |

***Operating Leases***

In July 2015, the Company entered into a three-year sublease agreement for its former office in South San Francisco, California. In 2017, the Company terminated this lease agreement. In July 2016, the Company entered into a five-year lease agreement for its current facility located in Foster City, California. The term of the lease is from September 1, 2016 to August 31, 2021, with two 30-month renewal options. In addition to payment of base rent, the Company is also required to pay property taxes, insurance and common area expenses. The Foster City lease agreement provide for an escalation of rent payments each year. The Company records rent expense on a straight-line basis over the term of the lease. The Company records deferred rent which is calculated as the difference between rent expense and the cash rental payments. The Company also leases an office in San Diego, California. The original lease term began on January 1, 2018 and ended on December 31, 2018, and was renewed automatically for a period of three months. Rent is payable monthly for both leases.

Future minimum payments required under operating leases as of December 31, 2018, are as follows. For purposes of the table below, the San Diego office rent is assumed to be renewed until December 31, 2019:

| Year ending December 31, | (in thousands) |
|---|---|
| 2019 | $ 442 |
| 2020 | 436 |
| 2021 | 297 |
| 2022 | — |
| 2023 | — |
| | $ 1,175 |

Rent expense recognized under the leases was $0.4 million for each the years ended December 31, 2017 and 2018.

***Legal Contingencies***

From time to time, the Company may become involved in legal proceedings arising from the ordinary course of business. The Company records a liability for such matters when it is probable that future losses will be incurred and that such losses can be reasonably estimated. Significant judgment by the Company is required to determine both probability and the estimated amount.

In April 2018, the Company reached a settlement of a dispute with a group of former consultants. As a result of the settlement, the parties agreed to a mutual release of certain claims, and the Company made a one-time payment of approximately $0.9 million, which had been previously recorded as a liability as of December 31, 2017. In addition, stock options previously issued to the consultants were returned to the Company's 2014 Plan.

Management is currently not aware of any other legal matters that could have a material adverse effect on the Company's financial position, results of operations or cash flows.

***Guarantees and Indemnifications***

In the normal course of business, the Company enters into agreements that contain a variety of representations and provide for general indemnification. The Company's exposure under these agreements is unknown because it involves claims that may be made against the Company in the future. To date, the Company has not paid any claims or been required to defend any action related to its indemnification obligations. As of December 31, 2017 and 2018, the Company does not have any material indemnification claims that were probable or reasonably possible and consequently has not recorded related liabilities.

***Indemnification***

To the extent permitted under Delaware law, the Company has agreed to indemnify its directors and officers for certain events or occurrences while the director or officer is, or was serving, at the Company's request in such capacity. The indemnification period covers all pertinent events and occurrences during the director's or officer's service. The maximum potential amount of future payments the Company could be required to make under these indemnification agreements is not specified in the agreements; however, the Company has director and officer insurance coverage that reduces its exposure and enables the Company to recover a portion of any future amounts paid. The Company believes the estimated fair value of these indemnification agreements in excess of applicable insurance coverage is minimal.

***Development and Manufacturing Services Agreement***

On October 21, 2016, the Company entered into a development and manufacturing services agreement with Lonza Pharma & Biotech (the "Lonza DMSA"), pursuant to which Lonza would provide certain process development and manufacturing services and the Company would pay certain fees according to specified project plans to support its efforts to develop potential best-in-class conjugate vaccines. In January, July and September 2017, the Company entered into amendments to the Lonza DMSA, which significantly expanded the scope of process development and manufacturing work to be provided by Lonza for the Company's lead PCV program. The Company has the option to cancel signed orders at any time upon written notice, which may or may not be subject to payment of a cancellation fee. The level of cancellation fees is generally dependent on the timing of the written notice in relation to the commencement date of the work, with the maximum cancellation fee equal to the full price of the work order.

In June 2018, the Company and Lonza agreed to certain terms for potential future equity payments as partial satisfaction of future obligations to Lonza. This agreement states that the initial pre-Investigational New Drug "pre-IND" cash payments will be subject to a specified dollar cap (the "Initial Cash Cap"). After the Initial Cash Cap has been reached, the Company shall have the option to make any further pre-IND payments due to Lonza in cash, equity, or a combination of both, at the Company's election, provided that Lonza may elect to receive up to 25% of pre-IND payments in equity, up to a maximum of $2.5 million and provided that no more than $10 million of pre-IND payments shall be made in the form of equity. The Initial Cash Cap had not been reached as of December 31, 2018 and the Company has not received any services associated with the potential equity payments. As such, no amount has been recorded with respect to the potential future payments above the Initial Cash Cap.

**8. Redeemable Convertible Preferred Stock**

As of December 31, 2018, the Company is authorized to issue 87,962,362 shares of stock with par value of $0.001 per share, of which 52,000,000 shares are designated as common stock and 35,962,362 shares are designated as redeemable convertible preferred stock.

The authorized, issued, and outstanding shares of redeemable convertible preferred stock and liquidation preferences as of December 31, 2017, were as follows:

| | Shares Authorized | Outstanding | Original Issuance Price | Carrying Value | Liquidation Amount |
|---|---|---|---|---|---|
| | | | | (in thousands) | |
| Series A Redeemable Convertible Preferred | 10,502,804 | 10,502,804 | $ 2.56 | $ 24,967 | $ 26,887 |
| Series B Redeemable Convertible Preferred | 11,449,515 | 7,633,008 | 5.25 | 35,101 | 40,101 |
| | 21,952,319 | 18,135,812 | | $ 60,068 | $ 66,988 |

The authorized, issued, and outstanding shares of redeemable convertible preferred stock and liquidation preferences as of December 31, 2018, were as follows:

| | Shares Authorized | Outstanding | Original Issuance Price | Carrying Value | Liquidation Amount |
|---|---|---|---|---|---|
| | | | | (in thousands) | |
| Series A Redeemable Convertible Preferred | 10,502,804 | 10,502,804 | $ 2.56 | $ 24,967 | $ 26,887 |
| Series B Redeemable Convertible Preferred | 11,449,515 | 11,449,510 | 5.25 | 55,151 | 60,150 |
| Series C Redeemable Convertible Preferred | 14,010,043 | 6,222,912 | 6.83 | 37,692 | 42,500 |
| | 35,962,362 | 28,175,226 | | $ 117,810 | $ 129,537 |

***Series A Redeemable Convertible Preferred Stock***

In July 2015, the Company entered into a Series A preferred stock purchase agreement with certain investors. The Company issued 4,736,330 shares of Series A redeemable convertible preferred stock at a purchase price of $2.56 per share and raised approximately $12.1 million in gross proceeds as part of the initial close. In addition, in July 2015, the Company issued 248,900 shares of Series A redeemable convertible preferred stock as a result of the conversion of notes payable and accrued interest at a purchase price of $2.56 per share. In total, the Company issued 4,985,230 shares of Series A redeemable convertible preferred stock as part of the initial close.

At the time of the initial close, the Company also granted investors the right to purchase shares of Series A redeemable convertible preferred stock in a second and third tranche upon the occurrence of certain events over time. The second tranche was issued in July 2016, in which the Company issued an additional 3,955,076 shares at a purchase price of $2.56 per share and raised approximately $10.1 million in gross proceeds.

For the third tranche, the Company authorized the sale and issuance of up to 1,562,498 shares of Series A redeemable convertible preferred stock at a purchase price of $2.56 per share immediately prior to (i) the acquisition of the Company by another entity by means of any transaction or series of related transactions to which the Company is party; (ii) a sale, lease, exclusive license, or other disposition of all or substantially all of the assets of the Company and its subsidiaries taken as a whole by means of any transaction or series of related transactions, except where such sale, lease, exclusive license, or other disposition is to a wholly owned subsidiary of the Company; or (iii) the closing of a firm commitment underwritten initial public offering of the Company's common stock pursuant to an effective registration statement filed under the Securities Act of 1933, as amended.

In conjunction with the Series B redeemable convertible preferred stock financing, the Company and Series A redeemable convertible preferred stock investors agreed to amend the Series A preferred stock purchase agreement, allowing Series A redeemable convertible preferred stock investors to exercise the option to purchase the third tranche of Series A redeemable convertible preferred stock within 90 days of the closing of the Series B redeemable convertible preferred stock financing. In May 2017, Series A redeemable convertible preferred stock investors exercised the Series A third tranche option, and the Company issued 1,562,498 shares of Series A redeemable convertible preferred stock at a purchase price of $2.56 per share and raised approximately $4.0 million in gross proceeds.

***Series B Redeemable Convertible Preferred Stock***

In March 2017, the Company entered into a Series B preferred stock purchase agreement with certain investors. The Company issued 7,633,008 shares of Series B redeemable convertible preferred stock at a purchase price of $5.2535 per share and raised approximately $40.1 million in gross proceeds as part of the initial close.

At the time of the initial close, the Company also authorized the sale and issuance of up to 3,816,507 shares of Series B redeemable convertible preferred stock in a second tranche at a purchase price of $5.2535 per share upon the earlier of (i) the acceptance of an Investigational New Drug (IND) application by the U.S. Food and Drug Administration for the Company's lead program or (ii) the approval by a majority of the Board of Directors of the Company.

In conjunction with the Series C redeemable convertible preferred stock financing, the Company and Series B redeemable convertible preferred stock investors agreed that the second tranche of the Series B redeemable convertible preferred stock financing should occur immediately prior to the closing of the Series C redeemable convertible preferred stock financing. As a result, the Company issued an additional 3,816,502 shares in May 2018 at a purchase price of $5.2535 per share and raised approximately $20.0 million in gross proceeds.

***Series C Redeemable Convertible Preferred Stock***

In May 2018, the Company entered into a Series C preferred stock purchase agreement with certain investors. The Company issued 6,222,912 shares of Series C redeemable convertible preferred stock at a purchase price of $6.8296 per share and raised approximately $42.5 million in gross proceeds as part of the initial close.

At the time of the initial close, the Company also authorized the sale and issuance of up to 6,222,914 shares of Series C redeemable convertible preferred stock in a second tranche ("Secondary Closing") at a purchase price of $6.8296 per share on or after December 1, 2019 as elected by written notice by the Company to the Series C redeemable convertible preferred stock investors ("Series C Investors"); provided that the Secondary Closing may take place prior to December 1, 2019 with the mutual consent of the Company and Series C Investors representing a majority of the shares to be sold in the Secondary Closing. Each Series C Investor has the right to invest its Secondary Closing commitment at any time at or following the initial close and prior to or in connection with the Secondary Closing by providing a written notice to the Company.

Other key terms of the Series C preferred stock purchase agreement were largely consistent with terms of the Series B preferred stock purchase agreement. In conjunction with the closing of the Series C redeemable convertible preferred stock financing, the Company increased its authorized share capital to 87,962,362 shares of stock with par value of $0.001 per share, of which 52,000,000 shares are designated as common stock and 35,962,362 shares are designated as redeemable convertible preferred stock.

***Series A Redeemable Convertible Preferred Stock Tranche Liability***

The Series A preferred stock purchase agreement provided the investors the right to participate in future rounds of the Series A redeemable convertible preferred stock financing at a specified price equal to the original issue price. These rights to participate in the second and third tranche of the Series A redeemable convertible preferred stock financing were provided concurrently with the issuance of the original preferred stock purchase agreement. The redeemable convertible preferred stock tranche liability has been valued as freestanding financial instruments because they are freely separately exercisable and are classified as liabilities until exercise or expiration. The Company valued these redeemable convertible preferred stock tranche liability using a probability-weighted option pricing model, which included significant estimates regarding the expected probability and time to exercise, volatility and discount rate.

The fair value of the Series A redeemable convertible preferred stock tranche liability as of January 1, 2016 was $1.7 million. During 2016, the Company re-measured the tranche liability associated with the second tranche of the Series A redeemable convertible preferred stock call option prior to exercise and recorded the decrease in the fair value of $1.7 million as other income in the statements of operations and comprehensive loss. Immediately before the closing of the second tranche of the Series A redeemable convertible preferred stock in July 2016, the Company determined the fair value of the tranche liability based on the Black-Scholes valuation model, and recorded the settlement of less than $0.1 million as a capital transaction.

As of December 31, 2016, the Company re-measured the Series A third redeemable convertible preferred stock tranche liability and determined its fair value was approximately $0.1 million using a probability-weighted option pricing model. During 2016, the Company recorded the immaterial decrease in the fair value as other income in the statements of operations and comprehensive loss.

The Company re-measured the third Series A redeemable convertible preferred stock call option as of the amendment date and immediately prior to the closing of the third tranche of the Series A redeemable convertible preferred stock in May 2017. During 2017, the Company re-measured the tranche liability associated with the third tranche of Series A redeemable convertible preferred stock prior to exercise and recorded the $0.6 million increase in the fair value as other income in the statements of operations and comprehensive loss.

The fair value of the Series A redeemable convertible preferred stock tranche liability was determined to be $0.6 million immediately before the closing of the third tranche of Series A redeemable convertible preferred stock, based on the Black-Scholes valuation model. Following the closing of the third tranche of the Series A convertible redeemable convertible preferred stock in May 2017, the Company recorded $0.6 million for the settlement of the redeemable convertible preferred stock tranche liability as a capital transaction.

***Series B Redeemable Convertible Preferred Stock Tranche Liability***

The Series B preferred stock purchase agreement provided the investors the right to participate in a subsequent round of the Series B redeemable convertible preferred stock financing at a specified price equal to the original issue price. This right to participate in the second tranche of the Series B redeemable convertible preferred stock financing was provided concurrently with the issuance of the original preferred stock purchase agreement. The redeemable convertible preferred stock tranche liabilities have been valued as freestanding financial instruments because they are freely separately exercisable and are classified as liabilities until exercise or expiration. The Company valued the redeemable convertible preferred stock tranche liability using an option pricing model, which included significant estimates regarding time to exercise, volatility and discount rate.

The Company recorded the initial redeemable convertible preferred stock tranche liability in March 2017 upon the initial close of the Series B redeemable convertible preferred stock financing. The fair value of the second tranche of the Series B redeemable convertible preferred stock tranche liability was determined to be approximately $4.8 million.

As of December 31, 2017, the Company re-measured the second tranche of the Series B redeemable convertible preferred stock tranche liability prior to exercise and determined its fair value was approximately $3.8 million. During 2017, the Company recorded the decrease in the fair value of $1.0 million as other income in the statements of operations and comprehensive loss.

The Company re-measured the second tranche of Series B redeemable convertible preferred stock call option immediately prior to the closing of the second tranche of the Series B redeemable convertible preferred stock in May 2018. During 2018, the Company re-measured the tranche liability associated with the second tranche of Series B redeemable convertible preferred stock prior to exercise and recorded the $3.8 million decrease in the fair value as other income in the statements of operations and comprehensive loss.

***Series C Redeemable Convertible Preferred Stock Tranche Liability***

The Series C preferred stock purchase agreement provides the investors the right to participate in a subsequent round of the Series C redeemable convertible preferred stock financing at a specified price equal to the original issue price of $6.8296 per share. This right to participate in the second tranche of the Series C redeemable convertible preferred stock financing was provided concurrently with the issuance of the original preferred stock purchase agreement. The redeemable convertible preferred stock tranche liabilities have been valued as freestanding financial instruments because they are freely separately exercisable and are classified as liabilities until exercise or expiration. The Company valued the redeemable convertible preferred stock tranche liability using an option pricing model, which included significant estimates regarding volatility and discount rate.

The Company recorded the initial redeemable convertible preferred stock tranche liability in May 2018 upon the initial close of the Series C redeemable convertible preferred stock financing. The fair value of the second tranche of the Series C redeemable convertible preferred stock tranche liability was determined to be approximately $4.6 million.

As of December 31, 2018, the Company re-measured the second tranche of the Series C redeemable convertible preferred stock tranche liability and determined its fair value was approximately $3.2 million. During 2018, the Company recorded the decrease in the fair value of $1.4 million as other income in the statements of operations and comprehensive loss.

The significant rights, privileges, and preferences of the Company's redeemable convertible preferred stock are as follows:

***Dividends***—The holders of Series A, Series B and Series C redeemable convertible preferred stock are entitled to receive noncumulative dividends at the rate of 8% per share of the original issuance price, when, as and if declared by the Board of Directors. Any additional dividends set aside or paid in any fiscal year shall be set aside or paid among the holders of the redeemable convertible preferred stock and common stock in proportion to the greatest whole number of shares of common stock, which would be held by each such holder if all shares of redeemable convertible preferred stock were converted at the then-effective conversion rate. No dividends were declared and payable in the years ended December 31, 2017 and 2018.

***Liquidation Rights***—In the event of any liquidation, dissolution, or winding-up of the Company, including a merger, acquisition, or sale of assets, as defined in the certificate of incorporation, each holder of Series A redeemable convertible preferred stock is entitled to receive a liquidation preference amount equal to $2.56 per share plus any dividends declared but unpaid, each holder of Series B redeemable convertible preferred stock is entitled to receive a liquidation preference amount equal to $5.2535 per share plus any dividends declared but unpaid, and each holder of Series C redeemable convertible preferred stock is entitled to receive a liquidation preference amount equal to $6.8296 per share plus any dividends declared but unpaid. After the payment of the full liquidation preference to holders of redeemable convertible preferred stock, the remaining assets of the Company legally available for distribution shall be distributed with equal priority and pro rata among the holders of Series A redeemable convertible preferred stock, Series B redeemable convertible preferred stock, Series C redeemable convertible preferred stock and common stock; provided that the aggregate distributions made to the holders of Series A redeemable convertible preferred stock shall not exceed an amount equal to $3.84 per share (one and one half times the liquidation preference) plus any dividends declared but unpaid, provided that the aggregate distributions made to the holders of Series B redeemable convertible preferred stock shall not exceed an amount equal to $7.88 per share (one and one half times the liquidation preference) plus any dividends declared but unpaid, and provided that the aggregate distributions made to the holders of Series C redeemable convertible preferred stock shall not exceed an amount equal to $10.24 per share (one and one half times the liquidation preference) plus any dividends declared but unpaid.

***Conversion***—Each share of Series A redeemable convertible preferred stock is convertible, at the option of the holder, at any time after the closing of the second tranche, which occurred in July 2016, into that number of fully paid, non-assessable shares of common stock determined by dividing the original issue price by the conversion price. The redeemable convertible preferred stock will also be converted automatically into shares of common stock at the then applicable conversion rate (a) immediately prior to the closing of a firm commitment underwritten initial public offering of the Company's common stock, registered under the Securities Act of 1933, as amended, in which the offering price is not less than $7.68 per share, which results in aggregate proceeds in excess of $40.0 million, and the Company is listed for trading on the New York Stock Exchange, the Nasdaq Stock Market or another international exchange of similar stature, or (b) upon the receipt by the Company of a written request for such conversion from the holders of at least 55% of redeemable convertible preferred stock then outstanding. Upon the issuance of the Series C redeemable convertible preferred stock in May 2018, the conversion option was amended in the Amended and Restated Certificate of Incorporation to be the same as the conversion option under the Series C redeemable convertible preferred stock below.

Each share of Series B redeemable convertible preferred stock is convertible, at the option of the holder at any time after the earlier of (i) the closing of the second tranche of the Series B redeemable convertible preferred stock and (ii) the date that the ability to consummate the closing of the second tranche of the Series B redeemable convertible preferred stock is terminated under the Series B preferred stock purchase agreement, into that number of fully paid, non-assessable shares of common stock determined by dividing the original issue price by the conversion price. The redeemable convertible preferred stock will also be converted automatically into shares of common stock at the then applicable conversion rate (a) immediately prior to the closing of a firm commitment underwritten initial public offering of the Company's common stock, registered under the Securities

Act of 1933, as amended, in which the offering price is not less than $15.76 per share, which results in aggregate proceeds in excess of $40.0 million, and the Company is listed for trading on the New York Stock Exchange, the Nasdaq Stock Market or another international exchange of similar stature, or (b) upon the receipt by the Company of a written request for such conversion from the holders of at least 55% of redeemable convertible preferred stock then outstanding. Upon the issuance of the Series C redeemable convertible preferred stock in May 2018, the conversion option was amended in the Amended and Restated Certificate of Incorporation to be the same as the conversion option under the Series C redeemable convertible preferred stock below.

Each share of Series C redeemable convertible preferred stock is convertible, at the option of the holder at any time on a one-for-one basis, subject to standard adjustments. Upon the election of holders of a Preferred Majority (as defined herein), all of the shares of redeemable convertible preferred stock shall automatically convert into common stock at the then applicable conversion prices. Preferred Majority shall mean: (i) on any date prior to the consummation of the Second Closing, the holders of at least 67% of the outstanding shares of the redeemable convertible preferred stock, voting together as a single class on an as-converted basis; and (ii) on any date on or following the Second Closing, the holder of at least 60% of the outstanding shares of the redeemable convertible preferred stock, voting together as a single class on an as-converted basis. In addition, the redeemable convertible preferred stock will automatically convert into shares of common stock at the then applicable conversion rate (i) immediately prior to a Qualified IPO event, with such “Qualified IPO” event meaning the Company’s first underwritten offering to the public, provided that either (a) the aggregate gross proceeds to the Company exceed $50.0 million, at a price per share of not less than $13.66 (appropriately adjusted for stock splits, stock dividends, or other subdivisions or combinations of Common Stock) and the Company’s common stock is listed for trading on the New York Stock Exchange, the Nasdaq Stock Market or such other international exchange of equal stature, including, without limitation, the Alternative Investment Market of the London Stock Exchange or Euronext Paris, S.A or (b) the public offering is approved by the Preferred Majority, or (ii) upon the receipt by the Company of a written request for such conversion from the Preferred Majority of the holders of the redeemable convertible preferred stock then outstanding.

***Voting Rights***—Except for certain matters or as required by law, the holders of redeemable convertible preferred stock and the holders of common stock shall vote together and not as separate classes. Each holder of redeemable convertible preferred stock shall be entitled to the number of votes equal to the number of shares of common stock into which the shares of redeemable convertible preferred stock could be converted as of the record date. Fractional shares shall not be permitted.

Certain protective provisions, such as any actions that could adversely affect the redeemable convertible preferred stock, alter the capital structure, increase or decrease the size of the Company’s Board of Directors, or effect any liquidation event, shall require approval of at least 67% of the outstanding shares of redeemable convertible preferred stock, voting as a single class on an as-converted basis.

Each of the Series A redeemable convertible preferred stockholders, the Series B redeemable convertible preferred stockholders, and the common stockholders, voting as a separate class, shall be entitled to elect two members of the Company’s Board of Directors. The Series C redeemable convertible preferred stockholders, voting as a separate class, shall be entitled to elect one member of the Company’s Board of Directors. Any additional members of the Company’s Board of Directors shall be elected by the holders of redeemable convertible preferred stock and common stock, voting together as a single class on an as-converted basis.

***Redemption Features***—Upon the occurrence of certain change in control events that are outside the Company’s control, including liquidation, sale or transfer of the Company, holders of the redeemable convertible preferred stock can effectively cause redemption for cash. As a result, the Company has classified the redeemable convertible preferred stock as mezzanine equity on the balance sheets as the stock is contingently redeemable.

The Company has elected not to adjust the carrying values of the redeemable convertible preferred stock to the liquidation preferences of such shares because it is uncertain whether or when an event would occur that

would obligate the Company to pay the liquidation preferences to holders of shares of redeemable convertible preferred stock. Subsequent adjustments to the carrying values to the liquidation preferences will be made only when it becomes probable that such a liquidation event will occur.

**9. Common Stock**

At December 31, 2018, the Company's certificate of incorporation authorizes the Company to issue up to 52,000,000 shares of common stock with $0.001 par value per share, of which 6,338,763 shares were issued and outstanding. The holders of common stock are also entitled to receive dividends whenever funds are legally available, when and if declared by the Board of Directors. As of December 31, 2018, no dividends have been declared to date. Each share of common stock is entitled to one vote.

At December 31, 2017 and 2018, the Company had reserved common stock for future issuances as follows:

| | December 31, | |
|---|---|---|
| | 2017 | 2018 |
| Options issued and outstanding | 3,581,620 | 5,117,067 |
| Shares available for future stock option grants | 837,983 | 2,479,525 |
| Conversion of redeemable convertible preferred stock | 18,135,812 | 28,175,226 |
| Common stock warrant | 53,744 | 53,744 |
| Redeemable convertible preferred stock warrant | — | 100,000 |
| Total | 22,609,159 | 35,925,562 |

**10. Warrants**

Warrants issued and outstanding as of December 31, 2018 were as follows:

| Warrants to Purchase Stock | Number of Warrants Outstanding | Issue Date | Expiration Date | Exercise Price |
|---|---|---|---|---|
| Common stock | 53,744 | July 10, 2015 | July 10, 2025 | $ 0.47 |
| Series C redeemable convertible preferred stock | 100,000 | May 29, 2018 | May 29, 2028 | $ 6.83 |
| Total | 153,744 | | | |

On July 10, 2015, the Company issued a warrant to Sutro Biopharma, Inc. ("Sutro Biopharma") (Note 14) to purchase 53,744 shares of its common stock that is exercisable immediately. The warrant expires the earlier of (i) July 10, 2025, (ii) the occurrence of a deemed liquidation event, or (iii) immediately prior to the closing of a firm commitment underwritten initial public offering of the Company's common stock registered under the Securities Act of 1933, as amended. The warrant will be automatically net share settled prior to expiration based on the fair market value on the date of exercise.

On May 29, 2018, the Company issued a warrant to Sutro Biopharma (Note 14) to purchase 100,000 shares of its Series C redeemable convertible preferred stock that is exercisable immediately. The warrant expires the earlier of (i) May 29, 2028, (ii) the occurrence of a deemed liquidation event, or (iii) immediately prior to the closing of a firm commitment underwritten initial public offering of the Company's common stock registered under the Securities Act of 1933, as amended. The warrant will be automatically net exercised prior to expiration based on the fair market value on the date of exercise.

**11. Equity Incentive Plans**

In January 2014, the Company adopted the 2014 Equity Incentive Plan (the "2014 Plan"), which provides for the granting of incentive stock options and nonqualified stock options to employees, consultants,

and directors. The 2014 Plan also provides for the granting of stock appreciation rights, restricted stock, and restricted stock units. The Company has not granted any restricted stock or restricted stock units to date. The Company grants stock options to purchase its common stock, generally at fair value as of the date of grant. Options generally vest over a period of up to four years and expire after 10 years from the date of grants. The 2014 Plan is expected to terminate in July 2025.

Activity under the Company's 2014 Plan is as follows:

| | | Options Outstanding | | | |
|---|---|---|---|---|---|
| Stock Option Activity | Options Available for Grant | Number of Options | Weighted-Average Exercise Price Per Share | Weighted-Average Remaining Contractual Term (in years) | Aggregate Intrinsic Value (in thousands) |
| Balances—December 31, 2016 | 296,602 | 749,440 | $ 0.36 | | |
| Additional Shares Authorized | 3,450,000 | — | | | |
| Options Granted | (2,937,369) | 2,937,369 | $ 1.02 | | |
| Options Exercised | — | (189,439) | $ 0.93 | | |
| Options Forfeited | 28,750 | (28,750) | $ 0.83 | | |
| Balances—December 31, 2017 | 837,983 | 3,468,620 | $ 0.89 | | |
| Additional Shares Authorized | 3,322,355 | — | | | |
| Options Granted | (2,728,264) | 2,728,264 | $ 1.19 | | |
| Options Exercised | — | (145,366) | $ 0.88 | | |
| Options Forfeited | 1,047,451 | (1,047,451) | $ 0.39 | | |
| Balances—December 31, 2018 | 2,479,525 | 5,004,067 | $ 1.06 | 8.67 | $ 689 |
| Vested and expected to vest | | 5,004,067 | $ 1.06 | 8.67 | $ 689 |
| Exercisable | | 2,281,436 | $ 0.96 | 7.90 | $ 544 |

During the years ended December 31, 2017 and 2018, 189,439 and 145,366 shares of stock options were exercised for cash at a weighted-average price per share of $0.93 and $0.88, respectively. Weighted-average grant date fair value of options granted in 2017 and 2018 are $0.71 and $0.82, respectively. The intrinsic value of the stock options exercised was immaterial for each of the years ended December 31, 2017 and 2018.

The following table summarizes information about stock options outstanding as of December 31, 2018.

| | Options Outstanding | | Options Exercisable | |
|---|---|---|---|---|
| Exercise Price | Number Outstanding | Weighted-Average Remaining Contractual Term (in years) | Number Exercisable | Weighted-Average Exercise Price |
| 0.47 | 148,000 | 7.1 | 117,092 | $ 7.055 |
| 0.02 | 65,000 | 5.2 | 65,000 | $ 5.162 |
| 0.76 | 273,750 | 8.0 | 131,039 | $ 8.023 |
| 0.02 | 82,385 | 1.3 | 77,235 | $ 1.313 |
| 1.20 | 2,383,855 | 9.6 | 226,269 | $ 9.563 |
| 1.06 | 2,051,077 | 8.2 | 1,664,801 | $ 8.139 |
| | 5,004,067 | | 2,281,436 | |

***Early Exercise of Stock Options***

The terms of the 2014 Plan permit the exercise of options granted prior to vesting, subject to required approvals. The unvested shares are subject to the Company's lapsing repurchase right upon termination of employment at the original purchase price. The repurchase right lapses in 90 days after the termination of the employee's employment. Shares purchased by employees pursuant to the early exercise of stock options are not deemed, for accounting purposes, to be issued until those shares vest according to their respective vesting schedules. Cash received for early exercised stock options is recorded as other liabilities on the balance sheet and is reclassified to common stock and additional paid-in capital as such shares vest.

At December 31, 2017 and 2018, 166,339 and 156,801 shares, respectively, remained subject to the Company's right of repurchase as a result of the early exercised stock options. The remaining liability related to early exercised shares as of both December 31, 2017 and 2018 was $0.2 million, which were recorded in accrued expenses and other liabilities.

***Stock-Based Compensation***

The Company estimated the fair value of employee stock options granted during 2017 and 2018 using the Black-Scholes option-pricing model at the date of grant with the following assumptions:

| | Year Ended December 31, | |
|---|---|---|
| | 2017 | 2018 |
| Expected volatility | 78.0% - 79.1% | 77.0% - 78.2% |
| Expected dividend yield | 0% | 0% |
| Expected term (in years) | 5.8 - 6.1 | 5.8 - 6.1 |
| Risk-free interest rate | 1.9% - 2.2% | 2.6% - 2.9% |

The Company has recorded aggregate stock-based compensation expense for 2017 and 2018 related to the issuance of stock option awards to employees and nonemployees in the statements of operations and comprehensive loss as follows:

| | Year Ended December 31, | |
|---|---|---|
| | 2017 | 2018 |
| | (in thousands) | |
| Research and development expenses | $ 117 | $ 274 |
| General and administrative expenses | 273 | 475 |
| Total stock-based compensation expense | $ 390 | $ 749 |

Stock-based compensation expense for employees was $0.4 million and $0.7 million for the years ended December 31, 2017 and 2018, respectively.

Stock-based compensation expense related to stock options granted to non-employees is recognized as the stock options are earned in exchange for services performed. The Company determined that the estimated fair value of the stock options is more readily measurable than the fair value of the services received. The fair value of stock options granted to non-employees is calculated at each grant date and re-measured at each reporting date using the Black-Sholes option pricing model. The stock-based compensation expense related to a grant will fluctuate as the estimated fair value of the common stock fluctuates over the period from the grant date to the vesting date (i.e., the measurement date). Stock-based compensation expense for non-employees was immaterial for the years ended December 31, 2017 and 2018.

As of December 31, 2018, there was $2.8 million of unrecognized stock-based compensation expense related to the employee and nonemployee awards, which is expected to be recognized over a weighted-average period of 1.5 years.

**12. Net Loss Per Share Attributable to Common Stockholders**

The following table sets forth the computation of basic and diluted net loss per share attributable to common stockholders which excludes shares which are legally outstanding, but subject to repurchase by the Company (in thousands, except share and per share data):

| | 2017 | 2018 |
|---|---|---|
| Net loss attributable to common stockholders | $ (17,238) | $ (29,485) |
| Weighted-average shares outstanding used in computing net loss per share attributable to common stockholders, basic and diluted | 6,014,717 | 6,142,274 |
| Net loss per share attributable to common stockholders, basic and diluted | $ (2.87) | $ (4.80) |

The following potentially dilutive securities were excluded from the computation of diluted net loss per share attributable to common stockholders for the period presented because including them would have been antidilutive:

| | 2017 | 2018 |
|---|---|---|
| Stock options | 3,581,620 | 5,117,067 |
| Redeemable convertible preferred stock: | | |
| Series A | 10,502,804 | 10,502,804 |
| Series B | 7,633,008 | 11,449,510 |
| Series C | — | 6,222,912 |
| Common stock warrant | 53,744 | 53,744 |
| Redeemable convertible preferred stock warrant | — | 100,000 |
| Total | 21,771,176 | 33,446,037 |

***Unaudited Pro Forma Net Loss Per Share***

The unaudited pro forma basic and diluted net loss per share for the year ended December 31, 2018 has been computed to give effect to (i) the conversion of all outstanding shares of redeemable convertible preferred stock into shares of common stock, (ii) the net exercise of redeemable convertible preferred stock warrants and common stock warrants into shares of common stock (see Note 2), as of the beginning of the period or the date of issuance, if later, and (iii) the removal of gains or losses resulting from the re-measurement of the redeemable convertible preferred stock warrant liability as the warrants will be net exercised for shares of common stock immediately prior to the Company's planned IPO. Stock- based compensation expense associated with the vesting of the service and performance-based awards is excluded from the pro forma net loss basic and diluted per share presentation.

The following table sets forth the computation of the unaudited pro forma net loss per share (in thousands, except share and per share data):

| | Year Ended December 31, 2018 |
|---|---|
| Net loss attributable to common stockholders | $ (29,485) |
| Pro forma adjustment to reflect the removal of gains or losses resulting from the re-measurement of the redeemable convertible preferred stock warrant liability | |
| Pro forma net loss | |
| Weighted-average shares outstanding used in computing net loss per share attributable to common stockholders, basic and diluted | 6,142,274 |
| Pro forma adjustment to reflect the conversion of redeemable convertible preferred stock | |
| Pro forma adjustment to reflect the net exercise of the redeemable convertible preferred stock warrants | |
| Pro forma adjustments to reflect the net exercise of the common stock warrants | |
| Pro forma weighted-average shares outstanding used in computing pro forma net loss per share, basic and diluted | — |
| Pro forma net loss per share, basic and diluted | |

**13. Income Taxes**

The Company's pre-tax book loss was derived from its business operations within the United States. The tax provision for the years ended December 31, 2017 and December 31, 2018 consists of immaterial amounts of current state taxes.

A reconciliation of the Company's effective tax rate to the statutory U.S. federal rate is as follows:

| | Year Ended December 31, | |
|---|---|---|
| | 2017 | 2018 |
| U.S. federal taxes at statutory rate | 34.0% | 21.0% |
| State income taxes | 8.8% | 8.8% |
| Effect of reduced corporate tax rates | (23.7)% | 0.0% |
| Tax credits | (0.7)% | 0.4% |
| Change in deferred assets due to change in state rate | 2.8% | 0.0% |
| Change in valuation allowance | (21.1)% | (34.2)% |
| Permanent items | 0.4% | 4.6% |
| Other | (0.5)% | (0.6)% |
| Total | 0.0% | 0.0% |

Deferred income taxes reflect the net tax effects of temporary differences between the carrying amounts of the assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. The following table presents significant components of the Company's deferred tax assets as of December 31, 2017 and 2018:

| | December 31, | |
|---|---|---|
| | 2017 | 2018 |
| | (in thousands) | |
| Depreciation and amortization | $ 353 | $ 419 |
| Accrued expenses and reserves | 294 | 563 |
| Net operating loss carryforwards | 8,751 | 18,390 |
| Research credit carryforwards | 356 | 475 |
| Total | 9,754 | 19,847 |
| Valuation allowance | (9,754) | (19,847) |
| Net deferred tax assets | $ — | $ — |

At December 31, 2018, the Company has net operating loss carryforwards of approximately $61.2 million and $62.6 million available to reduce future taxable income, if any, for federal and California state income tax purposes, respectively. The net operating losses begin to expire in year 2034 for both federal tax and state tax purposes. Federal net operating losses generated in 2018 have an indefinite carryover period and do not expire.

At December 31, 2018, the Company has research credit carryforward of $0.7 million and $0.2 million available to offset future income tax liabilities, if any, for federal and state income tax purposes, respectively. The federal tax credits begin to expire in 2034 and the state tax credits can be carried forward indefinitely.

The Company has evaluated the positive and negative evidences bearing upon the realizability of its deferred tax assets. Based on the Company's history of operating losses, the Company has concluded that it is more likely than not that the benefit of its deferred tax assets will not be realized. Accordingly, the Company has provided a full valuation allowance for deferred tax assets as of December 31, 2017 and 2018.

Utilization of the net operating loss ("NOL") carryforward may be subject to an annual limitation due to the ownership percentage change limitations under Section 382 provided by the Internal Revenue Code of 1986, as amended (the "Code"), and similar state provisions. The annual limitation may result in the expiration of the net operating loss before utilization. The Company has performed a Code section 382 ("382") analysis and determined there was an ownership change in 2015 that resulted in 382 limitations (the "2015 Ownership Change"). When an ownership change occurs, 382 limits the use of NOLs and credits in subsequent periods based on the annual 382 limitations. The annual 382 limitations may limit the full use of available tax attributes in one year but the identified ownership changes may not result in expiration of tax attributes for use prior to expiration of their respective carryforward periods. The Company has determined that the applicable limits from the 2015 Ownership Change should not impair the value or anticipated use of the Company's federal and state NOLs. However, the Company may have experienced additional ownership changes in the past and may experience ownership changes in the future. As a result, the Company's ability to use its federal and state NOLs to offset future taxable income may be subject to limitations.

The Company has uncertain tax benefits ("UTBs") totaling $0.1 million and $0.4 million as of December 31, 2017 and 2018 respectively, which were netted against deferred tax assets subject to valuation allowance. The UTBs had no effect on the effective tax rate. The Company recognizes interest and penalties related to UTBs, when they occur, as a component of income tax expense. To the extent accrued interest and penalties do not ultimately become payable, amounts accrued will be reduced and reflected as a reduction of the provision for income taxes in the period such determination is made. There were no interest or penalties recognized for the years ended December 31, 2017 and 2018. The Company does not expect its UTBs to change significantly over the next 12 months.

A reconciliation of the beginning and ending unrecognized tax benefit amount is as follows:

| | December 31, | |
|---|---|---|
| | 2017 | 2018 |
| | (in thousands) | |
| Balance at the beginning of the year | $ 153 | $119 |
| Additions based on tax positions related to current year | 90 | 228 |
| Adjustments based on tax positions related to prior years | (124) | 61 |
| Balance at end of year | $ 119 | $408 |

The Company files U.S. federal and state tax returns. The Company is generally subject to tax examinations for federal and state tax purposes. The Company does not have any tax audits or other issues pending.

On December 22, 2017, the U.S. government enacted new legislation, the Tax Cuts and Jobs Act (the “Tax Act”), that significantly revises the Code. The newly enacted federal income tax law, among other things, contains significant changes to corporate taxation, including reduction of the corporate tax rate from a top marginal rate of 35% to a flat rate of 21%, limitation of the tax deduction for interest expense to 30% of adjusted earnings (except for certain small businesses), limitation of the deduction for net operating losses to 80% of current year taxable income and elimination of net operating loss carrybacks, one time taxation of offshore earnings at reduced rates regardless of whether they are repatriated, generally eliminating U.S. federal income taxes on dividends from foreign subsidiaries, requiring a current inclusion in the U.S. federal taxable income of certain earnings of controlled foreign corporations, immediate deductions for certain new investments instead of deductions for depreciation expense over time, and modifying or repealing many business deductions and credits. The Company adjusted its deferred tax balances to reflect the expected rate of 21%.

In conjunction with the tax law changes, the SEC staff issued Staff Accounting Bulletin 118, or SAB 118, to address the application of U.S.GAAP in situations when a registrant does not have the necessary information available, prepared, or analyzed (including computations) in reasonable detail to complete the accounting for certain income tax effects of the Act. In March 2018, Accounting Standards Codification, or ASC, 740, *Income Taxes*, was amended to incorporate the provisions of SAB 118. In these instances, a company can record provisional amounts in its financial statements for the income tax effects for which a reasonable estimate can be determined. For items for which a reasonable estimate cannot be determined, a company should continue to apply ASC 740 based on the provisions of the tax laws that were in effect immediately prior to the Act being enacted. The Company has recognized a net tax benefit of $0 for the provisional tax impacts related to the revaluation of deferred tax balances and included this estimate in its financial statements for the year ended December 31, 2017. In the fourth quarter of 2018, the Company completed its analysis to determine the effect of the Tax Act. No adjustments were recorded based on the completion of the analysis as of December 31, 2018.

**14. Related Party Transactions**

The Company has an ongoing relationship with Sutro Biopharma. In 2013, Sutro Biopharma provided the initial funding for the establishment of the Company. As of December 31, 2018, Sutro Biopharma owned approximately 2.8 million shares of the Company’s common stock, a warrant to purchase 53,744 shares of the Company’s common stock and a warrant to purchase 100,000 shares of the Company’s Series C redeemable convertible stock. In the agreements and amendments identified herein, the Company licensed certain intellectual property and acquired certain supply rights from Sutro Biopharma, including the right to use the XpressCF platform to discover and develop vaccine candidates for the treatment or prophylaxis of infectious diseases. On October 12, 2015, SutroVax and Sutro Biopharma (“the Parties”) entered into the Sutro Biopharma License Agreement, which amended and restated an agreement dated August 1, 2014. The Sutro Biopharma License Agreement was subsequently amended on May 9, 2018 (“License Amendment A1”) and May 29, 2018 (“License Amendment A2”). The Company also entered into a separate supply agreement with Sutro Biopharma on May 29, 2018 (the “Sutro Biopharma Supply Agreement”).

Under the Sutro Biopharma License Agreement, Sutro Biopharma granted the Company an exclusive, worldwide license to research, develop, manufacture and commercialize vaccine products addressing infectious disease, which are discovered or produced based on the use of Sutro Biopharma's proprietary cell-free protein expression technology, known as XpressCF which utilizes extracts derived from strains of *E. Coli*. In connection with the Sutro Biopharma License Agreement, under the Sutro Biopharma Supply Agreement Sutro Biopharma has agreed to manufacture and supply extracts and reagents for the Company on a cost plus basis. In consideration for the rights licensed, the Company is obligated to pay a 4% royalty on worldwide aggregate annual net sales of its vaccine products for human health and a 2% royalty on such net sales of vaccine compositions for animal health. In addition, for a certain period of time, if the Company grants a sublicense to a third party to further develop or sell a vaccine product discovered or generated by SutroVax, SutroVax is obligated to pay Sutro Biopharma a percentage, in the low single digits of any net sublicense fees received. The Company's obligation to pay single-digit royalties to Sutro Biopharma expires on a country-by-country basis on the later of the expiration of the last to expire patent covering the manufacture, use, offer for sale or importation of the applicable vaccine product and ten years from first commercial sale of the applicable vaccine product.

In License Amendment A1, the Parties amended the license agreement to remove a pre-IND regulatory meeting as a diligence milestone and to agree that certain other diligence milestones had been satisfied. In License Amendment A2, the Parties amended the license agreement to add certain terms confirming the Company's obligation to purchase Sutro Biopharma's proprietary extract from *E. coli* ("Extract") from Sutro Biopharma and precluding the Company from manufacturing Extract. In addition, the Parties amended the license agreement to specify the Company's rights to a transfer of certain know-how relating to the manufacture of Extract in the event of a declaration of bankruptcy by Sutro Biopharma. Finally, the Parties agreed to terms providing for injunctive relief in the event of a breach or threatened breach by the other party.

In the Sutro Biopharma Supply Agreement, the Parties agreed to commercial terms for the supply of manufactured Extract and custom reagents by Sutro Biopharma for the Company to use in manufacturing vaccine compositions in non-clinical research or in Phase 1 or Phase 2 clinical trials. The term of the Sutro Biopharma Supply Agreement is from execution until the later of July 31, 2021, and the date the parties enter into and commence activities under unless extended through a subsequent supply agreement for the supply of Extract and custom reagents for vaccine compositions for Phase 3 and commercial uses as contemplated in the Supply Agreement.

In consideration of the License Amendment A2, the Company issued to Sutro Biopharma a warrant to purchase 100,000 shares of Series C redeemable convertible preferred stock at a purchase price of $6.8296 per share. This warrant is exercisable and vests immediately and expires on May 29, 2028.

The Company recognized expenses of approximately $0.1 million and $1.4 million related to the Supply Agreement for the years ended December 31, 2017 and 2018, respectively. The Company also recognized the fair value related to the warrant issued to Sutro Biopharma of approximately $0.5 million at the time of issuance and recorded an immaterial change in fair value in 2018. The expense related to the warrant, as well as the changes in the fair value of the warrant, is included in research and development expenses in the statements of operations and comprehensive loss. The Company recorded immaterial amounts of accrued expenses payable to Sutro Biopharma as of both December 31, 2017 and 2018.

**15. Subsequent Events**

The Company has reviewed all events occurring from December 31, 2018 through October 11, 2019, which is the date the financial statements were available for issuance.

In July 2019, the Company received a cost reimbursement research award from CARB-X that will provide funding over four years to develop a universal vaccine to prevent infections caused by group A Strep bacteria, which include pharyngitis, impetigo, and necrotizing fasciitis. The award commits initial funding of up to $1.6 million and up to $15.1 million in total funding available upon achievement of development milestones over the next four years.

Through and including , 2020 (the 25th day after the date of this prospectus) all dealers that effect transactions in these securities, whether or not participating in this offering, may be required to deliver a prospectus. This is in addition to the dealers' obligation to deliver a prospectus when acting as underwriters and with respect to their unsold allotments or subscriptions.

# Shares


## Common Stock

**PROSPECTUS**

## BofA Merrill Lynch

## Jefferies LLC

## Evercore ISI

## Cantor

## Needham & Company

**, 2020**

## Part II

## INFORMATION NOT REQUIRED IN PROSPECTUS

### Item 13. Other Expenses of Issuance and Distribution.

The following table indicates the expenses to be incurred in connection with the offering described in this registration statement, other than underwriting discounts and commissions, all of which will be paid by us. All amounts are estimated except the SEC registration fee, the Financial Industry Regulatory Authority, Inc. (FINRA) filing fee and the exchange listing fee.

| | Amount Paid or to Be Paid |
|---|---|
| SEC registration fee | $ * |
| FINRA filing fee | * |
| Exchange listing fee | * |
| Accountants' fees and expenses | * |
| Legal fees and expenses | * |
| Transfer Agent's fees and expenses | * |
| Printing and engraving expenses | * |
| Miscellaneous | * |
| Total expenses | $ * |

* *To be provided by amendment.*

### Item 14. Indemnification of Directors and Officers.

Section 145 of the Delaware General Corporation Law authorizes a court to award, or a corporation's board of directors to grant, indemnity to directors and officers in terms sufficiently broad to permit such indemnification under certain circumstances for liabilities, including reimbursement for expenses incurred, arising under the Securities Act. Our amended and restated certificate of incorporation that will be in effect upon the closing of this offering permits indemnification of our directors, officers, employees and other agents to the maximum extent permitted by the Delaware General Corporation Law, and our amended and restated bylaws that will be in effect upon the closing of this offering provide that we will indemnify our directors and officers and permit us to indemnify our employees and other agents, in each case to the maximum extent permitted by the Delaware General Corporation Law.

We have entered into indemnification agreements with our directors and officers, whereby we have agreed to indemnify our directors and officers to the fullest extent permitted by law, including indemnification against expenses and liabilities incurred in legal proceedings to which the director or officer was, or is threatened to be made, a party by reason of the fact that such director or officer is or was a director, officer, employee or agent of SutroVax, Inc., provided that such director or officer acted in good faith and in a manner that the director or officer reasonably believed to be in, or not opposed to, the best interest of SutroVax, Inc. At present, there is no pending litigation or proceeding involving a director or officer of SutroVax, Inc. regarding which indemnification is sought, nor is the registrant aware of any threatened litigation that may result in claims for indemnification.

We maintain insurance policies that indemnify our directors and officers against various liabilities arising under the Securities Act and the Exchange Act that might be incurred by any director or officer in his or her capacity as such.

**Item 15. Recent Sales of Unregistered Securities.**

Since January 1, 2016, we have issued the following unregistered securities:

(1) We granted to certain employees, consultants and directors options to purchase an aggregate of 6,870,143 shares of our common stock at exercise prices ranging from $0.47 to $1.25 per share.

(2) We issued an aggregate of 840,102 shares of our common stock upon the exercise of options, at exercise prices ranging from $0.02 to $1.20 per share, for an aggregate exercise price of $740,492.

(3) We issued a warrant to purchase an aggregate of 100,000 shares of Series C convertible preferred stock (convertible into 100,000 shares of common stock) in May 2018 to a strategic partner at an exercise price of $6.8296 per share.

(4) We issued an aggregate of 6,222,912 shares of Series C convertible preferred stock (convertible into 6,222,912 shares of common stock) in May 2018 to 13 accredited investors at a price of $6.8296 per share for aggregate consideration of approximately $42.5 million.

(5) We issued an aggregate of 11,449,510 shares of Series B convertible preferred stock (convertible into 11,449,510 shares of common stock) between March 2017 and May 2018 to nine accredited investors at a price of $5.2535 per share for aggregate consideration of approximately $60.1 million.

None of the foregoing transactions involved any underwriters, underwriting discounts or commissions, or any public offering. Unless otherwise stated, the sales of the above securities were deemed to be exempt from registration under the Securities Act in reliance on Section 4(a)(2) of the Securities Act (and Regulation D or Regulation S promulgated thereunder) or Rule 701 promulgated under Section 3(b) of the Securities Act as transactions by an issuer not involving any public offering or pursuant to benefit plans and contracts relating to compensation as provided under Rule 701. The recipients of the securities in each of these transactions represented their intentions to acquire the securities for investment only and not with a view to or for sale in connection with any distribution thereof, and appropriate legends were placed on the share certificates issued in these transactions. All recipients had adequate access, through their relationships with us, to information about us. The sales of these securities were made without any general solicitation or advertising.

**Item 16. Exhibits and Financial Statement Schedules.**

(a) Exhibits.

| Exhibit Number | Description of Exhibit |
|---|---|
| 1.1* | Form of Underwriting Agreement. |
| 3.1 | Amended and Restated Certificate of Incorporation of the Registrant, as currently in effect. |
| 3.2 | Amended and Restated Bylaws of the Registrant, as currently in effect. |
| 3.3* | Form of Amended and Restated Certificate of Incorporation of the Registrant, to be in effect prior to the closing of this offering. |
| 3.4* | Form of Amended and Restated Bylaws of the Registrant, to be in effect prior to the closing of this offering. |
| 4.1* | Form of common stock certificate of the Registrant. |
| 5.1* | Opinion of Cooley LLP. |
| 10.1* | Amended and Restated Investors' Rights Agreement by and among the Registrant and certain of its stockholders, dated May 29, 2018. |

| Exhibit Number | Description of Exhibit |
|---|---|
| 10.2 | SutroVax, Inc. Amended and Restated 2014 Equity Incentive Plan and forms of agreements thereunder. |
| 10.3* | SutroVax, Inc. 2020 Equity Incentive Plan and forms of agreements thereunder. |
| 10.4* | SutroVax, Inc. 2020 Employee Stock Purchase Plan and forms of agreements thereunder. |
| 10.5* | Form of Indemnification Agreement entered into by and between the Registrant and each director and executive officer. |
| 10.6* | Amended and Restated Executive Employment Agreement entered into by and between the Registrant and Grant Pickering, dated , 20 . |
| 10.7* | Amended and Restated Executive Employment Agreement entered into by and between the Registrant and Jeff Fairman, dated , 20 . |
| 10.8* | Executive Employment Agreement entered into by and between the Registrant and Paul Sauer, dated , 20 . |
| 10.9* | Amended and Restated Executive Employment Agreement entered into by and between the Registrant and Elaine Sun, dated , 20 . |
| 10.10* | Executive Employment Agreement entered into by and between the Registrant and Jane Wright-Mitchell, dated , 20 . |
| 10.11+ | Development and Manufacturing Services Agreement by and between the Registrant and Lonza Ltd, dated October 29, 2018. |
| 10.12+ | Development and Manufacturing Services Agreement by and between the Registrant and Lonza Ltd, dated October 21, 2016, as amended. |
| 10.13+ | Letter Agreement by and between the Registrant and Lonza Ltd, dated June 19, 2018. |
| 10.14+ | Amended and Restated SutroVax Agreement by and between the Registrant and Sutro Biopharma, Inc., dated October 12, 2015, as amended. |
| 10.15+ | Supply Agreement by and between the Registrant and Sutro Biopharma, Inc., dated May 29, 2018. |
| 10.16+ | License Agreement by and between the Registrant and The Regents of the University of California, represented by its San Diego campus, dated February 4, 2019. |
| 10.17 | Lease Agreement by and among the Registrant, Grey Peak Fork, LLC and Grey Peak Fork, Series A, LLC, dated July 22, 2016. |
| 10.18 | Assignment and Assumption of Lease and Consent of Lessor by and among the Registrant, Orchard Therapeutics North America and Rakesh Kumar and Premila Kumar Revocable Family Trust, dated July 1, 2019. |
| 10.19 | Third Addendum to Standard Multi-Tenant Office Lease by and between the Registrant and Rakesh Kumar and Premila Kumar Revocable Family Trust, dated July 1, 2019. |
| 23.1* | Consent of Deloitte & Touche LLP, independent registered public accounting firm. |
| 23.2* | Consent of Cooley LLP (included in Exhibit 5.1). |
| 24.1 | Power of Attorney (included on signature page). |

* To be filed by amendment.

\+ Confidential treatment requested. Portions of this exhibit have been omitted pending a determination by the SEC as to whether these portions should be granted confidential treatment.

(b) Financial Statement Schedules.

All financial statement schedules are omitted because the information required to be set forth therein is not applicable or is shown in the financial statements or the notes thereto.

**Item 17. Undertakings.**

The undersigned registrant hereby undertakes to provide to the underwriters at the closing specified in the underwriting agreement certificates in such denominations and registered in such names as required by the underwriters to permit prompt delivery to each purchaser.

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the registrant under the foregoing provisions or otherwise, the registrant has been advised that in the opinion of the SEC such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act and will be governed by the final adjudication of such issue.

The undersigned registrant hereby undertakes that:

(1) For purposes of determining any liability under the Securities Act, the information omitted from the form of prospectus filed as part of this registration statement in reliance upon Rule 430A and contained in a form of prospectus filed by the registrant under Rule 424(b)(1) or (4) or 497(h) under the Securities Act shall be deemed to be part of this registration statement as of the time it was declared effective.

(2) For the purpose of determining any liability under the Securities Act, each post-effective amendment that contains a form of prospectus shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

## SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Foster City, State of California, on , 2020.

**SUTROVAX, INC.**

By: _____
Grant E. Pickering
President and Chief Executive Officer

## POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Grant E. Pickering, Elaine Sun and Jane Wright-Mitchell, and each one of them, as his or her true and lawful attorneys-in-fact and agents, with full power of substitution and resubstitution, for him or her and in their name, place and stead, in any and all capacities, to sign any and all amendments (including post-effective amendments) to this registration statement, and to sign any registration statement for the same offering covered by this registration statement that is to be effective on filing pursuant to Rule 462(b) under the Securities Act of 1933, as amended, and all post-effective amendments thereto, and to file the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents or any of them, or his or her substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, this registration statement has been signed by the following persons in the capacities and on the dates indicated.

| Signature | Title | Date |
|---|---|---|
| Grant E. Pickering | President, Chief Executive Officer and Director *(Principal Executive Officer)* | , 2020 |
| Elaine Sun | Chief Financial Officer *(Principal Financial and Accounting Officer)* | , 2020 |
| Moncef Slaoui, Ph.D. | Director | , 2020 |
| Kurt von Emster | Director | , 2020 |
| Patrick Enright | Director | , 2020 |
| Patrick Heron | Director | , 2020 |
| Peter Hirth, Ph.D. | Director | , 2020 |

| Signature | Title | Date |
| --- | --- | --- |
| Rob Hopfner, Ph.D. | Director | , 2020 |
| Heath Lukatch, Ph.D. | Director | , 2020 |
| William J. Newell | Director | , 2020 |

**AMENDED AND RESTATED**

**CERTIFICATE OF INCORPORATION OF**

**SUTROVAX, INC.**

SutroVax, Inc., a corporation organized and existing under the laws of the State of Delaware (the "***Corporation***"), certifies that:

1. The name of the Corporation is SutroVax, Inc. The Corporation's original Certificate of Incorporation was filed with the Secretary of State of the State of Delaware on November 27, 2013.

2. This Amended and Restated Certificate of Incorporation was duly adopted in accordance with Sections 242 and 245 of the General Corporation Law of the State of Delaware, and has been duly approved by the written consent of the stockholders of the Corporation in accordance with Section 228 of the General Corporation Law of the State of Delaware.

3. The text of the Amended and Restated Certificate of Incorporation is amended and restated to read as set forth in EXHIBIT A attached hereto.

IN WITNESS WHEREOF, SutroVax, Inc. has caused this Amended and Restated Certificate of Incorporation to be signed by Grant E. Pickering, a duly authorized officer of the Corporation, on May 24, 2018.

/s/ Grant E. Pickering

Grant E. Pickering,
President and Chief Executive Officer

**EXHIBIT A**

**ARTICLE I**

The name of the Corporation is SutroVax, Inc.

**ARTICLE II**

The purpose of this corporation is to engage in any lawful act or activity for which corporations may be organized under the General Corporation Law of Delaware.

**ARTICLE III**

The address of the Corporation's registered office in the State of Delaware is 1209 Orange Street, City of Wilmington, County of New Castle, 19801. The name of the registered agent at such address is The Corporation Trust Company.

**ARTICLE IV**

The total number of shares of stock that the corporation shall have authority to issue is 87,962,362, consisting of 52,000,000 shares of Common Stock, $0.001 par value per share, and 35,962,362 shares of Preferred Stock, $0.001 par value per share. The first Series of Preferred Stock shall be designated "***Series A Preferred Stock***" and shall consist of 10,502,804 shares, the second Series of Preferred Stock shall be designated "***Series B Preferred Stock***" and shall consist of 11,449,515 shares, and the third Series of Preferred Stock shall be designated "***Series C Preferred Stock***" and shall consist of 14,010,043 shares.

**ARTICLE V**

The terms and provisions of the Common Stock and Preferred Stock are as follows:

1. **Definitions.** For purposes of this ARTICLE V, the following definitions shall apply:

(a) "***Certificate of Incorporation***" shall mean this Amended and Restated Certificate of Incorporation.

(b) "***Conversion Price***" shall mean $2.56 per share for the Series A Preferred Stock (subject to adjustment from time to time for Recapitalizations and as otherwise set forth elsewhere herein), $5.2535 per share for the Series B Preferred Stock (subject to adjustment from time to time for Recapitalizations and as otherwise set forth elsewhere herein) and $6.8296 per share for the Series C Preferred Stock (subject to adjustment from time to time for Recapitalizations and as otherwise set forth elsewhere herein).

(c) "***Convertible Securities***" shall mean any evidences of indebtedness, shares or other securities convertible into or exchangeable for Common Stock.

(d) "***Corporation***" shall mean SutroVax, Inc.

(e) "***Distribution***" shall mean the transfer of cash or other property without consideration whether by way of dividend or otherwise, other than dividends on Common Stock payable in Common Stock, or the purchase or redemption of shares of the Corporation by the Corporation for cash or property other than: (i) repurchases of Common Stock issued to or held by employees, officers, directors or consultants of the Corporation or its subsidiaries upon termination of their employment or services pursuant to agreements

providing for the right of said repurchase, (ii) repurchases of Common Stock issued to or held by employees, officers, directors or consultants of the Corporation or its subsidiaries pursuant to rights of first refusal contained in agreements providing for such right, (iii) repurchase of capital stock of the Corporation in connection with the settlement of disputes with any stockholder and (iv) any other repurchase or redemption of capital stock of the Corporation approved by the holders of each of (A) a majority of the Common Stock outstanding and (B) the Preferred Majority.

(f) "***Preferred Majority***" means (i) on any date prior to the consummation of the Secondary Closing, the holders of at least 67% of the outstanding shares of Preferred Stock of the Corporation (voting as a single class on an as-converted basis), and on any date following the consummation of the Secondary Closing, the holders of at least 60% of the outstanding shares of Preferred Stock of the Corporation (voting as a single class on an as-converted basis).

(g) "***Dividend Rate***" shall mean an annual rate of $0.2048 per share for the Series A Preferred Stock (subject to adjustment from time to time for Recapitalizations as set forth elsewhere herein), an annual rate of $0.4203 per share for the Series B Preferred Stock (subject to adjustment from time to time for Recapitalizations as set forth elsewhere herein) and an annual rate of $0.5464 per share for the Series C Preferred Stock (subject to adjustment from time to time for Recapitalizations as set forth elsewhere herein).

(h) "***Liquidation Preference***" shall mean $2.56 per share for the Series A Preferred Stock (subject to adjustment from time to time for Recapitalizations as set forth elsewhere herein), $5.2535 per share for the Series B Preferred Stock (subject to adjustment from time to time for Recapitalizations as set forth elsewhere herein), and $6.8296 per share for the Series C Preferred Stock (subject to adjustment from time to time for Recapitalizations as set forth elsewhere herein).

(i) "***Options***" shall mean rights, options or warrants to subscribe for, purchase or otherwise acquire Common Stock or Convertible Securities.

(j) "***Original Issue Price***" shall mean $2.56 per share for the Series A Preferred Stock (subject to adjustment from time to time for Recapitalizations as set forth elsewhere herein), $5.2535 per share for the Series B Preferred Stock (subject to adjustment from time to time for Recapitalizations as set forth elsewhere herein), and $6.8296 per share for the Series C Preferred Stock (subject to adjustment from time to time for Recapitalizations as set forth elsewhere herein).

(k) "***Preferred Stock***" shall mean the Series A Preferred Stock, the Series B Preferred Stock, and the Series C Preferred Stock, collectively.

(l) "***Recapitalization***" shall mean any stock dividend, stock split, combination of shares, reorganization, recapitalization, reclassification or other similar event.

(m) "***Secondary Closing***" shall have the meaning set forth in that certain Series C Preferred Stock Purchase Agreement dated on or about the date of the filing of the Certificate of Incorporation with the office of the Secretary of State of the State of Delaware, by and among the Corporation and the investors listed on Exhibit A attached thereto (the "***Purchase Agreement***").

2. **Dividends.**

(a) ***Preferred Stock.*** In any calendar year, the holders of outstanding shares of Preferred Stock shall be entitled to receive dividends, when, as and if declared by the Board of Directors, out of any assets at the time legally available therefor, at the Dividend Rate specified for such shares of Preferred Stock payable in preference and priority to any declaration or payment of any Distribution on Common Stock of the Corporation in such calendar year. No Distributions shall be made with respect to the Common Stock unless dividends on the Preferred Stock have been declared in accordance with the preferences stated herein and all declared dividends on the Preferred Stock have been paid or set aside for payment to the Preferred Stock holders. The right to receive dividends on shares of Preferred Stock shall not be cumulative, and no right to dividends shall accrue to holders of Preferred Stock by reason of the fact that dividends on said shares are not declared or paid. Payment of any dividends to the holders of Preferred Stock shall be on a *pro rata*, *pari passu* basis in proportion to the Dividend Rates for each series of Preferred Stock.

(b) ***Additional Dividends.*** After the payment or setting aside for payment of the dividends described in Section 2(a), any additional dividends (other than dividends on Common Stock payable solely in Common Stock) set aside or paid in any fiscal year shall be set aside or paid among the holders of the Preferred Stock and Common Stock then outstanding in proportion to the greatest whole number of shares of Common Stock which would be held by each such holder if all shares of Preferred Stock were converted at the then effective Conversion Rate (as defined in Section 4) for each series of Preferred Stock.

(c) ***Non-Cash Distributions.*** Whenever a Distribution provided for in this Section 2 shall be payable in property other than cash, the value of such Distribution shall be deemed to be the fair market value of such property as determined in good faith by the Board of Directors.

3. **Liquidation Rights.**

(a) ***Liquidation Preference.*** In the event of any Deemed Liquidation Event (as defined below), the holders of the Preferred Stock shall be entitled to receive, prior and in preference to any Distribution of any of the assets of the Corporation to the holders of the Common Stock by reason of their ownership of such stock, an amount per share for each share of Preferred Stock held by them equal to the sum of (i) the Liquidation Preference specified for such share of Preferred Stock and (ii) all declared or accrued but unpaid dividends (if any) on such share of Preferred Stock. If upon any Deemed Liquidation Event, the assets of the Corporation legally available for distribution to the holders of the Preferred Stock are insufficient to permit the payment to such holders of the full amounts specified in this Section 3(a), then the entire assets of the Corporation legally available for distribution shall be distributed with equal priority and *pro rata* among the holders of the Preferred Stock in proportion to the full amounts they would otherwise be entitled to receive pursuant to this Section 3(a).

(b) ***Remaining Assets.*** After the payment to the holders of Preferred Stock of the full preferential amounts specified in Section 3(a) above, the entire remaining assets of the Corporation legally available for distribution by the Corporation shall be distributed with equal priority and *pro rata* among the holders of the Preferred Stock and Common Stock in proportion to the number of shares of Common Stock held by them, with the shares of Preferred Stock being treated for this purpose as if they had been converted to shares of Common Stock at the then applicable Conversion Rate for each series of Preferred Stock.

Notwithstanding the foregoing, the aggregate distributions made pursuant to Sections 3(a) and (b) with respect to any share of Preferred Stock shall not exceed an amount equal to one and one half (1.5) times the applicable Liquidation Preference for that share of Preferred Stock plus any declared or accrued but unpaid dividends.

(c) ***Shares not Treated as Both Preferred Stock and Common Stock in any Distribution.*** Shares of Preferred Stock shall not be entitled to be converted into shares of Common Stock in order to participate in any Distribution, or series of Distributions, as shares of Common Stock, without first foregoing participation in the Distribution, or series of Distributions, as shares of Preferred Stock.

(d) ***Reorganization.*** A "***Deemed Liquidation Event***" shall mean the liquidation, dissolution or winding up of the Corporation, whether voluntary or involuntary; for purposes of this definition, a liquidation, dissolution or winding up of the Corporation shall be deemed to be occasioned by, or to include, (i) the acquisition of the Corporation by another entity by means of any transaction or series of related transactions to which the Corporation is a party (including, without limitation, any stock acquisition, reorganization, merger or consolidation but excluding any sale of stock for capital raising purposes) other than a transaction or series of related transactions in which the holders of the voting securities of the Corporation outstanding immediately prior to such transaction or series of related transactions retain, immediately after such transaction or series of related transactions, as a result of shares in the Corporation held by such holders prior to such transaction or series of related transactions, at least a majority of the total voting power represented by the outstanding voting securities of the Corporation or such other surviving or resulting entity (or if the Corporation or such other surviving or resulting entity is a wholly-owned subsidiary immediately following such acquisition, its parent); (ii) a sale, lease, exclusive license or other disposition of all or substantially all of the assets or all or substantially all of the intellectual property assets of the Corporation and its subsidiaries taken as a whole by means of any transaction or series of related transactions, except where such sale, lease, exclusive license or other disposition is to a wholly-owned subsidiary of the Corporation; or (iii) any liquidation, dissolution or winding up of the Corporation, whether voluntary or involuntary; *provided, however,* that a Deemed Liquidation Event shall not include any transaction or series of transactions principally for bona fide equity financing purposes in which cash is received by the Company or any successor, indebtedness of the Company is cancelled or converted, or a combination thereof.. The treatment of any transaction or series of related transactions as a liquidation, dissolution or winding up pursuant to clause (i), (ii) or (iii) of the preceding sentence may be waived by the consent or vote of the Preferred Majority. The Corporation shall not have the power to effect a Deemed Liquidation Event unless the applicable agreement for such transaction provides that the consideration payable to the stockholders of the Corporation shall be allocated among the holders of capital stock of the Corporation in accordance with this Section 3.

(e) ***Notional Conversion***. Notwithstanding the above or anything to the contrary herein, for purposes of determining the amount each holder of shares of Preferred Stock is entitled to receive with respect to any liquidation, dissolution, winding up or Deemed Liquidation Event, each such holder of shares of a series of Preferred Stock shall automatically receive the greater of (i) the amount such holder is entitled to receive with respect to such series of Preferred Stock pursuant to Sections 3(a) and (b) and (ii) such amount per share as would have been payable had all shares of such series of Preferred Stock been converted into Common Stock pursuant to Section 4 immediately prior to such liquidation, dissolution, winding up or Deemed Liquidation Event.

(f) ***Valuation of Non-Cash Consideration.*** If any assets of the Corporation distributed to stockholders in connection with any Deemed Liquidation Event are other than cash, then the value of such assets shall be their fair market value as determined in good faith by the Board of Directors, *except that* any publicly-traded securities to be distributed to stockholders in a Deemed Liquidation Event shall be valued as follows:

(i) if the securities are then traded on a national securities exchange, then the value of the securities shall be deemed to be the average of the closing prices of the securities on such exchange over the ten (10) trading day period ending five (5) trading days prior to the Distribution;

(ii) if the securities are actively traded over-the-counter, then the value of the securities shall be deemed to be the average of the closing bid prices of the securities over the ten (10) trading day period ending five (5) trading days prior to the Distribution.

In the event of a merger or other acquisition of the Corporation by another entity, the Distribution date shall be deemed to be the date such transaction closes.

For the purposes of this subsection 3(f), "***trading day***" shall mean any day which the exchange or system on which the securities to be distributed are traded is open and "***closing prices***" or "***closing bid prices***" shall be deemed to be: (i) for securities traded primarily on the New York Stock Exchange, the American Stock Exchange or a Nasdaq market, the last reported trade price or sale price, as the case may be, at 4:00 p.m., New York time, on that day and (ii) for securities listed or traded on other exchanges, markets and systems, the market price as of the end of the regular hours trading period that is generally accepted as such for such exchange, market or system. If, after the date hereof, the benchmark times generally accepted in the securities industry for determining the market price of a stock as of a given trading day shall change from those set forth above, the fair market value shall be determined as of such other generally accepted benchmark times.

(g) ***Allocation of Escrow and Contingent Consideration.*** In the event of a Deemed Liquidation Event of the Corporation pursuant to Section 3(d), if any portion of the consideration payable to the stockholders of the Corporation is payable only upon satisfaction of contingencies (the "***Additional Consideration***"), the definitive agreement with respect to such Deemed Liquidation Event of the Corporation shall provide that (a) the portion of such consideration that is not Additional Consideration (such portion, the "***Initial Consideration***") shall be allocated among the holders of capital stock of the Corporation in accordance with Sections 3(a) and 3(b) as if the Initial Consideration were the only consideration payable in connection with such Deemed Liquidation Event of the Corporation and (b) any Additional Consideration which becomes payable to the stockholders of the Corporation upon satisfaction of such contingencies shall be allocated among the holders of capital stock of the Corporation in accordance with Subsections 3(a) and 3(b) after taking into account the previous payment of the Initial Consideration as part of the same transaction. For the purposes of this Section 3(g), consideration placed into escrow or retained as holdback to be available for satisfaction of indemnification or similar obligations in connection with such Deemed Liquidation Event of the Corporation shall be deemed to be Additional Consideration.

(h) ***Superior Rights***. In the event the Corporation's next bona fide equity financing for capital raising purposes includes the issuance of equity securities with dividend rights or liquidation preference rights that are more favorable (other than with respect to the dividend rate or per share liquidation preference), the shares of Preferred Stock shall be entitled to the same dividend rights or liquidation preference rights (other than with respect to the dividend rate or per share liquidation preference) as apply to such equity securities issued in such equity financing.

4. **Conversion.** The holders of the Preferred Stock shall have conversion rights as follows:

(a) ***Right to Convert.*** Except as set forth in Section 4(b)(i), each share of Preferred Stock shall be convertible, at the option of the holder thereof, at any time after the earlier of (i) the Secondary Closing and (ii) the date that the ability to consummate a Secondary Closing has terminated under the Purchase Agreement, into that number of fully-paid, nonassessable shares of Common Stock determined by dividing the Original Issue Price for the relevant series by the Conversion Price for such series. (The number of shares of Common Stock into which each share of Preferred Stock of a series may be converted is hereinafter referred to as the "***Conversion Rate***" for each such series.) Upon any decrease or increase in the Conversion Price for any series of Preferred Stock, as described in this Section 4, the Conversion Rate for such series shall be appropriately increased or decreased.

(b) ***Special Conversion***.

(i) Each share of Preferred Stock shall be convertible, at the option of the holder thereof, at any time after the date of issuance of such share at the office of the Corporation or any transfer agent for the Preferred Stock, into that number of fully-paid, nonassessable shares of Common Stock determined by dividing the Conversion Rate for the relevant series by two (2).

(ii) Procedural Requirements. Upon a Special Conversion, each holder of shares of Preferred Stock converted pursuant to this Section 4(b) shall be sent written notice of such Special Conversion and the place designated for mandatory conversion of all such shares of Preferred Stock pursuant to this Section 4(b). Upon receipt of such notice, each holder of such shares of Preferred Stock in certificated form shall surrender his, her or its certificate or certificates for all such shares (or, if such holder alleges that any such certificate has been lost, stolen or destroyed, a lost certificate affidavit and agreement reasonably acceptable to the Corporation to indemnify the Corporation against any claim that may be made against the Corporation on account of the alleged loss, theft or destruction of such certificate) to the Corporation at the place designated in such notice. If so required by the Corporation, any certificates surrendered for conversion shall be endorsed or accompanied by written instrument or instruments of transfer, in form satisfactory to the Corporation, duly executed by the registered holder or by his, her or its attorney duly authorized in writing. All rights with respect to the Preferred Stock converted pursuant to this Section 4(b), including the rights, if any, to receive notices and vote (other than as a holder of Common Stock), will terminate at the time of the Special Conversion (notwithstanding the failure of the holder or holders thereof to surrender any certificates for such shares at or prior to such time), except only the rights of the holders thereof, upon surrender of any certificate or certificates of such holders therefor (or lost certificate affidavit and agreement), to receive the items provided for in the next sentence of this Section 4(b). As soon as practicable after the Special Conversion and, if applicable, the surrender of any certificate or certificates (or lost certificate affidavit and agreement) for Preferred Stock so converted, the Corporation shall (a) issue and deliver to such holder a certificate or certificates for the number of full shares of Common Stock issuable on such conversion in accordance with the provisions hereof and (b) pay cash as provided in Section 4(d) in lieu of any fraction of a share of Common Stock otherwise issuable upon such conversion. Such converted Preferred Stock shall be retired and cancelled and may not be reissued as shares of such series, and the Corporation may thereafter take such appropriate action (without the need for stockholder action) as may be necessary to reduce the authorized number of shares of Series A Preferred Stock, Series B Preferred Stock and Series C Preferred Stock accordingly.

(c) ***Automatic Conversion.*** Each share of Preferred Stock shall automatically be converted into fully-paid, non-assessable shares of Common Stock at the then effective Conversion Rate for such share (i) immediately prior to the closing of a firm commitment underwritten initial public offering pursuant to an effective registration statement filed under the Securities Act of 1933, as amended (the "***Securities Act***"), covering the offer and sale of the Corporation's Common Stock, *provided*, that either (A) the offering price per share is not less than $13.66 (as adjusted for Recapitalizations), the aggregate gross proceeds to the Corporation exceed $50,000,000 and the Corporation's Common Stock is listed for trading on the New York Stock Exchange, the Nasdaq Stock Market or another international exchange of similar stature, including, for example, AIM of the London Stock Exchange or Euronext Paris S.A. (a "***Qualified IPO***") or (B) the public offering is approved by the Preferred Majority or (ii) upon the receipt by the Corporation of a written request from the Preferred Majority, or, if later, the effective date for conversion specified in such requests (each of the events referred to in (i) and (ii) are referred to herein as an "***Automatic Conversion Event***").

(d) ***Mechanics of Conversion.*** No fractional shares of Common Stock shall be issued upon conversion of Preferred Stock. In lieu of any fractional shares to which the holder would otherwise be entitled, the Corporation shall pay cash equal to such fraction multiplied by the then fair market value of a share of Common Stock as determined by the Board of Directors. For such purpose, all shares of Preferred Stock held by each holder of Preferred Stock shall be aggregated, and any resulting fractional share of Common Stock shall be paid in cash. Before any holder of Preferred Stock shall be entitled to convert the same into full shares of Common Stock, and to receive certificates therefor, the holder shall either (A) surrender the certificate or certificates therefor, duly endorsed, at the office of the Corporation or of any transfer agent for the Preferred Stock or (B) notify the Corporation or its transfer agent that such certificates have been lost, stolen or destroyed and execute an agreement satisfactory to the Corporation to indemnify the Corporation from any loss incurred by it in connection with such certificates, and shall give written notice to the Corporation at such office that the holder elects to convert the same; *provided, however,* that on the date of an Automatic Conversion Event, the

outstanding shares of Preferred Stock shall be converted automatically without any further action by the holders of such shares and whether or not the certificates representing such shares are surrendered to the Corporation or its transfer agent; *provided further*, however, that the Corporation shall not be obligated to issue certificates evidencing the shares of Common Stock issuable upon such Automatic Conversion Event unless either the certificates evidencing such shares of Preferred Stock are delivered to the Corporation or its transfer agent as provided above, or the holder notifies the Corporation or its transfer agent that such certificates have been lost, stolen or destroyed and executes an agreement satisfactory to the Corporation to indemnify the Corporation from any loss incurred by it in connection with such certificates. On the date of the occurrence of an Automatic Conversion Event, each holder of record of shares of Preferred Stock shall be deemed to be the holder of record of the Common Stock issuable upon such conversion, notwithstanding that the certificates representing such shares of Preferred Stock shall not have been surrendered at the office of the Corporation, that notice from the Corporation shall not have been received by any holder of record of shares of Preferred Stock, or that the certificates evidencing such shares of Common Stock shall not then be actually delivered to such holder.

The Corporation shall, as soon as practicable after such delivery, or after such agreement and indemnification, issue and deliver at such office to such holder of Preferred Stock, a certificate or certificates for the number of shares of Common Stock to which the holder shall be entitled as aforesaid and a check payable to the holder in the amount of any cash amounts payable as the result of a conversion into fractional shares of Common Stock, plus any declared and unpaid dividends on the converted Preferred Stock. Such conversion shall be deemed to have been made immediately prior to the close of business on the date of such surrender of the shares of Preferred Stock to be converted, and the person or persons entitled to receive the shares of Common Stock issuable upon such conversion shall be treated for all purposes as the record holder or holders of such shares of Common Stock on such date; *provided*, *however,* that if the conversion is in connection with an underwritten offer of securities registered pursuant to the Securities Act or a merger, sale, financing, or liquidation of the Corporation or other event, the conversion may, at the option of any holder tendering Preferred Stock for conversion, be conditioned upon the closing of such transaction or upon the occurrence of such event, in which case the person(s) entitled to receive the Common Stock issuable upon such conversion of the Preferred Stock shall not be deemed to have converted such Preferred Stock until immediately prior to the closing of such transaction or the occurrence of such event.

(e) ***Adjustments to Conversion Price for Diluting Issues.***

(i) ***Special Definition.*** For purposes of this paragraph 4(e), "***Additional Shares of Common***" shall mean all shares of Common Stock issued (or, pursuant to paragraph 4(e)(iii), deemed to be issued) by the Corporation after the filing of this Certificate of Incorporation, other than issuances or deemed issuances of:

(1) shares of Common Stock upon the conversion of the Preferred Stock or any series thereof;

(2) shares of Common Stock (or Options therefor) issued or issuable to employees, officers or directors of, or consultants or advisors to the Corporation or any subsidiary under incentive stock option or non-qualified stock option agreements, stock restriction agreements or other options, arrangements or contracts approved by a majority of the Board of Directors and made pursuant to a plan recommended by management and approved by a majority of the Board of Directors, including at least a majority of the Preferred Directors;

(3) shares of Common Stock upon the exercise or conversion of Options or Convertible Securities;

(4) shares of Common Stock issued or issuable as a dividend or distribution on Preferred Stock or pursuant to any event for which adjustment is made pursuant to paragraph 4(f), 4(g) or 4(h) hereof;

(5) shares of Common Stock issued or issuable in a registered public offering under the Securities Act;

(6) shares of Common Stock issued or issuable pursuant to the acquisition of another corporation by the Corporation by merger, purchase of substantially all of the assets or other reorganization or to a joint venture agreement, *provided*, that such issuances are approved by the Board of Directors, including at least a majority of the Preferred Directors;

(7) shares of Common Stock issued or issuable to banks, equipment lessors, real property lessors, financial institutions or other persons engaged in the business of making loans pursuant to a debt financing, commercial leasing or real property leasing transaction entered into for primarily non-equity financing purposes and approved by the Board of Directors, including at least a majority of the Preferred Directors;

(8) shares of Common Stock issued or issuable in connection with any settlement of any action, suit, proceeding or litigation approved by the Board of Directors, including at least a majority of the Preferred Directors;

(9) shares of Common Stock issued or issuable in connection with sponsored research, collaboration, technology license, development, OEM, marketing or other similar business agreements or strategic partnerships approved by the Board of Directors, including at least a majority of the Preferred Directors;

(10) shares of Common Stock issued or issuable to suppliers or third party service providers in connection with the provision of goods or services pursuant to agreements currently in existence that have been approved by the Board of Directors, including at least a majority of the Preferred Directors;

(11) shares of Common Stock or Preferred Stock issued or issuable to Lonza Ltd., or one or more of its affiliates, pursuant to the terms and conditions of that certain Fourth Amendment to the Development and Manufacturing Agreement, by and between Lonza Ltd. and the Corporation to be entered into by the Corporation following the effectiveness of this Certificate of Incorporation;

(12) shares of Series B Preferred Stock issued in connection with the Series B Secondary Closing; and

(13) as to any particular series of Preferred Stock, the issuance or deemed issuance of Common Stock if the Corporation receives written notice from the holders of a majority of the then outstanding shares of such series of Preferred Stock on an as-converted basis agreeing that no adjustment shall be made to the Conversion Price of such series as a result of the issuance or deemed issuance.

The foregoing issuances described in Article V Section 4(e)(i)(1) through Article V Section 4(e)(i)(13) shall be referred to as the "***Exempted Securities***."

(ii) ***No Adjustment of Conversion Price.*** No adjustment in the Conversion Price of a particular series of Preferred Stock shall be made in respect of the issuance of Additional Shares of Common unless the consideration per share (as determined pursuant to paragraph 4(e)(v)) for an Additional Share of Common issued or deemed to be issued by the Corporation is less than the Conversion Price in effect on the date of, and immediately prior to such issue, for such series of Preferred Stock.

(iii) ***Deemed Issue of Additional Shares of Common.*** In the event the Corporation at any time or from time to time after the date of the filing of this Certificate of Incorporation shall issue any Options or Convertible Securities or shall fix a record date for the determination of holders of any class of securities entitled to receive any such Options or Convertible Securities, then the maximum number of shares (as set forth in the instrument relating thereto without regard to any provisions contained therein for a subsequent adjustment of such number) of Common Stock issuable upon the exercise of such Options or, in the case of Convertible Securities, the conversion or exchange of such Convertible Securities or, in the case of Options for Convertible Securities, the exercise of such Options and the conversion or exchange of the underlying securities, shall be deemed to have been issued as of the time of such issue or, in case such a record date shall have been fixed, as of the close of business on such record date, *provided* that in any such case in which shares are deemed to be issued:

(1) no further adjustment in the Conversion Price of any series of Preferred Stock shall be made upon the subsequent issue of Convertible Securities or shares of Common Stock in connection with the exercise of such Options or conversion or exchange of such Convertible Securities;

(2) if such Options or Convertible Securities by their terms provide, with the passage of time or otherwise, for any change in the consideration payable to the Corporation or in the number of shares of Common Stock issuable upon the exercise, conversion or exchange thereof (other than a change pursuant to the anti-dilution provisions of such Options or Convertible Securities such as this Section 4(e) or pursuant to Recapitalization provisions of such Options or Convertible Securities such as Sections 4(f), 4(g) and 4(h) hereof), the Conversion Price of each series of Preferred Stock and any subsequent adjustments based thereon shall be recomputed to reflect such change as if such change had been in effect as of the original issue thereof (or upon the occurrence of the record date with respect thereto);

(3) no readjustment pursuant to clause (2) above shall have the effect of increasing the Conversion Price of a series of Preferred Stock to an amount above the Conversion Price that would have resulted from any other issuances of Additional Shares of Common and any other adjustments provided for herein between the original adjustment date and such readjustment date;

(4) upon the expiration of any such Options or any rights of conversion or exchange under such Convertible Securities which shall not have been exercised, the Conversion Price of each Series of Preferred Stock computed upon the original issue thereof (or upon the occurrence of a record date with respect thereto) and any subsequent adjustments based thereon shall, upon such expiration, be recomputed as if:

(a) in the case of Convertible Securities or Options for Common Stock, the only Additional Shares of Common issued were the shares of Common Stock, if any, actually issued upon the exercise of such Options or the conversion or exchange of such Convertible Securities and the consideration received therefor was the consideration actually received by the Corporation for the issue of such exercised Options plus the consideration actually received by the Corporation upon such exercise or for the issue of all such Convertible Securities which were actually converted or exchanged, plus the additional consideration, if any, actually received by the Corporation upon such conversion or exchange, and

(b) in the case of Options for Convertible Securities, only the Convertible Securities, if any, actually issued upon the exercise thereof were issued at the time of issue of such Options, and the consideration received by the Corporation for the Additional Shares of Common deemed to have been then issued was the consideration actually received by the Corporation for the issue of such exercised Options, plus the consideration deemed to have been received by the Corporation (determined pursuant to Section 4(e)(v)) upon the issue of the Convertible Securities with respect to which such Options were actually exercised; and

(5) if such record date shall have been fixed and such Options or Convertible Securities are not issued on the date fixed therefor, the adjustment previously made in the Conversion Price which became effective on such record date shall be canceled as of the close of business on such record date, and thereafter the Conversion Price shall be adjusted pursuant to this paragraph 4(e)(iii) as of the actual date of their issuance.

(iv) ***Adjustment of Conversion Price Upon Issuance of Additional Shares of Common.*** In the event this Corporation shall issue Additional Shares of Common (including Additional Shares of Common deemed to be issued pursuant to paragraph 4(e)(iii)) without consideration or for a consideration per share less than the applicable Conversion Price of a series of Preferred Stock in effect on the date of and immediately prior to such issue, then, the Conversion Price of the affected series of Preferred Stock shall be reduced, concurrently with such issue, to a price (calculated to the nearest cent) determined by multiplying such Conversion Price by a fraction, the numerator of which shall be the number of shares of Common Stock outstanding immediately prior to such issue plus the number of shares which the aggregate consideration received by the Corporation for the total number of Additional Shares of Common so issued would purchase at such Conversion Price, and the denominator of which shall be the number of shares of Common Stock outstanding immediately prior to such issue plus the number of such Additional Shares of Common so issued; *provided*, that, other than with respect to any adjustment that may be made to the Conversion Price of the Series C Preferred Stock, any adjustment that may be made to the Conversion Price in connection with any issuance of Additional Shares of Common pursuant to this paragraph 4(e)(iv) shall not reduce the Conversion Price to less than one-half the Original Issue Price. Notwithstanding the foregoing, the Conversion Price shall not be reduced at such time if the amount of such reduction would be less than $0.01, but any such amount shall be carried forward, and a reduction will be made with respect to such amount at the time of, and together with, any subsequent reduction which, together with such amount and any other amounts so carried forward, equal $0.01 or more in the aggregate. For the purposes of this Subsection 4(e)(iv), all shares of Common Stock issuable upon conversion of all outstanding shares of Preferred Stock and the exercise and/or conversion of any other outstanding Convertible Securities and all outstanding Options shall be deemed to be shares of Common Stock outstanding.

(v) ***Determination of Consideration.*** For purposes of this subsection 4(e), the consideration received by the Corporation for the issue (or deemed issue) of any Additional Shares of Common shall be computed as follows:

(1) ***Cash and Property.*** Such consideration shall:

(a) insofar as it consists of cash, be computed at the aggregate amount of cash received by the Corporation before deducting any reasonable discounts, commissions or other expenses allowed, paid or incurred by the Corporation for any underwriting or otherwise in connection with such issuance;

(b) insofar as it consists of property other than cash, be computed at the fair market value thereof at the time of such issue, as determined in good faith by the Board of Directors; and

(c) in the event Additional Shares of Common are issued together with other shares or securities or other assets of the Corporation for consideration which covers both, be the proportion of such consideration so received, computed as provided in clauses (a) and (b) above, as reasonably determined in good faith by the Board of Directors.

(2) ***Options and Convertible Securities.*** The consideration per share received by the Corporation for Additional Shares of Common deemed to have been issued pursuant to paragraph 4(e)(iii) shall be determined by dividing

(x) the total amount, if any, received or receivable by the Corporation as consideration for the issue of such Options or Convertible Securities, plus the minimum aggregate amount of additional consideration (as set forth in the instruments relating thereto, without regard to any provision contained therein for a subsequent adjustment of such consideration) payable to the Corporation upon the exercise of such Options or the conversion or exchange of such Convertible Securities, or in the case of Options for Convertible Securities, the exercise of such Options for Convertible Securities and the conversion or exchange of such Convertible Securities by

(y) the maximum number of shares of Common Stock (as set forth in the instruments relating thereto, without regard to any provision contained therein for a subsequent adjustment of such number) issuable upon the exercise of such Options or the conversion or exchange of such Convertible Securities.

(f) ***Adjustments for Subdivisions or Combinations of Common Stock.*** In the event the outstanding shares of Common Stock shall be subdivided (by stock split, by payment of a stock dividend or otherwise), into a greater number of shares of Common Stock, the Conversion Price of each series of Preferred Stock in effect immediately prior to such subdivision shall, concurrently with the effectiveness of such subdivision, be proportionately decreased. In the event the outstanding shares of Common Stock shall be combined (by reclassification or otherwise) into a lesser number of shares of Common Stock, the Conversion Prices in effect immediately prior to such combination shall, concurrently with the effectiveness of such combination, be proportionately increased.

(g) ***Adjustments for Subdivisions or Combinations of Preferred Stock.*** In the event the outstanding shares of Preferred Stock or a series of Preferred Stock shall be subdivided (by stock split, by payment of a stock dividend or otherwise), into a greater number of shares of Preferred Stock, the Dividend Rate, Original Issue Price and Liquidation Preference of the affected series of Preferred Stock in effect immediately prior to such subdivision shall, concurrently with the effectiveness of such subdivision, be proportionately decreased. In the event the outstanding shares of Preferred Stock or a series of Preferred Stock shall be combined (by reclassification or otherwise) into a lesser number of shares of Preferred Stock, the Dividend Rate, Original Issue Price and Liquidation Preference of the affected series of Preferred Stock in effect immediately prior to such combination shall, concurrently with the effectiveness of such combination, be proportionately increased.

(h) ***Adjustments for Reclassification, Exchange and Substitution.*** Subject to Section 3 ("***Liquidation Rights***"), if the Common Stock issuable upon conversion of the Preferred Stock shall be changed into the same or a different number of shares of any other class or classes of stock, whether by capital reorganization, reclassification or otherwise (other than a subdivision or combination of shares provided for above), then, in any such event, in lieu of the number of shares of Common Stock which the holders would otherwise have been entitled to receive each holder of such Preferred Stock shall have the right thereafter to convert such shares of Preferred Stock into a number of shares of such other class or classes of stock which a holder of the number of shares of Common Stock deliverable upon conversion of such series of Preferred Stock immediately before that change would have been entitled to receive in such reorganization or reclassification, all subject to further adjustment as provided herein with respect to such other shares.

(i) ***Certificate as to Adjustments.*** Upon the occurrence of each adjustment or readjustment of the Conversion Price pursuant to this Section 4, the Corporation at its expense shall promptly compute such adjustment or readjustment in accordance with the terms hereof and furnish to each holder of Preferred Stock a certificate setting forth such adjustment or readjustment and showing in detail the facts upon which such adjustment or readjustment is based. The Corporation shall, upon the written request at any time of any holder of Preferred Stock, furnish or cause to be furnished to such holder a like certificate setting forth (i) such adjustments and readjustments, (ii) the Conversion Price at the time in effect for each series of Preferred Stock and (iii) the number of shares of Common Stock and the amount, if any, of other property which at the time would be received upon the conversion of each series of Preferred Stock.

(j) ***Waiver of Adjustment of Conversion Price.*** Notwithstanding anything herein to the contrary, any downward adjustment of the Conversion Price of the Series A Preferred Stock or Series B Preferred Stock may be waived by the consent or vote of the holders of at least 55% of the outstanding shares of such series, and any downward adjustment of the Conversion Price of the Series C Preferred Stock may be waived by the consent or vote of the holders of a majority of the outstanding shares of Series C Preferred Stock, in each case, either before or after the issuance causing the adjustment. Any such waiver shall bind all future holders of shares of such series of Preferred Stock.

(k) ***Notices of Record Date.*** In the event that this Corporation shall propose at any time:

(i) to declare any Distribution upon its Common Stock, whether in cash, property, stock or other securities, whether or not a regular cash dividend and whether or not out of earnings or earned surplus;

(ii) to effect any reclassification or recapitalization of its Common Stock outstanding involving a change in the Common Stock; or

(iii) to voluntarily liquidate or dissolve or to enter into any transaction deemed to be a liquidation, dissolution or winding up or other Deemed Liquidation Event pursuant to Section 3(d);

then, in connection with each such event, this Corporation shall send to the holders of the Preferred Stock at least 10 days' prior written notice of the date on which a record shall be taken for such Distribution (and specifying the date on which the holders of Common Stock shall be entitled thereto and, if applicable, the amount and character of such Distribution) or for determining rights to vote in respect of the matters referred to in (ii) and (iii) above.

Such written notice shall be given by first class mail (or express courier), postage prepaid, addressed to the holders of Preferred Stock at the address for each such holder as shown on the books of the Corporation and shall be deemed given on the date such notice is mailed.

The notice provisions set forth in this section may be shortened or waived prospectively or retrospectively by the consent or vote of the holders of the Preferred Majority.

(l) ***Reservation of Stock Issuable Upon Conversion.*** The Corporation shall at all times reserve and keep available out of its authorized but unissued shares of Common Stock solely for the purpose of effecting the conversion of the shares of the Preferred Stock, such number of its shares of Common Stock as shall from time to time be sufficient to effect the conversion of all then outstanding shares of the Preferred Stock; and if at any time the number of authorized but unissued shares of Common Stock shall not be sufficient to effect the conversion of all then outstanding shares of the Preferred Stock, the Corporation will take such corporate action as may, in the opinion of its counsel, be necessary to increase its authorized but unissued shares of Common Stock to such number of shares as shall be sufficient for such purpose.

5. **Voting.**

(a) ***Restricted Class Voting.*** Except as otherwise expressly provided herein or as required by law, the holders of Preferred Stock and the holders of Common Stock shall vote together and not as separate classes.

(b) ***No Series Voting.*** Other than as provided herein or required by law, there shall be no series voting, provided, that, without the consent or vote of the holders of at least 55% of the outstanding shares of Series B Preferred Stock or a majority of the outstanding shares of Series C Preferred Stock, as applicable, the Corporation shall not take any action that alters or changes the powers, preferences, or special rights of the shares of the Series B Preferred Stock or Series C Preferred Stock, as applicable, so as to affect them adversely in a manner that does not so affect all shares of Preferred Stock, and provided further, that the creation or issuance of any new class or series of shares of capital stock having rights, preferences or privileges senior to or on parity with the Series B Preferred Stock or Series C Preferred Stock shall not be subject to the consent or vote required of this Section 5(b).

(c) ***Preferred Stock.*** Each holder of Preferred Stock shall be entitled to the number of votes equal to the number of shares of Common Stock into which the shares of Preferred Stock held by such holder could be converted as of the record date. The holders of shares of the Preferred Stock shall be entitled to vote on all matters on which the Common Stock shall be entitled to vote. Holders of Preferred Stock shall be entitled to notice of any stockholders' meeting in accordance with the Bylaws of the Corporation. Fractional votes shall not, however, be permitted and any fractional voting rights resulting from the above formula (after aggregating all shares into which shares of Preferred Stock held by each holder could be converted), shall be disregarded.

(d) ***Election of Directors.*** So long as at least 3,000,000 shares (as adjusted for Recapitalizations) of Series A Preferred Stock remain outstanding, the holders of Series A Preferred Stock, voting as a separate class, shall be entitled to elect two (2) members of the Corporation's Board of Directors at each meeting or pursuant to each consent of the Corporation's stockholders for the election of directors (the "***Series A Directors***"). So long as at least 2,850,000 shares (as adjusted for Recapitalizations) of Series B Preferred Stock remain outstanding, the holders of Series B Preferred Stock, voting as a separate class, shall be entitled to elect two (2) members of the Corporation's Board of Directors at each meeting or pursuant to each consent of the Corporation's stockholders for the election of directors (the "***Series B Directors***"), as long as at least 3,000,000 shares (as adjusted for Recapitalizations) of Series C Preferred Stock remain outstanding on any date prior to the consummation of the Secondary Closing or at least 6,000,000 shares (as adjusted for Recapitalizations) of Series C Preferred Stock remain outstanding on any date following the consummation of the Secondary Closing, the holders of Series C Preferred Stock, voting as a separate class, shall be entitled to elect one (1) member of the Corporation's Board of Directors at each meeting or pursuant to each consent of the Corporation's stockholders for the election of directors (the "***Series C Directors***" and, together with the Series A Directors and Series B Directors, the "**Preferred Directors**"). The holders of Common Stock, voting as a separate class, shall be entitled to elect two (2) members of the Corporation's Board of Directors at each meeting or pursuant to each consent of the Corporation's stockholders for the election of directors. Any additional members of the Corporation's Board of Directors shall be elected by the holders of Common Stock and Preferred Stock, voting together as a single class on an as-converted basis.

(e) ***Common Stock.*** Each holder of shares of Common Stock shall be entitled to one vote for each share thereof held; provided, however, that, except as otherwise required by law, holders of Common Stock, as such, shall not be entitled to vote on any amendment to this Certificate of Incorporation that relates solely to the terms of one or more outstanding series of Preferred Stock if the holders of such affected series are entitled, either separately or together with the holders of one or more other such series, to vote thereon pursuant to this Certificate of Incorporation or pursuant to the General Corporation Law of the State of Delaware. There shall be no cumulative voting. The number of authorized shares of Common Stock may be

increased or decreased (but not below the number of shares thereof then outstanding) by (in addition to any vote of the holders of one or more series of Preferred Stock that may be required by the terms of this Certificate of Incorporation) the affirmative vote of the holders of shares of capital stock of the Corporation representing a majority of the votes represented by all outstanding shares of capital stock of the Corporation entitled to vote, irrespective of the provisions of Section 242(b)(2) of the General Corporation Law of the State of Delaware.

6. **Amendments and Changes.** As long as 3,000,000 shares of the Preferred Stock shall be issued and outstanding, the Corporation shall not, either directly or indirectly, by amendment, modification, waiver, merger, consolidation, Recapitalization or otherwise, without first obtaining the approval (by vote or written consent as provided by law) of the Preferred Majority (in addition to any other vote required by law or this Certificate of Incorporation or the Corporation's Bylaws) and any such act or transaction entered into without such consent or vote shall be null and void *ab initio*, and of no force or effect:

(a) take any action that alters or changes or adversely affects the rights, privileges or preferences of, or restrictions provided for the benefit of, the Preferred Stock, regardless of whether any such action is by means of amendment to this Certificate of Incorporation or by merger, consolidation or otherwise;

(b) amend, alter, waive or repeal any provision of this Certificate of Incorporation or Bylaws of the Corporation (including pursuant to a merger) if such action would adversely alter the rights, preferences, privileges or powers of, or restrictions provided for the benefit of the Preferred Stock or any series thereof;

(c) increase or decrease (other than for decreases resulting from conversion of the Preferred Stock) the authorized number of shares of Common Stock or Preferred Stock or any series thereof;

(d) authorize or create (by reclassification or otherwise) any new class or series of equity security having rights, preferences or privileges with respect to dividends or payments upon liquidation senior to or on a parity with any series of Preferred Stock;

(e) liquidate, dissolve or wind-up the business and affairs of the Corporation, effect any merger or consolidation or any other Deemed Liquidation Event, or consent to any of the foregoing;

(f) increase or decrease the size of the Board of Directors;

(g) incur indebtedness in excess of $500,000;

(h) form any subsidiary or permit any subsidiary to issue capital stock;

(i) reclassify any capital stock of the Corporation;

(j) purchase or redeem (or permit any subsidiary to purchase or redeem) any shares of capital stock of the Corporation other than (i) redemptions on the Preferred Stock as expressly authorized herein, (ii) repurchases of stock from former employees, officers, directors, consultants or other persons who performed services for the Corporation or any subsidiary in connection with the cessation of such employment or service at the lower of the original purchase price or the then-current fair market value thereof or (iii) repurchase of stock issued to or held by employees, officers, directors or consultants of the Corporation or any subsidiary pursuant to rights of first refusal contained in agreements providing for such right;

(k) pay or declare or pay any Distribution on, any shares of capital stock of the Corporation other than dividends or distributions on the Preferred Stock as expressly authorized herein;

(l) increase the number of shares authorized for issuance under any existing stock or option plan or create any new stock or option plan;

(m) amend this Section 6;

(n) take any action pursuant to which the Corporation agrees or commits to do any of the foregoing;

(o) change the Corporation's entity classification for tax purposes.

7. **Special Board Votes**. The consent of a majority of the Board of Directors of the Corporation, including a majority of the Preferred Directors, shall be required for the Corporation to:

(a) establish any pension or retirement plans for employees;

(b) sell, transfer or license any material intellectual property of the Corporation; or

(c) acquire or dispose of or enter into any lease for real property or premises.

8. **Reissuance of Preferred Stock.** In the event that any shares of Preferred Stock shall be converted pursuant to Section 4, redeemed or otherwise repurchased by the Corporation, the shares so converted, redeemed or repurchased shall be cancelled and shall not be issuable by this Corporation.

9. **Notices.** Any notice required by the provisions of this ARTICLE V to be given to the holders of Preferred Stock shall be deemed given if deposited in the United States mail, postage prepaid, and addressed to each holder of record at such holder's address appearing on the books of the Corporation or, if applicable, international courier.

**ARTICLE VI**

The Corporation is to have perpetual existence.

**ARTICLE VII**

Elections of directors need not be by written ballot unless the Bylaws of the Corporation shall so provide.

**ARTICLE VIII**

Unless otherwise set forth herein, the number of directors that constitute the Board of Directors of the Corporation shall be fixed by, or in the manner provided in, the Bylaws of the Corporation.

**ARTICLE IX**

Except as otherwise set forth herein, in furtherance and not in limitation of the powers conferred by statute, the Board of Directors of the Corporation is expressly authorized to adopt, amend or repeal the Bylaws of the Corporation.

## ARTICLE X

1. To the fullest extent permitted by the Delaware General Corporation Law as the same exists or as may hereafter be amended, a director of the Corporation shall not be personally liable to the Corporation or its stockholders for monetary damages for a breach of fiduciary duty as a director. If the Delaware General Corporation Law is amended to authorize corporate action further eliminating or limiting the personal liability of directors, then the liability of a director of the Corporation shall be eliminated or limited to the fullest extent permitted by the Delaware General Corporation Law, as so amended. Neither any amendment nor repeal of this Section 1, nor the adoption of any provision of this Corporation's Certificate of Incorporation inconsistent with this Section 1, shall eliminate or reduce the effect of this Section 1, in respect of any matter occurring, or any action or proceeding accruing or arising or that, but for this Section 1, would accrue or arise, prior to such amendment, repeal or adoption of an inconsistent provision.

2. The Corporation shall have the power to indemnify, to the extent permitted by the Delaware General Corporation Law, as it presently exists or may hereafter be amended from time to time, any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (a "***Proceeding***") by reason of the fact that he or she is or was a director, officer, employee or agent of the Corporation or is or was serving at the request of the Corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, including service with respect to employee benefit plans, against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by such person in connection with any such Proceeding. A right to indemnification or to advancement of expenses arising under a provision of this Certificate of Incorporation or a bylaw of the Corporation shall not be eliminated or impaired by an amendment to this Certificate of Incorporation or the Bylaws of the Corporation after the occurrence of the act or omission that is the subject of the civil, criminal, administrative or investigative action, suit or proceeding for which indemnification or advancement of expenses is sought, unless the provision in effect at the time of such act or omission explicitly authorizes such elimination or impairment after such action or omission has occurred.

## ARTICLE XI

Meetings of stockholders may be held within or without the State of Delaware, as the Bylaws may provide. The books of the Corporation may be kept (subject to any provision contained in the statutes) outside of the State of Delaware at such place or places as may be designated from time to time by the Board of Directors or in the Bylaws of the Corporation.

## ARTICLE XII

The Corporation renounces, to the fullest extent permitted by law, any interest or expectancy of the Corporation in, or in being offered an opportunity to participate in, any Excluded Opportunity. An "***Excluded Opportunity***" is any matter, transaction or interest that is presented to, or acquired, created or developed by, or which otherwise comes into the possession of, (i) any director of the Corporation who is not an employee of the Corporation or any of its subsidiaries, or (ii) any holder of Preferred Stock or any partner, member, director, stockholder, employee or agent of any such holder, other than someone who is an employee of the Corporation or any of its subsidiaries (collectively, "***Covered Persons***"), unless such matter, transaction or interest is presented to, or acquired, created or developed by, or otherwise comes into the possession of, a Covered Person expressly and solely in such Covered Person's capacity as a director of the Corporation.

**Exhibit 3.2**

# BYLAWS OF

# SUTROVAX, INC.

**Adopted November 27, 2013**

**As amended March 3, 2017**

**As amended May 29, 2018**

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**(Continued)**

# BYLAWS

## ARTICLE I — MEETINGS OF STOCKHOLDERS

1.1 ***Place of Meetings***. Meetings of stockholders of SutroVax, Inc. (the "**Company**") shall be held at any place, within or outside the State of Delaware, determined by the Company's board of directors (the "**Board**"). The Board may, in its sole discretion, determine that a meeting of stockholders shall not be held at any place, but may instead be held solely by means of remote communication as authorized by Section 211(a)(2) of the Delaware General Corporation Law (the "**DGCL**"). In the absence of any such designation or determination, stockholders' meetings shall be held at the Company's principal executive office.

1.2 ***Annual Meeting***. Unless directors are elected by written consent in lieu of an annual meeting as permitted by Section 211(b) of the DGCL, an annual meeting of stockholders shall be held for the election of directors at such date and time as may be designated by resolution of the Board from time to time. Stockholders may, unless the certificate of incorporation otherwise provides, act by written consent to elect directors; *provided, however,* that, if such consent is less than unanimous, such action by written consent may be in lieu of holding an annual meeting only if all of the directorships to which directors could be elected at an annual meeting held at the effective time of such action are vacant and are filled by such action. Any other proper business may be transacted at the annual meeting.

1.3 ***Special Meeting***. A special meeting of the stockholders may be called at any time by the Board, Chairperson of the Board, Chief Executive Officer or President (in the absence of a Chief Executive Officer) or by one or more stockholders holding shares in the aggregate entitled to cast not less than 10% of the votes at that meeting.

If any person(s) other than the Board calls a special meeting, the request shall:

(i) be in writing;

(ii) specify the time of such meeting and the general nature of the business proposed to be transacted; and

(iii) be delivered personally or sent by registered mail or by facsimile transmission to the Chairperson of the Board, the Chief Executive Officer, the President (in the absence of a Chief Executive Officer) or the Secretary of the Company.

The officer(s) receiving the request shall cause notice to be promptly given to the stockholders entitled to vote at such meeting, in accordance with these bylaws, that a meeting will be held at the time requested by the person or persons calling the meeting. No business may be transacted at such special meeting other than the business specified in such notice to stockholders. Nothing contained in this paragraph of this **section 1.3** shall be construed as limiting, fixing, or affecting the time when a meeting of stockholders called by action of the Board may be held.

1.4 ***Notice of Stockholders' Meetings***. Whenever stockholders are required or permitted to take any action at a meeting, a written notice of the meeting shall be given which shall state the place, if any, date and hour of the meeting, the means of remote communications, if any, by which stockholders and proxy holders may be deemed to be present in person and vote at such meeting, the record date for determining the stockholders entitled to vote at the meeting, if such date is different from the record date for determining stockholders entitled to notice of the meeting, and, in the case of a special meeting, the purpose or purposes for which the meeting is called. Except as otherwise provided in the DGCL, the certificate of incorporation or these bylaws, the written notice of any meeting of stockholders shall be given not less than 10 nor more than 60 days before the date of the meeting to each stockholder entitled to vote at such meeting as of the record date for determining the stockholders entitled to notice of the meeting.

1.5 ***Quorum***. Except as otherwise provided by law, the certificate of incorporation or these bylaws (or as set forth in **section 8.5**), at each meeting of stockholders the presence in person or by proxy of the holders of shares of stock having a majority of the votes which could be cast by the holders of all outstanding shares of stock entitled to vote at the meeting shall be necessary and sufficient to constitute a quorum. Where a separate vote by a class or series or classes or series is required, a majority of the outstanding shares of such class or series or classes or series, present in person or represented by proxy, shall constitute a quorum entitled to take action with respect to that vote on that matter, except as otherwise provided by law, the certificate of incorporation or these bylaws.

If, however, such quorum is not present or represented at any meeting of the stockholders, then either (i) the chairperson of the meeting, or (ii) the stockholders entitled to vote at the meeting, present in person or represented by proxy, shall have the power to adjourn the meeting from time to time, in the manner provided in **section 1.6**, until a quorum is present or represented.

1.6 ***Adjourned Meeting; Notice***. Any meeting of stockholders, annual or special, may adjourn from time to time to reconvene at the same or some other place, and notice need not be given of the adjourned meeting if the time, place, if any, thereof, and the means of remote communications, if any, by which stockholders and proxy holders may be deemed to be present in person and vote at such adjourned meeting are announced at the meeting at which the adjournment is taken. At the adjourned meeting, the Company may transact any business which might have been transacted at the original meeting. If the adjournment is for more than 30 days, a notice of the adjourned meeting shall be given to each stockholder of record entitled to vote at the meeting. If after the adjournment a new record date for stockholders entitled to vote is fixed for the adjourned meeting, the Board shall fix a new record date for notice of such adjourned meeting in accordance with Section 213(a) of the DGCL and **section 1.10** of these bylaws, and shall give notice of the adjourned meeting to each stockholder of record entitled to vote at such adjourned meeting as of the record date fixed for notice of such adjourned meeting.

1.7 ***Conduct of Business***. Meetings of stockholders shall be presided over by the Chairperson of the Board, if any, or in his or her absence by the Vice Chairperson of the Board, if any, or in the absence of the foregoing persons by the Chief Executive Officer, or in the absence of the foregoing persons by the President, or in the absence of the foregoing persons by a Vice President, or in the absence of the foregoing persons by a chairperson designated by the Board, or in the absence of such designation by a chairperson chosen at the meeting. The Secretary shall act as secretary of the meeting, but in his or her absence the chairperson of the meeting may appoint any person to act as secretary of the meeting. The chairperson of any meeting of stockholders shall determine the order of business and the procedure at the meeting, including such regulation of the manner of voting and the conduct of business.

1.8 ***Voting***. The stockholders entitled to vote at any meeting of stockholders shall be determined in accordance with the provisions of **section 1.10** of these bylaws, subject to Section 217 (relating to voting rights of fiduciaries, pledgors and joint owners of stock) and Section 218 (relating to voting trusts and other voting agreements) of the DGCL.

Except as may be otherwise provided in the certificate of incorporation, each stockholder entitled to vote at any meeting of stockholders shall be entitled to one vote for each share of capital stock held by such stockholder which has voting power upon the matter in question. Voting at meetings of stockholders need not be by written ballot and, unless otherwise required by law, need not be conducted by inspectors of election unless so determined by the holders of shares of stock having a majority of the votes which could be cast by the holders of all outstanding shares of stock entitled to vote thereon which are present in person or by proxy at such meeting. If authorized by the Board, such requirement of a written ballot shall be satisfied by a ballot submitted by electronic transmission (as defined in **section 7.2** of these bylaws), *provided* that any such electronic transmission must either set forth or be submitted with information from which it can be determined that the electronic transmission was authorized by the stockholder or proxy holder.

Except as otherwise required by law, the certificate of incorporation or these bylaws, in all matters other than the election of directors, the affirmative vote of a majority of the voting power of the shares present in person or represented by proxy at the meeting and entitled to vote on the subject matter shall be the act of the stockholders. Except as otherwise required by law, the certificate of incorporation or these bylaws, directors shall be elected by a plurality of the voting power of the shares present in person or represented by proxy at the meeting and entitled to vote on the election of directors. Where a separate vote by a class or series or classes or series is required, in all matters other than the election of directors, the affirmative vote of the majority of shares of such class or series or classes or series present in person or represented by proxy at the meeting shall be the act of such class or series or classes or series, except as otherwise provided by law, the certificate of incorporation or these bylaws.

1.9 ***Stockholder Action by Written Consent Without a Meeting***. Unless otherwise provided in the certificate of incorporation, any action required by the DGCL to be taken at any annual or special meeting of stockholders of a corporation, or any action which may be taken at any annual or special meeting of such stockholders, may be taken without a meeting, without prior notice, and without a vote, if a consent or consents in writing, setting forth the action so taken, shall be signed by the holders of outstanding stock having not less than the minimum number of votes that would be necessary to authorize or take such action at a meeting at which all shares entitled to vote thereon were present and voted.

An electronic transmission (as defined in **section 7.2**) consenting to an action to be taken and transmitted by a stockholder or proxy holder, or by a person or persons authorized to act for a stockholder or proxy holder, shall be deemed to be written, signed and dated for purposes of this section, *provided* that any such electronic transmission sets forth or is delivered with information from which the Company can determine (i) that the electronic transmission was transmitted by the stockholder or proxy holder or by a person or persons authorized to act for the stockholder or proxy holder and (ii) the date on which such stockholder or proxy holder or authorized person or persons transmitted such electronic transmission.

In the event that the Board shall have instructed the officers of the Company to solicit the vote or written consent of the stockholders of the Company, an electronic transmission of a stockholder written consent given pursuant to such solicitation may be delivered to the Secretary or the President of the Company or to a person designated by the Secretary or the President. The Secretary or the President of the Company or a designee of the Secretary or the President shall cause any such written consent by electronic transmission to be reproduced in paper form and inserted into the corporate records.

Prompt notice of the taking of the corporate action without a meeting by less than unanimous written consent shall be given to those stockholders who have not consented in writing and who, if the action had been taken at a meeting, would have been entitled to notice of the meeting if the record date for notice of such meeting had been the date that written consents signed by a sufficient number of holders to take the action were delivered to the Company as provided in Section 228 of the DGCL. In the event that the action which is consented to is such as would have required the filing of a certificate under any provision of the DGCL, if such action had been voted on by stockholders at a meeting thereof, the certificate filed under such provision shall state, in lieu of any statement required by such provision concerning any vote of stockholders, that written consent has been given in accordance with Section 228 of the DGCL.

1.10 ***Record Dates***. In order that the Company may determine the stockholders entitled to notice of any meeting of stockholders or any adjournment thereof, the Board may fix a record date, which record date shall not precede the date upon which the resolution fixing the record date is adopted by the Board and which record date shall not be more than 60 nor less than 10 days before the date of such meeting. If the Board so fixes a date, such date shall also be the record date for determining the stockholders entitled to vote at such meeting unless the Board determines, at the time it fixes such record date, that a later date on or before the date of the meeting shall be the date for making such determination.

If no record date is fixed by the Board, the record date for determining stockholders entitled to notice of and to vote at a meeting of stockholders shall be at the close of business on the day next preceding the day on which notice is given, or, if notice is waived, at the close of business on the day next preceding the day on which the meeting is held.

A determination of stockholders of record entitled to notice of or to vote at a meeting of stockholders shall apply to any adjournment of the meeting; *provided, however,* that the Board may fix a new record date for determination of stockholders entitled to vote at the adjourned meeting, and in such case shall also fix as the record date for stockholders entitled to notice of such adjourned meeting the same or an earlier date as that fixed for determination of stockholders entitled to vote in accordance with the provisions of Section 213 of the DGCL and this Section 1.10 at the adjourned meeting.

In order that the Company may determine the stockholders entitled to consent to corporate action in writing without a meeting, the Board may fix a record date, which record date shall not precede the date upon which the resolution fixing the record date is adopted by the Board, and which date shall not be more than 10 days after the date upon which the resolution fixing the record date is adopted by the Board. If no record date has been fixed by the Board, the record date for determining stockholders entitled to consent to corporate action in writing without a meeting, when no prior action by the Board is required by law, shall be the first date on which a signed written consent setting forth the action taken or proposed to be taken is delivered to the Company in accordance with applicable law. If no record date has been fixed by the Board and prior action by the Board is required by law, the record date for determining stockholders entitled to consent to corporate action in writing without a meeting shall be at the close of business on the day on which the Board adopts the resolution taking such prior action.

In order that the Company may determine the stockholders entitled to receive payment of any dividend or other distribution or allotment of any rights or the stockholders entitled to exercise any rights in respect of any change, conversion or exchange of stock, or for the purpose of any other lawful action, the Board may fix a record date, which record date shall not precede the date upon which the resolution fixing the record date is adopted, and which record date shall be not more than 60 days prior to such action. If no record date is fixed, the record date for determining stockholders for any such purpose shall be at the close of business on the day on which the Board adopts the resolution relating thereto.

1.11 ***Proxies***. Each stockholder entitled to vote at a meeting of stockholders or to express consent or dissent to corporate action in writing without a meeting may authorize another person or persons to act for such stockholder by proxy authorized by an instrument in writing or by a transmission permitted by law filed in accordance with the procedure established for the meeting, but no such proxy shall be voted or acted upon after three years from its date, unless the proxy provides for a longer period. The revocability of a proxy that states on its face that it is irrevocable shall be governed by the provisions of Section 212 of the DGCL.

1.12 ***List of Stockholders Entitled to Vote***. The officer who has charge of the stock ledger of the Company shall prepare and make, at least ten days before every meeting of stockholders, a complete list of the stockholders entitled to vote at the meeting; *provided, however,* if the record date for determining the stockholders entitled to vote is less than 10 days before the meeting date, the list shall reflect the stockholders entitled to vote as of the tenth day before the meeting date, arranged in alphabetical order, and showing the address of each stockholder and the number of shares registered in the name of each stockholder. The Company shall not be required to include electronic mail addresses or other electronic contact information on such list. Such list shall be open to the examination of any stockholder for any purpose germane to the meeting for a period of at least ten days prior to the meeting: (i) on a reasonably accessible electronic network, *provided* that the information required to gain access to such list is provided with the notice of the meeting, or (ii) during ordinary business hours, at the Company's principal place of business. In the event that the Company determines to make the list available on an electronic network, the Company may take reasonable steps to ensure that such information is available only to stockholders of the Company. If the meeting is to be held at a place, then the list shall be produced and kept at the time and place of the meeting during the whole time thereof, and may be examined by any stockholder who is present. If the meeting is to be held solely by means of remote communication, then the list shall also be open to the examination of any stockholder during the whole time of the meeting on a reasonably accessible electronic network, and the information required to access such list shall be provided with the notice of the meeting.

## ARTICLE II — DIRECTORS

2.1 ***Powers***. The business and affairs of the Company shall be managed by or under the direction of the Board, except as may be otherwise provided in the DGCL or the certificate of incorporation.

2.2 ***Number of Directors***. The Board shall consist of one or more members, each of whom shall be a natural person. Unless the certificate of incorporation fixes the number of directors, the number of directors shall be determined from time to time by resolution of the Board. No reduction of the authorized number of directors shall have the effect of removing any director before that director's term of office expires.

2.3 ***Election, Qualification and Term of Office of Directors***. Except as provided in **section 2.4** of these bylaws, and subject to **sections 1.2** and **1.9** of these bylaws, directors shall be elected at each annual meeting of stockholders. Directors need not be stockholders unless so required by the certificate of incorporation or these bylaws. The certificate of incorporation or these bylaws may prescribe other qualifications for directors. Each director shall hold office until such director's successor is elected and qualified or until such director's earlier death, resignation or removal.

2.4 ***Resignation and Vacancies***. Any director may resign at any time upon notice given in writing or by electronic transmission to the Company. A resignation is effective when the resignation is delivered unless the resignation specifies a later effective date or an effective date determined upon the happening of an event or events. A resignation which is conditioned upon the director failing to receive a specified vote for reelection as a director may provide that it is irrevocable. Unless otherwise provided in the certificate of incorporation or these bylaws, when one or more directors resign from the Board, effective at a future date, a majority of the directors then in office, including those who have so resigned, shall have power to fill such vacancy or vacancies, the vote thereon to take effect when such resignation or resignations shall become effective.

Unless otherwise provided in the certificate of incorporation or these bylaws:

(i) Vacancies and newly created directorships resulting from any increase in the authorized number of directors elected by all of the stockholders having the right to vote as a single class may be filled by a majority of the directors then in office, although less than a quorum, or by a sole remaining director.

(ii) Whenever the holders of any class or classes of stock or series thereof are entitled to elect one or more directors by the provisions of the certificate of incorporation, vacancies and newly created directorships of such class or classes or series may be filled by a majority of the directors elected by such class or classes or series thereof then in office, or by a sole remaining director so elected.

If at any time, by reason of death or resignation or other cause, the Company should have no directors in office, then any officer or any stockholder or an executor, administrator, trustee or guardian of a stockholder, or other fiduciary entrusted with like responsibility for the person or estate of a stockholder, may call a special meeting of stockholders in accordance with the provisions of the certificate of incorporation or these bylaws, or may apply to the Court of Chancery for a decree summarily ordering an election as provided in Section 211 of the DGCL.

If, at the time of filling any vacancy or any newly created directorship, the directors then in office constitute less than a majority of the whole Board (as constituted immediately prior to any such increase), the Court of Chancery may, upon application of any stockholder or stockholders holding at least 10% of the voting stock at the time outstanding having the right to vote for such directors, summarily order an election to be held to fill any such vacancies or newly created directorships, or to replace the directors chosen by the directors then in office as aforesaid, which election shall be governed by the provisions of Section 211 of the DGCL as far as applicable.

A director elected to fill a vacancy shall be elected for the unexpired term of his or her predecessor in office and until such director’s successor is elected and qualified, or until such director’s earlier death, resignation or removal.

2.5 ***Place of Meetings; Meetings by Telephone***. The Board may hold meetings, both regular and special, either within or outside the State of Delaware.

Unless otherwise restricted by the certificate of incorporation or these bylaws, members of the Board, or any committee designated by the Board, may participate in a meeting of the Board, or any committee, by means of conference telephone or other communications equipment by means of which all persons participating in the meeting can hear each other, and such participation in a meeting shall constitute presence in person at the meeting.

2.6 ***Conduct of Business***. Meetings of the Board shall be presided over by the Chairperson of the Board, if any, or in his or her absence by the Vice Chairperson of the Board, if any, or in the absence of the foregoing persons by a chairperson designated by the Board, or in the absence of such designation by a chairperson chosen at the meeting. The Secretary shall act as secretary of the meeting, but in his or her absence the chairperson of the meeting may appoint any person to act as secretary of the meeting.

2.7 ***Regular Meetings***. Regular meetings of the Board may be held without notice at such time and at such place as shall from time to time be determined by the Board.

2.8 ***Special Meetings; Notice***. Special meetings of the Board for any purpose or purposes may be called at any time by the Chairperson of the Board, the Chief Executive Officer, the President, the Secretary or any two directors.

Notice of the time and place of special meetings shall be:

(i) delivered personally by hand, by courier or by telephone;

(ii) sent by United States first-class mail, postage prepaid;

(iii) sent by facsimile; or

(iv) sent by electronic mail,

directed to each director at that director's address, telephone number, facsimile number or electronic mail address, as the case may be, as shown on the Company's records.

If the notice is (i) delivered personally by hand, by courier or by telephone, (ii) sent by facsimile or (iii) sent by electronic mail, it shall be delivered or sent at least 24 hours before the time of the holding of the meeting. If the notice is sent by United States mail, it shall be deposited in the United States mail at least four days before the time of the holding of the meeting. Any oral notice may be communicated to the director. The notice need not specify the place of the meeting (if the meeting is to be held at the Company's principal executive office) nor the purpose of the meeting.

2.9 ***Quorum; Voting***. At all meetings of the Board, a majority of the total authorized number of directors shall constitute a quorum for the transaction of business. If a quorum is not present at any meeting of the Board, then the directors present thereat may adjourn the meeting from time to time, without notice other than announcement at the meeting, until a quorum is present. A meeting at which a quorum is initially present may continue to transact business notwithstanding the withdrawal of directors, if any action taken is approved by at least a majority of the required quorum for that meeting.

The vote of a majority of the directors present at any meeting at which a quorum is present shall be the act of the Board, except as may be otherwise specifically provided by statute, the certificate of incorporation or these bylaws.

If the certificate of incorporation provides that one or more directors shall have more or less than one vote per director on any matter, every reference in these bylaws to a majority or other proportion of the directors shall refer to a majority or other proportion of the votes of the directors.

2.10 ***Board Action by Written Consent Without a Meeting***. Unless otherwise restricted by the certificate of incorporation or these bylaws, any action required or permitted to be taken at any meeting of the Board, or of any committee thereof, may be taken without a meeting if all members of the Board or committee, as the case may be, consent thereto in writing or by electronic transmission and the writing or writings or electronic transmission or transmissions are filed with the minutes of proceedings of the Board or committee. Such filing shall be in paper form if the minutes are maintained in paper form and shall be in electronic form if the minutes are maintained in electronic form.

2.11 ***Fees and Compensation of Directors***. Unless otherwise restricted by the certificate of incorporation or these bylaws, the Board shall have the authority to fix the compensation of directors.

2.12 ***Removal of Directors***. Unless otherwise restricted by statute, the certificate of incorporation or these bylaws, any director or the entire Board may be removed, with or without cause, by the holders of a majority of the shares then entitled to vote at an election of directors.

No reduction of the authorized number of directors shall have the effect of removing any director prior to the expiration of such director's term of office.

## ARTICLE III — COMMITTEES

3.1 ***Committees of Directors***. The Board may designate one or more committees, each committee to consist of one or more of the directors of the Company. The Board may designate one or more directors as alternate members of any committee, who may replace any absent or disqualified member at any meeting of the committee. In the absence or disqualification of a member of a committee, the member or members thereof present at any meeting and not disqualified from voting, whether or not such member or members constitute a quorum, may unanimously appoint another member of the Board to act at the meeting in the place of any such absent or disqualified member. Any such committee, to the extent provided in the resolution of the Board or in these bylaws, shall have and may exercise all the powers and authority of the Board in the management of the business and affairs of the Company, and may authorize the seal of the Company to be affixed to all papers that may require it; but no such committee shall have the power or authority to (i) approve or adopt, or recommend to the stockholders, any action or matter (other than the election or removal of directors) expressly required by the DGCL to be submitted to stockholders for approval, or (ii) adopt, amend or repeal any bylaw of the Company.

3.2 ***Committee Minutes***. Each committee shall keep regular minutes of its meetings and report the same to the Board when required.

3.3 ***Meetings and Actions of Committees***. Meetings and actions of committees shall be governed by, and held and taken in accordance with, the provisions of:

(i) **section 2.5** (Place of Meetings; Meetings by Telephone);

(ii) **section 2.7** (Regular Meetings);

(iii) **section 2.8** (Special Meetings; Notice);

(iv) **section 2.9** (Quorum; Voting);

(v) **section 2.10** (Board Action by Written Consent Without a Meeting); and

(vi) **section 7.5** (Waiver of Notice)

with such changes in the context of those bylaws as are necessary to substitute the committee and its members for the Board and its members. *However*:

(i) the time of regular meetings of committees may be determined either by resolution of the Board or by resolution of the committee;

(ii) special meetings of committees may also be called by resolution of the Board; and

(iii) notice of special meetings of committees shall also be given to all alternate members, who shall have the right to attend all meetings of the committee. The Board may adopt rules for the government of any committee not inconsistent with the provisions of these bylaws.

Any provision in the certificate of incorporation providing that one or more directors shall have more or less than one vote per director on any matter shall apply to voting in any committee or subcommittee, unless otherwise provided in the certificate of incorporation or these bylaws.

3.4 ***Subcommittees***. Unless otherwise provided in the certificate of incorporation, these bylaws or the resolutions of the Board designating the committee, a committee may create one or more subcommittees, each subcommittee to consist of one or more members of the committee, and delegate to a subcommittee any or all of the powers and authority of the committee.

## ARTICLE IV — OFFICERS

4.1 ***Officers***. The officers of the Company shall be a President and a Secretary. The Company may also have, at the discretion of the Board, a Chairperson of the Board, a Vice Chairperson of the Board, a Chief Executive Officer, one or more Vice Presidents, a Chief Financial Officer, a Treasurer, one or more Assistant Treasurers, one or more Assistant Secretaries, and any such other officers as may be appointed in accordance with the provisions of these bylaws. Any number of offices may be held by the same person.

4.2 ***Appointment of Officers***. The Board shall appoint the officers of the Company, except such officers as may be appointed in accordance with the provisions of **section 4.3** of these bylaws.

4.3 ***Subordinate Officers***. The Board may appoint, or empower the Chief Executive Officer or, in the absence of a Chief Executive Officer, the President, to appoint, such other officers and agents as the business of the Company may require. Each of such officers and agents shall hold office for such period, have such authority, and perform such duties as are provided in these bylaws or as the Board may from time to time determine.

4.4 ***Removal and Resignation of Officers***. Any officer may be removed, either with or without cause, by an affirmative vote of the majority of the Board at any regular or special meeting of the Board or, except in the case of an officer chosen by the Board, by any officer upon whom such power of removal may be conferred by the Board.

Any officer may resign at any time by giving written notice to the Company. Any resignation shall take effect at the date of the receipt of that notice or at any later time specified in that notice. Unless otherwise specified in the notice of resignation, the acceptance of the resignation shall not be necessary to make it effective. Any resignation is without prejudice to the rights, if any, of the Company under any contract to which the officer is a party.

4.5 ***Vacancies in Offices***. Any vacancy occurring in any office of the Company shall be filled by the Board or as provided in **section 4.3**.

4.6 ***Representation of Shares of Other Corporations***. Unless otherwise directed by the Board, the President or any other person authorized by the Board or the President is authorized to vote, represent and exercise on behalf of the Company all rights incident to any and all shares of any other corporation or corporations standing in the name of the Company. The authority granted herein may be exercised either by such person directly or by any other person authorized to do so by proxy or power of attorney duly executed by such person having the authority.

4.7 ***Authority and Duties of Officers***. Except as otherwise provided in these bylaws, the officers of the Company shall have such powers and duties in the management of the Company as may be designated from time to time by the Board and, to the extent not so provided, as generally pertain to their respective offices, subject to the control of the Board.

## ARTICLE V — INDEMNIFICATION

5.1 ***Indemnification of Directors and Officers in Third Party Proceedings***. Subject to the other provisions of this **Article V**, the Company shall indemnify, to the fullest extent permitted by the DGCL, as now or hereinafter in effect, any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (a "**Proceeding**") (other than an action by or in the right of the Company) by reason of the fact that such person is or was a director or officer of the Company, or is or was a director or officer of the Company serving at the request of the Company as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by such person in connection with such Proceeding if such person acted in good faith and in a manner such person reasonably believed to be in or not opposed to the best interests of the Company, and, with respect to any criminal action or proceeding, had no reasonable cause to believe such person's conduct was unlawful. The termination of any Proceeding by judgment, order, settlement, conviction, or upon a plea of *nolo contendere* or its equivalent, shall not, of itself, create a presumption that the person did not act in good faith and in a manner which such person reasonably believed to be in or not opposed to the best interests of the Company, and, with respect to any criminal action or proceeding, had reasonable cause to believe that such person's conduct was unlawful.

5.2 ***Indemnification of Directors and Officers in Actions by or in the Right of the Company***. Subject to the other provisions of this **Article V**, the Company shall indemnify, to the fullest extent permitted by the DGCL, as now or hereinafter in effect, any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action or suit by or in the right of the Company to procure a judgment in its favor by reason of the fact that such person is or was a director or officer of the Company, or is or was a director or officer of the Company serving at the request of the Company as a director, officer,

employee or agent of another corporation, partnership, joint venture, trust or other enterprise against expenses (including attorneys' fees) actually and reasonably incurred by such person in connection with the defense or settlement of such action or suit if such person acted in good faith and in a manner such person reasonably believed to be in or not opposed to the best interests of the Company; except that no indemnification shall be made in respect of any claim, issue or matter as to which such person shall have been adjudged to be liable to the Company unless and only to the extent that the Court of Chancery or the court in which such action or suit was brought shall determine upon application that, despite the adjudication of liability but in view of all the circumstances of the case, such person is fairly and reasonably entitled to indemnity for such expenses which the Court of Chancery or such other court shall deem proper.

5.3 ***Successful Defense***. To the extent that a present or former director or officer of the Company has been successful on the merits or otherwise in defense of any action, suit or proceeding described in **section 5.1** or **section 5.2**, or in defense of any claim, issue or matter therein, such person shall be indemnified against expenses (including attorneys' fees) actually and reasonably incurred by such person in connection therewith.

5.4 ***Indemnification of Others***. Subject to the other provisions of this **Article V**, the Company shall have power to indemnify its employees and agents to the extent not prohibited by the DGCL or other applicable law. The Board shall have the power to delegate to such person or persons the determination of whether employees or agents shall be indemnified.

5.5 ***Advanced Payment of Expenses***. Expenses (including attorneys' fees) incurred by an officer or director of the Company in defending any Proceeding shall be paid by the Company in advance of the final disposition of such Proceeding upon receipt of a written request therefor (together with documentation reasonably evidencing such expenses) and an undertaking by or on behalf of the person to repay such amounts if it shall ultimately be determined that the person is not entitled to be indemnified under this **Article V** or the DGCL. Such expenses (including attorneys' fees) incurred by former directors and officers or other employees and agents of the Company or by persons serving at the request of the Company as directors, officers, employees or agents of another corporation, partnership, joint venture, trust or other enterprise may be so paid upon such terms and conditions, if any, as the Company deems appropriate. The right to advancement of expenses shall not apply to any Proceeding for which indemnity is excluded pursuant to these bylaws, but shall apply to any Proceeding referenced in **section 5.6(ii)** or **5.6(iii)** prior to a determination that the person is not entitled to be indemnified by the Company.

Notwithstanding the foregoing, unless otherwise determined pursuant to **section 5.8**, no advance shall be made by the Company to an officer of the Company (except by reason of the fact that such officer is or was a director of the Company, in which event this paragraph shall not apply) in any Proceeding if a determination is reasonably and promptly made (i) by a majority vote of the directors who are not parties to such Proceeding, even though less than a quorum, or (ii) by a committee of such directors designated by majority vote of such directors, even though less than a quorum, or (iii) if there are no such directors, or if such directors so direct, by independent legal counsel in a written opinion, that facts known to the decision-making party at the time such determination is made demonstrate clearly and convincingly that such person acted in bad faith or in a manner that such person did not believe to be in or not opposed to the best interests of the Company.

5.6 ***Limitation on Indemnification***. Subject to the requirements in **section 5.3** and the DGCL, the Company shall not be obligated to indemnify any person pursuant to this **Article V** in connection with any Proceeding (or any part of any Proceeding):

(i) for which payment has actually been made to or on behalf of such person under any statute, insurance policy, indemnity provision, vote or otherwise, except with respect to any excess beyond the amount paid;

(ii) for an accounting or disgorgement of profits pursuant to Section 16(b) of the Securities Exchange Act of 1934, as amended, or similar provisions of federal, state or local statutory law or common law, if such person is held liable therefor (including pursuant to any settlement arrangements);

(iii) for any reimbursement of the Company by such person of any bonus or other incentive-based or equity-based compensation or of any profits realized by such person from the sale of securities of the Company, as required in each case under the Securities Exchange Act of 1934, as amended (including any such reimbursements that arise from an accounting restatement of the Company pursuant to Section 304 of the Sarbanes-Oxley Act of 2002 (the "**Sarbanes-Oxley Act**"), or the payment to the Company of profits arising from the purchase and sale by such person of securities in violation of Section 306 of the Sarbanes-Oxley Act), if such person is held liable therefor (including pursuant to any settlement arrangements);

(iv) initiated by such person, including any Proceeding (or any part of any Proceeding) initiated by such person against the Company or its directors, officers, employees, agents or other indemnitees, unless (a) the Board authorized the Proceeding (or the relevant part of the Proceeding) prior to its initiation, (b) the Company provides the indemnification, in its sole discretion, pursuant to the powers vested in the Company under applicable law, (c) otherwise required to be made under **section 5.7** or (d) otherwise required by applicable law; or

(v) if prohibited by applicable law.

5.7 ***Determination; Claim***. If a claim for indemnification or advancement of expenses under this **Article V** is not paid by the Company or on its behalf within 90 days after receipt by the Company of a written request therefor, the claimant shall be entitled to an adjudication by a court of competent jurisdiction of his or her entitlement to such indemnification or advancement of expenses. To the extent not prohibited by law, the Company shall indemnify such person against all expenses actually and reasonably incurred by such person in connection with any action for indemnification or advancement of expenses from the Company under this **Article V**, to the extent such person is successful in such action, and, if requested by such person, shall advance such expenses to such person, subject to the provisions of **section 5.5**. In any such suit, the Company shall, to the fullest extent not prohibited by law, have the burden of proving that the claimant is not entitled to the requested indemnification or advancement of expenses.

5.8 ***Non-Exclusivity of Rights***. The indemnification and advancement of expenses provided by, or granted pursuant to, this **Article V** shall not be deemed exclusive of any other rights to which those seeking indemnification or advancement of expenses may be entitled under the certificate of incorporation or any statute, bylaw, agreement, vote of stockholders or disinterested directors or otherwise, both as to action in such person's official capacity and as to action in another capacity while holding such office. The Company is specifically authorized to enter into individual contracts with any or all of its directors, officers, employees or agents respecting indemnification and advancement of expenses, to the fullest extent not prohibited by the DGCL or other applicable law.

5.9 ***Insurance***. The Company may purchase and maintain insurance on behalf of any person who is or was a director, officer, employee or agent of the Company, or is or was serving at the request of the Company as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise against any liability asserted against such person and incurred by such person in any such capacity, or arising out of such person's status as such, whether or not the Company would have the power to indemnify such person against such liability under the provisions of the DGCL.

5.10 ***Survival***. The rights to indemnification and advancement of expenses conferred by this **Article V** shall continue as to a person who has ceased to be a director, officer, employee or agent and shall inure to the benefit of the heirs, executors and administrators of such a person.

5.11 ***Effect of Repeal or Modification***. A right to indemnification or to advancement of expenses arising under a provision of the certificate of incorporation or a bylaw shall not be eliminated or impaired by an amendment to the certificate of incorporation or these bylaws after the occurrence of the act or omission that is the subject of the civil, criminal, administrative or investigative action, suit or proceeding for which indemnification or advancement of expenses is sought, unless the provision in effect at the time of such act or omission explicitly authorizes such elimination or impairment after such action or omission has occurred.

5.12 ***Certain Definitions***. For purposes of this **Article V**, references to the "**Company**" shall include, in addition to the resulting corporation, any constituent corporation (including any constituent of a constituent) absorbed in a consolidation or merger which, if its separate existence had continued, would have had power and authority to indemnify its directors, officers, employees or agents, so that any person who is or was a director, officer, employee or agent of such constituent corporation, or is or was serving at the request of such constituent corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, shall stand in the same position under the provisions of this **Article V** with respect to the resulting or surviving corporation as such person would have with respect to such constituent corporation if its separate existence had continued. For purposes of this **Article V**, references to "**other enterprises**" shall include employee benefit plans; references to "**fines**" shall include any excise taxes assessed on a person with respect to an employee benefit plan; and references to "**serving at the request of the Company**" shall include any service as a director, officer, employee or agent of the Company which imposes duties on, or involves services by, such director, officer, employee or agent with respect to an employee benefit plan, its participants or beneficiaries; and a person who acted in good faith and in a manner such person reasonably believed to be in the interest of the participants and beneficiaries of an employee benefit plan shall be deemed to have acted in a manner "**not opposed to the best interests of the Company**" as referred to in this **Article V**.

## ARTICLE VI — STOCK

6.1 ***Stock Certificates; Partly Paid Shares***. The shares of the Company shall be represented by certificates, *provided* that the Board may provide by resolution or resolutions that some or all of any or all classes or series of its stock shall be uncertificated shares. Any such resolution shall not apply to shares represented by a certificate until such certificate is surrendered to the Company. Every holder of stock represented by certificates shall be entitled to have a certificate signed by, or in the name of the Company by the Chairperson of the Board or Vice-Chairperson of the Board, or the President or a Vice-President, and by the Treasurer or an Assistant Treasurer, or the Secretary or an Assistant Secretary of the Company representing the number of shares registered in certificate form. Any or all of the signatures on the certificate may be a facsimile. In case any officer, transfer agent or registrar who has signed or whose facsimile signature has been placed upon a certificate has ceased to be such officer, transfer agent or registrar before such certificate is issued, it may be issued by the Company with the same effect as if such person were such officer, transfer agent or registrar at the date of issue. The Company shall not have power to issue a certificate in bearer form.

The Company may issue the whole or any part of its shares as partly paid and subject to call for the remainder of the consideration to be paid therefor. Upon the face or back of each stock certificate issued to represent any such partly paid shares, or upon the books and records of the Company in the case of uncertificated partly paid shares, the total amount of the consideration to be paid therefor and the amount paid thereon shall be stated. Upon the declaration of any dividend on fully paid shares, the Company shall declare a dividend upon partly paid shares of the same class, but only upon the basis of the percentage of the consideration actually paid thereon.

6.2 ***Special Designation on Certificates***. If the Company is authorized to issue more than one class of stock or more than one series of any class, then the powers, the designations, the preferences, and the relative, participating, optional or other special rights of each class of stock or series thereof and the qualifications, limitations or restrictions of such preferences and/or rights shall be set forth in full or summarized on the face or back of the certificate that the Company shall issue to represent such class or series of stock; *provided* that, except as otherwise provided in Section 202 of the DGCL, in lieu of the foregoing requirements there may be set forth on the face or back of the certificate that the Company shall issue to represent such class or series of stock, a statement that the Company will furnish without charge to each stockholder who so requests the powers, designations, preferences and relative, participating, optional or other special rights of each class of stock or series thereof and the qualifications, limitations or restrictions of such preferences and/or rights. Within a reasonable time after the issuance or transfer of uncertificated stock, the Company shall send to the registered owner thereof a written notice containing the information required to be set forth or stated on certificates pursuant to this section 6.2 or Sections 156, 202(a) or 218(a) of the DGCL or with respect to this section 6.2 a statement that the Company will furnish without charge to each stockholder who so requests the powers, designations, preferences and relative, participating, optional or other special rights of each class of stock or series thereof and the qualifications, limitations or restrictions of such preferences and/or rights. Except as otherwise expressly provided by law, the rights and obligations of the holders of uncertificated stock and the rights and obligations of the holders of certificates representing stock of the same class and series shall be identical.

6.3 ***Lost Certificates***. Except as provided in this **section 6.3**, no new certificates for shares shall be issued to replace a previously issued certificate unless the latter is surrendered to the Company and cancelled at the same time. The Company may issue a new certificate of stock or uncertificated shares in the place of any certificate theretofore issued by it, alleged to have been lost, stolen or destroyed, and the Company may require the owner of the lost, stolen or destroyed certificate, or such owner's legal representative, to give the Company a bond sufficient to indemnify it against any claim that may be made against it on account of the alleged loss, theft or destruction of any such certificate or the issuance of such new certificate or uncertificated shares.

6.4 ***Dividends***. The Board, subject to any restrictions contained in the certificate of incorporation or applicable law, may declare and pay dividends upon the shares of the Company's capital stock. Dividends may be paid in cash, in property, or in shares of the Company's capital stock, subject to the provisions of the certificate of incorporation.

The Board may set apart out of any of the funds of the Company available for dividends a reserve or reserves for any proper purpose and may abolish any such reserve.

6.5 ***Stock Transfer Agreements***. The Company shall have power to enter into and perform any agreement with any number of stockholders of any one or more classes of stock of the Company to restrict the transfer of shares of stock of the Company of any one or more classes owned by such stockholders in any manner not prohibited by the DGCL.

6.6 ***Registered Stockholders***. The Company:

(i) shall be entitled to recognize the exclusive right of a person registered on its books as the owner of shares to receive dividends and to vote as such owner;

(ii) shall be entitled to hold liable for calls and assessments the person registered on its books as the owner of shares; and

(iii) shall not be bound to recognize any equitable or other claim to or interest in such share or shares on the part of another person, whether or not it shall have express or other notice thereof, except as otherwise provided by the laws of Delaware.

6.7 ***Transfers***. Transfers of record of shares of stock of the Company shall be made only upon its books by the holders thereof, in person or by an attorney duly authorized, and, if such stock is certificated, upon the surrender of a certificate or certificates for a like number of shares, properly endorsed or accompanied by proper evidence of succession, assignation or authority to transfer.

## ARTICLE VII — MANNER OF GIVING NOTICE AND WAIVER

7.1 ***Notice of Stockholder Meetings***. Notice of any meeting of stockholders, if mailed, is given when deposited in the United States mail, postage prepaid, directed to the stockholder at such stockholder's address as it appears on the Company's records. An affidavit of the Secretary or an Assistant Secretary of the Company or of the transfer agent or other agent of the Company that the notice has been given shall, in the absence of fraud, be *prima facie* evidence of the facts stated therein.

7.2 ***Notice by Electronic Transmission***. Without limiting the manner by which notice otherwise may be given effectively to stockholders pursuant to the DGCL, the certificate of incorporation or these bylaws, any notice to stockholders given by the Company under any provision of the DGCL, the certificate of incorporation or these bylaws shall be effective if given by a form of electronic transmission consented to by the stockholder to whom the notice is given. Any such consent shall be revocable by the stockholder by written notice to the Company. Any such consent shall be deemed revoked if:

(i) the Company is unable to deliver by electronic transmission two consecutive notices given by the Company in accordance with such consent; and

(ii) such inability becomes known to the Secretary or an Assistant Secretary of the Company or to the transfer agent, or other person responsible for the giving of notice.

However, the inadvertent failure to treat such inability as a revocation shall not invalidate any meeting or other action.

Any notice given pursuant to the preceding paragraph shall be deemed given:

(i) if by facsimile telecommunication, when directed to a number at which the stockholder has consented to receive notice;

(ii) if by electronic mail, when directed to an electronic mail address at which the stockholder has consented to receive notice;

(iii) if by a posting on an electronic network together with separate notice to the stockholder of such specific posting, upon the later of (A) such posting and (B) the giving of such separate notice; and

(iv) if by any other form of electronic transmission, when directed to the stockholder.

An affidavit of the Secretary or an Assistant Secretary or of the transfer agent or other agent of the Company that the notice has been given by a form of electronic transmission shall, in the absence of fraud, be *prima facie* evidence of the facts stated therein.

An "**electronic transmission**" means any form of communication, not directly involving the physical transmission of paper, that creates a record that may be retained, retrieved, and reviewed by a recipient thereof, and that may be directly reproduced in paper form by such a recipient through an automated process.

Notice by a form of electronic transmission shall not apply to Sections 164, 296, 311, 312 or 324 of the DGCL.

7.3 ***Notice to Stockholders Sharing an Address***. Except as otherwise prohibited under the DGCL, without limiting the manner by which notice otherwise may be given effectively to stockholders, any notice to stockholders given by the Company under the provisions of the DGCL, the certificate of incorporation or these bylaws shall be effective if given by a single written notice to stockholders who share an address if consented to by the stockholders at that address to whom such notice is given. Any such consent shall be revocable by the stockholder by written notice to the Company. Any stockholder who fails to object in writing to the Company, within 60 days of having been given written notice by the Company of its intention to send the single notice, shall be deemed to have consented to receiving such single written notice.

7.4 ***Notice to Person with Whom Communication is Unlawful***. Whenever notice is required to be given, under the DGCL, the certificate of incorporation or these bylaws, to any person with whom communication is unlawful, the giving of such notice to such person shall not be required and there shall be no duty to apply to any governmental authority or agency for a license or permit to give such notice to such person. Any action or meeting which shall be taken or held without notice to any such person with whom communication is unlawful shall have the same force and effect as if such notice had been duly given. In the event that the action taken by the Company is such as to require the filing of a certificate under the DGCL, the certificate shall state, if such is the fact and if notice is required, that notice was given to all persons entitled to receive notice except such persons with whom communication is unlawful.

7.5 ***Waiver of Notice***. Whenever notice is required to be given under any provision of the DGCL, the certificate of incorporation or these bylaws, a written waiver, signed by the person entitled to notice, or a waiver by electronic transmission by the person entitled to notice, whether before or after the time of the event for which notice is to be given, shall be deemed equivalent to notice. Attendance of a person at a meeting shall constitute a waiver of notice of such meeting, except when the person attends a meeting for the

express purpose of objecting at the beginning of the meeting, to the transaction of any business because the meeting is not lawfully called or convened. Neither the business to be transacted at, nor the purpose of, any regular or special meeting of the stockholders need be specified in any written waiver of notice or any waiver by electronic transmission unless so required by the certificate of incorporation or these bylaws.

## ARTICLE VIII — GENERAL MATTERS

8.1 ***Fiscal Year***. The fiscal year of the Company shall be fixed by resolution of the Board and may be changed by the Board.

8.2 ***Seal***. The Company may adopt a corporate seal, which shall be in such form as may be approved from time to time by the Board. The Company may use the corporate seal by causing it or a facsimile thereof to be impressed or affixed or in any other manner reproduced.

8.3 ***Annual Report***. The Company shall cause an annual report to be sent to the stockholders of the Company to the extent required by applicable law. If and so long as there are fewer than 100 holders of record of the Company's shares, the requirement of sending an annual report to the stockholders of the Company is expressly waived (to the extent permitted under applicable law).

8.4 ***Construction; Definitions***. Unless the context requires otherwise, the general provisions, rules of construction, and definitions in the DGCL shall govern the construction of these bylaws. Without limiting the generality of this provision, the singular number includes the plural, the plural number includes the singular, and the term "person" includes both a corporation and a natural person.

8.5 ***Conflict with Applicable Law, Certificate of Incorporation or Amended and Restated Voting Agreement.*** These bylaws are adopted subject to any applicable law, the certificate of incorporation or the Amended and Restated Voting Agreement dated as of May 29, 2018, as may be amended or restated and in effect from time to time (the "Voting Agreement"). Whenever these bylaws may conflict with any applicable law, the certificate of incorporation or the Voting Agreement, such conflict shall be resolved in favor of such law, the certificate of incorporation or Voting Agreement.

## ARTICLE IX — AMENDMENTS

These bylaws may be adopted, amended or repealed by the stockholders entitled to vote. However, the Company may, in its certificate of incorporation, confer the power to adopt, amend or repeal bylaws upon the directors. The fact that such power has been so conferred upon the directors shall not divest the stockholders of the power, nor limit their power to adopt, amend or repeal bylaws.

A bylaw amendment adopted by stockholders which specifies the votes that shall be necessary for the election of directors shall not be further amended or repealed by the Board.

**Exhibit 10.2**

**SUTROVAX, INC.**

**2014 EQUITY INCENTIVE PLAN**

As amended, March 21, 2014
As amended, April 24, 2015
As amended, July 9, 2015
As amended, January 31, 2017
As amended, March 2, 2017
As amended and restated, May 24, 2018

1. Purposes of the Plan. The purposes of this Plan are:

- to attract and retain the best available personnel for positions of substantial responsibility,
- to provide additional incentive to Employees, Directors and Consultants, and
- to promote the success of the Company's business.

The Plan permits the grant of Incentive Stock Options, Nonstatutory Stock Options, Stock Appreciation Rights, Restricted Stock and Restricted Stock Units.

2. Definitions. As used herein, the following definitions will apply:

(a) "Administrator" means the Board or any of its Committees as will be administering the Plan, in accordance with Section 4 of the Plan.

(b) "Applicable Laws" means the requirements relating to the administration of equity-based awards under U.S. state corporate laws, U.S. federal and state securities laws, the Code, any stock exchange or quotation system on which the Common Stock is listed or quoted and the applicable laws of any foreign country or jurisdiction where Awards are, or will be, granted under the Plan.

(c) "Award" means, individually or collectively, a grant under the Plan of Options, Stock Appreciation Rights, Restricted Stock, or Restricted Stock Units.

(d) "Award Agreement" means the written or electronic agreement setting forth the terms and provisions applicable to each Award granted under the Plan. The Award Agreement is subject to the terms and conditions of the Plan.

(e) "Board" means the Board of Directors of the Company.

(f) Change in Control" means the occurrence of any of the following events:

(i) Change in Ownership of the Company. A change in the ownership of the Company which occurs on the date that any one person, or more than one person acting as a group ("Person"), acquires ownership of the stock of the Company that, together with the stock held by such Person, constitutes more than 50% of the total voting power of the stock of the Company, except that any change in the ownership of the stock of the Company as a result of a private financing of the Company that is approved by the Board will not be considered a Change in Control; or

(ii) Change in Effective Control of the Company. If the Company has a class of securities registered pursuant to Section 12 of the Exchange Act, a change in the effective control of the Company which occurs on the date that a majority of members of the Board is replaced during any twelve (12) month period by Directors whose appointment or election is not endorsed by a majority of the members of the Board prior to the date of the appointment or election. For purposes of this clause (ii), if any Person is considered to be in effective control of the Company, the acquisition of additional control of the Company by the same Person will not be considered a Change in Control; or

(iii) Change in Ownership of a Substantial Portion of the Company's Assets. A change in the ownership of a substantial portion of the Company's assets which occurs on the date that any Person acquires (or has acquired during the twelve (12) month period ending on the date of the most recent acquisition by such person or persons) assets from the Company that have a total gross fair market value equal to or more than 50% of the total gross fair market value of all of the assets of the Company immediately prior to such acquisition or acquisitions. For purposes of this subsection (iii), gross fair market value means the value of the assets of the Company, or the value of the assets being disposed of, determined without regard to any liabilities associated with such assets.

For purposes of this Section 2(f), persons will be considered to be acting as a group if they are owners of a corporation that enters into a merger, consolidation, purchase or acquisition of stock, or similar business transaction with the Company.

Notwithstanding the foregoing, a transaction will not be deemed a Change in Control unless the transaction qualifies as a change in control event within the meaning of Code Section 409A, as it has been and may be amended from time to time, and any proposed or final Treasury Regulations and Internal Revenue Service guidance that has been promulgated or may be promulgated thereunder from time to time.

Further and for the avoidance of doubt, a transaction will not constitute a Change in Control if: (i) its sole purpose is to change the jurisdiction of the Company's incorporation, or (ii) its sole purpose is to create a holding company that will be owned in substantially the same proportions by the persons who held the Company's securities immediately before such transaction.

(g) "Code" means the Internal Revenue Code of 1986, as amended. Any reference to a section of the Code herein will be a reference to any successor or amended section of the Code.

(h) "Committee" means a committee of Directors or of other individuals satisfying Applicable Laws appointed by the Board, or by the compensation committee of the Board, in accordance with Section 4 hereof.

(i) "Common Stock" means the common stock of the Company.

(j) "Company" means SutroVax, Inc., a Delaware corporation, or any successor thereto.

(k) Consultant" means any natural person, including an advisor, engaged by the Company or a Parent or Subsidiary to render bona fide services to such entity, provided the services (i) are not in connection with the offer or sale of securities in a capital-raising transaction, and (ii) do not directly promote or maintain a market for the Company's securities.

(l) "Director" means a member of the Board.

(m) "Disability" means total and permanent disability as defined in Code Section 22(e)(3), provided that in the case of Awards other than Incentive Stock Options, the Administrator in its discretion may determine whether a permanent and total disability exists in accordance with uniform and non-discriminatory standards adopted by the Administrator from time to time.

(n) "Employee" means any person, including officers and Directors, employed by the Company or any Parent or Subsidiary of the Company. Neither service as a Director nor payment of a director's fee by the Company will be sufficient to constitute "employment" by the Company.

(o) "Exchange Act" means the Securities Exchange Act of 1934, as amended.

(p) "Exchange Program" means a program under which (i) outstanding Awards are surrendered or cancelled in exchange for Awards of the same type (which may have higher or lower exercise prices and different terms), Awards of a different type, and/or cash, (ii) Participants would have the opportunity to transfer any outstanding Awards to a financial institution or other person or entity selected by the Administrator, and/or (iii) the exercise price of an outstanding Award is reduced or increased. The Administrator will determine the terms and conditions of any Exchange Program in its sole discretion.

(q) "Fair Market Value" means, as of any date, the value of Common Stock determined as follows:

(i) If the Common Stock is listed on any established stock exchange or a national market system, including without limitation the Nasdaq Global Select Market, the Nasdaq Global Market or the Nasdaq Capital Market of The Nasdaq Stock Market, its Fair Market Value will be the closing sales price for such stock (or the closing bid, if no sales were reported) as quoted on such exchange or system on the day of determination, as reported in *The Wall Street Journal* or such other source as the Administrator deems reliable;

(ii) If the Common Stock is regularly quoted by a recognized securities dealer but selling prices are not reported, the Fair Market Value of a Share will be the mean between the high bid and low asked prices for the Common Stock on the day of determination (or, if no bids and asks were reported on that date, as applicable, on the last trading date such bids and asks were reported), as reported in *The Wall Street Journal* or such other source as the Administrator deems reliable; or

(iii) In the absence of an established market for the Common Stock, the Fair Market Value will be determined in good faith by the Administrator.

(r) "Incentive Stock Option" means an Option that by its terms qualifies and is otherwise intended to qualify as an incentive stock option within the meaning of Code Section 422 and the regulations promulgated thereunder.

(s) "Nonstatutory Stock Option" means an Option that by its terms does not qualify or is not intended to qualify as an Incentive Stock Option.

(t) "Option" means a stock option granted pursuant to the Plan.

(u) "Parent" means a "parent corporation," whether now or hereafter existing, as defined in Code Section 424(e).

(v) "Participant" means the holder of an outstanding Award.

(w) "Period of Restriction" means the period during which the transfer of Shares of Restricted Stock are subject to restrictions and therefore, the Shares are subject to a substantial risk of forfeiture. Such restrictions may be based on the passage of time, the achievement of target levels of performance, or the occurrence of other events as determined by the Administrator.

(x) "Plan" means this 2014 Equity Incentive Plan.

(y) "Restricted Stock" means Shares issued pursuant to an Award of Restricted Stock under Section 8 of the Plan, or issued pursuant to the early exercise of an Option.

(z) "Restricted Stock Unit" means a bookkeeping entry representing an amount equal to the Fair Market Value of one Share, granted pursuant to Section 9. Each Restricted Stock Unit represents an unfunded and unsecured obligation of the Company.

(aa) "Service Provider" means an Employee, Director or Consultant.

(bb) "Share" means a share of the Common Stock, as adjusted in accordance with Section 13 of the Plan.

(cc) "Stock Appreciation Right" means an Award, granted alone or in connection with an Option, that pursuant to Section 7 is designated as a Stock Appreciation Right.

(dd) "Subsidiary" means a "subsidiary corporation," whether now or hereafter existing, as defined in Code Section 424(f).

3. Stock Subject to the Plan.

(a) Stock Subject to the Plan. Subject to the provisions of Section 13 of the Plan, the maximum aggregate number of Shares that may be subject to Awards and sold under the Plan is **7,822,355** Shares. The Shares may be authorized but unissued, or reacquired Common Stock.

(b) Lapsed Awards. If an Award expires or becomes unexercisable without having been exercised in full, is surrendered pursuant to an Exchange Program, or, with respect to Restricted Stock or Restricted Stock Units, is forfeited to or repurchased by the Company due to the failure to vest, the unpurchased Shares (or for Awards other than Options or Stock Appreciation Rights the forfeited or repurchased Shares) which were subject thereto will become available for future grant or sale under the Plan (unless the Plan has terminated). With respect to Stock Appreciation Rights, only Shares actually issued pursuant to a Stock Appreciation Right will cease to be available under the Plan; all remaining Shares under Stock Appreciation Rights will remain available for future grant or sale under the Plan (unless the Plan has terminated). Shares that have actually been issued under the Plan under any Award will not be returned to the Plan and will not become available for future distribution under the Plan; provided, however, that if Shares issued pursuant to Awards of Restricted Stock or Restricted Stock Units are repurchased by the Company or are forfeited to the Company due to the failure to vest, such Shares will become available for future grant under the Plan. Shares used to pay the exercise price of an Award or to satisfy the tax withholding obligations related to an Award will become available for future grant or sale under the Plan. To the extent an Award under the Plan is paid out in cash rather than Shares, such cash payment will not result in reducing the number of Shares available for issuance under the Plan. Notwithstanding the foregoing and, subject to adjustment as provided in Section 13, the maximum number of Shares that may be issued upon the exercise of Incentive Stock Options will equal the aggregate Share number stated in Section 3(a), plus, to the extent allowable under Code Section 422 and the Treasury Regulations promulgated thereunder, any Shares that become available for issuance under the Plan pursuant to Section 3(b).

(c) Share Reserve. The Company, during the term of this Plan, will at all times reserve and keep available such number of Shares as will be sufficient to satisfy the requirements of the Plan.

4. Administration of the Plan.

(a) Procedure.

(i) Multiple Administrative Bodies. Different Committees with respect to different groups of Service Providers may administer the Plan.

(ii) Other Administration. Other than as provided above, the Plan will be administered by (A) the Board or (B) a Committee, which Committee will be constituted to satisfy Applicable Laws.

(b) Powers of the Administrator. Subject to the provisions of the Plan, and in the case of a Committee, subject to the specific duties delegated by the Board to such Committee, the Administrator will have the authority, in its discretion:

(i) to determine the Fair Market Value;

(ii) to select the Service Providers to whom Awards may be granted hereunder;

(iii) to determine the number of Shares to be covered by each Award granted hereunder;

(iv) to approve forms of Award Agreements for use under the Plan;

(v) to determine the terms and conditions, not inconsistent with the terms of the Plan, of any Award granted hereunder. Such terms and conditions include, but are not limited to, the exercise price, the time or times when Awards may be exercised (which may be based on performance criteria), any vesting acceleration or waiver of forfeiture restrictions, and any restriction or limitation regarding any Award or the Shares relating thereto, based in each case on such factors as the Administrator will determine;

(vi) to institute and determine the terms and conditions of an Exchange Program;

(vii) to construe and interpret the terms of the Plan and Awards granted pursuant to the Plan;

(viii) to prescribe, amend and rescind rules and regulations relating to the Plan, including rules and regulations relating to sub-plans established for the purpose of satisfying applicable foreign laws or for qualifying for favorable tax treatment under applicable foreign laws;

(ix) to modify or amend each Award (subject to Section 18(c) of the Plan), including but not limited to the discretionary authority to extend the post-termination exercisability period of Awards and to extend the maximum term of an Option (subject to Section 6(d));

(x) to allow Participants to satisfy withholding tax obligations in a manner prescribed in Section 14;

(xi) to authorize any person to execute on behalf of the Company any instrument required to effect the grant of an Award previously granted by the Administrator;

(xii) to allow a Participant to defer the receipt of the payment of cash or the delivery of Shares that otherwise would be due to such Participant under an Award; and

(xiii) to make all other determinations deemed necessary or advisable for administering the Plan.

(c) Effect of Administrator's Decision. The Administrator's decisions, determinations and interpretations will be final and binding on all Participants and any other holders of Awards.

5. Eligibility. Nonstatutory Stock Options, Stock Appreciation Rights, Restricted Stock, and Restricted Stock Units may be granted to Service Providers. Incentive Stock Options may be granted only to Employees.

6. Stock Options.

(a) Grant of Options. Subject to the terms and provisions of the Plan, the Administrator, at any time and from time to time, may grant Options in such amounts as the Administrator, in its sole discretion, will determine.

(b) Option Agreement. Each Award of an Option will be evidenced by an Award Agreement that will specify the exercise price, the term of the Option, the number of Shares subject to the Option, the exercise restrictions, if any, applicable to the Option, and such other terms and conditions as the Administrator, in its sole discretion, will determine.

(c) Limitations. Each Option will be designated in the Award Agreement as either an Incentive Stock Option or a Nonstatutory Stock Option. Notwithstanding such designation, however, to the extent that the aggregate Fair Market Value of the Shares with respect to which Incentive Stock Options are exercisable for the first time by the Participant during any calendar year (under all plans of the Company and any Parent or Subsidiary) exceeds one hundred thousand dollars ($100,000), such Options will be treated as Nonstatutory Stock Options. For purposes of this Section 6(c), Incentive Stock Options will be taken into account in the order in which they were granted, the Fair Market Value of the Shares will be determined as of the time the Option with respect to such Shares is granted, and calculation will be performed in accordance with Code Section 422 and Treasury Regulations promulgated thereunder.

(d) Term of Option. The term of each Option will be stated in the Award Agreement; provided, however, that the term will be no more than ten (10) years from the date of grant thereof. In the case of an Incentive Stock Option granted to a Participant who, at the time the Incentive Stock Option is granted, owns stock representing more than ten percent (10%) of the total combined voting power of all classes of stock of the Company or any Parent or Subsidiary, the term of the Incentive Stock Option will be five (5) years from the date of grant or such shorter term as may be provided in the Award Agreement.

(e) Option Exercise Price and Consideration.

(i) Exercise Price. The per Share exercise price for the Shares to be issued pursuant to the exercise of an Option will be determined by the Administrator, but will be no less than one hundred percent (100%) of the Fair Market Value per Share on the date of grant. In addition, in the case of an Incentive Stock Option granted to an Employee who owns stock representing more than ten percent (10%) of the voting power of all classes of stock of the Company or any Parent or Subsidiary, the per Share exercise price will be no less than one hundred ten percent (110%) of the Fair Market Value per Share on the date of grant. Notwithstanding the foregoing provisions of this Section 6(e)(i), Options may be granted with a per Share exercise price of less than one hundred percent (100%) of the Fair Market Value per Share on the date of grant pursuant to a transaction described in, and in a manner consistent with, Code Section 424(a).

(ii) Waiting Period and Exercise Dates. At the time an Option is granted, the Administrator will fix the period within which the Option may be exercised and will determine any conditions that must be satisfied before the Option may be exercised.

(iii) Form of Consideration. The Administrator will determine the acceptable form of consideration for exercising an Option, including the method of payment. In the case of an Incentive Stock Option, the Administrator will determine the acceptable form of consideration at the time of grant. Such consideration may consist entirely of: (1) cash; (2) check; (3) promissory note, to the extent permitted by Applicable Laws, (4) other Shares, provided that such Shares have a Fair Market Value on the date of surrender equal to the aggregate exercise price of the Shares as to which such Option will be exercised and provided further that accepting such Shares will not result in any adverse accounting consequences to the Company, as the Administrator determines in its sole discretion; (5) consideration received by the Company under cashless exercise program (whether through a broker or otherwise) implemented by the Company in connection with the Plan; (6) by net exercise, (7) such other consideration and method of payment for the issuance of Shares to the extent permitted by Applicable Laws, or (8) any combination of the foregoing methods of payment. In making its determination as to the type of consideration to accept, the Administrator will consider if acceptance of such consideration may be reasonably expected to benefit the Company.

(f) Exercise of Option.

(i) Procedure for Exercise; Rights as a Stockholder. Any Option granted hereunder will be exercisable according to the terms of the Plan and at such times and under such conditions as determined by the Administrator and set forth in the Award Agreement. An Option may not be exercised for a fraction of a Share.

An Option will be deemed exercised when the Company receives: (i) notice of exercise (in such form as the Administrator may specify from time to time) from the person entitled to exercise the Option, and (ii) full payment for the Shares with respect to which the Option is exercised (together with applicable tax withholding). Full payment may consist of any consideration and method of payment authorized by the Administrator and permitted by the Award Agreement and the Plan. Shares issued upon exercise of an Option will be issued in the name of the Participant or, if requested by the Participant, in the name of the Participant and his or her spouse. Until the Shares are issued (as evidenced by the appropriate entry on the books of the Company or of a duly authorized transfer agent of the Company), no right to vote or receive dividends or any other rights as a stockholder will exist with respect to the Shares subject to an Option, notwithstanding the exercise of the Option. The Company will issue (or cause to be issued) such Shares promptly after the Option is exercised. No adjustment will be made for a dividend or other right for which the record date is prior to the date the Shares are issued, except as provided in Section 13 of the Plan.

Exercising an Option in any manner will decrease the number of Shares thereafter available, both for purposes of the Plan and for sale under the Option, by the number of Shares as to which the Option is exercised.

(ii) Termination of Relationship as a Service Provider. If a Participant ceases to be a Service Provider, other than upon the Participant's termination as the result of the Participant's death or Disability, the Participant may exercise his or her Option within thirty (30) days of termination, or such longer period of time as is specified in the Award Agreement (but in no event later than the expiration of the term of such Option as set forth in the Award Agreement) to the extent that the Option is vested on the date of termination. Unless otherwise provided by the Administrator, if on the date of termination the Participant is not vested as to his or her entire Option, the Shares covered by the unvested portion of the Option will revert to the Plan. If after termination the Participant does not exercise his or her Option within the time specified by the Administrator, the Option will terminate, and the Shares covered by such Option will revert to the Plan.

(iii) Disability of Participant. If a Participant ceases to be a Service Provider as a result of the Participant's Disability, the Participant may exercise his or her Option within six (6) months of termination, or such longer period of time as is specified in the Award Agreement (but in no event later than the expiration of the term of such Option as set forth in the Award Agreement) to the extent the Option is vested on the date of termination. Unless otherwise provided by the Administrator, if on the date of termination the Participant is not vested as to his or her entire Option, the Shares covered by the unvested portion of the Option will revert to the Plan. If after termination the Participant does not exercise his or her Option within the time specified herein, the Option will terminate, and the Shares covered by such Option will revert to the Plan.

(iv) Death of Participant. If a Participant dies while a Service Provider, the Option may be exercised within six (6) months following the Participant's death, or within such longer period of time as is specified in the Award Agreement (but in no event later than the expiration of the term of such Option as set forth in the Award Agreement) to the extent that the Option is vested on the date of death, by the Participant's designated beneficiary, provided such beneficiary has been designated prior to the Participant's death in a form acceptable to the Administrator. If no such beneficiary has been designated by the Participant, then such Option may be exercised by the personal representative of the Participant's estate or by the person(s) to whom the Option is transferred pursuant to the Participant's will or in accordance with the laws of descent and distribution. Unless otherwise provided by the Administrator, if at the time of death Participant is not vested as to his or her entire Option, the Shares covered by the unvested portion of the Option will immediately revert to the Plan. If the Option is not so exercised within the time specified herein, the Option will terminate, and the Shares covered by such Option will revert to the Plan.

7. Stock Appreciation Rights.

(a) Grant of Stock Appreciation Rights. Subject to the terms and conditions of the Plan, a Stock Appreciation Right may be granted to Service Providers at any time and from time to time as will be determined by the Administrator, in its sole discretion.

(b) Number of Shares. The Administrator will have complete discretion to determine the number of Shares subject to any Award of Stock Appreciation Rights.

(c) Exercise Price and Other Terms. The per Share exercise price for the Shares that will determine the amount of the payment to be received upon exercise of a Stock Appreciation Right as set forth in Section 7(f) will be determined by the Administrator and will be no less than one hundred percent (100%) of the Fair Market Value per Share on the date of grant. Otherwise, the Administrator, subject to the provisions of the Plan, will have complete discretion to determine the terms and conditions of Stock Appreciation Rights granted under the Plan.

(d) Stock Appreciation Right Agreement. Each Stock Appreciation Right grant will be evidenced by an Award Agreement that will specify the exercise price, the term of the Stock Appreciation Right, the conditions of exercise, and such other terms and conditions as the Administrator, in its sole discretion, will determine.

(e) Expiration of Stock Appreciation Rights. A Stock Appreciation Right granted under the Plan will expire upon the date determined by the Administrator, in its sole discretion, and set forth in the Award Agreement. Notwithstanding the foregoing, the rules of Section 6(d) relating to the maximum term and Section 6(f) relating to exercise also will apply to Stock Appreciation Rights.

(f) Payment of Stock Appreciation Right Amount. Upon exercise of a Stock Appreciation Right, a Participant will be entitled to receive payment from the Company in an amount determined by multiplying:

(i) The difference between the Fair Market Value of a Share on the date of exercise over the exercise price; times

(ii) The number of Shares with respect to which the Stock Appreciation Right is exercised.

At the discretion of the Administrator, the payment upon Stock Appreciation Right exercise may be in cash, in Shares of equivalent value, or in some combination thereof.

8. Restricted Stock.

(a) Grant of Restricted Stock. Subject to the terms and provisions of the Plan, the Administrator, at any time and from time to time, may grant Shares of Restricted Stock to Service Providers in such amounts as the Administrator, in its sole discretion, will determine.

(b) Restricted Stock Agreement. Each Award of Restricted Stock will be evidenced by an Award Agreement that will specify the Period of Restriction, the number of Shares granted, and such other terms and conditions as the Administrator, in its sole discretion, will determine. Unless the Administrator determines otherwise, the Company as escrow agent will hold Shares of Restricted Stock until the restrictions on such Shares have lapsed.

(c) Transferability. Except as provided in this Section 8 or as the Administrator determines, Shares of Restricted Stock may not be sold, transferred, pledged, assigned, or otherwise alienated or hypothecated until the end of the applicable Period of Restriction.

(d) Other Restrictions. The Administrator, in its sole discretion, may impose such other restrictions on Shares of Restricted Stock as it may deem advisable or appropriate.

(e) Removal of Restrictions. Except as otherwise provided in this Section 8, Shares of Restricted Stock covered by each Restricted Stock grant made under the Plan will be released from escrow as soon as practicable after the last day of the Period of Restriction or at such other time as the Administrator may determine. The Administrator, in its discretion, may accelerate the time at which any restrictions will lapse or be removed.

(f) Voting Rights. During the Period of Restriction, Service Providers holding Shares of Restricted Stock granted hereunder may exercise full voting rights with respect to those Shares, unless the Administrator determines otherwise.

(g) Dividends and Other Distributions. During the Period of Restriction, Service Providers holding Shares of Restricted Stock will be entitled to receive all dividends and other distributions paid with respect to such Shares, unless the Administrator provides otherwise. If any such dividends or distributions are paid in Shares, the Shares will be subject to the same restrictions on transferability and forfeitability as the Shares of Restricted Stock with respect to which they were paid.

(h) Return of Restricted Stock to Company. On the date set forth in the Award Agreement, the Restricted Stock for which restrictions have not lapsed will revert to the Company and again will become available for grant under the Plan.

9. Restricted Stock Units.

(a) Grant. Restricted Stock Units may be granted at any time and from time to time as determined by the Administrator. After the Administrator determines that it will grant Restricted Stock Units, it will advise the Participant in an Award Agreement of the terms, conditions, and restrictions related to the grant, including the number of Restricted Stock Units.

(b) Vesting Criteria and Other Terms. The Administrator will set vesting criteria in its discretion, which, depending on the extent to which the criteria are met, will determine the number of Restricted Stock Units that will be paid out to the Participant. The Administrator may set vesting criteria based upon the achievement of Company-wide, business unit, or individual goals (including, but not limited to, continued employment or service), or any other basis determined by the Administrator in its discretion.

(c) Earning Restricted Stock Units. Upon meeting the applicable vesting criteria, the Participant will be entitled to receive a payout as determined by the Administrator. Notwithstanding the foregoing, at any time after the grant of Restricted Stock Units, the Administrator, in its sole discretion, may reduce or waive any vesting criteria that must be met to receive a payout.

(d) Form and Timing of Payment. Payment of earned Restricted Stock Units will be made as soon as practicable after the date(s) determined by the Administrator and set forth in the Award Agreement. The Administrator, in its sole discretion, may settle earned Restricted Stock Units in cash, Shares, or a combination of both.

(e) Cancellation. On the date set forth in the Award Agreement, all unearned Restricted Stock Units will be forfeited to the Company.

10. Compliance With Code Section 409A. Awards will be designed and operated in such a manner that they are either exempt from the application of, or comply with, the requirements of Code Section 409A, except as otherwise determined in the sole discretion of the Administrator. The Plan and each Award Agreement under the Plan is intended to meet the requirements of Code Section 409A and will be construed and interpreted in accordance with such intent, except as otherwise determined in the sole discretion of the Administrator. To the extent that an Award or payment, or the settlement or deferral thereof, is subject to Code Section 409A the Award will be granted, paid, settled or deferred in a manner that will meet the requirements of Code Section 409A, such that the grant, payment, settlement or deferral will not be subject to the additional tax or interest applicable under Code Section 409A.

11. Leaves of Absence/Transfer Between Locations. Unless the Administrator provides otherwise, vesting of Awards granted hereunder will be suspended during any unpaid leave of absence. A Participant will not cease to be an Employee in the case of (i) any leave of absence approved by the Company or (ii) transfers between locations of the Company or between the Company, its Parent, or any Subsidiary. For purposes of Incentive Stock Options, no such leave may exceed three (3) months, unless reemployment upon expiration of such leave is guaranteed by statute or contract. If reemployment upon expiration of a leave of absence approved by the Company is not so guaranteed, then six (6) months following the first (1st) day of such leave, any Incentive Stock Option held by the Participant will cease to be treated as an Incentive Stock Option and will be treated for tax purposes as a Nonstatutory Stock Option.

12. Limited Transferability of Awards.

(a) Unless determined otherwise by the Administrator, Awards may not be sold, pledged, assigned, hypothecated, or otherwise transferred in any manner other than by will or by the laws of descent and distribution, and may be exercised, during the lifetime of the Participant, only by the Participant. If the Administrator makes an Award transferable, such Award may only be transferred (i) by will, (ii) by the laws of descent and distribution, or (iii) as permitted by Rule 701 of the Securities Act of 1933, as amended (the “Securities Act”).

(b) Further, until the Company becomes subject to the reporting requirements of Section 13 or 15(d) of the Exchange Act, or after the Administrator determines that it is, will, or may no longer be relying upon the exemption from registration under the Exchange Act as set forth in Rule 12h-1(f) promulgated under the Exchange Act, an Option, or prior to exercise, the Shares subject to the Option, may not be pledged, hypothecated or otherwise transferred or disposed of, in any manner, including by entering into any short position, any “put equivalent position” or any “call equivalent position” (as defined in Rule 16a-1(h) and Rule 16a-1(b) of the Exchange Act, respectively), other than to (i) persons who are “family members” (as defined in Rule 701(c)(3) of the Securities Act) through gifts or domestic relations orders, or (ii) to an executor or guardian of the Participant upon the death or disability of the Participant. Notwithstanding the foregoing sentence, the Administrator, in its sole discretion, may determine to permit transfers to the Company or in connection with a Change in Control or other acquisition transactions involving the Company to the extent permitted by Rule 12h-1(f).

13. Adjustments; Dissolution or Liquidation; Merger or Change in Control.

(a) Adjustments. In the event that any dividend or other distribution (whether in the form of cash, Shares, other securities, or other property), recapitalization, stock split, reverse stock split, reorganization, merger, consolidation, split-up, spin-off, combination, repurchase, or exchange of Shares or other securities of the Company, or other change in the corporate structure of the Company affecting the Shares occurs, the Administrator, in order to prevent diminution or enlargement of the benefits or potential benefits intended to be made available under the Plan, will adjust the number and class of shares of stock that may be delivered under the Plan and/or the number, class, and price of shares of stock covered by each outstanding Award; provided, however, that the Administrator will make such adjustments to an Award required by Section 25102(o) of the California Corporations Code to the extent the Company is relying upon the exemption afforded thereby with respect to the Award.

(b) Dissolution or Liquidation. In the event of the proposed dissolution or liquidation of the Company, the Administrator will notify each Participant as soon as practicable prior to the effective date of such proposed transaction. To the extent it has not been previously exercised, an Award will terminate immediately prior to the consummation of such proposed action.

(c) Merger or Change in Control. In the event of a merger of the Company with or into another corporation or other entity or a Change in Control, each outstanding Award will be treated as the Administrator determines (subject to the provisions of the following paragraph) without a Participant's consent, including, without limitation, that (i) Awards will be assumed, or substantially equivalent Awards will be substituted, by the acquiring or succeeding corporation (or an affiliate thereof) with appropriate adjustments as to the number and kind of shares and prices; (ii) upon written notice to a Participant, that the Participant's Awards will terminate upon or immediately prior to the consummation of such merger or Change in Control; (iii) outstanding Awards will vest and become exercisable, realizable, or payable, or restrictions applicable to an Award will lapse, in whole or in part prior to or upon consummation of such merger or Change in Control, and, to the extent the Administrator determines, terminate upon or immediately prior to the effectiveness of such merger or Change in Control; (iv) (A) the termination of an Award in exchange for an amount of cash and/or property, if any, equal to the amount that would have been attained upon the exercise of such Award or realization of the Participant's rights as of the date of the occurrence of the transaction (and, for the avoidance of doubt, if as of the date of the occurrence of the transaction the Administrator determines in good faith that no amount would have been attained upon the exercise of such Award or realization of the Participant's rights, then such Award may be terminated by the Company without payment), or (B) the replacement of such Award with other rights or property selected by the Administrator in its sole discretion; or (v) any combination of the foregoing. In taking any of the actions permitted under this subsection 13(c), the Administrator will not be obligated to treat all Awards, all Awards held by a Participant, or all Awards of the same type, similarly.

In the event that the successor corporation does not assume or substitute for the Award (or portion thereof), the Participant will fully vest in and have the right to exercise all of his or her outstanding Options and Stock Appreciation Rights, including Shares as to which such Awards would not otherwise be vested or exercisable, all restrictions on Restricted Stock and Restricted Stock Units will lapse, and, with respect to Awards with performance-based vesting, all

performance goals or other vesting criteria will be deemed achieved at one hundred percent (100%) of target levels and all other terms and conditions met. In addition, if an Option or Stock Appreciation Right is not assumed or substituted in the event of a merger or Change in Control, the Administrator will notify the Participant in writing or electronically that the Option or Stock Appreciation Right will be exercisable for a period of time determined by the Administrator in its sole discretion, and the Option or Stock Appreciation Right will terminate upon the expiration of such period.

For the purposes of this subsection 13(c), an Award will be considered assumed if, following the merger or Change in Control, the Award confers the right to purchase or receive, for each Share subject to the Award immediately prior to the merger or Change in Control, the consideration (whether stock, cash, or other securities or property) received in the merger or Change in Control by holders of Common Stock for each Share held on the effective date of the transaction (and if holders were offered a choice of consideration, the type of consideration chosen by the holders of a majority of the outstanding Shares); provided, however, that if such consideration received in the merger or Change in Control is not solely common stock of the successor corporation or its Parent, the Administrator may, with the consent of the successor corporation, provide for the consideration to be received upon the exercise of an Option or Stock Appreciation Right or upon the payout of a Restricted Stock Unit, for each Share subject to such Award, to be solely common stock of the successor corporation or its Parent equal in fair market value to the per share consideration received by holders of Common Stock in the merger or Change in Control.

Notwithstanding anything in this Section 13(c) to the contrary, an Award that vests, is earned or paid-out upon the satisfaction of one or more performance goals will not be considered assumed if the Company or its successor modifies any of such performance goals without the Participant's consent; provided, however, a modification to such performance goals only to reflect the successor corporation's post-Change in Control corporate structure will not be deemed to invalidate an otherwise valid Award assumption.

Notwithstanding anything in this Section 13(c) to the contrary, if a payment under an Award Agreement is subject to Code Section 409A and if the change in control definition contained in the Award Agreement does not comply with the definition of "change of control" for purposes of a distribution under Code Section 409A, then any payment of an amount that is otherwise accelerated under this Section will be delayed until the earliest time that such payment would be permissible under Code Section 409A without triggering any penalties applicable under Code Section 409A.

14. Tax Withholding.

(a) Withholding Requirements. Prior to the delivery of any Shares or cash pursuant to an Award (or exercise thereof), the Company will have the power and the right to deduct or withhold, or require a Participant to remit to the Company, an amount sufficient to satisfy federal, state, local, foreign or other taxes (including the Participant's FICA obligation) required to be withheld with respect to such Award (or exercise thereof).

(b) Withholding Arrangements. The Administrator, in its sole discretion and pursuant to such procedures as it may specify from time to time, may permit a Participant to satisfy such tax withholding obligation, in whole or in part by (without limitation) (i) paying cash, (ii) electing to have the Company withhold otherwise deliverable Shares having a Fair Market Value equal to the minimum statutory amount required to be withheld, (iii) delivering to the Company already-owned Shares having a Fair Market Value equal to the statutory amount required to be withheld, provided the delivery of such Shares will not result in any adverse accounting consequences, as the Administrator determines in its sole discretion, or (iv) selling a sufficient number of Shares otherwise deliverable to the Participant through such means as the Administrator may determine in its sole discretion (whether through a broker or otherwise) equal to the amount required to be withheld. The amount of the withholding requirement will be deemed to include any amount which the Administrator agrees may be withheld at the time the election is made, not to exceed the amount determined by using the maximum federal, state or local marginal income tax rates applicable to the Participant with respect to the Award on the date that the amount of tax to be withheld is to be determined. The Fair Market Value of the Shares to be withheld or delivered will be determined as of the date that the taxes are required to be withheld.

15. No Effect on Employment or Service. Neither the Plan nor any Award will confer upon a Participant any right with respect to continuing the Participant's relationship as a Service Provider with the Company, nor will they interfere in any way with the Participant's right or the Company's right to terminate such relationship at any time, with or without cause, to the extent permitted by Applicable Laws.

16. Date of Grant. The date of grant of an Award will be, for all purposes, the date on which the Administrator makes the determination granting such Award, or such other later date as is determined by the Administrator. Notice of the determination will be provided to each Participant within a reasonable time after the date of such grant.

17. Term of Plan. Subject to Section 21 of the Plan, the Plan will become effective upon its adoption by the Board. Unless sooner terminated under Section 18, it will continue in effect for a term of ten (10) years from the later of (a) the effective date of the Plan, or (b) the earlier of the most recent Board or stockholder approval of an increase in the number of Shares reserved for issuance under the Plan.

18. Amendment and Termination of the Plan.

(a) Amendment and Termination. The Board may at any time amend, alter, suspend or terminate the Plan.

(b) Stockholder Approval. The Company will obtain stockholder approval of any Plan amendment to the extent necessary and desirable to comply with Applicable Laws.

(c) Effect of Amendment or Termination. No amendment, alteration, suspension or termination of the Plan will impair the rights of any Participant, unless mutually agreed otherwise between the Participant and the Administrator, which agreement must be in writing and signed by the Participant and the Company. Termination of the Plan will not affect the Administrator's ability to exercise the powers granted to it hereunder with respect to Awards granted under the Plan prior to the date of such termination.

19. Conditions Upon Issuance of Shares.

(a) Legal Compliance. Shares will not be issued pursuant to the exercise of an Award unless the exercise of such Award and the issuance and delivery of such Shares will comply with Applicable Laws and will be further subject to the approval of counsel for the Company with respect to such compliance.

(b) Investment Representations. As a condition to the exercise of an Award, the Company may require the person exercising such Award to represent and warrant at the time of any such exercise that the Shares are being purchased only for investment and without any present intention to sell or distribute such Shares if, in the opinion of counsel for the Company, such a representation is required.

20. Inability to Obtain Authority. The inability of the Company to obtain authority from any regulatory body having jurisdiction, which authority is deemed by the Company's counsel to be necessary to the lawful issuance and sale of any Shares hereunder, will relieve the Company of any liability in respect of the failure to issue or sell such Shares as to which such requisite authority will not have been obtained.

21. Stockholder Approval. The Plan will be subject to approval by the stockholders of the Company within twelve (12) months after the date the Plan is adopted by the Board. Such stockholder approval will be obtained in the manner and to the degree required under Applicable Laws.

22. Information to Participants. Beginning on the earlier of (i) the date that the aggregate number of Participants under this Plan is five hundred (500) or more and the Company is relying on the exemption provided by Rule 12h-1(f)(1) under the Exchange Act and (ii) the date that the Company is required to deliver information to Participants pursuant to Rule 701 under the Securities Act, and until such time as the Company becomes subject to the reporting requirements of Section 13 or 15(d) of the Exchange Act, is no longer relying on the exemption provided by Rule 12h-1(f)(1) under the Exchange Act or is no longer required to deliver information to Participants pursuant to Rule 701 under the Securities Act, the Company shall provide to each Participant the information described in paragraphs (e)(3), (4), and (5) of Rule 701 under the Securities Act not less frequently than every six (6) months with the financial statements being not more than 180 days old and with such information provided either by physical or electronic delivery to the Participants or by written notice to the Participants of the availability of the information on an Internet site that may be password-protected and of any password needed to access the information. The Company may request that Participants agree to keep the information to be provided pursuant to this section confidential. If a Participant does not agree to keep the information to be provided pursuant to this section confidential, then the Company will not be required to provide the information unless otherwise required pursuant to Rule 12h-1(f)(1) under the Exchange Act or Rule 701 of the Securities Act.

**SUTROVAX, INC.**

**2014 EQUITY INCENTIVE PLAN**

**STOCK OPTION AGREEMENT**

Unless otherwise defined herein, the terms defined in the 2014 Equity Incentive Plan (the "Plan") shall have the same defined meanings in this Stock Option Agreement (the "Option Agreement").

**I. NOTICE OF STOCK OPTION GRANT**

**Name:**

**Address:**

The undersigned Participant has been granted an Option to purchase Common Stock of the Company, subject to the terms and conditions of the Plan and this Option Agreement, as follows:

| | |
|---|---|
| Date of Grant: | _____ |
| Vesting Commencement Date: | _____ |
| Exercise Price per Share: | $ _____ |
| Total Number of Shares Granted: | _____ |
| Total Exercise Price : | $ _____ |
| Type of Option: | _____ Incentive Stock Option |
| | _____ Nonstatutory Stock Option |
| Term/Expiration Date: | _____ |

Vesting Schedule:

This Option shall be exercisable, in whole or in part, according to the following vesting schedule:

Twenty-five percent (25%) of the Shares subject to the Option shall vest on the one (1) year anniversary of the Vesting Commencement Date, and one forty-eighth (1/48$^{th}$) of the Shares subject to the Option shall vest each month thereafter on the same day of the month as the Vesting Commencement Date (and if there is no corresponding day, on the last day of the month), subject to Participant continuing to be a Service Provider through each such date.

Termination Period:

This Option shall be exercisable for three (3) months after Participant ceases to be a Service Provider, unless such termination is due to Participant's death or Disability, in which case this Option shall be exercisable for twelve (12) months after Participant ceases to be a Service Provider. Notwithstanding the foregoing sentence, in no event may this Option be exercised after the Term/Expiration Date as provided above and this Option may be subject to earlier termination as provided in Section 13 of the Plan.

## II. AGREEMENT

1. Grant of Option. The Administrator of the Company hereby grants to the Participant named in the Notice of Stock Option Grant in Part I of this Agreement ("Participant"), an option (the "Option") to purchase the number of Shares set forth in the Notice of Stock Option Grant, at the exercise price per Share set forth in the Notice of Stock Option Grant (the "Exercise Price"), and subject to the terms and conditions of the Plan, which is incorporated herein by reference. Subject to Section [18] of the Plan, in the event of a conflict between the terms and conditions of the Plan and this Option Agreement, the terms and conditions of the Plan shall prevail.

If designated in the Notice of Stock Option Grant as an Incentive Stock Option ("ISO"), this Option is intended to qualify as an Incentive Stock Option as defined in Section 422 of the Code. Nevertheless, to the extent that it exceeds the $100,000 rule of Code Section 422(d), this Option shall be treated as a Nonstatutory Stock Option ("NSO"). Further, if for any reason this Option (or portion thereof) shall not qualify as an ISO, then, to the extent of such nonqualification, such Option (or portion thereof) shall be regarded as a NSO granted under the Plan. In no event shall the Administrator, the Company or any Parent or Subsidiary or any of their respective employees or directors have any liability to Participant (or any other person) due to the failure of the Option to qualify for any reason as an ISO.

2. Exercise of Option.

(a) Right to Exercise. This Option shall be exercisable during its term in accordance with the Vesting Schedule set out in the Notice of Stock Option Grant and with the applicable provisions of the Plan and this Option Agreement.

(b) Method of Exercise. This Option shall be exercisable by delivery of an exercise notice in the form attached as Exhibit A (the "Exercise Notice") or in a manner and pursuant to such procedures as the Administrator may determine, which shall state the election to exercise the Option, the number of Shares with respect to which the Option is being exercised (the "Exercised Shares"), and such other representations and agreements as may be required by the Company. The Exercise Notice shall be accompanied by payment of the aggregate Exercise Price as to all Exercised Shares, together with any applicable tax withholding. This Option shall be deemed to be exercised upon receipt by the Company of such fully executed Exercise Notice accompanied by the aggregate Exercise Price, together with any applicable tax withholding.

No Shares shall be issued pursuant to the exercise of an Option unless such issuance and such exercise comply with Applicable Laws. Assuming such compliance, for income tax purposes the Shares shall be considered transferred to Participant on the date on which the Option is exercised with respect to such Shares.

3. Participant's Representations. In the event the Shares have not been registered under the Securities Act of 1933, as amended (the "Securities Act"), at the time this Option is exercised, Participant shall, if required by the Company, concurrently with the exercise of all or any portion of this Option, deliver to the Company his or her Investment Representation Statement in the form attached hereto as Exhibit B.

4. Lock-Up Period. Participant hereby agrees that Participant shall not offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, lend, or otherwise transfer or dispose of, directly or indirectly, any Common Stock (or other securities) of the Company or enter into any swap, hedging or other arrangement that transfers to another, in whole or in part, any of the economic consequences of ownership of any Common Stock (or other securities) of the Company held by Participant (other than those included in the registration) for a period specified by the representative of the underwriters of Common Stock (or other securities) of the Company not to exceed one hundred and eighty (180) days following the effective date of any registration statement of the Company filed under the Securities Act (or such other period as may be requested by the Company or the underwriters to accommodate regulatory restrictions on (i) the publication or other distribution of research reports and (ii) analyst recommendations and opinions, including, but not limited to, the restrictions contained in NASD Rule 2711(f)(4) or NYSE Rule 472(f)(4), or any successor provisions or amendments thereto).

Participant agrees to execute and deliver such other agreements as may be reasonably requested by the Company or the underwriter which are consistent with the foregoing or which are necessary to give further effect thereto. In addition, if requested by the Company or the representative of the underwriters of Common Stock (or other securities) of the Company, Participant shall provide, within ten (10) days of such request, such information as may be required by the Company or such representative in connection with the completion of any public offering of the Company's securities pursuant to a registration statement filed under the Securities Act. The obligations described in this Section 4 shall not apply to a registration relating solely to employee benefit plans on Form S-1 or Form S-8 or similar forms that may be promulgated in the future, or a registration relating solely to a Commission Rule 145 transaction on Form S-4 or similar forms that may be promulgated in the future. The Company may impose stop-transfer instructions with respect to the shares of Common Stock (or other securities) subject to the foregoing restriction until the end of said one hundred and eighty (180) day (or other) period. Participant agrees that any transferee of the Option or shares acquired pursuant to the Option shall be bound by this Section 4.

5. Method of Payment. Payment of the aggregate Exercise Price shall be by any of the following, or a combination thereof, at the election of the Participant:

(a) cash;

(b) check;

(c) consideration received by the Company under a formal cashless exercise program adopted by the Company in connection with the Plan; or

(d) surrender of other Shares which (i) shall be valued at its Fair Market Value on the date of exercise, and (ii) must be owned free and clear of any liens, claims, encumbrances or security interests, if accepting such Shares, in the sole discretion of the Administrator, shall not result in any adverse accounting consequences to the Company.

6. Restrictions on Exercise. This Option may not be exercised until such time as the Plan has been approved by the stockholders of the Company, or if the issuance of such Shares upon such exercise or the method of payment of consideration for such shares would constitute a violation of any Applicable Law.

7. Non-Transferability of Option.

(a) This Option may not be transferred in any manner otherwise than by will or by the laws of descent or distribution and may be exercised during the lifetime of Participant only by Participant. The terms of the Plan and this Option Agreement shall be binding upon the executors, administrators, heirs, successors and assigns of Participant.

(b) Further, until the Company becomes subject to the reporting requirements of Section 13 or 15(d) of the Exchange Act, or after the Administrator determines that it is, will, or may no longer be relying upon the exemption from registration of Options under the Exchange Act as set forth in Rule 12h-1(f) promulgated under the Exchange Act (the "Reliance End Date"), Participant shall not transfer this Option or, prior to exercise, the Shares subject to this Option, in any manner other than (i) to persons who are "family members" (as defined in Rule 701(c)(3) of the Securities Act) through gifts or domestic relations orders, or (ii) to an executor or guardian of Participant upon the death or disability of Participant. Until the Reliance End Date, the Options and, prior to exercise, the Shares subject to this Option, may not be pledged, hypothecated or otherwise transferred or disposed of, including by entering into any short position, any "put equivalent position" or any "call equivalent position" (as defined in Rule 16a-1(h) and Rule 16a-1(b) of the Exchange Act, respectively), other than as permitted in clauses (i) and (ii) of this paragraph.

8. Term of Option. This Option may be exercised only within the term set out in the Notice of Stock Option Grant, and may be exercised during such term only in accordance with the Plan and the terms of this Option Agreement.

9. Tax Obligations.

(a) Tax Withholding. Participant agrees to make appropriate arrangements with the Company (or the Parent or Subsidiary employing or retaining Participant) for the satisfaction of all Federal, state, local and foreign income and employment tax withholding requirements applicable to the Option exercise. Participant acknowledges and agrees that the Company may refuse to honor the exercise and refuse to deliver the Shares if such withholding amounts are not delivered at the time of exercise.

(b) Notice of Disqualifying Disposition of ISO Shares. If the Option granted to Participant herein is an ISO, and if Participant sells or otherwise disposes of any of the Shares acquired pursuant to the ISO on or before the later of (i) the date two (2) years after the Date of Grant, or (ii) the date one (1) year after the date of exercise, Participant shall immediately notify the Company in writing of such disposition. Participant agrees that Participant may be subject to income tax withholding by the Company on the compensation income recognized by Participant.

(c) Code Section 409A. Under Code Section 409A, an Option that vests after December 31, 2004 (or that vested on or prior to such date but which was materially modified after October 3, 2004) that was granted with a per Share exercise price that is determined by the Internal Revenue Service (the "IRS") to be less than the Fair Market Value of a Share on the date of grant (a "discount option") may be considered "deferred compensation." An Option that is a "discount option" may result in (i) income recognition by Participant prior to the exercise of the Option, (ii) an additional twenty percent (20%) federal income tax, and (iii) potential penalty and interest charges. The "discount option" may also result in additional state income, penalty and interest tax to the Participant. Participant acknowledges that the Company cannot and has not guaranteed that the IRS will agree that the per Share exercise price of this Option equals or exceeds the Fair Market Value of a Share on the date of grant in a later examination. Participant agrees that if the IRS determines that the Option was granted with a per Share exercise price that was less than the Fair Market Value of a Share on the date of grant, Participant shall be solely responsible for Participant's costs related to such a determination.

10. Entire Agreement; Governing Law. The Plan is incorporated herein by reference. The Plan and this Option Agreement constitute the entire agreement of the parties with respect to the subject matter hereof and supersede in their entirety all prior undertakings and agreements of the Company and Participant with respect to the subject matter hereof, and may not be modified adversely to the Participant's interest except by means of a writing signed by the Company and Participant. This Option Agreement is governed by the internal substantive laws but not the choice of law rules of California.

11. No Guarantee of Continued Service. PARTICIPANT ACKNOWLEDGES AND AGREES THAT THE VESTING OF SHARES PURSUANT TO THE VESTING SCHEDULE HEREOF IS EARNED ONLY BY CONTINUING AS A SERVICE PROVIDER AT THE WILL OF THE COMPANY (OR THE PARENT OR SUBSIDIARY EMPLOYING OR RETAINING PARTICIPANT) AND NOT THROUGH THE ACT OF BEING HIRED, BEING GRANTED THIS OPTION OR ACQUIRING SHARES HEREUNDER. PARTICIPANT FURTHER ACKNOWLEDGES AND AGREES THAT THIS AGREEMENT, THE TRANSACTIONS CONTEMPLATED HEREUNDER AND THE VESTING SCHEDULE SET FORTH HEREIN DO NOT CONSTITUTE AN EXPRESS OR IMPLIED PROMISE OF CONTINUED ENGAGEMENT AS A SERVICE PROVIDER FOR THE VESTING PERIOD, FOR ANY PERIOD, OR AT ALL, AND SHALL NOT INTERFERE IN ANY WAY WITH PARTICIPANT'S RIGHT OR THE RIGHT OF THE COMPANY (OR THE PARENT OR SUBSIDIARY EMPLOYING OR RETAINING PARTICIPANT) TO TERMINATE PARTICIPANT'S RELATIONSHIP AS A SERVICE PROVIDER AT ANY TIME, WITH OR WITHOUT CAUSE.

Participant acknowledges receipt of a copy of the Plan and represents that he or she is familiar with the terms and provisions thereof, and hereby accepts this Option subject to all of the terms and provisions thereof. Participant has reviewed the Plan and this Option in their entirety, has had an opportunity to obtain the advice of counsel prior to executing this Option and fully understands all provisions of the Option. Participant hereby agrees to accept as binding, conclusive and final all decisions or interpretations of the Administrator upon any questions arising under the Plan or this Option. Participant further agrees to notify the Company upon any change in the residence address indicated below.

| PARTICIPANT | SUTROVAX, INC. |
| --- | --- |
| Signature | By |
| Print Name | Print Name |
| | Title |
| Residence Address | |

**EXHIBIT A**

**2014 EQUITY INCENTIVE PLAN**
**EXERCISE NOTICE**

SutroVax, Inc.
310 Utah Ave.
So. San Francisco, CA 94080

Attention: President

1. Exercise of Option. Effective as of today, _____, , the undersigned ("Participant") hereby elects to exercise Participant's option (the "Option") to purchase_____shares of the Common Stock (the "Shares") of SutroVax, Inc. (the "Company") under and pursuant to the 2014 Equity Incentive Plan (the "Plan") and the Stock Option Agreement dated_____, (the "Option Agreement").

2. Delivery of Payment. Participant herewith delivers to the Company the full purchase price of the Shares, as set forth in the Option Agreement, and any and all withholding taxes due in connection with the exercise of the Option.

3. Representations of Participant. Participant acknowledges that Participant has received, read and understood the Plan and the Option Agreement and agrees to abide by and be bound by their terms and conditions.

4. Rights as Stockholder. Until the issuance of the Shares (as evidenced by the appropriate entry on the books of the Company or of a duly authorized transfer agent of the Company), no right to vote or receive dividends or any other rights as a stockholder shall exist with respect to the Common Stock subject to an Award, notwithstanding the exercise of the Option. The Shares shall be issued to Participant as soon as practicable after the Option is exercised in accordance with the Option Agreement. No adjustment shall be made for a dividend or other right for which the record date is prior to the date of issuance except as provided in Section **[**13**]** of the Plan.

5. Company's Right of First Refusal. Before any Shares held by Participant or any transferee (either being sometimes referred to herein as the "Holder") may be sold or otherwise transferred (including transfer by gift or operation of law), the Company or its assignee(s) shall have a right of first refusal to purchase the Shares on the terms and conditions set forth in this Section 5 (the "Right of First Refusal").

(a) Notice of Proposed Transfer. The Holder of the Shares shall deliver to the Company a written notice (the "Notice") stating: (i) the Holder's bona fide intention to sell or otherwise transfer such Shares; (ii) the name of each proposed purchaser or other transferee ("Proposed Transferee"); (iii) the number of Shares to be transferred to each Proposed Transferee; and (iv) the bona fide cash price or other consideration for which the Holder proposes to transfer the Shares (the "Offered Price"), and the Holder shall offer the Shares at the Offered Price to the Company or its assignee(s).

(b) Exercise of Right of First Refusal. At any time within thirty (30) days after receipt of the Notice, the Company and/or its assignee(s) may, by giving written notice to the Holder, elect to purchase all, but not less than all, of the Shares proposed to be transferred to any one or more of the Proposed Transferees, at the purchase price determined in accordance with subsection (c) below.

(c) Purchase Price. The purchase price ("Purchase Price") for the Shares purchased by the Company or its assignee(s) under this Section 5 shall be the Offered Price. If the Offered Price includes consideration other than cash, the cash equivalent value of the non-cash consideration shall be determined by the Board of Directors of the Company in good faith.

(d) Payment. Payment of the Purchase Price shall be made, at the option of the Company or its assignee(s), in cash (by check), by cancellation of all or a portion of any outstanding indebtedness of the Holder to the Company (or, in the case of repurchase by an assignee, to the assignee), or by any combination thereof within thirty (30) days after receipt of the Notice or in the manner and at the times set forth in the Notice.

(e) Holder's Right to Transfer. If all of the Shares proposed in the Notice to be transferred to a given Proposed Transferee are not purchased by the Company and/or its assignee(s) as provided in this Section 5, then the Holder may sell or otherwise transfer such Shares to that Proposed Transferee at the Offered Price or at a higher price, *provided* that such sale or other transfer is consummated within one hundred and twenty (120) days after the date of the Notice, that any such sale or other transfer is effected in accordance with any applicable securities laws and that the Proposed Transferee agrees in writing that the provisions of this Section 5 shall continue to apply to the Shares in the hands of such Proposed Transferee. If the Shares described in the Notice are not transferred to the Proposed Transferee within such period, a new Notice shall be given to the Company, and the Company and/or its assignees shall again be offered the Right of First Refusal before any Shares held by the Holder may be sold or otherwise transferred.

(f) Exception for Certain Family Transfers. Anything to the contrary contained in this Section 5 notwithstanding, the transfer of any or all of the Shares during the Participant's lifetime or on the Participant's death by will or intestacy to the Participant's immediate family or a trust for the benefit of the Participant's immediate family shall be exempt from the provisions of this Section 5. "Immediate Family" as used herein shall mean spouse, lineal descendant or antecedent, father, mother, brother or sister. In such case, the transferee or other recipient shall receive and hold the Shares so transferred subject to the provisions of this Section 5, and there shall be no further transfer of such Shares except in accordance with the terms of this Section 5.

(g) Termination of Right of First Refusal. The Right of First Refusal shall terminate as to any Shares upon the earlier of (i) the first sale of Common Stock of the Company to the general public, or (ii) a Change in Control in which the successor corporation has equity securities that are publicly traded.

6. Tax Consultation. Participant understands that Participant may suffer adverse tax consequences as a result of Participant's purchase or disposition of the Shares. Participant represents that Participant has consulted with any tax consultants Participant deems advisable in connection with the purchase or disposition of the Shares and that Participant is not relying on the Company for any tax advice.

7. Restrictive Legends and Stop-Transfer Orders.

(a) Legends. Participant understands and agrees that the Company shall cause the legends set forth below or legends substantially equivalent thereto, to be placed upon any certificate(s) evidencing ownership of the Shares together with any other legends that may be required by the Company or by state or federal securities laws:

> THE SECURITIES REPRESENTED HEREBY HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933 (THE "ACT") AND MAY NOT BE OFFERED, SOLD OR OTHERWISE TRANSFERRED, PLEDGED OR HYPOTHECATED UNLESS AND UNTIL REGISTERED UNDER THE ACT OR, IN THE OPINION OF COUNSEL SATISFACTORY TO THE ISSUER OF THESE SECURITIES, SUCH OFFER, SALE OR TRANSFER, PLEDGE OR HYPOTHECATION IS IN COMPLIANCE THEREWITH.
>
> THE SHARES REPRESENTED BY THIS CERTIFICATE ARE SUBJECT TO CERTAIN RESTRICTIONS ON TRANSFER AND A RIGHT OF FIRST REFUSAL HELD BY THE ISSUER OR ITS ASSIGNEE(S) AS SET FORTH IN THE EXERCISE NOTICE BETWEEN THE ISSUER AND THE ORIGINAL HOLDER OF THESE SHARES, A COPY OF WHICH MAY BE OBTAINED AT THE PRINCIPAL OFFICE OF THE ISSUER. SUCH TRANSFER RESTRICTIONS AND RIGHT OF FIRST REFUSAL ARE BINDING ON TRANSFEREES OF THESE SHARES.
>
> THE SHARES REPRESENTED BY THIS CERTIFICATE ARE SUBJECT TO RESTRICTIONS ON TRANSFER FOR A PERIOD OF TIME FOLLOWING THE EFFECTIVE DATE OF THE UNDERWRITTEN PUBLIC OFFERING OF THE COMPANY'S SECURITIES SET FORTH IN AN AGREEMENT BETWEEN THE ISSUER AND THE ORIGINAL HOLDER OF THESE SHARES AND MAY NOT BE SOLD OR OTHERWISE DISPOSED OF BY THE HOLDER PRIOR TO THE EXPIRATION OF SUCH PERIOD WITHOUT THE CONSENT OF THE COMPANY OR THE MANAGING UNDERWRITER.

(b) Stop-Transfer Notices. Participant agrees that, in order to ensure compliance with the restrictions referred to herein, the Company may issue appropriate "stop transfer" instructions to its transfer agent, if any, and that, if the Company transfers its own securities, it may make appropriate notations to the same effect in its own records.

(c) Refusal to Transfer. The Company shall not be required (i) to transfer on its books any Shares that have been sold or otherwise transferred in violation of any of the provisions of this Exercise Notice or (ii) to treat as owner of such Shares or to accord the right to vote or pay dividends to any purchaser or other transferee to whom such Shares shall have been so transferred.

8. Successors and Assigns. The Company may assign any of its rights under this Exercise Notice to single or multiple assignees, and this Exercise Notice shall inure to the benefit of the successors and assigns of the Company. Subject to the restrictions on transfer herein set forth, this Exercise Notice shall be binding upon Participant and his or her heirs, executors, administrators, successors and assigns.

9. Interpretation. Any dispute regarding the interpretation of this Exercise Notice shall be submitted by Participant or by the Company forthwith to the Administrator, which shall review such dispute at its next regular meeting. The resolution of such a dispute by the Administrator shall be final and binding on all parties.

10. Governing Law; Severability. This Exercise Notice is governed by the internal substantive laws, but not the choice of law rules, of California. In the event that any provision hereof becomes or is declared by a court of competent jurisdiction to be illegal, unenforceable or void, this Exercise Notice shall continue in full force and effect.

11. Entire Agreement. The Plan and Option Agreement are incorporated herein by reference. This Exercise Notice, the Plan, the Option Agreement and the Investment Representation Statement constitute the entire agreement of the parties with respect to the subject matter hereof and supersede in their entirety all prior undertakings and agreements of the Company and Participant with respect to the subject matter hereof, and may not be modified adversely to the Participant's interest except by means of a writing signed by the Company and Participant.

Submitted by:
PARTICIPANT

_____
Signature

_____
Print Name

Address:

_____

_____

Accepted by:
SUTROVAX, INC.

_____
By

_____
Print Name

_____
Title

Address:

_____

_____

_____
Date Received

**EXHIBIT B**

**INVESTMENT REPRESENTATION STATEMENT**

| | | |
|---|---|---|
| PARTICIPANT | : | |
| COMPANY | : | SUTROVAX, INC. |
| SECURITY | : | COMMON STOCK |
| AMOUNT | : | |
| DATE | : | |

In connection with the purchase of the above-listed Securities, the undersigned Participant represents to the Company the following:

(a) Participant is aware of the Company's business affairs and financial condition and has acquired sufficient information about the Company to reach an informed and knowledgeable decision to acquire the Securities. Participant is acquiring these Securities for investment for Participant's own account only and not with a view to, or for resale in connection with, any "distribution" thereof within the meaning of the Securities Act of 1933, as amended (the "Securities Act").

(b) Participant acknowledges and understands that the Securities constitute "restricted securities" under the Securities Act and have not been registered under the Securities Act in reliance upon a specific exemption therefrom, which exemption depends upon, among other things, the bona fide nature of Participant's investment intent as expressed herein. In this connection, Participant understands that, in the view of the Securities and Exchange Commission, the statutory basis for such exemption may be unavailable if Participant's representation was predicated solely upon a present intention to hold these Securities for the minimum capital gains period specified under tax statutes, for a deferred sale, for or until an increase or decrease in the market price of the Securities, or for a period of one (1) year or any other fixed period in the future. Participant further understands that the Securities must be held indefinitely unless they are subsequently registered under the Securities Act or an exemption from such registration is available. Participant further acknowledges and understands that the Company is under no obligation to register the Securities. Participant understands that the certificate evidencing the Securities shall be imprinted with any legend required under applicable state securities laws.

(c) Participant is familiar with the provisions of Rule 701 and Rule 144, each promulgated under the Securities Act, which, in substance, permit limited public resale of "restricted securities" acquired, directly or indirectly from the issuer thereof, in a non-public offering subject to the satisfaction of certain conditions. Rule 701 provides that if the issuer qualifies under Rule 701 at the time of the grant of the Option to Participant, the exercise shall be exempt from registration under the Securities Act. In the event the Company becomes subject to the reporting requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, ninety (90) days thereafter (or such

longer period as any market stand-off agreement may require) the Securities exempt under Rule 701 may be resold, subject to the satisfaction of the applicable conditions specified by Rule 144, including in the case of affiliates (1) the availability of certain public information about the Company, (2) the amount of Securities being sold during any three (3) month period not exceeding specified limitations, (3) the resale being made in an unsolicited "broker's transaction", transactions directly with a "market maker" or "riskless principal transactions" (as those terms are defined under the Securities Exchange Act of 1934) and (4) the timely filing of a Form 144, if applicable.

In the event that the Company does not qualify under Rule 701 at the time of grant of the Option, then the Securities may be resold in certain limited circumstances subject to the provisions of Rule 144, which may require (i) the availability of current public information about the Company; (ii) the resale to occur more than a specified period after the purchase and full payment (within the meaning of Rule 144) for the Securities; and (iii) in the case of the sale of Securities by an affiliate, the satisfaction of the conditions set forth in sections (2), (3) and (4) of the paragraph immediately above.

(d) Participant further understands that in the event all of the applicable requirements of Rule 701 or 144 are not satisfied, registration under the Securities Act, compliance with Regulation A, or some other registration exemption shall be required; and that, notwithstanding the fact that Rules 144 and 701 are not exclusive, the Staff of the Securities and Exchange Commission has expressed its opinion that persons proposing to sell private placement securities other than in a registered offering and otherwise than pursuant to Rules 144 or 701 shall have a substantial burden of proof in establishing that an exemption from registration is available for such offers or sales, and that such persons and their respective brokers who participate in such transactions do so at their own risk. Participant understands that no assurances can be given that any such other registration exemption shall be available in such event.

PARTICIPANT

_____

Signature

_____

Print Name

_____

Date

**Exhibit 10.11**

**CERTAIN CONFIDENTIAL INFORMATION CONTAINED IN THIS DOCUMENT, MARKED BY [***], HAS BEEN OMITTED BECAUSE IT IS BOTH (I) NOT MATERIAL AND (II) WOULD LIKELY CAUSE COMPETITIVE HARM IF PUBLICLY DISCLOSED.**

# DEVELOPMENT AND MANUFACTURING SERVICES AGREEMENT

(the "Agreement")

by and between

**Lonza Ltd**
Münchensteinerstrasse 38
CH-4002 Basel
Switzerland

- hereinafter "Lonza" -

and

**SutroVax Inc.**
353 Hatch Drive Foster City, CA 94404
United States

- hereinafter "Customer" -

Effective as of 29 October 2018 (the "Effective Date")

**Table of Contents**



**Recitals**

WHEREAS, Customer is engaged in the development and research of certain products and requires assistance in the development and manufacture of product:

WHEREAS, Lonza and its Affiliates have expertise in the evaluation, development and manufacture of products;

WHEREAS, Lonza and Customer are parties to a Development Master Services Agreement, dated October 21, 2016, as amended (collectively, the “2016 Agreement”), under which Customer has engaged Lonza to perform development and manufacturing services related to various components of the Customer’s multi-valent pneumococcal vaccine product;

WHEREAS, Lonza and Customer are also parties to a letter agreement dated 19 June 2018, under which the parties have agreed on certain payment arrangements that would apply to Customer's payment obligations under the 2016 Agreement and this Agreement (the "Cap Agreement"):

WHEREAS, Customer wishes to engage Lonza for Services relating to the development and manufacture of the Product as described in this Agreement; and

WHEREAS, Lonza, or its Affiliate, is prepared to perform such Services for Customer on the terms and subject to the conditions set out herein.

NOW, THEREFORE, in consideration of the mutual promises contained herein, and for other good and valuable consideration, the Parties intending to be legally bound, agree as follows:

**1. Definitions and Interpretation**

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| "Affiliate" | means any company, partnership or other entity which directly or indirectly Controls, is Controlled by or Is under common Control with the relevant Party. "Control" means the ownership of more than fifty percent (50%) of the issued share capital or the legal power to direct or cause the direction of the general management and policies of the relevant Party. |
| "Agreement" | means this agreement incorporating all Appendices, as amended from time to time by written agreement of the Parties. |
| "Antigens" | means one or more polysaccharide-CRM12 conjugates, which are part of the active ingredient of Product. Antigens are Customer Materials for the purposes of this Agreement. |
| "Applicable Laws" | means all relevant U.S. and European Union federal, state and local laws, statutes, rules, and regulations which are applicable to a Party's activities hereunder, including, without limitation, the applicable regulations and guidelines of any Governmental Authority and all applicable cGMP together with amendments thereto. |
| "Approval" | means the first marketing approval by the FDA or EMA of Product from the Facility for commercial supply. |
| "Background Intellectual Property" | means any Intellectual Property either (i) owned, licensed or controlled by a Party prior to the Effective Date or (ii) developed or acquired by a Party independently from the performance of the Services hereunder during the Term of this Agreement, and, in the case of Lonza, without use or reliance on Customer Materials or Customer Information, and, in the case of the Customer, without use or reliance on Lonza materials or Lonza information. |

| | |
|---|---|
| “Batch” | means the Product derived from a single run of the Manufacturing Process at a scale to be mutually agreed by the Parties. |
| “Batch Price” | means the Price of each Batch. |
| “Campaign” | means a series of no less than three (3) cGMP Batches manufactured consecutively. |
| “Cancellation Fee” | has the meaning given in Clause 6.4. |
| “Capital Equipment” | means those certain pieces of equipment described in the Project Plan: (i) that are specific to the production of the Product and (ii) that are purchased by Customer or for which Customer reimburses Lonza, including, without limitation, the related documentation regarding the design, validation, operation, calibration and maintenance of such equipment. |
| “Certificate of Analysis” | means a document prepared by Lonza listing tests performed by Lonza or approved External Laboratories, the Specifications and test results. |
| “cGMP” | means those laws and regulations applicable in the U.S. and Europe, relating to the manufacture of medicinal products for human use, including, without limitation, current good manufacturing practices as specified in the ICH guidelines, including without limitation, ICH Q7A “ICH Good Manufacturing Practice Guide for Active Pharmaceutical Ingredients”, US Federal Food Drug and Cosmetic Act at 21CFR (Chapters 210, 211, 600 and 610) and the Guide to Good Manufacturing Practices for Medicinal Products as promulgated under European Directive 91/356/EEC. For the avoidance of doubt, Lonza’s operational quality standards are defined in internal cGMP policy documents. |
| “cGMP Batches” | means any Batches which are required under the Project Plan to be manufactured in accordance with cGMP. |

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| “Change” | means any change to the Services or pricing incorporated into a written amendment to the Agreement in accordance with clause 16.2 or effected in accordance with the Quality Agreement. |
| “Commencement Date” | means the date of commencement of manufacturing activities for a Batch hereunder. |
| “Confidential Information” | means Customer Information and/or Lonza Information, as the context requires. |
| “Customer Information” | means all technical and other information which at the time of disclosure by Customer was not known to Lonza or in the public domain relating to the Manufacturing Process and the Product, from time to time supplied by the Customer to Lonza, including any materials supplied by Customer to Lonza in accordance with the Project Plan. |
| “Customer Materials” | means any Raw Materials, components of Product (e.g. the Antigens), or other materials of any nature (e.g. Product-specific antibody reagents for nephelometry) provided by Customer. |
| “EMA” | means the European Medicines Agency or any successor agency thereto. |
| “External Laboratories” | means any Third Party instructed by Lonza, with Customer’s prior consent, which is to conduct activities not available at Lonza but required to complete the Services, such as analytical ultracentrifugation or protein sequencing. |
| “Facility” | means Lonza’s manufacturing facilities in Visp and/or Basel Switzerland, or such other facility as may be agreed upon by the Parties. |
| “FDA” | means the United States Food and Drug Administration, or any successor agency thereto. |
| “Governmental Authority” | means any Regulatory Authority and any national, multi-national, regional, state or local regulatory agency, department, bureau, or other governmental entity in the U.S., Switzerland or the European Union. |

| | |
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| “Intellectual Property” | means (i) inventions (whether or not patentable), patents, trade secrets, copyrights, trademarks, trade names and domain names, rights in designs, rights in computer software, database rights, rights in confidential information (including know-how) and any other intellectual property rights, in each case whether registered or unregistered, (ii) all applications (or rights to apply) for, and renewals or extensions of, any of the rights described in the foregoing clause (i) and (iii) and all rights and applications that are similar or equivalent to the rights and application described in the foregoing clauses (i) and (ii), which exist now, or which come to exist in the future, in any part of the world. |
| “Lonza Information” | means all information that is proprietary to Lonza or any Affiliate of Lonza and that is maintained in confidence by Lonza or any Affiliate of Lonza and that is disclosed by Lonza or any Affiliate of Lonza to Customer under or in connection with this Agreement, including without limitation, any and all Lonza know-how and trade secrets. |
| “Manufacturing Instructions” | means the document compiled by Lonza and approved by Customer, which defines the manufacturing methods, test methods and other procedures, directions and controls associated with the manufacture and testing of Product. |
| “Manufacturing Process” | means the production process for the manufacture of Product to be developed by Lonza and approved by Customer, as described in the Project Plan, based on Antigen and drug product formulations and compounding order provided by Customer. |
| “New Customer Intellectual Property” | has the meaning given in Clause 10.2. |
| “New General Application Intellectual Property” | has the meaning given in Clause 10.3. |
| “Non-Clinical Batches” | means a Batch manufactured under the Project Plan that is not intended as a cGMP Batch, which shall include “Technical Batches”, “Toxicology Batches”, “Proof-of-Concept Batches” and any other non-cGMP Batches in the Project Plan. |
| “Party” | means each of Lonza and Customer and, together, the “Parties”. |

| | |
|---|---|
| “Price” | means the price for the Services and Products as set out in Appendix A. |
| “Product” | means the proprietary vaccine drug product from the Polysaccharide-CRM 12 conjugates (Antigens) to be manufactured using the Manufacturing Process by Lonza for Customer as specified in the Project Plans. Depending on the context and Customer’s selected drug product presentation, Product may comprise drug product, and separate formulations of placebo, diluents, or adjuvants. |
| “Project Plan” or “Project Plans” | means the plans describing the Services to be performed by Lonza under this Agreement, including any update and amendment of the Project Plan to which the Parties may agree from time to time. The initial Project Plans are attached hereto as Appendix A. |
| “Quality Agreement” | means the quality agreement to be entered into by the Parties, setting out the responsibilities of the Parties in relation to quality as required for compliance with cGMP. |
| “Raw Materials” | means all ingredients, solvents, consumables/disposables, kits, capillaries, columns, antibody reagents, and other “nonstandard” reagents, filters, chromatography resins, cross flow membranes, bags, HPLC columns, specific reagents, infusion sets, pumps, and other components of the Product required to perform the Manufacturing Process or Services. |
| “Raw Material Fee” | means the procurement and handling fee of [***] of the acquisition cost of Raw Materials (save for Antigens and other Customer Materials that are provided by SutroVax) by Lonza that Is charged to the Customer in addition to the cost of such Raw Materials. For clarity, the [***] procurement and handling fee shall not apply to any materials produced by Lonza (or any of its Affiliates) under any other written agreement between Lonza and Customer. |
| “Regulatory Authority” | means the FDA, EMA and any other similar regulatory authorities as may be agreed upon in writing by the Parties. |
| “Release” | has the meaning given in Clause 7.1. |

| | |
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| “Services” | means all or any part of the services to be performed by Lonza under this Agreement (including, without limitation, process and analytical method transfer, process development, process optimization, validation, non-clinical, clinical and commercial manufacturing, as well as quality control and quality assurance activities), particulars of which are set out in a Project Plan. |
| “Specifications” | means the analytical tests and acceptance criteria of the Product as agreed between Customer and Lonza during the execution of the Services. |
| “Technical Batch” | means a Batch that is intended to demonstrate the transfer of the Manufacturing Process to the Facility. |
| “Term” | has the meaning given in Clause 14.1. |
| “Third Party” | means any party other than Customer, Lonza and their respective Affiliates. |

In this Agreement references to the Parties are to the Parties to this Agreement, headings are used for convenience only and do not affect its interpretation, references to a statutory provision include references to the statutory provision as modified or re-enacted or both from time to time and to any subordinate legislation made under the statutory provision, references to the singular include the plural and vice versa, and references to the word “including” are to be construed without limitation.

**2. Performance of Services**

2.1 Performance of Services. Subject to Clause 2.3, Lonza shall itself and through ***its Affiliates, diligently carry out the Services as provided in the Project Plan and use commercially reasonable efforts to perform the Services without any material defect and according to the estimated timelines as set forth in the Project Plan. Lonza shall retain appropriately qualified and trained personnel with the requisite knowledge and experience to perform the Services in accordance with this Agreement. Lonza may subcontract or delegate any of its rights or obligations under this Agreement to perform the Services: provided, that Lonza shall remain primarily responsible for the actions of any such subcontractor and/or delegate. For the sake of clarity, Laboratoire Baccinex SA qualifies as subcontractor. Specifically and without limiting the foregoing, any External Laboratories shall be subject to the same obligations of confidentiality at least as stringent, and as protective of Customer, as those obligations of confidence and non-use imposed upon Lonza and provided that such External Laboratories shall be subject to obligations to act diligently. Lonza shall not be responsible for analytical lab services performed by External Laboratories.

2.2 Technology Transfer. The Parties expressly agree that they shall work together to transfer the Manufacturing Process to the Facility, including implementing the technology transfer plan set forth in the Project Plan. Customer shall fully support such technology transfer as reasonably requested by Lonza.

2.3 Non-Clinical Batches. Lonza shall manufacture the Non-Clinical Batches (including the Technical Batches) in accordance with the Project Plan. Customer shall have the right to make whatever further use of the Non-Clinical Batches as it shall determine, provided that Customer pays for such Batches, such use is not for human use and does not violate any Applicable Laws. Lonza makes no warranty that the Non-Clinical Batches (including the Technical Batches) will meet the Specifications, but will manufacture all such Batches in accordance with and for the intended purpose set forth in the Project Plan.

2.4 cGMP Batches. Lonza will, in accordance with the terms of this Agreement and Quality Agreement, manufacture at the Facility and Release to Customer, cGMP Batches that comply with the Manufacturing Process, cGMP and the Specifications, together with a Certificate of Analysis; provided, however, that cGMP manufacture shall not commence until at least [***] has been manufactured in compliance with the Specifications. Lonza will replace any cGMP Batch that does not meet the Specifications and will compensate Customer for Raw Materials and lost Customer Material (e.g. Antigens) in such a batch in accordance with clause 7.3.3. Prior to commencement of cGMP manufacturing, Lonza shall review the process assumptions. In the event that there is a material difference in the process assumptions as compared with the process results demonstrated during the manufacture of the Technical Batches, the Parties shall meet to discuss in good faith a revision to the Batch Price to reflect such difference.

2.5 Supply of Customer Information and Customer Materials. Customer shall supply to Lonza all Customer Information and Customer Materials and other information or materials that may be reasonably required by Lonza to perform the Services free of charge. Lonza shall not be responsible for any delays arising out of Customer's failure to provide such Customer Information, Customer Materials, or other information or materials reasonably required to perform the Services to Lonza, and [***]. For the avoidance of doubt, Lonza shall be responsible for shipment of Polysaccharide-CRM12 conjugates (the Antigens) from the Lonza Visp facility to the drug product manufacturing Facility. Lonza hereby undertakes not to use the Customer Materials or Customer Information (or any part thereof) for any purpose other than the performance of the Services under this Agreement. With respect to any Customer Materials, title shall remain with the Customer and shall not transfer to Lonza.

2.6 Raw Materials. Lonza shall procure all required Raw Materials as well as consumables other than those Raw Materials that are Customer Materials. Customer shall be responsible for payment for all consumables and Raw Materials ordered or irrevocably committed to be procured by Lonza hereunder for the manufacture of the Batches and/or the performance of development services as agreed upon between the Parties. Upon cancellation of any Batch or termination of the Agreement, all unused Raw Materials shall be paid for by Customer (to the extent Customer has not previously made such payment to Lonza and to the extent that Raw Materials cannot be used by Lonza for its own use or the use of one of its customers) within [***] days of invoice and at Customer's option will either be (a) held by Lonza for future use for the production of Product, (b) delivered to Customer, or (c) disposed of by Lonza.

**3. Project Management / Steering Committee**

3.1 Project Plans. With respect to a new project to be governed by this Agreement, a new Project Plan shall be added by agreement in a writing signed by the Parties and appended to Appendix A. Each Project Plan shall include a description of the Services to be provided, the Product to be manufactured, Specifications, a schedule for completion of the Project Plan, pricing details, and such other information as is necessary for relevant Services. In the event of a conflict between the terms of a Project Plan and this Agreement, the terms of this Agreement will govern.

3.2 Project Management. With respect to each Project Plan, each party will appoint a project manager who will be the party responsible for overseeing the Project Plan.

3.3 Steering Committee. Each Party shall name a mutually agreed upon equal number of representatives for the Steering Committee, which shall meet twice per calendar year, or as otherwise mutually agreed by the Parties. In the event that a Steering Committee dispute cannot be resolved, such dispute shall be escalated to a senior executive of each of Customer and Lonza.

The primary function of the Steering Committee is to ensure the ongoing communication between the Parties and discuss and resolve any issues arising under this Agreement. In addition to the primary function described above, the Steering Committee shall also take on the following responsibilities:

3.3.1 discuss and seek resolution of issues around management of the Services;

3.3.2 agree and monitor deadlines and milestones for the Services; and

3.3.3 discuss and recommend any changes to the Services (although such changes will not take effect until they have been incorporated into a written amendment to the Project Plan which has been signed by the Parties).

3.4 Person In Plant. During manufacturing of the first Technical Batch, Customer shall be permitted to have [***] at the drug product manufacturing Facility as reasonably requested by Customer, at any time during the Manufacturing Process for the purpose of observing, reporting on, and consulting as to the performance of the Services. During manufacturing of the GMP Batches, Customer shall be permitted to have [***] at the drug product manufacturing Facility as reasonably requested by Customer, at any time during the GMP Manufacturing Process for the purpose of observing and reporting on the performance of the Services.

Furthermore, unless otherwise agreed to by the Parties, if Lonza does not have suitable space at Lonza's Services site for drug product ("Drug Product Services Site"), Customer shall [***]. In addition, Customer shall be permitted to [***] within the Drug Product Services Site as visitor(s), for visits over periods to be determined by mutual agreement to (a) facilitate real-time (same time-zone) communications between SutroVax technical drug product team and the Lonza drug product team, (b) facilitate transfer of process and analytical technology between the companies; (c) facilitate master batch record review and approval process; (d) perform technical review of manufacturing batch data; and/or (e) augment program management by providing local input.

Each such employee or authorized representative shall be subject to and agree to abide by confidentiality obligations to Third Parties and Lonza's customary practices, and such employee agrees to comply with all instructions of Lonza's employees at the drug product manufacturing Facility and/or Drug Product Services Site.

**4. Quality**

4.1 Responsibility for quality assurance and quality control of Product shall be allocated between Customer and Lonza as set forth in the Quality Agreement and in Lonza standard operating procedures. If there is a conflict between the terms and conditions of this Agreement and the Quality Agreement, the terms and conditions of this Agreement shall prevail. If the Quality Agreement is not in place at the Effective Date, Lonza and Customer commit to enter into the Quality Agreement in a timely manner, but in no event later than the commencement of cGMP manufacturing.

4.2 Provisions regarding inspections by Regulatory Authorities and audits shall be set out in the Quality Agreement.

**5. Insurance**

5.1 Customer shall, during the Term prior to any clinical use of the Product, obtain and maintain at its own cost and expense from a qualified insurance company, comprehensive general liability insurance in the amount of at least [***] U.S. dollars. Customer shall at least [***] days prior to the first clinical use of a Product manufactured or Services provided under this Agreement, and for [***] years after delivery of the last such Product, obtain and maintain at its own cost and expense from a qualified insurance company, comprehensive general liability insurance including, but not limited to product liability coverage in the amount of at least [***] U.S. dollars. Lonza shall, during the Term and for [***] years after delivery of the last Product manufactured or Services provided under this Agreement, obtain and maintain at its own cost and expense from a qualified insurance company, comprehensive general liability insurance including, but not limited to product liability coverage in the amount of at least [***] Swiss Francs per claim. Each Party shall provide the respective other Party with a certificate of such insurance upon reasonable request.

**6. Forecasting, Ordering and Cancellation**

6.1 Forecasting. To the extent not already set forth in the then-current Project Plan, no later than the [***] of each [***], Customer shall supply Lonza with a written forecast showing Customer's good faith estimated [***] requirements for Batches for the [***] month period (the "Forecast"). No later than [***] days following Lonza's receipt of a Forecast, Lonza shall provide written notice to Customer of [***] and shall provide Customer with an estimated production schedule showing the estimated Commencement Date and delivery date of each Batch. The forecast and [***] given in this Section 6.1 shall not be binding on Customer or Lonza.

6.2 Purchase Orders. Customer shall place purchase orders binding on Customer for the number of Batches it wishes to order at least [***] months (or earlier as may be [***]) prior to the Commencement Date for such Batches in accordance with Lonza's most recent response to the Forecast. For the sake of clarity, Parties acknowledge that the lead times with respect to the issuance of Purchase Orders for commercial launch and supply need to be longer and will be agreed upon between the Parties and amended at a later stage.

Each binding purchase order shall be signed by Customer and shall authorize Lonza to manufacture such Batches of the Product as are set forth therein. Lonza shall not be obligated to commence manufacture of any Batch unless and until such written purchase order is accepted in writing by Lonza. Any delivery date set forth in Lonza's written confirmation of a purchase order shall be an estimated delivery date only. All ordered Batches shall be scheduled in a single Campaign in each calendar year unless otherwise agreed by Lonza. Any additional or inconsistent terms or conditions of any Customer purchase order, acknowledgement or similar standardized form given or received pursuant to this Agreement shall have no effect and such terms and conditions are hereby rejected. For clarity, the then-current Project Plan shall be deemed a binding Purchase Order for the Batches set forth in the Project Plan with the Commencement Date of such Batches being the commencement dates set forth in the Project Plan, and Customer shall not be required to place separate Purchase Orders for such Batches. Customer shall have the right to reschedule and/or cancel any of the Batches in the Project Plan in the same manner and pursuant to the same terms and conditions as the rescheduling and cancellation set forth in Sections 6.3 through 6.6 as if they were the Batches ordered through a Purchase Order.

6.3 Rescheduling. Lonza shall have the right to reschedule a Commencement Date of any Batch or Campaign upon reasonable prior written notice to Customer, provided that the rescheduled Commencement Date is less than [***] days from the Commencement Date originally estimated at the time of Lonza's acceptance of the binding purchase order, and further provided that Customer is able to provide the necessary Customer Materials. If the Customer requests to change the Commencement Date, Lonza will make all reasonable attempts to accommodate the request; provided, however, in the event that this change would impact other projects scheduled for occupancy in the designated suite or suites, manufacture of the Customer's Batch or Campaign may be delayed until an adequate time period is available in the Facility schedule. Unless otherwise agreed, any such change requested by Customer may result in a rescheduling fee. Any delay requested by Customer of more than [***] days shall be considered a cancellation pursuant to Section 6.4. Notwithstanding the foregoing, ordinary updates to the schedule during the execution of the Project Plan (via contract amendment /scope change) shall not be subject to a rescheduling fee.

6.4 Cancellation of a Binding Purchase Order. Customer may cancel a binding purchase order upon written notice to Lonza, subject to the payment of a cancellation fee as calculated below (the "Cancellation Fee"):

6.4.1 In the event that Customer provides written notice of cancellation of [***] to Lonza less than or equal to [***] prior to the Commencement Date of the first subject Batch, then [***] of the Batch Price of each such Batch cancelled is payable;

6.4.2 In the event that Customer provides written notice of cancellation of [***] to Lonza more than [***] but less than or equal to [***] prior to the Commencement Date of the first subject Batch, then [***] of the Batch Price of each such Batch cancelled is payable; and

For the avoidance of doubt, no Cancellation Fee is payable in the event that Customer provides (i) written notice of cancellation of [***] to Lonza more than [***] prior to the Commencement Date of the first subject Batch or (ii) written notice of cancellation of [***] to Lonza more than [***] prior to the Commencement Date of the first subject Batch.

6.4.3 Notwithstanding the provisions of this Clause 6.4, (a) Lonza will use commercially reasonable efforts to reschedule its Facility to mitigate any losses from a cancellation, and if Lonza is able to reallocate any reserved capacity for the performance of services for any third party during the applicable period, then Customer's obligation to pay the amounts under Sections 6.4.1, 6.4.2 or 6.4.3, shall be reduced pro-rata based on the use of such capacity for such third party during the applicable period and (b) notwithstanding anything to the contrary, no Cancellation Fee is payable by Customer for any cancellation or rescheduling to the extent resulting from Lonza's action or inaction, either under this Agreement or the 2016 Agreement or otherwise.

6.5 Payment of Cancellation Fee. Any Cancellation Fee shall be payable within thirty (30) days following the written notice of cancellation associated with the cancelled Batch. Any Cancellation Fee shall include all costs associated with the cancelled Batch, including any Raw Materials.

6.6 Replacement Project. Notwithstanding the foregoing, Lonza will use commercially reasonable efforts to secure a new project (but excluding any project then under contract with Lonza) for the cGMP manufacturing space, and for the same dates and duration that would have been occupied by Customer, and then, in such case, the Cancellation Fee for each Batch cancelled that is replaced by a Batch of the new project shall be reduced by an amount equal to one hundred percent (100%) of the production fees associated with such replacement Batch.

**7. Delivery and Acceptance**

7.1 Delivery. All Product shall be delivered FCA the Facility (as defined by Incoterms® 2010). Lonza shall deliver to Customer the Certificate of Analysis and such other documentation as is reasonably required to meet all applicable regulatory requirements of the Governmental Authorities not later than the date of delivery of Batches (the "Release"). With respect to any Customer Materials, title and risk of loss shall remain with the Customer and shall not transfer to Lonza. With respect to Product, title and risk of loss shall remain with Lonza until Release, and shall transfer to Customer upon Release in accordance with this provision.

7.2 Storage. Drug product Batches will be stored at no charge for up to [***] after Release; provided that any additional storage beyond [***] will be subject to availability and, if available, will be charged to Customer and will be subject to a separate agreement. Customer shall arrange for shipment and take delivery of such Batch(es) from the Facility, at Customer's expense, within [***] after Release or pay applicable storage costs, unless otherwise agreed to by the Parties. Lonza shall provide storage on a bill and hold basis for such Batch(es) at no charge for up to [***]; provided that any additional storage beyond [***] will be subject to availability and, if available, will be charged to Customer and will be subject to a separate agreement. In addition to Section 8.2, Customer shall be responsible for all value added tax (VAT) and any other applicable taxes, levies, import, duties and fees of whatever nature imposed as a result of any storage. Unless otherwise agreed to by the Parties, in no event shall Lonza be required to store any Batch for more than [***] calendar days after Release. Within [***] days following a written request from Lonza, Customer shall provide Lonza with a letter in form satisfactory to Lonza confirming the bill and hold status of each stored Batch.

7.3 Acceptance/Rejection of Product.

7.3.1 Promptly following Release of Batches, Customer shall inspect such Batches and shall have the right to test such Batches to determine compliance with the Specifications. Customer shall notify Lonza in writing of any rejection of a Batch based on any claim that it fails to meet Specifications within [***] days of Release, after which time all unrejected Batches shall be deemed accepted.

7.3.2 In the event that Lonza believes that a Batch has been incorrectly rejected, Lonza may require that Customer provide to it Batch samples for testing. Lonza may retain and test the samples of such Batch. In the event of a discrepancy between Customer's and Lonza's test results such that Lonza's test results fall within relevant Specifications, or there exists a dispute between the Parties over the extent to which such failure is attributable to a given Party, the Parties shall cause an independent laboratory promptly to review records, test data and perform comparative tests and/or analyses on samples of the Product that allegedly fails to conform to Specifications. Such independent laboratory shall be mutually agreed upon by the Parties. The independent laboratory's results shall be in writing and shall be final and binding save for manifest error. Unless otherwise agreed to by the Parties in writing, the costs associated with such testing and review shall be borne by the Party against whom the independent laboratory rules.

7.3.3 Lonza shall replace any Batch that failed to conform with the Specifications (a "Failed Batch") at no cost to Customer. In the event that it is determined (by the Parties or the independent laboratory) that such failure was [***] ("Lonza Responsibility"), (i) Lonza shall [***] and (ii) Customer shall provide Lonza with the Customer Material for each replacement [***]. Notwithstanding the foregoing, Lonza agrees to compensate Customer for lost Customer Materials (e.g. Antigens) in a Failed Batch. This compensation is capped to [***]. If any replacement cGMP Batch provided as replacement for a Failed Batch also fails to conform to the Specifications, then the Steering Committee shall decide in its sole discretion, if Lonza shall either replace such cGMP Batch or refund the amounts paid by Customer for such cGMP Batch. Such replacement shall be made as promptly as practicable, in light of available manufacturing capacity, after the confirmation of Lonza Responsibility, and in any case as soon as reasonably possible after confirmation of Lonza Responsibility. Where possible, such replacement Batch shall be manufactured with the next scheduled cGMP Batch or Campaign. Customer acknowledges and agrees that [***] with respect to a Failed Batch that is a Lonza Responsibility [***].

**8. Price and Payment**

8.1 Pricing for the Services provided by Lonza are set out in, and based on the assumptions and information set out in, the applicable Project Plan. In the event of changes to the Services based on Customer's request, Customer shall bear all additional costs. Conversely, if Services scope of work within the Project Plan is reduced by formal contract amendment I scope change, Lonza shall revise quoted price to accurately reflect the reduced Services. For the sake of clarity, Parties hereby agree that the Cap Agreement shall apply to all Customer payments.

8.2 Unless otherwise indicated in writing by Lonza, all Prices and charges are exclusive of value added tax (VAT) and of any other applicable taxes, levies, import, duties and fees of whatever nature imposed by or under the authority of any government or public authority and all such charges applicable to the Services (other than taxes on Lonza's income) shall be paid by Customer. When sending payment to Lonza, the Customer shall quote the relevant invoice number in its remittance advice.

8.3 Lonza shall issue invoices to Customer for [***] of the Price for Products or Services upon commencement thereof (the "Initiation Payment") and [***] upon Release of applicable Batches or completion of applicable Services (the "Completion Payment"), unless otherwise stated in the Project Plan. Charges for Raw Materials and the Raw Materials Fee for each Batch shall be invoiced upon the Release of each Batch or completion of applicable Services. Charges for consumables and wearables, as well as charges for Services provided by External Laboratories, shall be invoiced upon the Release of the applicable Batch or completion of applicable Services at cost plus a fee of [***]. Lonza shall for any stage that commences after 31 December 2019 or has not been completed by 31 December 2019, invoice the Initiation Payment for Products or Services upon commencement thereof. The Completion Payment for Products or Services shall be invoiced by Lonza either (i) [***] or (ii) on [***]. All invoices are strictly net and payment must be made within [***] days of date of invoice. Payment shall be made without deduction, deferment, set-off, lien or counterclaim, except as set forth in the Agreement or any Amendments. The provisions of this Clause 8.3, including the rate of markup charges set forth herein and in the definition of Raw Materials Fees, shall apply prospectively to all Services under the Agreement, including those Services to be performed after the Amendment Three Effective Date under Work Plan A-1, Work Plan A-2, Work Plan A-3 and Work Plan A-4. Notwithstanding anything to the contrary, any of Customer's payment obligations shall be subject to the arrangement of the Cap Agreement, if applicable.

8.4 If in default of payment of any undisputed invoice on the due date, interest shall accrue on any amount overdue at the lesser of (i) rate of two percent (2%) per month above the London Interbank Offered Rate (LIBOR) or (ii) the maximum rate allowable by applicable law, interest to accrue on a day to day basis until full payment; and Lonza shall, at its sole discretion, and without prejudice to any other of its accrued rights, be entitled to suspend the provision of the Services and or delivery of Product until all overdue amounts have been paid in full including interest for late payments.

8.5 Price adjustments.

8.5.1 Not more than once per calendar year, Lonza may adjust the Price in accordance with the [***] for the previous calendar year. The new Price reflecting such Batch Price adjustment shall be effective for any Batch for which the Commencement Date is on or after the date of Lonza's notice to Customer of the Price adjustment.

8.5.2 In addition to the above, the Price may be changed by Lonza, upon reasonable prior written notice to Customer (providing reasonable detail in support thereof), to reflect (i) an increase in variable costs (such as energy) by more than [***] (based on the initial Price or any previously amended Price), or for a process adjustment or assumption changes, and (ii) any material change in an environmental, safety or regulatory standard that substantially impacts Lonza's cost and ability to perform the Services, in each case to the extent not already passed through to Customer.

**9. Capital Equipment**

9.1 Upon agreement between the Parties, Lonza shall use commercially reasonable efforts to purchase Capital Equipment in a timely manner so as not to delay any of the Services to be performed by Lonza under a Project Plan. Parties shall notify each other in writing sufficiently in advance in the event that a Party foresees such purchase requirement.

**10. Intellectual Property**

10.1 Except as expressly otherwise provided herein, neither Party will, as a result of this Agreement, acquire any right, title, or interest in any Background Intellectual Property of the other Party.

10.2 Subject to Clause 10.3, Customer shall own all right, title, and interest in and to any and all Intellectual Property that Lonza and/or its Affiliates, the External Laboratories or other contractors or agents of Lonza develops, conceives, invents, first reduces to practice or makes, solely or jointly with Customer or others, in the performance of the Services, to the extent such Intellectual Property is [***] (collectively, the "New Customer Intellectual Property"). For avoidance of doubt, "New Customer Intellectual Property" shall include any material, processes or other items that solely embody, or that solely are claimed or covered by, any of the foregoing Intellectual Property, but excluding any New General Application Intellectual Property.

10.3 Notwithstanding Clause 10.2, and subject to the license granted in Clause 10.5, Lonza shall own all right, title and interest in Intellectual Property that Lonza and/or its Affiliates, the External Laboratories or other contractors or agents of Lonza, solely or jointly with Customer, develops, conceives, invents, or first reduces to practice or makes in the course of performance of the Services to the extent such Intellectual Property (i) [***] or (ii) [***] ("New General Application Intellectual Property"). For avoidance of doubt, "New General Application Intellectual Property" shall include any material, processes or other items that embody, or that are claimed or covered by, any of the foregoing Intellectual Property.

10.4 Lonza hereby assigns to Customer all of its right, title and interest in any New Customer Intellectual Property. Lonza shall execute, and shall require its personnel as well as its Affiliates, External Laboratories or other contractors or agents and their personnel involved in the performance of the Services to execute, any documents reasonably required to confirm Customer's ownership of the New Customer Intellectual Property, and any documents required to apply for, maintain and enforce any patent or other right in the New Customer Intellectual Property.

10.5 Subject to the terms and conditions set forth herein (including the payment of the Price as required above), Lonza hereby grants to Customer a non-exclusive, world-wide, fully paid-up, irrevocable, transferable license, including the right to grant sublicenses, under the New General Application Intellectual Property, to research, develop, make, have made, use, sell and import the Product.

10.6 Customer hereby grants Lonza the non-exclusive right to use the Customer Information, Customer Background Intellectual Property and New Customer Intellectual Property during the Term solely for the purpose of fulfilling its obligations under this Agreement; provided, however, that no license is granted to any Customer Background Intellectual Property that is owned or controlled by Sutro Biopharma, Inc.

10.7 Customer will have the right to transfer the Manufacturing Process to itself, its Affiliates and/or any third Party, provided, however, to the extent such technology transfer includes Lonza Confidential Information, or Lonza Background Intellectual Property, such technology transfer to any Third Party shall be subject to [***], and a reasonable royalty and/or licensing fee and terms to be agreed upon by the Parties. Lonza will not include in the Manufacturing Process any Lonza Confidential Information or Lonza Background Intellectual Property that would require Customer to pay any additional payment and/or royalty to Lonza in order to transfer the Manufacturing Process to itself, its Affiliates and/or any Third Party without first obtaining Customer's prior written consent and advising Customer as to the royalty structure and any other payment that would apply for the use of such additional technologies. If Customer has provided such consent and the Manufacturing Process includes the use of any such additional payment-bearing or royalty-bearing Lonza Confidential Information or Lonza Background Intellectual Property, then Customer will pay to Lonza an agreed royalty and/or other agreed payments for the use of Lonza Confidential Information or Lonza Background Intellectual Property. Lonza shall provide reasonably necessary documents to complete such technology transfer, including transfer of New General Application Intellectual Property, if applicable, and subject to the terms and conditions of this Clause 10.7, Lonza Confidential Information or Lonza Background Intellectual Property, if incorporated into the Manufacturing Process with Customer's consent, and Customer shall reimburse Lonza for any costs (based on a full-time employee rate for such support) and expenses, provided that the total cost of such assistance ( excluding any costs paid to Lonza for the use of Lonza's Confidential Information or Lonza Background Intellectual Property) will not exceed [***].

**11. Warranties**

11.1 Lonza warrants that:

11.1.1 the Services shall be performed in a professional and workmanlike manner and in accordance with all Applicable Laws;

11.1.2 Lonza will not knowingly include in the Manufacturing Process any elements that infringe any such intellectual or industrial property rights vested in any Third Party;

11.1.3 except with respect to any development services and Non-Clinical Batches (including the Technical Batches), the manufacture of Product shall be performed in accordance with cGMP and will meet the Specifications at the date of delivery;

11.1.4 the manufacture of the Non-Clinical Batches (including the Technical Batches) shall be performed as required in the Project Plan;

11.1.5 it or its Affiliate holds all necessary permits, approvals, consents and licenses to enable it to perform the Services at the Facility;

11.1.6 It has the necessary corporate authorizations to enter into and perform this Agreement;

11.1.7 Lonza has never been debarred under the Generic Drug Enforcement Act of 1992, 21 U.S.C. Sec. 335a (a) or (b) (the "Act"). In the event that during the term of this Agreement, Lonza (i) becomes debarred, suspended, excluded, sanctioned, or otherwise declared ineligible under the Act; Lonza agrees to promptly notify Customer. Lonza also agrees that in the event that it becomes debarred, suspended, excluded, sanctioned, or otherwise declared ineligible under the Act, it shall promptly cease all activities relating to this Agreement;

11.1.8 subject to payment of undisputed invoices, title to all Product and all New Customer Intellectual Property provided to Customer under this Agreement shall pass free and clear of any security interest, lien or other encumbrance in favour of Lonza; and

11.2 Customer warrants that:

11.2.1 as of the date of this Agreement to the best of the Customer's knowledge and belief, the Customer has all the rights necessary to permit Lonza to perform the Services without infringing the Intellectual Property rights of any Third Party and the performance of the Services shall not infringe any Third Party Intellectual Property rights;

11.2.2 Customer will promptly notify Lonza in writing if it receives or is notified of a formal written claim from a Third Party that Customer Information and/or Customer Intellectual Property or that the use by Lonza thereof for the provision of the Services infringes any Intellectual Property or other rights of any Third Party; and

11.2.3 Customer has the necessary corporate authorizations to enter into this Agreement.

11.3 DISCLAIMER: THE WARRANTIES EXPRESSLY SET FORTH IN THIS AGREEMENT ARE IN LIEU OF ALL OTHER WARRANTIES, AND ALL OTHER WARRANTIES, BOTH EXPRESS AND IMPLIED, ARE EXPRESSLY DISCLAIMED, INCLUDING WITHOUT LIMITATION ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

11.4 Debarment.

11.4.1 In the event a Party receives a notice from the other party ("Defaulting Party") or otherwise becomes aware that a debarment, suspension, exclusion, sanction, or declaration of ineligibility action has been brought against the Defaulting Party; then the Party receiving such notice shall have the right to terminate this Agreement immediately; provided that if such event shall occur, the Party receiving such notice shall not have such right of termination if the Defaulting Party is disputing and defending such action and the Defaulting Party is otherwise able to perform its services in the manner required under this Agreement.

11.4.2 Each Party shall ensure that it will not knowingly use in any capacity the services of any individual, corporation, partnership or association which has been debarred under 21 U.S.C. Sec. 335a(a) or (b), or listed in the DHHS/OIG List of Excluded Individuals/Entities or the General Services Administration's Listing of Parties Excluded from Federal Procurement and Non-Procurement Programs.

**12. Indemnification and Liability**

12.1 Indemnification by Lonza. Lonza shall indemnify the Customer, its Affiliates, and their respective officers, employees and agents ("Customer lndemnitees") for any loss, damage, costs and expenses (including reasonable attorney fees) that Customer lndemnitees may suffer as a result of any Third Party claim arising directly out of [***] except, in each case, to the extent that such claims resulted from the negligence, intentional misconduct or breach of this Agreement by any Customer lndemnitees. Notwithstanding the foregoing, Lonza shall have no obligations under this clause 12.1 for any liabilities, expenses, or costs to the extent arising out of or relating to claims covered under clause 12.2.

12.2 Indemnification by Customer. Customer shall indemnify Lonza, its Affiliates, and their respective officers, employees and agents ("Lonza lndemnitees") from and against any loss, damage, costs and expenses (including reasonable attorney fees) that Lonza lndemnltees may suffer as a result of any Third Party claim arising directly out of [***]; except, in each case, to the extent that such claims resulted from the negligence, intentional misconduct or breach of this Agreement by any Lonza Indemnitees. Notwithstanding the foregoing, Customer shall have no obligations under this clause 12.2 for any liabilities, expenses, or costs to the extent arising out of or relating to claims covered under clause 12.1.

12.3 Indemnification Procedure. If the Party to be indemnified intends to claim indemnification under this Clause 12, it shall promptly notify the indemnifying Party in writing of such claim. The indemnitor shall have the right to control the defense and/or settlement thereof; provided, however, that (i) the indemnitor must obtain the prior written consent of the indemnitee (not to be unreasonably withheld) before entering into any settlement of such Third Party claim, and (ii) any indemnitee shall have the right to retain its own counsel at its own expense. The indemnitee, its employees and agents, shall reasonably cooperate with the indemnitor in the investigation of any liability covered by this Clause 12. The failure to deliver prompt written notice to the indemnitor of any claim, to the extent prejudicial to its ability to defend such claim, shall relieve the indemnitor of any obligation to the indemnitee under this Clause 12.

12.4 DISCLAIMER OF CONSEQUENTIAL DAMAGES. IN NO EVENT SHALL EITHER PARTY BE LIABLE TO THE OTHER PARTY FOR INCIDENTAL, INDIRECT, SPECIAL, PUNITIVE OR CONSEQUENTIAL DAMAGES, LOST PROFITS OR LOST REVENUES ARISING FROM OR RELATED TO THIS AGREEMENT, EXCEPT TO THE EXTENT RESULTING FROM FRAUD, GROSS NEGLIGENCE OR INTENTIONAL MISCONDUCT AND/OR FOR EITHER PARTY'S BREACH OF ARTICLE 13 HEREOF.

12.5 LIMITATION OF LIABILITY. LONZA'S LIABILITY UNDER THIS AGREEMENT SHALL IN NO EVENT EXCEED, IN THE AGGREGATE, [***], EXCEPT TO THE EXTENT RESULTING FROM LONZA'S FRAUD, GROSS NEGLIGENCE OR INTENTIONAL MISCONDUCT.

**13. Confidentiality**

13.1 A Party receiving Confidential Information (the "Receiving Party") agrees to strictly keep secret any and all Confidential Information received during the Term from or on behalf of the other Party (the "Disclosing Party") using at least the same level of measures as it uses to protect its own Confidential Information, but in any case at least commercially reasonable and customary efforts. Confidential Information shall include information disclosed in any form including but not limited to in writing, orally, graphically or in electronic or other form to the Receiving Party, observed by the Receiving Party or its employees, agents, consultants, or representatives, or otherwise learned by the Receiving Party under this Agreement, which the Receiving Party knows or reasonably should know is confidential or proprietary.

13.2 Notwithstanding the foregoing, Receiving Party may disclose to any courts and/or other authorities Confidential Information which is or will be required pursuant to applicable governmental or administrative or public law, rule, regulation or order. In such case the Party that received the Confidential Information will, to the extent legally permitted, inform the other Party promptly in writing and cooperate with the Disclosing Party in seeking to minimize the extent of Confidential Information which is required to be disclosed to the courts and/or authorities.

13.3 The obligation to maintain confidentiality under this Agreement does not apply to Confidential Information, which:

13.3.1 at the time of disclosure was publicly available; or

13.3.2 is or becomes publicly available other than as a result of a breach of this Agreement by the Receiving Party; or

13.3.3 as the Receiving Party can establish by competent proof, was rightfully in its possession at the time of disclosure by the Disclosing Party and had not been received from or on behalf of Disclosing Party; or

13.3.4 is supplied to a Party by a Third Party which was not in breach of an obligation of confidentiality to Disclosing Party or any other party; or

13.3.5 is developed by the Receiving Party independently from and without use of the Confidential Information, as evidenced by contemporaneous written records

13.4 The Receiving Party will use Confidential Information only for the purposes of this Agreement and will not make any use of the Confidential Information for its own separate benefit or the benefit of any Third Party including, without limitation, with respect to research or product development or any reverse engineering or similar testing. The Receiving Party agrees to return or destroy promptly (and certify such destruction) on Disclosing Party's request all written or tangible Confidential Information of the Disclosing Party, except that one copy of such Confidential Information may be kept by the Receiving Party in its confidential files for record keeping purposes only.

13.5 Each Party will restrict the disclosure of Confidential Information to such officers, employees, professional advisers, finance-providers, consultants and representatives of itself and its Affiliates who have been informed of the confidential nature of the Confidential Information and who have a need to know such Confidential Information for the purpose of this Agreement or an applicable financing or acquisition. Both Parties may disclose Confidential Information of the other Party and its Affiliates to potential and actual acquirers provided such disclosure is limited to the terms of this Agreement. Customer also may disclose to its potential and actual: (i) acquirers and (ii) bona fide collaborators in the research, development and commercialization of the Products, the work product provided to Customer by Lonza as a consequence of the provision of the Services. Prior to disclosure to such persons, the Receiving Party shall inform the Disclosing Party and it shall bind its and its Affiliates' officers, employees, consultants and representatives to confidentiality and non-use obligations no less stringent than those set forth herein. The Receiving Party shall notify the Disclosing Party as promptly as practicable of any unauthorized use or disclosure of the Confidential Information.

13.6 The Receiving Party shall at any time be fully liable for any and all breaches of the confidentiality obligations in this Clause 13 by any of its Affiliates or the employees, consultants, potential and actual acquirers, and representatives of itself or its Affiliates.

13.7 Each Party hereto expressly agrees that any breach or threatened breach of the undertakings of confidentiality provided under this Clause 13 by a Party may cause irreparable harm to the other Party and that money damages may not provide a sufficient remedy to the non-breaching Party for any breach or threatened breach. In the event of any breach and/or threatened breach, then, in addition to all other remedies available at law or in equity, the non-breaching Party shall be entitled to seek injunctive relief and any other relief deemed appropriate by the non-breaching Party.

**14. Term and Termination**

14.1 Term. This Agreement shall commence on the Effective Date and shall end on the fifth (5th) anniversary of the Effective Date unless terminated earlier as provided herein or extended by mutual written consent of the Parties (the "Term"). Notwithstanding the foregoing, each Project Plan may have separate term and termination provisions so long as the term of any Project Plan does not extend beyond the Term.

14.2 Termination. This Agreement may be terminated as follows:

14.2.1 by either Party for any reason upon [***] prior written notice; provided that Lonza may not provide such notice until the [***]. In such an event all cancellation terms in this Agreement shall apply (except, in the case of termination by Lonza pursuant to Clause 14.2.1, the Cancellation Fees shall not apply), and the Customer shall make payments for work commenced and performed under any purchase order(s) by Lonza prior to the termination notice date;

14.2.2 by either Party if the other Party breaches a material provision of this Agreement or a Project Plan and fails to cure such breach to the reasonable satisfaction of the non-breaching Party within [***] following written notification of such breach from the non-breaching party to the breaching party; provided, however, that such [***] period shall be extended as agreed by the Parties if the identified breach is incapable of cure within [***] and if the breaching Party provides a plan and timeline to cure the breach, promptly commences efforts to cure the breach and diligently prosecutes such cure [***];

14.2.3 by either Party, immediately, if the other Party becomes insolvent, is dissolved or liquidated, makes a general assignment for the benefit of its creditors, or files or has filed against it, a petition in bankruptcy or has a receiver appointed for a substantial part of its assets; or

14.2.4 by either Party pursuant to Clause 15.

14.3 Consequences of Termination. In the event of termination hereunder, Lonza shall be compensated for (i) Services rendered up to the date of termination, including in respect of any Product in-process; (ii) all costs incurred through the date of termination, including Raw Materials costs and Raw Materials Fees for Raw Materials used or purchased for use in connection with the Project Plan; (iii) all unreimbursed Capital Equipment and related decommissioning charges incurred pursuant to Clause 9; (iv) all Cancellation Fees due under Clause 6.4. In the case of termination by Lonza for Customer's material breach, Cancellation Fees shall be calculated as of the date of written notice of termination.

14.4 Survival. The rights and obligations of each Party which by their nature survive the termination or expiration of this Agreement shall survive the termination or expiration of this Agreement, including Clauses 5, 10-13 and 16 (to the extent relevant).

**15. Force Majeure**

15.1 If Lonza is prevented or delayed in the performance of any of its obligations under the Agreement by Force Majeure and gives written notice thereof to Customer specifying the matters constituting Force Majeure together with such evidence as Lonza reasonably can give and specifying the period for which it is estimated that such prevention or delay will continue, Lonza shall be excused from the performance or the punctual performance of such obligations as the case may be from the date of such notice for so long as such cause of prevention or delay shall continue. Provided that, if such Force Majeure persists for a period of [***] or more, Customer may terminate this Agreement by delivering written notice to Lonza.

15.2 "Force Majeure" shall be deemed to include any reason or cause beyond Lonza's reasonable control affecting the performance by Lonza of its obligations under the Agreement, including, but not limited to, any cause arising from or attributable to acts of God, strike, labor troubles, restrictive governmental orders or decrees, riots, insurrection, war, terrorist acts, or the inability of Lonza to obtain any required raw material, energy source, equipment, labor or transportation, at prices and on terms deemed by Lonza to be reasonably practicable, from Lonza's usual sources of supply.

15.3 With regard to Lonza, any such event of Force Majeure affecting services or production at its Affiliates or suppliers shall be regarded as an event of Force Majeure.

**16. Miscellaneous**

16.1 Severability. If any provision hereof is or becomes at any time illegal, invalid or unenforceable in any respect, neither the legality, validity nor enforceability of the remaining provisions hereof shall in any way be affected or impaired thereby. The Parties hereto undertake to substitute any illegal, invalid or unenforceable provision by a provision which is as far as possible commercially equivalent considering the legal interests and the Purpose.

16.2 Amendments. Modifications and/or amendments of this Agreement must be in writing and signed by the Parties.

16.3 Assignment. Lonza shall be entitled to instruct one or more of its Affiliates to perform any of Lonza's obligations contained in this Agreement, but Lonza shall remain fully responsible in respect of those obligations. Neither Party may assign its interest under this Agreement without the prior written consent of the other Party, such consent not to be unreasonably withheld, conditioned or delayed, provided, however that either Party may

assign this Agreement to (i) any Affiliate of such Party or (ii) any third party in connection with the sale or transfer (by whatever method) of all or substantially all of the assets of the business or Product of such Party to which this Agreement relates, whether by merger, consolidation, acquisition or other form of business combination. Any purported assignment without a required consent shall be void. No assignment shall relieve any Party of responsibility for the performance of any obligation that accrued prior to the effective date of such assignment. Lonza shall be entitled to sell, assign and/or transfer its trade receivables resulting from this Agreement without the consent of the Customer.

16.4 Notice. All notices must be written and sent to the address of the Party first set forth above. All notices must be given (a) by personal delivery, with receipt acknowledged, (b) by facsimile followed by hard copy delivered by the methods under (c) or (d), (c) by prepaid certified or registered mail, return receipt requested, or (d) by prepaid recognized next business day delivery service. Notices will be effective upon receipt or at a later date slated in the notice.

16.5 Governing Law/Jurisdiction. This Agreement is governed in all respects by the laws of the State of Delaware, without regard to its conflicts of laws principles. The Parties agree to submit to the jurisdiction of the state and federal courts located in Delaware.

16.6 Entire Agreement. This Agreement contains the entire agreement between the Parties as to the subject matter hereof and supersedes all prior and contemporaneous agreements with respect to the subject matter hereof. This Agreement may be executed in any number of counterparts, each of which shall be deemed to be an original, and all of which together shall constitute one and the same document. Each Party acknowledges that an original signature or a copy thereof transmitted by facsimile or by .pdf shall constitute an original signature for purposes of this Agreement.

**IN WITNESS WHEREOF**, each of the Parties hereto has caused this Development and Manufacturing Services Agreement to be executed by its duly authorized representative effective as of the date written above.

**LONZA LTD**

By: /s/ *Cordula Altekrüger*
Name Cordula Altekrüger
Title Senior Legal Counsel
Date

By: */s/ Bart A. M. van Aarnhem*
Name Bart A. M. van Aarnhem
Title Senior Legal Counsel
Date 27 November 2018

**SUTROVAX INC.**

By: */s/ Grant E. Pickering*
Name Grant E. Pickering
Title President & CEO
Date October 29, 2018

**Exhibit 10.12**

**CERTAIN CONFIDENTIAL INFORMATION CONTAINED IN THIS DOCUMENT, MARKED BY [***], HAS BEEN OMITTED BECAUSE IT IS BOTH (I) NOT MATERIAL AND (II) WOULD LIKELY CAUSE COMPETITIVE HARM IF PUBLICLY DISCLOSED.**

# Development and Manufacturing Services Agreement

(the "Agreement")

by and between

**Lonza Ltd**
Münchensteinerstrasse 38
CH-4002 Basel
Switzerland

- hereinafter "**Lonza**" -

and

**SutroVax Inc.**
400 E Jamie Ct #205
South San Francisco, CA 94080
United States

- hereinafter "**Customer**" -

Effective as of October 21, 2016 (the "Effective Date")

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**Recitals**

WHEREAS, Customer is engaged in the development and research of certain products and requires assistance in the development and manufacture of product;

WHEREAS, Lonza and its Affiliates have expertise in the evaluation, development and manufacture of products;

WHEREAS, Customer wishes to engage Lonza for Services relating to the development and manufacture of the Product as described in this Agreement; and

WHEREAS, Lonza, or its Affiliate, is prepared to perform such Services for Customer on the terms and subject to the conditions set out herein.

NOW, THEREFORE, in consideration of the mutual promises contained herein, and for other good and valuable consideration, the parties intending to be legally bound, agree as follows:

**1 Definitions and Interpretation**

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| "Affiliate" | means any company, partnership or other entity which directly or indirectly Controls, is Controlled by or is under common Control with the relevant Party. "Control" means the ownership of more than fifty percent (50%) of the issued share capital or the legal power to direct or cause the direction of the general management and policies of the relevant Party. |
| "Agreement" | means this agreement incorporating all Appendices, as amended from time to time by written agreement of the Parties. |
| "Applicable Laws" | means all relevant U.S. and European Union federal, state and local laws, statutes, rules, and regulations which are applicable to a Party's activities hereunder, including, without limitation, the applicable regulations and guidelines of any Governmental Authority and all applicable cGMP together with amendments thereto. |
| "Approval" | means the first marketing approval by the FDA or EMA of Product from the Facility for commercial supply. |
| "Background Intellectual Property" | means any Intellectual Property either (i) owned or controlled by a Party prior to the Effective Date or (ii) developed or acquired by a Party independently from the performance of the Services hereunder during the Term of this Agreement, and, in the case of Lonza, without use or reliance on Customer Materials or Customer Information, and, in the case of the Customer, without use or reliance on Lonza materials or Lonza Information. |
| "Batch" | means the Product derived from a single run of the Manufacturing Process at a scale to be mutually agreed by the Parties. |
| "Batch Price" | means the Price of each Batch. |

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| “Campaign” | means a series of no less than [***] cGMP Batches manufactured consecutively. |
| “Cancellation Fee” | has the meaning given in Clause 6.5. |
| “Capital Equipment” | means those certain pieces of equipment described in the Project Plan: (i) that are specific to the production of the Product and (ii) that are purchased by Customer or for which Customer reimburses Lonza, including, without limitation, the related documentation regarding the design, validation, operation, calibration and maintenance of such equipment. |
| “Certificate of Analysis” | means a document prepared by Lonza listing tests performed by Lonza or approved External Laboratories, the Specifications and test results. |
| “cGMP” | means those laws and regulations applicable in the U.S. and Europe, relating to the manufacture of medicinal products for human use, including, without limitation, current good manufacturing practices as specified in the ICH guidelines, including without limitation, ICH Q7A “ICH Good Manufacturing Practice Guide for Active Pharmaceutical Ingredients”, US Federal Food Drug and Cosmetic Act at 21CFR (Chapters 210, 211, 600 and 610) and the Guide to Good Manufacturing Practices for Medicinal Products as promulgated under European Directive 91/356/EEC. For the avoidance of doubt, Lonza’s operational quality standards are defined in internal cGMP policy documents. |
| “cGMP Batches” | means any Batches which are required under the Project Plan to be manufactured in accordance with cGMP. |
| “Change” | means any change to the Services or pricing incorporated into a written amendment to the Agreement in accordance with clause 16.2 or effected in accordance with the Quality Agreement. |
| “Commencement Date” | means the date of commencement of manufacturing activities for a Batch hereunder. |
| “Confidential Information” | means Customer Information and/or Lonza Information, as the context requires. |
| “Customer Information” | means all technical and other information which at the time of disclosure by Customer was not known to Lonza or in the public domain relating to the Manufacturing Process and the Product, from time to time supplied by the Customer to Lonza, including any materials supplied by Customer to Lonza in accordance with the Project Plan. |
| “Customer Materials” | means any Raw Materials, components of Product, or other materials of any nature provided by Customer. |
| “EMA” | means the European Medicines Agency or any successor agency thereto. |

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| “Engineering Batches” | means a Batch that is intended to demonstrate the transfer of the Manufacturing Process to the Facility. |
| “External Laboratories” | means any Third Party instructed by Lonza, with Customer’s prior consent, which is to conduct activities required to complete the Services. |
| “Facility” | means Lonza’s manufacturing facilities in Visp, Switzerland, or such other Lonza facility as may be agreed upon by the Parties. |
| “FDA” | means the United States Food and Drug Administration, or any successor agency thereto. |
| “Governmental Authority” | means any Regulatory Authority and any national, multi-national, regional, state or local regulatory agency, department, bureau, or other governmental entity in the U.S., Switzerland or the European Union. |
| “Intellectual Property” | means (i) inventions (whether or not patentable), patents, trade secrets, copyrights, trademarks, trade names and domain names, rights in designs, rights in computer software, database rights, rights in confidential information (including know-how) and any other intellectual property rights, in each case whether registered or unregistered, (ii) all applications (or rights to apply) for, and renewals or extensions of, any of the rights described in the foregoing clause (i) and (iii) and all rights and applications that are similar or equivalent to the rights and application described in the foregoing clauses (i) and (ii), which exist now, or which come to exist in the future, in any part of the world. |
| “Lonza Information” | means all information that is proprietary to Lonza or any Affiliate of Lonza and that is maintained in confidence by Lonza or any Affiliate of Lonza and that is disclosed by Lonza or any Affiliate of Lonza to Customer under or in connection with this Agreement, including without limitation, any and all Lonza know-how and trade secrets. |
| “Manufacturing Process” | means the production process provided by Customer for the manufacture of Product, as such process may be improved or modified from time to time by agreement of the Parties in writing. |
| “Master Batch Record” | means the document, proposed by Lonza and approved by Customer, which defines the manufacturing methods, test methods and other procedures, directions and controls associated with the manufacture and testing of Product. |
| “New Customer Intellectual Property” | has the meaning given in Clause 10.2. |
| “New General Application Intellectual Property” | has the meaning given in Clause 10.3. |
| “Party” | means each of Lonza and Customer and, together, the “Parties”. |

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| “Price” | means the price for the Services and Products as set out in Appendix A. |
| “Process Validation Batch” | means a Batch that is produced with the intent to show reproducibility of the Manufacturing Process and is required to complete process validation studies. |
| “Product” or “Products” | means the proprietary molecule identified by Customer as CRM12 (Lonza code: SUO-001) and Polysaccharide + CRM12 Conjugates (Lonza code: SUO-002), to be manufactured using the Manufacturing Process by Lonza for Customer as specified in the Project Plans. |
| “Project Plan” or “Project Plans” | means the plans describing the Services to be performed by Lonza under this Agreement, including any update and amendment of the Project Plan to which the Parties may agree from time to time. The initial Project Plans are attached hereto as Appendix A. |
| “Quality Agreement” | means the quality agreement, attached hereto as Appendix B, setting out the responsibilities of the Parties in relation to quality as required for compliance with cGMP. |
| “Raw Materials” | means all ingredients, solvents, consumables and other components of the Product required to perform the Manufacturing Process or Services set forth in the bill of materials detailing the same (including Resins but excluding any consumables or wearables). |
| “Raw Materials Fee” | means the procurement and handling fee of [***] of the acquisition cost of Raw Materials (save for polysaccharides for conjugation that are provided by Sutrovax) by Lonza that is charged to the Customer in addition to the cost of such Raw Materials. Resins are charged at a fee of [***] as set forth in Clause 8.3. |
| “Regulatory Authority” | means the FDA, EMA and any other similar regulatory authorities as may be agreed upon in writing by the Parties. |
| “Release” | has the meaning given in Clause 7.1. |
| “Resin” | means the chromatographic media and/or UF membranes intended to refine or purify the Product, as specified in the Master Batch Record. |
| “Services” | means all or any part of the services to be performed by Lonza under this Agreement (including, without limitation, process and analytical method transfer, process development, process optimization, validation, clinical and commercial manufacturing, as well as quality control and quality assurance activities), particulars of which are set out in a Project Plan. |
| “Specifications” | means the analytical tests and acceptance criteria of the Product as specified in Appendix C, which may be amended from time to time in accordance with this Agreement. |
| “Term” | has the meaning given in Clause 14.1. |
| “Third Party” | means any party other than Customer, Lonza and their respective Affiliates. |

In this Agreement references to the Parties are to the Parties to this Agreement, headings are used for convenience only and do not affect its interpretation, references to a statutory provision include references to the statutory provision as modified or re-enacted or both from time to time and to any subordinate legislation made under the statutory provision, references to the singular include the plural and vice versa, and references to the word "including" are to be construed without limitation.

**2 Performance of Services**

2.1 Performance of Services. Subject to Clause 2.3, Lonza shall itself and through its Affiliates, diligently carry out the Services as provided in the Project Plan and use commercially reasonable efforts to perform the Services without any material defect and according to the estimated timelines as set forth in the Project Plan. Lonza shall retain appropriately qualified and trained personnel with the requisite knowledge and experience to perform the Services in accordance with this Agreement. Lonza may subcontract or delegate any of its rights or obligations under this Agreement to perform the Services; provided, that any External Laboratories shall be subject to the same obligations and other provisions contained in this Agreement or any applicable Project Plan, including obligations of confidentiality at least as stringent, and as protective of Customer, as those obligations of confidence and non-use imposed upon Lonza and provided that such External Laboratories shall be subject to obligations to act diligently. Lonza shall not be responsible for analytical lab services performed by External Laboratories.

2.2 Technology Transfer. The Parties expressly agree that they shall work together to transfer the Manufacturing Process to the Facility, including implementing the technology transfer plan set forth in Project Plan. Customer shall fully support such technology transfer as reasonably requested by Lonza.

2.3 Engineering Batches. Lonza shall manufacture Engineering Batches in accordance with the Project Plan. Customer shall have the right to make whatever further use of the non-cGMP Engineering Batches as it shall determine, provided that Customer pays for such Batches, such use is not for human use and does not violate any Applicable Laws. Lonza makes no warranty that Engineering Batches will meet cGMP or the Specifications. If Lonza determines that an Engineering Batch does meet cGMP and the Specifications, it will release such Engineering Batch as a cGMP Batch. Regardless of whether any Engineering Batch meets cGMP or the Specifications, Customer shall pay to Lonza the Price for such Engineering Batch that were executed in accordance with mutually agreed plans and meet a mutually agreed specification for bioburden, plus the Raw Materials Fee associated with such Engineering Batches. If the Engineering Batch was not performed in accordance with mutually agreed plans or does not meet the agreed bioburden specification, then Lonza shall bear the costs of replacing the Batch, the Raw Materials and Customer Materials for any replacement Engineering Batch. For each CRM12 batch, the Raw Materials liability may be up to a maximum amount of [***]. For each bioconjugate batch, the Raw Materials liability (i) during storage of each bioconjugate batch is limited to [***], (ii) for manufacturing of each bioconjugate batch is limited to [***] and (iii) per manufacturing campaign is limited to [***].

2.4 cGMP Batches. Lonza will, in accordance with the terms of this Agreement and Quality Agreement, manufacture at the Facility and Release to Customer, cGMP Batches that comply with the Manufacturing Process, cGMP and the Specifications, together with a Certificate of Analysis; provided, however, that cGMP manufacture shall not commence until at least [***] has been manufactured in compliance with cGMP and Specifications. Lonza will bear the risk of replacing any Raw Materials or Customer Materials that were consumed in any cGMP Batch that does not meet the Specifications and is not released to Customer, and after [***], Lonza will bear the risk of replacing any Batch that does not meet the Specifications. For each CRM12 batch, the Raw

Materials liability may be up to a maximum amount of [***]. (i) during storage of each bioconjugate batch is limited to [***], (ii) for manufacturing of each bioconjugate batch is limited to [***] and (iii) per manufacturing campaign is limited to [***]. Prior to commencement of cGMP manufacturing, Lonza shall review the process assumptions. In the event that there is a material difference in the process assumptions as compared with the process results demonstrated during the manufacture of Engineering Batches, the Parties shall meet to discuss in good faith a revision to the Batch Price to reflect such difference.

2.5 Process Validation Batches. Lonza shall manufacture and deliver Process Validation Batches as mutually agreed by Parties sufficient to document the operability and reproducibility of the Manufacturing Process and permit the Parties to complete and file the necessary regulatory documents.

2.5.1 Prior to commencement of Process Validation Batches, Lonza and Customer shall agree a process validation plan identifying the validation requirements of the Manufacturing Process. All process validation activities are excluded from the Price of Process Validation Batches shall be approved by the Customer in advance and shall be paid for by the Customer at the Price set out in the applicable Project Plan.

2.5.2 Any regulatory support activities (including pre-Approval inspection) required and agreed to by Customer to support the Approval of the Product from the Facility shall be performed and supported by Lonza as reasonably requested by Customer. All such regulatory support activities are excluded from the Price of Process Validation Batches, shall be approved by the Customer in advance, and shall be paid for by the Customer at the Price set out in the applicable Project Plan.

2.6 Supply of Customer Information and Customer Materials. Customer shall supply to Lonza all Customer Information and Customer Materials and other information or materials that may be reasonably required by Lonza to perform the Services. Lonza shall not be responsible for any delays arising out of Customer's failure to provide such Customer Information, Customer Materials, or other information or materials reasonably required to perform the Services to Lonza, and [***]. Lonza hereby undertakes not to use the Customer Materials or Customer Information (or any part thereof) for any purpose other than the performance of the Services under this Agreement. With respect to any Customer Materials, title shall remain with the Customer and shall not transfer to Lonza.

2.7 Raw Materials. Lonza shall procure all required Raw Materials as well as consumables other than those Raw Materials that are Customer Materials. Customer shall be responsible for payment for all consumables and Raw Materials ordered or irrevocably committed to be procured by Lonza hereunder. Upon cancellation of any Batch or termination of the Agreement, all unused Raw Materials shall be paid for by Customer within [***] days of invoice and at Customer's option will either be (a) held by Lonza for future use for the production of Product, (b) delivered to Customer, or (c) disposed of by Lonza.

**3 Project Management / Steering Committee**

3.1 Project Plans. With respect to a new project to be governed by this Agreement, a new Project Plan shall be added by agreement in a writing signed by the Parties and appended to Appendix A. Each Project Plan shall include a description of the Services to be provided, the Product to be manufactured, Specifications, a schedule for completion of the Project Plan, pricing details, and such other information as is necessary for relevant Services. In the event of a conflict between the terms of a Project Plan and this Agreement, the terms of this Agreement will govern.

3.2 Project Management. With respect to each Project Plan, each party will appoint a project manager who will be the party responsible for overseeing the Project Plan.

3.3 Steering Committee. Each Party shall name a mutually agreed upon equal number of representatives for the Steering Committee, which shall meet twice per calendar year, or as otherwise mutually agreed by the Parties. In the event that a Steering Committee dispute cannot be resolved, such dispute shall be escalated to a senior executive of each of Customer and Lonza.

The primary function of the Steering Committee is to ensure the ongoing communication between the Parties and discuss and resolve any issues arising under this Agreement. In addition to the primary function described above, the Steering Committee shall also take on the following responsibilities:

3.3.1 discuss and seek resolution of issues around management of the Services;

3.3.2 agree and monitor deadlines and milestones for the Services; and

3.3.3 discuss and recommend any changes to the Services (although such changes will not take effect until they have been incorporated into a written amendment to the Project Plan which has been signed by the Parties).

3.4 Person in Plant. Customer shall be permitted to have, [***], [***] at the Facility as reasonably requested by Customer, [***] for the purpose of observing, reporting on, and consulting as to the performance of the Services. Such [***] shall be subject to and agree to abide by confidentiality obligations to Third Parties and Lonza's customary practices and operating procedures regarding persons in plant, and such [***] agrees to comply with all instructions of Lonza's employees at the Facility.

**4 Quality**

4.1 Responsibility for quality assurance and quality control of Product shall be allocated between Customer and Lonza as set forth in the Quality Agreement and in Lonza standard operating procedures. If there is a conflict between the terms and conditions of this Agreement and the Quality Agreement, the terms and conditions of this Agreement shall prevail. If the Quality Agreement is not in place at the Effective Date, Lonza and Customer commit to enter into the Quality Agreement in a timely manner, but in no event later than the commencement of cGMP manufacturing.

4.2 Provisions regarding inspections by Regulatory Authorities and audits shall be set out in the Quality Agreement.

**5 Insurance**

5.1 Customer shall, during the Term prior to any clinical use of the Product, obtain and maintain at its own cost and expense from a qualified insurance company, comprehensive general liability insurance in the amount of at least [***]. Customer shall at least [***] days prior to the first clinical use of a Product manufactured or Services provided under this Agreement, and for [***] years after delivery of the last such Product, obtain and maintain at its own cost and expense from a qualified insurance company, comprehensive general liability insurance including, but not limited to product liability coverage in the amount of at least [***]. Lonza shall, during the Term and for [***] years after delivery of the last Product manufactured or Services provided under this Agreement, obtain and maintain at its own cost and expense from a qualified insurance company, comprehensive general liability insurance including, but not limited to product liability coverage in the amount of at least [***]. Each Party shall provide the respective other Party with a certificate of such insurance upon reasonable request.

**6 Forecasting, Ordering and Cancellation**

6.1 Forecasting. No later than the[***] day of each [***], Customer shall supply Lonza with a written forecast showing Customer's good faith estimated [***] requirements for Batches for the following [***] month period (the "Forecast"). No later than [***] following Lonza's receipt of a Forecast, Lonza shall provide written notice to Customer of [***] and shall provide Customer with an estimated production schedule showing the estimated Commencement Date and delivery date of each Batch. The forecast and [***] given in this Section 6.1 shall not be binding on Customer or Lonza.

6.2 Purchase Orders. Customer shall place purchase orders binding on Customer for the number of Batches it wishes to order at least [***] months (or earlier as may be [***]) prior to the Commencement Date for such Batches in accordance with Lonza's most recent response to the Forecast. Each binding purchase order shall be signed by Customer and shall authorize Lonza to manufacture such Batches of the Product as are set forth therein. Lonza shall not be obligated to commence manufacture of any Batch unless and until such written purchase order is accepted in writing by Lonza. Any delivery date set forth in Lonza's written confirmation of a purchase order shall be an estimated delivery date only. All ordered Batches shall be scheduled in a single Campaign in each calendar year unless otherwise agreed by Lonza. Any additional or inconsistent terms or conditions of any Customer purchase order, acknowledgement or similar standardized form given or received pursuant to this Agreement shall have no effect and such terms and conditions are hereby rejected.

6.3 Rescheduling. Lonza shall have the right to reschedule a Commencement Date of any Batch or Campaign upon reasonable prior written notice to Customer, provided that the rescheduled Commencement Date is no earlier or no later than [***] from the Commencement Date originally estimated at the time of Lonza's acceptance of the binding purchase order, and further provided that Customer is able to provide the necessary Customer Materials. If the Customer requests to change the Commencement Date, Lonza will make all reasonable attempts to accommodate the request; provided, however, in the event that this change would impact other projects scheduled for occupancy in the designated suite or suites, manufacture of the Customer's Batch or Campaign may be delayed until an adequate time period is available in the Facility schedule. Any such change requested by Customer may result in a rescheduling fee. Any delay requested by Customer of more than [***] shall be considered a cancellation pursuant to Section 6.5.

6.4 Cancellation of a Binding Purchase Order for Polysaccharide + CRM12 Conjugates. Customer may cancel a binding purchase order for Polysaccharide + CRM12 Conjugates upon written notice to Lonza, subject to the payment of a cancellation fee as calculated below (the "Cancellation Fee"):

6.4.1 In the event that Customer provides written notice of cancellation to Lonza less than or equal to [***] prior to the Commencement Date of one or more Batches, then [***] of the Batch Price of each such Batch cancelled is payable;

6.4.2 In the event that Customer provides written notice of cancellation to Lonza more than [***] but less than or equal to [***] prior to the Commencement Date of one or more Batches, then [***] of the Batch Price of each such Batch cancelled is payable; and

6.4.3 In the event that Customer provides written notice of cancellation to Lonza more than[***] but less than or equal to [***] prior to the Commencement Date of one or more Batches, then [***] of the Batch Price of each such Batch cancelled is payable; and

6.4.4 In the event Customer provides written notice of cancellation more [***] prior to the Commencement Date of a subject Batch, then [***].

6.4.5 Notwithstanding the provisions of this Clause 6.4, Lonza will use commercially reasonable efforts to reschedule its Facility to mitigate any losses from a cancellation, and if Lonza is able to reallocate any reserved capacity for the performance of services for any third party during the applicable period, then Customer's obligation to pay the amounts under Sections 6.4.1, 6.4.2 or 6.4.3, shall be reduced pro-rata based on the use of such capacity for such third party during the applicable period.

6.5 Cancellation of a Binding Purchase Order for CRM 12. Customer may cancel a binding purchase order for CRM 12 upon written notice to Lonza, subject to the payment of a cancellation fee as calculated below (the "Cancellation Fee'):

6.5.1 In the event that Customer provides written notice of cancellation to Lonza less than or equal to [***] prior to the Commencement Date of one or more Batches, then [***] of the Batch Price of each such Batch cancelled is payable;

6.5.2 In the event Customer provides written notice of cancellation more than [***] prior to the Commencement Date of a subject Batch, then [***].

Notwithstanding the provisions of this Clause 6.4, Lonza will use commercially reasonable efforts to reschedule its Facility to mitigate any losses from a cancellation, and if Lonza is able to reallocate any reserved capacity for the performance of services for any third party during the applicable period, then Customer's obligation to pay the amounts under Sections 6.4.1, 6.4.2 or 6.4.3, shall be reduced pro-rata based on the use of such capacity for such third party during the applicable period

6.6 Payment of Cancellation Fee. Any Cancellation Fee shall be payable within [***] following the written notice of cancellation associated with the cancelled Batch. Any Cancellation Fee shall include all costs associated with the cancelled Batch, including any Raw Materials.

6.7 Replacement Project. Notwithstanding the foregoing, Lonza will use commercially reasonable efforts to secure a new project [***] for the cGMP manufacturing space, [***], and then, in such case, the Cancellation Fee for each Batch cancelled that is replaced by a Batch of the new project shall be reduced by an amount equal to [***] of the production fees associated with such replacement Batch.

6.8 Preferred Partnership. Customer and Lonza recognize the mutual strategic value of forging a long-term business relationship (hereinafter a "Preferred Partnership"). Reflecting this Preferred Partnership, Customer agrees [***] from the Effective Date of this Agreement to contract exclusively with Lonza for the manufacture of any and all [***] provided that Lonza can manufacture said product a) [***], b) [***], and c) [***].

**7 Delivery and Acceptance**

7.1 Delivery. All Product shall be delivered [***] (as defined by Incoterms® 2010). Lonza shall deliver to Customer the Certificate of Analysis and such other documentation as is reasonably required to meet all applicable regulatory requirements of the Governmental Authorities not later than the date of delivery of Batches (the "Release"). With respect to any Customer Materials, title and risk of loss shall remain with the Customer and shall not transfer to Lonza. With respect to Product, title and risk of loss shall remain with Lonza until Release, and shall transfer to Customer upon Release in accordance with this provision.

7.2 Storage. Customer shall arrange for shipment and take delivery of such Batch from the Facility, at Customer's expense, within [***] after Release or pay applicable storage costs. Lonza shall provide storage on a bill and hold basis for such Batch(es) at no charge for up to [***]; provided that any additional storage beyond [***] will be subject to availability and, if available, will be charged to Customer and will be subject to a separate agreement. In addition to Section 8.2, Customer shall be responsible for all value added tax (VAT) and any other applicable taxes, levies, import, duties and fees of whatever nature imposed as a result of any storage. Notwithstanding anything to the contrary contained in this Agreement, in no event shall Lonza be required to store any Batch for more than [***] after Release. Within [***] following a written request from Lonza, Customer shall provide Lonza with a letter in form satisfactory to Lonza confirming the bill and hold status of each stored Batch.

7.3 Acceptance/Rejection of Product.

7.3.1 Promptly following Release of Batches, Customer shall inspect such Batches and shall have the right to test such Batches to determine compliance with the Specifications. Customer shall notify Lonza in writing of any rejection of a Batch based on any claim that it fails to meet Specifications within [***] of Release, after which time all unrejected Batches shall be deemed accepted.

7.3.2 In the event that Lonza believes that a Batch has been incorrectly rejected, Lonza may require that Customer provide to it Batch samples for testing. Lonza may retain and test the samples of such Batch. In the event of a discrepancy between Customer's and Lonza's test results such that Lonza's test results fall within relevant Specifications, or there exists a dispute between the Parties over the extent to which such failure is attributable to a given Party, the Parties shall cause an independent laboratory promptly to review records, test data and perform comparative tests and/or analyses on samples of the Product that allegedly fails to conform to Specifications. Such independent laboratory shall be mutually agreed upon by the Parties. The independent laboratory's results shall be in writing and shall be final and binding save for manifest error. Unless otherwise agreed to by the Parties in writing, the costs associated with such testing and review shall be borne by the Party against whom the independent laboratory rules.

7.3.3 Lonza shall replace any Batch that failed to conform with the Specifications (a "Failed Batch"), in the event that it is determined (by the Parties or the independent laboratory) that such failure was [***] ("Lonza Responsibility"). If any replacement cGMP Batch provided as replacement for a Failed Batch also fails to conform to the Specifications, then the Steering Committee shall decide in its sole discretion, [***]. Such replacement shall be made as promptly as practicable, in light of available manufacturing capacity, after the confirmation of Lonza Responsibility, and in any case as soon as reasonably possible after confirmation of Lonza Responsibility. Where possible, such replacement Batch shall be manufactured with the next scheduled cGMP Batch or Campaign. [***] acknowledges and agrees that [***] with respect to a Failed Batch that is a Lonza Responsibility [***], and in furtherance thereof, [***]. Lonza shall not be responsible for the cost of Raw Materials or Customer Materials consumed in any Failed Batch except to the extent set forth in this Clause 7.3.3.

**8 Price and Payment**

8.1 Pricing for the Services provided by Lonza are set out in, and based on the assumptions and information set out in, the applicable Project Plan. In the event of changes to the Services based on Customer's request, Customer shall bear all additional costs.

8.2 Unless otherwise indicated in writing by Lonza, all Prices and charges are exclusive of value added tax (VAT) and of any other applicable taxes, levies, import, duties and fees of whatever nature imposed by or under the authority of any government or public authority and all such charges applicable to the Services (other than taxes on Lonza's income) shall be paid by Customer. When sending payment to Lonza, the Customer shall quote the relevant invoice number in its remittance advice.

8.3 Lonza shall issue invoices to Customer for [***] of the Price for Products or Services upon commencement thereof and [***] upon Release of applicable Batches or completion of applicable Services, unless otherwise stated in the Project Plan. Charges for Raw Materials and the Raw Materials Fee for each Batch shall be invoiced upon the Release of each Batch. Charges for Resins shall be invoiced by Lonza upon placement of purchase orders for such Resins by Lonza at cost plus a fee of [***]. All invoices are strictly net and payment must be made within [***] of date of invoice. Payment shall be made without deduction, deferment, set-off, lien or counterclaim.

8.4 If in default of payment of any undisputed invoice on the due date, interest shall accrue on any amount overdue at the lesser of (i) rate of [***] per month above the London Interbank Offered Rate (LIBOR) or (ii) the maximum rate allowable by applicable law, interest to accrue on a day to day basis until full payment; and Lonza shall, at its sole discretion, and without prejudice to any other of its accrued rights, be entitled to suspend the provision of the Services and or delivery of Product until all overdue amounts have been paid in full including interest for late payments.

8.5 Price adjustments.

8.5.1 Not more than once per calendar year, Lonza may adjust the Price in accordance with the [***] for the previous calendar year. The new Price reflecting such Batch Price adjustment shall be effective for any Batch for which the Commencement Date is on or after the date of Lonza's notice to Customer of the Price adjustment.

8.5.2 In addition to the above, the Price may be changed by Lonza, upon reasonable prior written notice to Customer (providing reasonable detail in support thereof), to reflect (i) an increase in variable costs (such as energy or Raw Materials) by more than [***] (based on the initial Price or any previously amended Price), or for a process adjustment or assumption changes, and (ii) any material change in an environmental, safety or regulatory standard that substantially impacts Lonza's cost and ability to perform the Services.

**9 Capital Equipment**

9.1 Any Capital Equipment required for the performance of the Services shall be acquired on terms to be agreed by the Parties prior to commencement of the relevant Services.

**10 Intellectual Property**

10.1 Except as expressly otherwise provided herein, neither Party will, as a result of this Agreement, acquire any right, title, or interest in any Background Intellectual Property of the other Party.

10.2 Subject to Clause 10.3, Customer shall own all right, title, and interest in and to any and all Intellectual Property that Lonza and/or its Affiliates, the External Laboratories or other contractors or agents of Lonza develops, conceives, invents, first reduces to practice or makes, solely or jointly with Customer or others, in the performance of the Services, to the extent such Intellectual Property is a direct derivative of or improvement to the Product, Customer Materials, Customer Information and/or Customer Background Intellectual Property (collectively, the "New Customer Intellectual Property"). For avoidance of doubt, "New Customer Intellectual Property" shall include any material, processes or other items that solely embody, or that solely are claimed or covered by, any of the foregoing Intellectual Property, but excluding any New General Application Intellectual Property.

10.3 Notwithstanding Clause 10.2, and subject to the license granted in Clause 10.5, Lonza shall own all right, title and interest in Intellectual Property that Lonza and/or its Affiliates, the External Laboratories or other contractors or agents of Lonza, solely or jointly with Customer, develops, conceives, invents, or first reduces to practice or makes in the course of performance of the Services to the extent such Intellectual Property (i) [***], or (ii) [***] ("New General Application Intellectual Property"). For avoidance of doubt, "New General Application Intellectual Property" shall include any material, processes or other items that embody, or that are claimed or covered by, any of the foregoing Intellectual Property.

10.4 Lonza hereby assigns to Customer all of its right, title and interest in any New Customer Intellectual Property. Lonza shall execute, and shall require its personnel as well as its Affiliates, External Laboratories or other contractors or agents and their personnel involved in the performance of the Services to execute, any documents reasonably required to confirm Customer's ownership of the New Customer Intellectual Property, and any documents required to apply for, maintain and enforce any patent or other right in the New Customer Intellectual Property.

10.5 Subject to the terms and conditions set forth herein (including the payment of the Price as required above), Lonza hereby grants to Customer a non-exclusive, world-wide, fully paid-up, irrevocable, transferable license, including the right to grant sublicenses, under the New General Application Intellectual Property, to research, develop, make, have made, use, sell and import the Product manufactured under this Agreement.

10.6 Customer hereby grants Lonza the non-exclusive right to use the Customer Information, Customer Background Intellectual Property and New Customer Intellectual Property during the Term solely for the purpose of fulfilling its obligations under this Agreement; provided, however, that no license is granted to any Customer Background Intellectual Property that is owned or controlled by Sutro Biopharma, Inc.

10.7 Customer will have the right to transfer the Manufacturing Process to itself and/or to any Third Party; provided, however, to the extent such technology transfer includes Lonza Confidential Information, or Lonza Background Intellectual Property, such technology transfer shall be subject to [***], and a reasonable royalty and/or licensing fee and terms to be agreed upon by the Parties. [***]. If [***] the Manufacturing Process includes the use of any such additional royalty-bearing Lonza Confidential Information or Lonza Background Intellectual Property, then Customer will pay to Lonza an agreed royalty and/or other agreed payments for the use of Lonza Confidential Information or Lonza Background Intellectual Property. Lonza shall provide reasonably necessary documents to complete such technology transfer, including transfer of New General Application Intellectual Property, if applicable, and, subject to the terms and conditions of this Clause 10.7, Lonza Confidential Information or Lonza Background Intellectual Property, [***] and Customer shall reimburse Lonza for any costs [***] and expenses, provided that the total cost of such assistance (excluding any costs paid to Lonza for the use of Lonza's Confidential Information or Lonza Background Intellectual Property) will not exceed [***].

**11 Warranties**

11.1 Lonza warrants that:

11.1.1 the Services shall be performed in a professional and workmanlike manner and in accordance with all Applicable Laws;

11.1.2 Lonza will not knowingly include in the Manufacturing Process any elements that infringe any such intellectual or industrial property rights vested in any Third Party;

11.1.3 except with respect to any development services and Engineering Batches, the manufacture of Product shall be performed in accordance with cGMP and will meet the Specifications at the date of delivery;

11.1.4 it or its Affiliate holds all necessary permits, approvals, consents and licenses to enable it to perform the Services at the Facility;

11.1.5 it has the necessary corporate authorizations to enter into and perform this Agreement;

11.1.6 Lonza has never been debarred under the Generic Drug Enforcement Act of 1992, 21 U.S.C. Sec. 335a (a) or (b) (the "Act"). In the event that during the term of this Agreement, Lonza (i) becomes debarred, suspended, excluded, sanctioned, or otherwise declared ineligible under the Act; Lonza agrees to promptly notify Customer. Lonza also agrees that in the event that it becomes debarred, suspended, excluded, sanctioned, or otherwise declared ineligible under the Act, it shall promptly cease all activities relating to this Agreement;

11.1.7 subject to payment of undisputed invoices, title to all Product and all New Customer Intellectual Property provided to Customer under this Agreement shall pass free and clear of any security interest, lien or other encumbrance in favour of Lonza; and

11.2 Customer warrants that:

11.2.1 as of the date of this Agreement to the best of the Customer's knowledge and belief, the Customer has all the rights necessary to permit Lonza to perform the Services without infringing the Intellectual Property rights of any Third Party and the performance of the Services shall not infringe any Third Party Intellectual Property rights;

11.2.2 Customer will promptly notify Lonza in writing if it receives or is notified of a formal written claim from a Third Party that Customer Information and/or Customer Intellectual Property or that the use by Lonza thereof for the provision of the Services infringes any Intellectual Property or other rights of any Third Party; and

11.2.3 Customer has the necessary corporate authorizations to enter into this Agreement.

11.3 DISCLAIMER: THE WARRANTIES EXPRESSLY SET FORTH IN THIS AGREEMENT ARE IN LIEU OF ALL OTHER WARRANTIES, AND ALL OTHER WARRANTIES, BOTH EXPRESS AND IMPLIED, ARE EXPRESSLY DISCLAIMED, INCLUDING WITHOUT LIMITATION ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

11.4 Debarment.

11.4.1 In the event a party receives a notice from the other party ("Defaulting Party") or otherwise becomes aware that a debarment, suspension, exclusion, sanction, or declaration of ineligibility action has been brought against the Defaulting Party; then the party receiving such notice shall have the right to terminate this Agreement immediately; provided that if such event shall occur, the party receiving such notice shall not have such right of termination. If the Defaulting Party is disputing and defending such action and the Defaulting Party is otherwise able to perform its services in the manner required under this Agreement.

11.4.2 Each party shall ensure that it will not knowingly use in any capacity the services of any individual, corporation, partnership or association which has been debarred under 21 U.S.C. Sec. 335a(a) or (b), or listed in the DHHS/OIG List of Excluded Individuals/Entities or the General Services Administration's Listing of Parties Excluded from Federal Procurement and Non-Procurement Programs.

**12 Indemnification and Liability**

12.1 Indemnification by Lonza. Lonza shall indemnify the Customer, its Affiliates, and their respective officers, employees and agents ("Customer Indemnitees") for any loss, damage, costs and expenses (including reasonable attorney fees) that Customer Indemnitees may suffer as a result of any Third Party claim arising directly out of [***] except, in each case, to the extent that such claims resulted from the negligence, intentional misconduct or breach of this Agreement by any Customer Indemnitees. Notwithstanding the foregoing, Lonza shall have no obligations under this clause 12.1 for any liabilities, expenses, or costs to the extent arising out of or relating to claims covered under clause 12.2.

12.2 Indemnification by Customer. Customer shall indemnify Lonza, its Affiliates, and their respective officers, employees and agents ("Lonza Indemnitees") from and against any loss, damage, costs and expenses (including reasonable attorney fees) that Lonza lndemnitees may suffer as a result of any Third Party claim arising directly out of [***]; except, in each case, to the extent that such claims resulted from the negligence, intentional misconduct or breach of this Agreement by any Lonza Indemnitees. Notwithstanding the foregoing, Customer shall have no obligations under this clause 12.2 for any liabilities, expenses, or costs to the extent arising out of or relating to claims covered under clause 12.1.

12.3 Indemnification Procedure. If the Party to be indemnified intends to claim indemnification under this Clause 12, it shall promptly notify the indemnifying Party in writing of such claim. The indemnitor shall have the right to control the defense and/or settlement thereof; provided, however, that (i) the indemnitor must obtain the prior written consent of the indemnitee (not to be unreasonably withheld) before entering into any settlement of such third party claim, and (ii) any indemnitee shall have the right to retain its own counsel at its own expense. The indemnitee, its employees and agents, shall reasonably cooperate with the indemnitor in the investigation of any liability covered by this Clause 12. The failure to deliver prompt written notice to the indemnitor of any claim, to the extent prejudicial to its ability to defend such claim, shall relieve the indemnitor of any obligation to the indemnitee under this Clause 12.

12.4 DISCLAIMER OF CONSEQUENTIAL DAMAGES. IN NO EVENT SHALL EITHER PARTY BE LIABLE TO THE OTHER PARTY FOR INCIDENTAL, INDIRECT, SPECIAL, PUNITIVE OR CONSEQUENTIAL DAMAGES, LOST PROFITS OR LOST REVENUES ARISING FROM OR RELATED TO THIS AGREEMENT, EXCEPT TO THE EXTENT RESULTING FROM FRAUD, GROSS NEGLIGENCE OR INTENTIONAL MISCONDUCT AND/OR FOR EITHER PARTY'S BREACH OF ARTICLE 13 HEREOF.

12.5 LIMITATION OF LIABILITY. LONZA'S LIABILITY UNDER THIS AGREEMENT SHALL IN NO EVENT EXCEED, IN THE AGGREGATE, [***], EXCEPT TO THE EXTENT RESULTING FROM LONZA'S FRAUD, GROSS NEGLIGENCE OR INTENTIONAL MISCONDUCT.

**13 Confidentiality**

13.1 A Party receiving Confidential Information (the "Receiving Party") agrees to strictly keep secret any and all Confidential Information received during the Term from or on behalf of the other Party (the "Disclosing Party") using at least the same level of measures as it uses to protect its own Confidential Information, but in any case at least commercially reasonable and customary efforts. Confidential Information shall include information disclosed in any form including but not limited to in writing, orally, graphically or in electronic or other form to the Receiving Party, observed by the Receiving Party or its employees, agents, consultants, or representatives, or otherwise learned by the Receiving Party under this Agreement, which the Receiving Party knows or reasonably should know is confidential or proprietary.

13.2 Notwithstanding the foregoing, Receiving Party may disclose to any courts and/or other authorities Confidential Information which is or will be required pursuant to applicable governmental or administrative or public law, rule, regulation or order. In such case the Party that received the Confidential Information will, to the extent legally permitted, inform the other Party promptly in writing and cooperate with the Disclosing Party in seeking to minimize the extent of Confidential Information which is required to be disclosed to the courts and/or authorities.

13.3 The obligation to maintain confidentiality under this Agreement does not apply to Confidential Information, which:

13.3.1 at the time of disclosure was publicly available; or

13.3.2 is or becomes publicly available other than as a result of a breach of this Agreement by the Receiving Party; or

13.3.3 as the Receiving Party can establish by competent proof, was rightfully in its possession at the time of disclosure by the Disclosing Party and had not been received from or on behalf of Disclosing Party; or

13.3.4 is supplied to a Party by a Third Party which was not in breach of an obligation of confidentiality to Disclosing Party or any other party; or

13.3.5 is developed by the Receiving Party independently from and without use of the Confidential Information, as evidenced by contemporaneous written records.

13.4 The Receiving party will use Confidential Information only for the purposes of this Agreement and will not make any use of the Confidential Information for its own separate benefit or the benefit of any Third Party including, without limitation, with respect to research or product development or any reverse engineering or similar testing. The Receiving Party agrees to return or destroy promptly (and certify such destruction) on Disclosing Party's request all written or tangible Confidential Information of the Disclosing Party, except that one copy of such Confidential Information may be kept by the Receiving Party in its confidential files for record keeping purposes only.

13.5 Each Party will restrict the disclosure of Confidential Information to such officers, employees, professional advisers, finance-providers, consultants and representatives of itself and its Affiliates who have been informed of the confidential nature of the Confidential Information and who have a need to know such Confidential Information for the purpose of this Agreement or an applicable financing or acquisition. Both Parties may disclose Confidential Information of the other Party and its Affiliates to potential and actual acquirers provided such disclosure is limited to the terms of this Agreement. Customer also may disclose to its potential and actual: (i) acquirers and (ii) bona fide collaborators in the research, development and commercialization of the Products, the work product provided to Customer by Lonza as a consequence of the provision of the Services. Prior to disclosure to such persons, the Receiving Party shall inform the Disclosing Party and it shall bind its and its Affiliates' officers, employees, consultants and representatives to confidentiality and non-use obligations no less stringent than those set forth herein. The Receiving Party shall notify the Disclosing Party as promptly as practicable of any unauthorized use or disclosure of the Confidential Information.

13.6 The Receiving Party shall at any time be fully liable for any and all breaches of the confidentiality obligations in this Clause 13 by any of its Affiliates or the employees, consultants, potential and actual acquirers, and representatives of itself or its Affiliates.

13.7 Each Party hereto expressly agrees that any breach or threatened breach of the undertakings of confidentiality provided under this Clause 13 by a Party may cause irreparable harm to the other Party and that money damages may not provide a sufficient remedy to the non-breaching Party for any breach or threatened breach. In the event of any breach and/or threatened breach, then, in addition to all other remedies available at law or in equity, the non-breaching Party shall be entitled to seek injunctive relief and any other relief deemed appropriate by the non-breaching Party.

**14 Term and Termination**

14.1 Term. This Agreement shall commence on the Effective Date and shall end on the fifth ($5^{th}$) anniversary of the Effective Date unless terminated earlier as provided herein or extended by mutual written consent of the Parties (the "Term"). Notwithstanding the foregoing, each Project Plan may have separate term and termination provisions so long as the term of any Project Plan does not extend beyond the Term.

14.2 Termination. This Agreement may be terminated as follows:

14.2.1 by either Party for any reason upon [***] prior written notice; provided that Lonza may not provide such notice until after [***]. In such an event all cancellation terms in this Agreement shall apply (except, in the case of termination by Lonza pursuant to Clause 14.2.1, the Cancellation Fees shalt not apply), and the Customer shall make payments for work commenced and performed under any purchase order(s) by Lonza prior to the termination notice date;

14.2.2 by either Party if the other Party breaches a material provision of this Agreement or a Project Plan and fails to cure such breach to the reasonable satisfaction of the non-breaching Party within [***] following written notification of such breach from the non-breaching party to the breaching party; provided, however, that such [***] period shall be extended as agreed by the Parties if the identified breach is incapable of cure within [***] and if the breaching Party provides a plan and timeline to cure the breach, promptly commences efforts to cure the breach and diligently prosecutes such cure [***];

14.2.3 by either Party, immediately, if the other Party becomes insolvent, is dissolved or liquidated, makes a general assignment for the benefit of its creditors, or files or has filed against it, a petition in bankruptcy or has a receiver appointed for a substantial part of its assets; or

14.2.4 by either Party pursuant to Clause 15.

14.3 Consequences of Termination. In the event of termination hereunder, Lonza shall be compensated for (i) Services rendered up to the date of termination, including in respect of any Product in-process; (ii) all costs incurred through the date of termination, including Raw Materials costs and Raw Materials Fees for Raw Materials used or purchased for use in connection with the Project Plan; (iii) all unreimbursed Capital Equipment and related decommissioning charges incurred pursuant to Clause 9; (iv) all amounts due under Clause 6.4, without proration of the final calendar year and (v) any applicable Cancellation Fees. In the case of termination by Lonza for Customer's material breach, Cancellation Fees shall be calculated as of the date of written notice of termination.

14.4 Survival. The rights and obligations of each Party which by their nature survive the termination or expiration of this Agreement shall survive the termination or expiration of this Agreement, including Clauses 5, 10-13 and 16 (to the extent relevant).

**15 Force Majeure**

15.1 If Lonza is prevented or delayed in the performance of any of its obligations under the Agreement by Force Majeure and gives written notice thereof to Customer specifying the matters constituting Force Majeure together with such evidence as Lanza reasonably can give and specifying the period for which It Is estimated that such prevention or delay will continue, Lonza shall be excused from the performance or the punctual performance of such obligations as the case may be from the date of such notice for so long as such cause of prevention or delay shall continue. Provided that, if such Force Majeure persists for a period of [***] or more, Customer may terminate this Agreement by delivering written notice to Lonza.

15.2 "Force Majeure" shall be deemed to include any reason or cause beyond Lonza's reasonable control affecting the performance by Lonza of its obligations under the Agreement, including, but not limited to, any cause arising from or attributable to acts of God, strike, labor troubles, restrictive governmental orders or decrees, riots, insurrection, war, terrorist acts, or the inability of Lonza to obtain any required raw material, energy source, equipment, labor or transportation, at prices and on terms deemed by Lonza to be reasonably practicable, from Lonza's usual sources of supply.

15.3 With regard to Lonza, any such event of Force Majeure affecting services or production at its Affiliates or suppliers shall be regarded as an event of Force Majeure.

**16 Miscellaneous**

16.1 Severability. If any provision hereof is or becomes at any time illegal, invalid or unenforceable in any respect, neither the legality, validity nor enforceability of the remaining provisions hereof shall in any way be affected or impaired thereby. The Parties hereto undertake to substitute any illegal, invalid or unenforceable provision by a provision which is as far as possible commercially equivalent considering the legal interests and the Purpose.

16.2 Amendments. Modifications and/or amendments of this Agreement must be in writing and signed by the Parties.

16.3 Assignment. Lonza shall be entitled to instruct one or more of its Affiliates to perform any of Lonza's obligations contained in this Agreement, but Lonza shall remain fully responsible in respect of those obligations. Neither Party may assign its interest under this Agreement without the prior written consent of the other Party, such consent not to be unreasonably withheld, conditioned or delayed, provided, however that either Party may assign this Agreement to (i) any Affiliate of such Party or (ii) any third party in connection with the sale or transfer (by whatever method) of all or substantially all of the assets of the business or Product of such Party to which this Agreement relates, whether by merger, consolidation, acquisition or other form of business combination. Any purported assignment without a required consent shall be void. No assignment shall relieve any Party of responsibility for the performance of any obligation that accrued prior to the effective date of such assignment. Lonza shall be entitled to sell, assign and/or transfer its trade receivables resulting from this Agreement without the consent of the Customer.

16.4 Notice. All notices must be written and sent to the address of the Party first set forth above. All notices must be given (a) by personal delivery, with receipt acknowledged, (b) by facsimile followed by hard copy delivered by the methods under (c) or (d), (c) by prepaid certified or registered mail, return receipt requested, or (d) by prepaid recognized next business day delivery service. Notices will be effective upon receipt or at a later date stated in the notice.

16.5 Governing Law/Jurisdiction. This Agreement is governed in all respects by the laws of [***], without regard to its conflicts of laws principles. The Parties agree to submit to the jurisdiction of the state and federal courts [***].

16.6 Entire Agreement. This Agreement contains the entire agreement between the Parties as to the subject matter hereof and supersedes all prior and contemporaneous agreements with respect to the subject matter hereof. This Agreement may be executed in any number of counterparts, each of which shall be deemed to be an original, and all of which together shall constitute one and the same document. Each party acknowledges that an original signature or a copy thereof transmitted by facsimile or by .pdf shall constitute an original signature for purposes of this Agreement.

**IN WITNESS WHEREOF**, each of the Parties hereto has caused this Development and Manufacturing Services Agreement to be executed by its duly authorized representative effective as of the date written above.

**LONZA LTD**

By: */s/ Bart A. M. van Aarnhem*
Name Bart A. M. van Aarnhem
Title Senior Legal Counsel
Date 26 October 2016

By: _____
Name
Title
Date

**SutroVax Inc.**

By: */s/ Grant E. Pickering*
Name Grant E. Pickering
Title President & CEO
Date October 21, 2016

*APPENDIX A*

**Project Plan A—1**

**[Attached]**

**[***]**

**Project Plan A – 2**

**[Attached]**

{16 pages omitted}

[***]

*APPENDIX B*

**Quality Agreement**

**[Attached]**

{37 pages omitted}

**[***]**

*APPENDIX C*
**Specifications**

**{9 pages omitted}**

**[***]**

**CERTAIN CONFIDENTIAL INFORMATION CONTAINED IN THIS DOCUMENT, MARKED BY [***], HAS BEEN OMITTED BECAUSE IT IS BOTH (I) NOT MATERIAL AND (II) WOULD LIKELY CAUSE COMPETITIVE HARM IF PUBLICLY DISCLOSED.**

# FIRST AMENDMENT TO DEVELOPMENT AND MANUFACTURING SUPPLY AGREEMENT

This First Amendment ("**First Amendment**"), which comes into effect on January 1, 2017 (the "**First Amendment Effective Date**"), is made by and between Lonza Ltd ("**Lonza**") and SutroVax Inc ("**SutroVax**"). This First Amendment is to be incorporated as part of the Development and Manufacturing Agreement, dated October 21, 2016, between Lonza and SutroVax (the "**Original Agreement**"). Lonza and Sutrovax, hereafter referred to as a "**Party**" and collectively as the "**Parties.**"

Whereas:

1. Lonza and SutroVax entered into the **Original Agreement**, which the Parties now desire to amend;
2. Sutrovax wishes to extend the Original Agreement in order to add the conjugation to the protein development and manufacturing;

Parties hereby agree that the following amendments are made pursuant to the Original Agreement:

1. Project Plan A-2 (Polysaccharide + CRM12 Conjugates, Lonza code SUO-002), version 4, dated 04 January 2017 shall be added to Appendix A of the Original Agreement, in addition to the pre-existing Project Plan A-1 (Technology Transfer and cGMP Manufacturing of CRM12, Lonza code SUO-001). Project Plan A-2 is attached to this First Amendment as **Annex 1**.
2. All capitalized terms used herein shall have the meaning set forth in the Original Agreement.
3. All other terms and conditions of the Original Agreement shall remain in full force and effect. In the event of any conflict between the terms and conditions of this First Amendment and the Original Agreement, the terms and conditions set forth in the Original Agreement shall control.
4. No modification of or amendment to this First Amendment, nor any waiver of any rights under this First Amendment, will be effective unless in writing signed by the duly authorized representatives of both Parties, and the waiver of any breach or default will not constitute a waiver of any other right hereunder or any subsequent breach or default.

IN WITNESS WHEREOF, SutroVax and Lonza hereby enter into this First Amendment, effective as of the First Amendment Effective Date.

**[Signatures on following page]**

**SUTROVAX INC**

By: */s/ Grant E. Pickering*
Name: Grant E. Pickering
Title: President & CEO

By: _____
Name: _____
Title: _____

**LONZA LTD**

By: */s/ Bart A M. van Aarnhem*
Name: Bart A M. van Aarnhem
Title: Senior Legal Counsel

By: */s/ Cordula Altekrüger*
Name: Cordula Altekrüger
Title: Senior Legal Counsel

**Annex 1**

**Project Plan A-2**

**to**

**Development and Manufacturing Agreement**

{24 pages omitted}

[***]

**CERTAIN CONFIDENTIAL INFORMATION CONTAINED IN THIS DOCUMENT, MARKED BY [***], HAS BEEN OMITTED BECAUSE IT IS BOTH (I) NOT MATERIAL AND (II) WOULD LIKELY CAUSE COMPETITIVE HARM IF PUBLICLY DISCLOSED.**

# SECOND AMENDMENT TO DEVELOPMENT AND MANUFACTURING SUPPLY AGREEMENT

This Second Amendment ("**Second Amendment**"), which comes into effect on July 1, 2017 (the "**Second Amendment Effective Date**"), is made by and between Lonza Ltd ("**Lonza**") and SutroVax Inc ("**SutroVax**"). This Second Amendment is to be incorporated as part of the Development and Manufacturing Agreement, dated October 21, 2016, between Lonza and SutroVax (the "**Original Agreement**"). Lonza and SutroVax, hereafter referred to as a "**Party**" and collectively as the "**Parties.**"

Whereas:

- Lonza and SutroVax entered into the **Original Agreement**, which the Parties now desire to amend;
- SutroVax wishes to extend the Original Agreement in order to add generation of RCB/PCB for 24 *S. pneumoniae* strains.

Parties hereby agree that the following amendments are made pursuant to the Original Agreement:

Project Plan A-3 (Generation of RCB/PCB of 24 *S. pneumoniae* strains, Lonza code SUO-005), version 2, dated 19 June 2017 shall be added to Appendix A of the Original Agreement, in addition to the pre-existing Project Plan A-1 (Technology Transfer and cGMP Manufacturing of CRM12, Lonza code SUO-001) and Project Plan A-2 (Polysaccharide + CRM12 Conjugates, Lonza code SUO-002); Project Plan A-3 is attached to this Second Amendment as **Annex 1**.

1. All capitalized terms used herein shall have the meaning set forth in the Original Agreement.

2. All other terms and conditions of the Original Agreement shall remain in full force and effect. In the event of any conflict between the terms and conditions of this Second Amendment and the Original Agreement, the terms and conditions set forth in the Original Agreement shall control.

3. No modification of or amendment to this Second Amendment, nor any waiver of any rights under this Second Amendment, will be effective unless in writing signed by the duly authorized representatives of both Parties, and the waiver of any breach or default will not constitute a waiver of any other right hereunder or any subsequent breach or default.

IN WITNESS WHEREOF, SutroVax and Lonza hereby enter into this Second Amendment, effective as of the Second Amendment Effective Date.

**[Signatures on following page]**

**SUTROVAX INC**

By: */s/ Grant E. Pickering*
Name: Grant E. Pickering
Title: President & CEO

By: _____
Name: _____
Title: _____

**LONZA LTD**

By: */s/ Marina Eiting*
Name: Marina Eiting
Title: PM

By: */s/ Andreas Brunner*
Name: Andreas Brunner
Title: Director

**Annex 1**

**Project Plan A-3**

**to**

**Development and Manufacturing Agreement**

{11 pages omitted}

[***]

**CERTAIN CONFIDENTIAL INFORMATION CONTAINED IN THIS DOCUMENT, MARKED BY [***], HAS BEEN OMITTED BECAUSE IT IS BOTH (I) NOT MATERIAL AND (II) WOULD LIKELY CAUSE COMPETITIVE HARM IF PUBLICLY DISCLOSED.**

# THIRD AMENDMENT TO DEVELOPMENT AND MANUFACTURING SUPPLY AGREEMENT

This Third Amendment ("**Third Amendment**"), which comes into effect on September 26, 2017 (the "**Third Amendment Effective Date**"), is made by and between Lonza Ltd ("**Lonza**") and SutroVax Inc ("**SutroVax**"). This Third Amendment is to be incorporated as part of the Development and Manufacturing Agreement, dated October 21, 2016, between Lonza and SutroVax (the "**Original Agreement**"). Lonza and SutroVax, hereafter referred to as a "**Party**" and collectively as the "**Parties**."

Where

1. Lonza and SutroVax entered into the **Original Agreement**, which the Parties now desire to amend;
2. SutroVax wishes to extend the Original Agreement in order to add the production of 25 Polysaccharides to the pneumococcal conjugate vaccine project.

Parties hereby agree that the following amendments are made pursuant to the Original Agreement:

1. All capitalized terms used herein shall have the meaning set forth in the Original Agreement
2. Project Plan A-4 (cGMP Supply of 25 Polysaccharides for a Multi-Valent Pneumococcal Vaccine, Lonza code SUO-005), version 5, dated September 15, 2017 shall be added to Appendix A of the Original Agreement, in addition to the pre-existing Project Plan A-1 (Technology Transfer and cGMP Manufacturing of CRM12, Lonza code SUO-001), Project Plan A-2 (Polysaccharide + CRM12 Conjugates, Lonza code SUO-002), version 4, dated 22 December 2016, and Project Plan A-3 (Generation of RCB/PCB of 24 *S. pneumonia* strains, Lonza code SUO-005), version 2, dated 19 June 2017. Project Plan A-4 is attached to this Third Amendment as **Annex 1**.
3. The Parties hereby agree that the current definition of "Background Intellectual Property" shall be deleted in its entire and shall be replaced by the following:

| | |
|---|---|
| "Background Intellectual Property" | *means any Intellectual Property either (i) owned, licensed or controlled by a Party prior to the Effective Date or (ii) developed or acquired by a Party independently from the performance of the Services hereunder during the Term of this Agreement, and, in the case of Lonza, without the use or reliance on Customer Materials or Customer Information, and, in the case of the Customer, without use or reliance on Lonza materials or Lonza information.* |

4. The Parties hereby agree that the current definition of "Product" shall be deleted in its entire and shall be replaced by the following:

| | |
|---|---|
| "*Product*" | *means the proprietary molecules identified by Customer in the applicable Project Plan, including: (a) CRM12 (Lonza code: SUO-001); (b) Polysaccharide + CRM12 Conjugates (Lonza code: SUO-002); (c) RCB/PCB of 24 S. pneumoniae strains (Lonza code SUO-005); and (d) 25 Polysaccharides (Lonza code SUO-006).* |

5. The Parties hereby agree that the current definition of "Raw Material Fee" shall be deleted in its entire and shall be replaced by the following:

| | |
|---|---|
| "*Raw Material Fee*" | *means the procurement and handling fee of [***] of the acquisition cost of Raw Materials by Lonza that is charged to the Customer in addition to the cost of such Raw Materials. Resins are charged at a fee of [***] as set forth in Clause 8.3.* |

6. The Parties hereby agree that the current clause 6.5 shall be deleted in its entire and shall be replaced by the following clause:

*"6.5 Cancellation of a Binding Purchase Order for CRM12 and/or for the manufacturing of polysaccharides Batches. Customer may cancel a binding purchase order for CRM12 and/or for the manufacturing of polysaccharides Betches upon written notice to Lonza, subject to the payment of a cancellation fee as calculated below (the "Cancellation Fee"):*

*6.5.1 In the event that Customer provides written notice of cancellation to Lonza less than or equal to [***] prior to the Commencement Date of one or more Batches, then [***] of the Batch Price of each such Batch cancelled is payable;*

*6.5.2 In the event Customer provides written notice of cancellation more than [***] prior to the Commencement Date of a subject Batch, then [***]; and*

*6.5.3 Notwithstanding the above, the Parties hereby agree that [***] shall apply with respect to [***], unless Customer [***], in which case [***].*

7. The Parties hereby agree that the current clause 7.2 shall be deleted in its entire and shall be replaced by the following clause:

"*7.2 Storage. CRM12 and polysaccharide Batches (required intermediates for the production of Conjugate Drug Substances) will be stored at no charge for up to [***] after Release of Conjugate Drug Substances; provided that any additional storage beyond [***] will be subject to availability and, if available, will be charged to Customer and will be subject to a separate agreement. Except for CRM12 and polysaccharide Batches, Customer shall arrange far shipment and take delivery of such Batch from the Facility, at Customer's expense, within [***] days after Release or pay applicable storage costs, unless otherwise agreed to by the Parties. Lonza shall provide storage on a bill and hold basis for such Batch(es) at no charge for up to [***]; provided that any additional storage beyond [***]) days will be subject to availability and, if available, will be charged to Customer and will be subiect to a separate agreement. In addition to Section 8.2, Customer shall be responsible for all value added tax (VAT) and any other applicable taxes, levies, import, duties and fees of whatever nature imposed as a result of any storage. Unless otherwise agreed to by the Parties, in no event shall Lonza be required to store any Batch for more than [***] calendar days after Release. Within [***] days following a written request from Lonza, Customer shall provide Lonza with a letter in form satisfactory to Lonza confirming the bill and hold status of each stored Batch.*"

8. The Parties hereby agree that the current clause 8.3 shall be deleted in its entire and shall be replaced by the following clause:

"8.*3 Lonza shall issue invoices to Customer for [***] of the Price for Products or Services upon commencement thereof (the "Initiation Payment") and [***] upon Release of applicable Batches or completion of applicable Services (the "Completion Payment"), unless otherwise stated in the Project Plan. Charges for Raw Materials and the Raw Materials Fee for each Batch shall be invoiced upon the Release of each Batch. Charges for Resins shall be invoiced by Lonza upon placement of purchase orders for such Resins by Lonza at cost plus a fee of [***]. Charges for consumables and wearables, as well as charges for Services provided by External Laboratories, shall be invoiced upon the Release of the applicable Batch at cost plus a fee of [***]. Notwithstanding the above, Parties agree that in the event that Lonza does not complete stages of the IND enabling work (i.e. the stages necessary for Customer to submit the IND application, including in any event the Release of at least one (1) GMP Drug Product Batch plus one (1) month of GMP Drug Product stability testing before 31 December 2019), Lonza shall for any stage that commences after 31 December 2019 or has not been completed by 31 December 2019, invoice the Initiation Payment for Products or Services upon commencement thereof. The Completion Payment for Products or Services shall be invoiced by Lonza either (i) [***] or (ii) on [***]. All invoices are strictly net and payment must be made within [***] days of date of invoice. Payment shall be made without deduction, deferment, set-off, lien or counterclaim, except as set forth in the Agreement or any Amendments. The provisions of this Clause 8.3, including the rate of markup charges set forth herein and in the definition of Raw Materials Fees, shall apply prospectively to all Services under the Agreement, including those Services to be performed after the Amendment Three Effective Date under Work Plan A-1, Work Plan A-2, Work Plan A-3 and Work Plan A-4.*"

9. The Parties hereby agree that the current clause 10.3 shall be deleted in its entire and shall be replaced by the following clause:

"*10.3 Nowithstanding Clause 10.2, and subject to the license granted in Clause 10.5, Lonza shall own all right, title and interest in Intellectual Property that Lonza and/or its Affiliates, the External Laboratories or other contractors or agents of Lonza, solely or jointly with Custorner, develops, conceives, invents, or first reduces to practice or makes in the course of performance of the Services to the extent such Intellectual Property (i) is generally applicable to the development or manufacture of chemieal or biological products or product components, and could reasanably have been made without the use of the Customer Materials, Customer Information, or Customer Baekground Intellectual Property or (ii) is an improvement of or direct derivative of, any Lonza Background Intellectual Praperty ("New General Application Intellectual Property"). For avoidance of doubt, "New General Application Intellectual Property" shall include any material, processes or other items that embody, or that are claimed or covered by, any of theforegoing Intellectual Property.*"

10. The Parties hereby agree that the current clause 10.5 shall be deleted in its entire and shall be replaced by the following clause:

"*10.5 Subject to the terms and conditions set forth herein (including the payment of the Price as required above), Lonza hereby grants to Customer a non-exclusive, world-wide, fully paid-up, irrevocable, transferable license, including the right to grant sublicenses, under the New General Application Intellectual Property, to research, develop, make, have made, use, sell and import the Product.*"

11. The Parties hereby agree that the current clause 10.7 shall be deleted in its entire and shall be replaced by the following clause:

"*10.7 Customer will have the right to transfer the Manufacturing Process to itself, its Affiliates and/or any third Party, provided, however, to the extent such technology transfer includes Lonza Confidential Information, or Lonza Background Intellectual Property, such technology transfer to any Third Party shall be subject to [***], and a reasonable royalty and/or licensing fee and terms to be agreed upon by the Parties. Lonza will not include in the Manufacturing Process any Lonza Confidential Information or Lonza Background Intellectual Property that would require Customer to pay any additional payment and/or royalty to Lonza in order to transfer the Manufacturing Process to itself, its Affiliates and/or any Third Party without first obtaining Customer's prior written consent and advising Customer as to the royalty structure and any other payment that would apply for the use of such additional technologies. If Customer has provided such consent and the Manufacturing Process includes the use of any such additional payment-bearing or royalty-bearing Lonza Confidential Information or Lonza Background Intellectual Property, then Customer will pay to Lonza an agreed royalty and/or other agreed payments for the use of Lonza Confidential Information or Lonza Background Intellectual Property. Lonza shall provide reasonably necessary documents to complete such technology transfer, including transfer of New General Application Intellectual Property, if applicable, and subject to the terms and conditions of this Clause 10.7, Lonza Confidential Information or Lonza Background Intellectual Property, if incorporated into the Manufacturing Process with Customer's consent, and Customer shall reimburse Lonza for any costs (based on a full-time employee rate for such support) and expenses, provided that the total cost of such assistance (excluding any costs paid to Lonza for the use of Lonza's Confidential Information or Lonza Background Intellectual Property) will not exceed [***].*"

12. The Parties hereby agree that the current clause 14.2.1 shall be deleted in its entire and shall be replaced by the following clause:

"*14.2.1 by either Party for any reason upon [***] prior written notice; provided that Lonza may not provide such notice until [***]. In such an event all cancellation terms in this Agreement shall apply (except, in the case of termination by Lonza pursuant to Clause 14.2.1, the Cancellation Fees shall not apply), and the Customer shall make payments for work commenced and performed under any purchase order(s) by Lonza prior to the termination notice date.*"

13. All other terms and conditions of the Original Agreement shall remain in full force and effect. In the event of any conflict between the terms and conditions of this Third Amendment and the Original Agreement, the terms and conditions set forth in the Original Agreement shall control.

14. No modification of or amendment to this Third Amendment, nor any waiver of any rights under this Third Amendment, will be effective unless in writing signed by the duly authorized representatives of both Parties, and the waiver of any breach or default will not constitute a waiver of any other right hereunder or any subsequent breach or default.

[Signatures on following page]

IN WITNESS WHEREOF, SutroVax and Lonza hereby enter into this Third Amendment, effective as of the Third Amendment Effective Date.

**SUTROVAX INC.**

By: /s/ Grant E. Pickering
Name: Grant E. Pickering
Title: President & CEO

By:
Name:
Title:

**LONZA LTD**

By: /s/ Bart A. M. van Aarnhem
Name: Bart A. M. van Aarnhem
Title: Senior Legal Counsel

By: /s/Lee Newton
Name: Lee Newton
Title: Director, Commercial Development

**Annex 1**

**Project Plan A-4**

**to**

**Development and Manufacturing Agreement**

{23 pages omitted}

[***]

**CERTAIN CONFIDENTIAL INFORMATION CONTAINED IN THIS DOCUMENT, MARKED BY [***], HAS BEEN OMITTED BECAUSE IT IS BOTH (I) NOT MATERIAL AND (II) WOULD LIKELY CAUSE COMPETITIVE HARM IF PUBLICLY DISCLOSED.**


Lonza Ltd
Münchensteinerstrasse 38
CH-4002 Basel
Switzerland

June 19, 2018

Dear Sir:

As you know, Lonza Ltd ("Lonza") and SutroVax, Inc ("SutroVax" or "Customer") are parties to the Development and Manufacturing Services Agreement, dated October 21, 2016, between Lonza and SutroVax and as amended on January 1, 2017, July 1, 2017 and September 26, 2017 (the "2016 Agreement"), under which Lonza is providing development and manufacturing services to SutroVax in connection with SutroVax's multi-valent pneumococcal vaccine product. In addition, as of the date of this letter, SutroVax and Lonza are in negotiations of a new Development and Manufacturing Services Agreement, which, if entered into, will govern the terms and conditions under which Lonza will provide SutroVax with development and manufacturing services for such vaccine product in drug product form (the "2018 Agreement"). The 2016 Agreement, the 2018 Agreement, and any future written addendums and agreements entered into between SutroVax and Lonza relating to SutroVax's engagement of Lonza's services for SutroVax's multi-valent pneumococcal vaccine product, will collectively be referred to as the "MSA." In recognition of SutroVax's engagement of Lonza for a broad range of services under the MSA, Lonza and SutroVax have been discussing a mechanism to further align the strategic and financial interests of the parties.

I am writing to confirm the following agreement between SutroVax and Lonza:

1. Pre-IND Payments. Notwithstanding anything to the contrary in the MSA, SutroVax's obligation to Lonza related to all payments under the MSA prior to and up to the delivery of SutroVax's 24-valent pneumococcal vaccine ("SVX-24") IND, including all stages of work, associated pass-through and other costs (such as raw materials, consumables/disposables, third-party contractors, external laboratories, shipment, storage, other services, capital expenditures, acceleration or other fees) necessary for Customer to submit the IND application for SVX-24 (the "Pre-IND Payments"), shall be as follows:

(a) SutroVax shall make Pre-IND Payments that are due to Lonza as set forth in the MSA and related amendments in cash until the aggregate amount of Pre-IND Payments made by SutroVax to Lonza, including payments already accrued or made to date under the MSA, reaches [***] (the "Initial Cash Cap"); to date Lonza has under contract with SutroVax an amount of approximately [***], which when paid will be counted towards the Initial Cash Cap.

(b) After the Initial Cash Cap has been reached, SutroVax shall have the option to make any further Pre-IND Payments due to Lonza as set forth in the MSA and related amendments in cash, equity or a combination of both, at SutroVax's election, provided that Lonza may elect to receive up to 25% of Pre-IND Payments in equity up to a maximum of two and a half million dollars ($2,500,000) and provided that no more than ten million dollars ($10,000,000) of Pre-IND Payments shall be made in equity (the "Equity Payment Cap"). In the event SutroVax remains a privately-held company and elects to make all or a portion of such further Pre-IND Payments in equity, then such equity payment shall be made at Lonza's option in (i) SutroVax's preferred stock at the price determined in the most recent financing transaction in which SutroVax received ten million ($10,000,000) dollars or more in proceeds (the "Last Financing Round Equity Conversion") or (ii) a convertible note that is mandatorily convertible into SutroVax's preferred stock in a subsequent financing transaction in which SutroVax receives ten million dollars ($10,000,000) or more in proceeds at the price determined in such subsequent financing transaction (the "Future Financing Round Equity Convertible"). The obligation for Lonza to accept any Pre-IND payments in equity shall be subject to SutroVax representing to Lonza that no [***] (a "Material Adverse Effect") took place between the date of the most recent financing transaction of SutroVax and the date that SutroVax elects to make all or a portion of a Pre-IND Payment in equity pursuant to this Section 1(b), except to the extent that any such event, circumstance, effect, occurrence or state of affairs results from or relates to any of the matters set forth on Annex 1 attached hereto. Notwithstanding the foregoing, any such event, circumstance, effect, occurrence or state of affairs shall not be deemed a Material Adverse Effect if SutroVax cures such event, circumstance, effect, occurrence or state of affairs within [***] days of the Chief Executive Officer or Chief Financial Officer of SutroVax becoming aware of such event, circumstance, effect, occurrence or state of affairs. In the event SutroVax is a publicly-traded company and elects to make all or a portion of such further Pre-IND Payments in equity, then such equity payment shall be made in SutroVax's common stock at the then fair market value based on the 90-day moving average price per share prior to the payment date.

(c) In case of a Last Financing Round Conversion, SutroVax will provide and Lonza hereby agrees to execute and deliver to SutroVax all applicable transaction documents entered into by other purchasers in the most recent financing transaction of SutroVax, including a purchase agreement, an investor rights agreement and other ancillary agreements, with customary representations and warranties and transfer restrictions (including, without limitation, a 180-day lock-up agreement in connection with an initial public offering). SutroVax will provide a stockholder resolution authorizing the entry into this agreement.

(d) In case of a Future Financing Round Equity Convertible, Lonza and SutroVax shall execute a convertible note agreement substantially in the form attached hereto in Annex 2 and, at the time of the conversion of such note, Lonza hereby agrees to execute and deliver to SutroVax all applicable transaction documents entered into by other purchasers in the financing transaction of SutroVax which is triggering the conversion, including a purchase agreement, an investor rights agreement and other ancillary agreements with customary representations and warranties and transfer restrictions (including, without limitation, a 180-day lock-up agreement in connection with an initial public offering).

(e) Once the Equity Payment Cap has been reached, SutroVax shall make any further Pre-IND Payments due to Lonza as set forth in the MSA and related amendments in cash. For clarity, with respect to the deferral of any Completion Payments pursuant to Section 8.3 of the Third Amendment to the MSA, to the extent the Pre-IND Payments exceed the Initial Cash Cap and the Equity Payment Cap has not been reached, SutroVax shall have the option to make its Pre-IND Payments in cash or equity at the earlier of [***].

2. Right of First Negotiation. SutroVax shall notify Lonza in writing the first time SutroVax desires to engage in bona fide term sheet discussions for the engagement of a third party contract manufacturer who is not an acquiror, affiliate or sublicensee of SutroVax ("Third Party Contract Manufacturer") to provide manufacturing services to SutroVax for the commercial supply of SVX-24 (the "Commercial Services"). The parties agree that Lonza shall have a one-time right of first negotiation for the provision of such Commercial Services, provided that Lonza can manufacture SVX-24 with acceptable quality, at an appropriate scale to meet anticipated capacity requirements, at a price acceptable to the parties and in a time frame that allows SutroVax to meet its corporate objectives. Lonza shall provide SutroVax with written notification of its interest to provide Commercial Services, together with a proposal for such Commercial Services (together with timeline, facility and pricing), within [***] days after receiving such notification (the "Commercial Proposal"). After receiving such Commercial Proposal and so long as such Commercial Proposal provides [***], SutroVax and Lonza will negotiate in good faith the terms and conditions for Lonza to provide such Commercial Services to SutroVax. In the event Lonza does not provide SutroVax with its interest and such Commercial Proposal within such [***]-day period, or in the event Lonza provides SutroVax such Commercial Proposal but SutroVax and Lonza, despite negotiations in good faith for a period of [***] days, do not enter into a services agreement governing the terms and conditions for such Commercial Services ("Commercial Agreement"), SutroVax shall have the right to enter into an agreement with any other Third Party Contract Manufacturer for the provision of Commercial Services by such Third Party Contract Manufacturer, without further obligation to Lonza under this Paragraph 2.

3. Assignment. Neither party may assign its interest under this letter without the prior written consent of the other party, such consent not to be unreasonably withheld, conditioned or delayed, provided, however that either party may assign this letter to any Affiliate of such Party or any third party in connection with the sale or transfer of all or substantially all of the assets of the business of such party to which this letter relates, whether by merger, consolidation, acquisition or other form of business combination.

Please indicate your agreement of the above by signing below and returning a signed copy to my attention. Except as agreed to by SutroVax and Lonza in this letter, all other terms and conditions of the MSA shall remain in full force and effect.

Sincerely,

By: */s/ Grant E. Pickering*
Name: Grant E Pickering
Title: President & CEO

Agreed to by Lonza Ltd.:

| | | |
|---|---|---|
| By: | */s/ Daniel Blaettler* | */s/ Jacov Wirtz* |
| Name: | Daniel Blaettler | Jacov Wirtz |
| Title: | General Counsel,<br>Corporate Compliance,<br>Finance & Transactions | Assoc. General Counsel |

Cc:

**Annex 1**

Matters Not Considered to be Materially Adverse to SutroVax

[***]

**Annex 2**

**Form of Convertible Promissory Note**

{8 pages omitted}

[***]

**CERTAIN CONFIDENTIAL INFORMATION CONTAINED IN THIS DOCUMENT, MARKED BY [***], HAS BEEN OMITTED BECAUSE IT IS BOTH (I) NOT MATERIAL AND (II) WOULD LIKELY CAUSE COMPETITIVE HARM IF PUBLICLY DISCLOSED.**

# AMENDED AND RESTATED SUTROVAX AGREEMENT

This Amended and Restated SutroVax Agreement (this "**Agreement**"), is made effective as of October 12, 2015 (the "**Amendment Effective Date**"), by and between Sutro Biopharma, Inc., having its principal place of business at 310 Utah Ave, Suite 150, South San Francisco, CA 94080 ("**Sutro**"), and SutroVax, Inc., having a principal place of business at 400 East Jamie Ct, Suite 205, South San Francisco CA 94080 ("**SutroVax**"), each a "**Party**" and collectively "**Parties**", and amends and restates in its entirety that certain SutroVax Agreement, dated August 1, 2014 (the "**Effective Date**"), by and between Sutro and SutroVax (the "**Original Agreement**").

WHEREAS, Sutro controls certain proprietary technology which permits cell-free expression of proteins;

WHEREAS, SutroVax has been formed to research, develop, make and commercialize Vaccine Compositions (as defined below);

WHEREAS, Sutro desires to continue to enable such activities, including by supplying extract and Vaccine Compositions to SutroVax, and SutroVax desires to continue to obtain such extract and Vaccine Compositions from Sutro, on the terms and conditions set forth below; and

WHEREAS, Sutro and SutroVax desire to amend certain terms of the Original Agreement, and to restate the Original Agreement, as so amended, in its entirety in this Agreement, all on the terms and conditions set forth in this Agreement.

NOW, THEREFORE, in consideration of the foregoing premises and the covenants and obligations set forth in this Agreement, the Parties hereby agree as follows:

**1. DEFINITIONS**. As used herein, the following terms shall have the following meanings:

1.1 **"Affiliate"** means, with respect to either Party, any business entity controlling, controlled by, or under common control with such Party. For the purpose of this definition only, "control" means (i) the possession, directly or indirectly, of the power to direct the management or policies of a business entity, whether through the ownership of voting securities, by contract or otherwise, or (ii) the ownership, directly or indirectly, of at least fifty percent (50%) of the voting securities or other ownership interest of a business entity. Notwithstanding the above, in no event shall Sutro (or any entity that would be an Affiliate of SutroVax solely because it is an Affiliate of Sutro) be deemed an Affiliate of SutroVax, or SutroVax (or any entity that would be an Affiliate of Sutro solely because it is an Affiliate of SutroVax) an Affiliate of Sutro.

1.2 **"Calendar Quarter"** means any three month period ending on March 31, June 30, September 30, or December 31.

1.3 **"Change of Control"** means, with respect to a Party: (i) any Third Party becoming the beneficial owner of securities of such Party representing more than fifty percent (50%) of the total of all then outstanding voting securities; (ii) a merger or consolidation of such Party with or into a Third Party, other than a merger or consolidation that would result in the holders of the voting securities of such Party

immediately prior thereto having beneficial ownership of securities that represent immediately after such merger or consolidation more than fifty percent (50%) of the total combined voting power of the entity that survives such merger or consolidation or the parent of the entity that survives such merger or consolidation; or (iii) the sale or disposition of all or substantially all of the assets of such Party to a Third Party wherein the holders of such Party's outstanding voting securities immediately before such sale do not, immediately after such sale, own or control (directly or indirectly) equity representing a majority of the outstanding voting securities of such Third Party.

1.4 **"Commercially Reasonable Efforts"** means the level of efforts and resources (including without limitation the promptness with which such efforts and resources would be applied) commonly used by companies in the pharmaceutical industry with respect to such activities, where the company involved is motivated to achieve the particular task or result involved.

1.5 **"Extract"** means Sutro's extract derived from strains of *E. coli*.

1.6 **"FDA"** means the U.S. Food and Drug Administration, and any successor entity thereto.

1.7 **"First Commercial Sale"** means, with respect to each Vaccine Composition, the first sale for which revenue has been recognized by SutroVax or its Affiliates or Sublicensees to any Third Party for which all Regulatory Approvals (including pricing and reimbursement approvals) that are legally required in order to sell such Vaccine Composition in such country have been granted; in each case provided, however, that the following shall not constitute a First Commercial Sale: (a) any sale to an Affiliate or Sublicensee unless the Affiliate or Sublicensee is the last entity in the distribution chain of the Vaccine Composition, (b) any use of such Vaccine Composition in clinical trials (including post-Regulatory Approval clinical trials), non-clinical development activities or other development activities with respect to such Vaccine Composition, or disposal or transfer of such Vaccine Composition for a bona fide charitable purpose, and (c) compassionate use.

1.8 **"Fully Burdened Manufacturing Costs"** means the costs of manufacturing Extract or, if applicable, Vaccine Compositions, which manufacturing costs shall mean: (a) [***], and (b) [***], in each case to the extent directly allocated to and incurred in the manufacture of Extracts or Vaccine Compositions (as applicable) supplied to SutroVax, its Affiliates and Sublicensees. Fully Burdened Manufacturing Costs shall not include any [***], and shall be calculated in accordance with the foregoing, GAAP and Sutro's policies and procedures for its other products, in each case consistently applied (and such plant operations and support services costs shall be allocated consistent with GAAP and other products of Sutro in that facility).

1.9 **"Net Sales"** means the gross invoice amount (not including value added taxes, sales taxes, or similar taxes) of Vaccine Composition sold by SutroVax or its Affiliates or Sublicensees to the first unrelated Third Party in a bona fide arms-length transaction after deducting, if not previously deducted, from the amount invoiced or received:

(a) amounts actually credited or allowed for rejections or returns of Vaccine Composition;

(b) discounts, adjustments, rebates, chargebacks, retroactive price reductions and other sales allowances that are actually allowed or granted, including rebates, reductions and allowances mandated by government;

(c) customs or excise duties, sales tax, consumption tax, value added tax, and other governmental charges (except income taxes) in respect of sales;

(d) insurance, customs charges, freight, postage, shipping, handling, and other transportation costs incurred by the applicable selling party in shipping Vaccine Composition to a Third Party;

(e) if Vaccine Composition is [***], the [***].

Gross invoice price of Vaccine Composition sold and the deductions allowed in subsections (a)-(e) above shall be calculated in accordance with GAAP.

In the case of any sale which is not invoiced or is delivered before invoice, Net Sales shall be calculated at the time all revenue recognition criteria are met.

In the case of any sale or other disposal of a Vaccine Composition between or among SutroVax and its Affiliates or Sublicensees for resale, Net Sales shall be calculated as above only on the value charged or invoiced on the first arm's-length sale thereafter to an unrelated Third Party, and not on sale or disposal among SutroVax, its Affiliates and Sublicensees. Any consideration received in exchange for the transfer of Vaccine Compositions for use in clinical trials, sampling or promotional use, in each case at or below cost, shall not be included in Net Sales.

In the case of any sale or other disposal for value, such as barter or counter-trade, of any Vaccine Composition, or part thereof, other than in an arm's-length transaction exclusively for money, Net Sales shall be calculated on any such cash consideration plus the value of the non-cash consideration received, or the fair market price (if higher) of the Vaccine Compositions in the country of the sale or disposal.

If a Vaccine Composition is sold as part of a Combination Product (as defined below), Net Sales will be the product of (i) Net Sales of the Combination Product calculated as above (i.e., calculated as for a non-Combination Product) and (ii) the fraction (A/(A+B)), where:

"A" is the gross invoice price in such country of the product comprising a Vaccine Composition as the sole active ingredient; and

"B" is the gross invoice price in such country of the other active ingredients contained in the Combination Product.

If "A" or "B" cannot be determined by reference to non-Combination Product sales as described above, then Net Sales will be calculated as above, but the gross invoice price in the above equation shall be determined [***].

As used in this Section, "Combination Product" means a product that contains a Vaccine Composition and one or more other active ingredients (whether coformulated or copackaged) that are not generic or other non-proprietary compositions of matter. Pharmaceutical dosage from vehicles, delivery devices, adjuvants and excipients shall be deemed not to be "active ingredients".

1.10 **"Net Sublicense Fees"** means any and all upfront fees, milestone fees, and other consideration (in cash or equity) received by SutroVax or its Affiliates from a Sublicensee in consideration of the grant by SutroVax or its Affiliates of rights under Section 4.3 with respect to a Vaccine Composition, provided that, for clarity, the following shall not be included in Net Sublicense Fees: (a) royalties or other payments based on sales included in the calculation of Net Sales (including profit sharing payments); (b) the amount of any bona fide loans; (c) bona fide equity investments at the then-current market value; (d) support or other funding to the extent [***]; (e) reimbursement [***] for patent prosecution costs or other similar [***] expenses reasonably related to Vaccine Compositions and incurred by SutroVax or its Affiliates pursuant to the applicable agreement with such Sublicensee [***];

(f) amounts received for supply of Vaccine Compositions or other materials to such Sublicensee in accordance with this Agreement at the then-current market value; and (g) proceeds from the sale of all or substantially all of the business or assets of SutroVax or any of its Affiliates, whether by merger, sale of stock or assets or otherwise. In the event the consideration received by SutroVax or its Affiliates from a Sublicensee consists of equity (whether stock, interests in partnerships, joint ventures or otherwise), Sutro shall be entitled to receive a share of such equity (based on the percentages set forth in Section 6.6). In the event of a payment to SutroVax or its Affiliate by a Sublicensee of a combined amount in consideration for both rights to a Vaccine Composition under Section 4.3 as well as other rights or value, the amount of such payment to be included in Net Sublicense Fees will be reasonably allocated between the rights under Section 4.3 and such other rights or value (it being understood that any dispute with respect to such allocation will be resolved in accordance with Article 14).

1.11 **"Patent"** means any of the following, whether existing now or in the future anywhere in the world: (i) any issued patents, including inventor's certificates, substitutions, extensions, confirmations, reissues, re-examinations, renewals or any like governmental grants for protection of inventions, and any extensions or restorations of any of the foregoing, including patent term adjustments, patent term extensions and supplementary protection certificates; and (ii) any pending applications for any of the foregoing, including any continuations, divisionals, substitutions, continuations-in-part, provisionals and utility applications and applications for extension or restoration.

1.12 **"Pneumococcal Conjugate Vaccine"** means a Vaccine Composition comprising CRM197, and/or variants thereof, including but not limited to sequences with substituted non-natural amino acids, conjugated to one or more polysaccharides as generally described in the Research Plan attached to this Agreement as of the Amendment Effective Date.

1.13 **"Regulatory Approval"** means the technical, medical and scientific licenses, registrations, authorizations and approvals (including approvals of NDAs or Biologic License Applications, supplements and amendments, pre- and post- approvals, pricing and third party reimbursement approvals, and labeling approvals) of the FDA or other applicable regulatory authority, necessary for the development, clinical testing, commercial manufacture, distribution, marketing, promotion, offer for sale, use, import, export or sale of a pharmaceutical product in a country, including all necessary price and/or reimbursement approvals.

1.14 **"Research Plan"** means the research plan set forth in Exhibit A, as such plan may be amended from time to time by mutual agreement between the Parties or pursuant to Section 2.2 below. It is understood that the Research Plan as set forth in Exhibit A of the Original Agreement is hereby replaced by Exhibit A to this Agreement.

1.15 **"Royalty Term"** means with respect to any particular Vaccine Composition in any particular country in the Territory, the period of time beginning on the First Commercial Sale of the Vaccine Composition and extending until the later of (i) the date of expiration on a country by country basis of the last to expire of a Valid Claim in such country of sale in which the Valid Claim covers the manufacture, use, sale, offer for sale or importation of the applicable Vaccine Composition, and (ii) ten (10) years from the First Commercial Sale of the Vaccine Composition.

1.16 **"Series A Financing"** means SutroVax's raise of a cumulative total of at least Six Million Five Hundred Thousand U.S. dollars ($6.5 million) (whether in the form of cash raised in connection with equity financings, government or private grants, or payments from partners or collaborators, provided, however, that at least Two Million U.S. dollars ($2 million) shall be raised in consideration for the sale of equity securities to venture capital or other institutional investors, or Strategic Investors) through one transaction or a series of transactions, excluding for such purpose the One Million

Five Hundred Thousand U.S. Dollars ($1.5 million) received by SutroVax from Johnson & Johnson Innovation and Sutro in SutroVax's initial convertible note financing. For such purposes, the amounts raised shall include future payments that have not yet been received, to the extent comprised of (a) non-contingent amounts under awarded grants, (b) subsequent tranches of an equity financing, and (c) non-contingent, non-cancellable payments from partners or other Third Parties. As used in this definition, "**Strategic Investors**" means any investment entity affiliated with a nationally or internationally recognized biotechnology or pharmaceutical company or health organization or foundation (such as the Gates Foundation): (i) whose principal business is other than the making and management of purely financial investments, (ii) who intends to make an investment in SutroVax for any reason other than potential financial gain from the appreciation of such investment (or the accrual of interest on such investment), or (iii) who would obtain contractual rights in connection with their investment with respect to SutroVax that are other than those that would typically accompany a purely financial investment in a company.

1.17 **"Series A Financing Close"** means the closing of the Series A Financing (which occurred on July 10, 2015).

1.18 **"[***] In-License"** means that certain license agreement by and between SUTRO and [***], dated [***], as may be amended from time to time.

1.19 **"Sublicensee"** means a Third Party to which SutroVax or any of its Affiliates has granted rights under Section 4.3.

1.20 **"Sutro Competitor"** means any of the entities set forth in Exhibit D and their respective Affiliates; provided that (i) in the event of a Change of Control of any such entity or its Affiliate, the Acquirer of such entity or its Affiliate shall not be deemed a Sutro Competitor, and (ii) any licensee or partner of any such entity, its Affiliate or Acquirer shall not be deemed a Sutro Competitor because of such licensing or partnership arrangement.

1.21 **"Sutro Core Know-How"** is defined in Section 3.3.

1.22 **"Sutro Know-How"** means all information and materials pertaining to the Extracts or Vaccine Compositions supplied hereunder, or the manufacture, use or, in the case of Vaccine Compositions, development thereof, as the case may be, that is owned or controlled by Sutro and (subject to Section 15.2) its Affiliates at any time during the Term, including (i) practices, protocols, methods, techniques, specifications, formulae, standard operating procedures, analytical methods, material and vendor lists, (ii) analytical, quality control and stability data, batch records, and other chemistry, manufacturing and control (CMC) data, (iii) regulatory documentation, and (iv) tangible materials and reagents; in each case as and to the extent reasonably necessary or useful for SutroVax to exercise the rights granted to it under this Agreement. Notwithstanding the foregoing, in no event shall Sutro Know-How include any information or materials of Sutro's third-party collaborators or sublicensees, except for such information or materials pertaining to the Sutro Platform which Sutro has the right to provide to SutroVax in accordance with this Agreement.

1.23 **"Sutro Patent"** means any Patents covering the Sutro Platform, Extracts, Vaccine Compositions, or the manufacture or use thereof, that are owned or controlled by Sutro and (subject to Section 15.2) its Affiliates at any time during the Term. As of the Amendment Effective Date, Sutro Patents shall include those Patents listed on Exhibit B. It is understood that the Sutro Patents as set forth in Exhibit B of the Original Agreement are hereby replaced by Exhibit B to this Agreement.

1.24 **"Sutro Platform"** means Sutro's cell-free protein synthesis platform, including improvements thereof.

1.25 **"SutroVax Platform Improvement Patents"** means any Patents owned or controlled by SutroVax or its Affiliates covering the SutroVax Platform Improvements at any time during the Term.

1.26 **"SutroVax Platform Improvements"** means any and all improvements to the Sutro Platform made by or on behalf of SutroVax, its Affiliates or Sublicensees, in each case that are made using Extracts. Inventions directed to the composition, formulation or use of Vaccine Compositions will not be considered SutroVax Platform Improvements.

1.27 **"Term"** has the meaning set forth in Section 8.1.

1.28 **"Territory"** means worldwide.

1.29 **"Third Party"** means any person other than Sutro, SutroVax and their respective Affiliates.

1.30 **"Vaccine Antigen"** means any of the following antigens (each including variants thereof with biological function substantially similar to such antigen): (i) any non-human vaccine antigen which is the same as or was derived from and directed against an infectious pathogen, including any one of a polypeptide, a polysaccharide, a carbohydrate, or other moiety, alone or in any combination thereof, (ii) the vaccine antigens identified in the Research Plan as of the Amendment Effective Date, and (iii) the vaccine antigens, if any, selected by SutroVax and approved by Sutro in accordance with Section 2.2.

1.31 **"Vaccine Field"** means the research, development, manufacture, sale and other commercialization of Vaccine Compositions for prophylactic, therapeutic and/or companion diagnostic applications.

1.32 **"Vaccine Composition"** means a composition comprising a Vaccine Antigen, which composition is developed and administered for the purpose of inducing an immune response specific to such Vaccine Antigen, solely for the prevention or treatment of the disease against which such Vaccine Antigen is directed, whereby such prevention or treatment occurs through the immune response induced by such Vaccine Antigen (excluding for clarity any form of passive immunization or use of additional molecules, including without limitation checkpoint inhibitors, to modify or otherwise affect the immune response induced by such Vaccine Antigen provided, however, that a Vaccine Composition may include one or more adjuvants solely for use in conjunction with such Vaccine Antigen to enhance the immune response induced by such Vaccine Antigen, and, for clarity, excluding any use with any form of passive immunization or with any checkpoint inhibitors or other additional non-adjuvant molecules), which Vaccine Composition or any portion thereof (e.g., a polysaccharide, carbohydrate, peptide or other moiety contained in such Vaccine Composition) is discovered or produced based on the use of any Extract(s) as the starting material, whether produced by Sutro, or produced by SutroVax or a CMO established or approved by Sutro using any Extract(s) supplied by Sutro or under a license from Sutro, in each case in any production system, whether cell-free or cell-based. Notwithstanding the foregoing, "Vaccine Composition" shall exclude any type of cancer vaccine (other than prophylactic vaccines where the agent causing cancer is an infectious pathogen (e.g. HPV vaccine), but excluding for clarity any therapeutic cancer vaccine or companion diagnostic for cancer vaccine applications). For clarity, SutroVax's Pneumococcal Conjugate Vaccine is a Vaccine Composition, as defined herein.

1.33 **“Valid Claim”** means a claim of (i) any issued, unexpired patent within the Sutro Patents which has not been dedicated to the public, disclaimed, abandoned or held invalid or unenforceable by a court or other government agency of competent jurisdiction in a decision from which no appeal can be taken or is otherwise not taken, or (ii) a pending patent application within the Sutro Patents which has not been irrevocably cancelled, withdrawn or abandoned, provided if a claim of pending patent application has not issued as a claim of an issued patent within [***] years after the filing date from which such claim takes priority, such pending claim shall not be a Valid Claim for under this clause (ii).

1.34 **Additional Definitions**. Each of the following definitions shall have the meanings defined in the corresponding sections of this Agreement indicated below:

| **Term** | **Section Defined** |
|---|---|
| Acquired Party | 15.2(g) |
| Acquirer | 15.2(g) |
| Agreement | Preamble |
| Amendment Effective Date | Preamble |
| Available Extract | 3.1(d) |
| Bankrupt Party | 15.3 |
| Claim | 12.1 |
| CMO | 3.1(d) |
| Combination Product | 1.9 |
| Discloser’s Information | 10.1 |
| Effective Date | Preamble |
| Enforcement Action | 9.2(a)(iii) |
| Extract Supply Agreement | 3.1(c) |
| Initial Supply Period | 3.1(b) |
| JAMS | 14.3 |
| Joint Vaccine Composition Patents | 9.l(b) |
| Lead Enforcement Party | 9.2(a)(v) |
| Marks | 9.4 |
| Original Agreement | Preamble |
| Parties | Preamble |
| Party | Preamble |
| Patent Term Extensions | 9.3 |
| Principal Contact | 14.1 |
| Prosecution and Maintenance/Prosecute and Maintain | 9.1(d) |
| Qualified Amount | 8.5 |
| Restricted Vaccine Antigens | 2.2 |
| Segregated Technology | 15.2(b) |
| Senior Management | 14.2 |
| Strategic Investors | 1.16 |
| Sublicense Agreement | 4.3 |
| Sutro | Preamble |
| Sutro Indemnitees | 12.1 |
| Sutro Mark | 9.4 |
| SutroVax | Preamble |
| SutroVax Indemnitees | 12.2 |
| SutroVax Marks | 9.4 |
| Vaccine Antigen Notice | 2.2 |
| Vaccine Field Infringement | 9.2(a)(i) |
| Vaccine Composition-Specific Patents | 9.1(a)(i) |
| Vaccine Composition Supply Agreement | 3.2(b) |

**2. RESEARCH PLAN**

2.1 **Sutro Obligations**. Prior to Series A Financing Close, Sutro will:

(a) evaluate the expression of up to [***] Vaccine Antigens identified in the Research Plan as of the Effective Date through the Sutro Platform as described in the Research Plan;

(b) use Commercially Reasonable Efforts to deliver to SutroVax for testing [***] of each Vaccine Antigen, for up to [***] Vaccine Antigens identified in the Research Plan as of the Effective Date;

(c) perform assays and/or analytical work for up to [***] Vaccine Antigens identified in the Research Plan as of the Effective Date, as may be mutually agreed between the Parties in writing.

2.2 **Designation of Additional Vaccine Antigens**. SutroVax may select up to [***] additional (i.e., in addition to the vaccine antigens identified in the Research Plan as of the Amendment Effective Date) vaccine antigens that are not for the prevention or treatment of any infectious disease or cancer, solely for development as Vaccine Compositions under the terms of this Agreement, by providing written notice to Sutro, within [***] years from the Series A Financing Close, of each such additional Vaccine Antigen proposed by SutroVax (each a "**Vaccine Antigen Notice**"), which Vaccine Antigen Notice shall include (i) the common name of such Vaccine Antigen, (ii) the specific amino acid sequence thereof, and (iii) such other information as Sutro reasonably requests. Sutro shall notify SutroVax within [***] of receipt of the Vaccine Antigen Notice as to whether it accepts or not such additional Vaccine Antigen proposed by SutroVax, provided that Sutro shall not withhold its acceptance of a proposed Vaccine Antigen (other than a Restricted Vaccine Antigen) that is available , it being understood that, with respect to [***], Sutro [***]. For such purposes, a proposed Vaccine Antigen shall be "available," unless Sutro (a) [***] , (b) is [***] or (c) has [***]. Upon Sutro's acceptance of a proposed Vaccine Antigen, such Vaccine Antigen shall be deemed a Vaccine Composition, in which case the Research Plan shall be amended to include any mutually agreed upon activities to be performed by Sutro with respect to such Vaccine Antigen. For purposes of this Section 2.2, "**Restricted Vaccine Antigens**" means vaccine antigens for the treatment of autoimmune or inflammatory diseases where inflammation is characterized by specific immune responses directed to self antigens.

**3. SUPPLY**

3.1 **Extract Supply**.

(a) Prior to the Series A Financing Close, Sutro shall use Commercially Reasonable Efforts to manufacture and supply, at no cost to SutroVax, the Extracts specified in the Research Plan.

(b) For [***] years following the Series A Financing Close ("**Initial Supply Period**"), Sutro shall use Commercially Reasonable Efforts to manufacture and supply the quantities of Extract(s) set forth in a mutually agreed upon research plan, based on the Series A work plan, at a price equal to Fully Burdened Manufacturing Costs plus [***]. Sutro agrees not to unreasonably withhold its agreement to such a research plan.

(c) Following SutroVax's achievement of the diligence milestone 2(a) set forth in Exhibit C, if requested by SutroVax, on an Extract-by-Extract basis, the Parties shall negotiate in good faith reasonable terms and conditions of an agreement for the supply by Sutro to SutroVax of the quantities of the Extract reasonably requested by SutroVax to manufacture the applicable Vaccine Composition(s) (but excluding, for clarity, any provision granting to SutroVax or its Affiliates or Sublicensees any right to obtain or use any Sutro Core Know-How), which terms shall be negotiated in good faith by the Parties, provided that the price for each Extract shall not exceed [***] of the Fully Burdened Manufacturing Cost thereof (each such agreement, an "**Extract Supply Agreement**").

(d) In the event Sutro engages one or more Third Parties or establishes a joint venture with one or more Third Parties (each such Third Party or joint venture, a "**CMO**"), to manufacture one or more Extract(s) for Sutro, its Affiliates or others (each such Extract, an "**Available Extract**"), Sutro shall promptly notify SutroVax.

(i) In the event one or more of the Extracts used by SutroVax to manufacture Vaccine Compositions under this Agreement are Available Extracts, and SutroVax wishes the CMO to supply such Available Extract(s) to SutroVax, SutroVax shall notify Sutro thereof. At SutroVax's request, Sutro agrees to authorize such CMO to supply to SutroVax SutroVax's reasonable requirements of such Available Extract(s) solely to manufacture Vaccine Compositions in accordance with this Agreement, under an agreement to be entered into by SutroVax and CMO, it being understood that Sutro shall not be liable to SutroVax or such CMO for any breach of such agreement by such CMO or SutroVax, respectively. SutroVax shall at Sutro's request provide to Sutro a copy of such agreement.

(ii) In the event one or more Extract(s) used by SutroVax to manufacture Vaccine Compositions under this Agreement are not Available Extracts, and SutroVax wishes the CMO to supply any such Extract(s) to SutroVax, SutroVax shall notify Sutro thereof. At SutroVax's request, Sutro agrees to authorize such CMO to supply to SutroVax SutroVax's reasonable requirements of such Extract(s) solely to manufacture Vaccine Compositions in accordance with this Agreement, under an agreement to be entered into by SutroVax and CMO, it being understood that Sutro shall not be liable to SutroVax or such CMO for any breach of such agreement by such CMO or SutroVax, respectively. SutroVax shall provide to Sutro a copy of such agreement promptly following its execution. Upon receipt of such copy, Sutro shall (a) transfer to such CMO as soon as reasonably practicable the items of Sutro Know-How reasonably necessary for such CMO to manufacture the specific Extract(s) identified in such agreement, and (b) make its personnel that is knowledgeable regarding the Sutro Platform ("**Sutro Personnel**") reasonably available to such CMO for scientific and technical explanations and on-site support that may reasonably be requested by such CMO to perform the activities set forth in this Section 3.1(d)(ii), provided however, that SutroVax shall [***].

(e) If Sutro undergoes a Change of Control and there is not in place at least one CMO who has supplied Extract to Sutro or a Third Party and who has adequate capabilities to manufacture and supply SutroVax's reasonable requirements of Extract(s) to manufacture Vaccine Compositions under this Agreement, and is willing to supply such requirements under reasonable and customary terms consistent with this Agreement (but excluding, for clarity, any provision granting to SutroVax or its Affiliates or Sublicensees any right to obtain or use any Sutro Core Know-How), then at SutroVax's request, Sutro, shall as soon as reasonably practicable, identify a CMO reasonably acceptable to SutroVax (the approval of such CMO not to be unreasonably withheld, conditioned or delayed by SutroVax). At SutroVax's request, Sutro agrees to (a) authorize such CMO to supply to SutroVax SutroVax's reasonable requirements of such Extract(s) and (b) use good faith efforts to assist SutroVax in connection with the negotiation by SutroVax of an agreement between SutroVax and such CMO for the supply by such CMO to SutroVax of SutroVax's reasonable requirements of Extracts, under reasonable and customary terms and conditions consistent with this Agreement (but excluding, for clarity, any provision granting to

SutroVax or its Affiliates or Sublicensees any right to obtain or use any Sutro Core Know-How), it being understood that Sutro shall not be liable to SutroVax or such CMO for any breach of such agreement by such CMO or SutroVax, respectively. SutroVax shall provide to Sutro a copy of such agreement promptly following its execution. Upon receipt of such copy, Sutro shall (i) transfer to such CMO as soon as reasonably practicable the items of Sutro Know-How reasonably necessary for such CMO to manufacture the specific Extract(s) identified in such agreement, and (ii) make Sutro Personnel reasonably available to such CMO for scientific and technical explanations and on-site support that may reasonably be requested by such CMO to perform the activities set forth in this Section 3.1(e), provided however, that SutroVax shall [***]. It is understood the CMO selected by Sutro under this Section 3.1 shall be a reputable and established manufacturer [***]. Furthermore, from and after Sutro's Change of Control, in the event Sutro's existing CMO engaged or established under Section 3.1 discontinues the supply of Extracts to SutroVax and is unable to resume such supply in a reasonable timeframe (whether due to bankruptcy, Change of Control or otherwise), at SutroVax's request, Sutro shall, as soon as reasonable practicable, establish another CMO in accordance with the terms and conditions set forth in this Section 3.1(e) (including for clarity SutroVax's payment obligation set forth above).

3.2 **Vaccine Composition Supply**.

(a) Prior to the Series A Financing Close, Sutro will use Commercially Reasonable Efforts to manufacture and supply, at no cost to SutroVax, the non-cGMP Vaccine Compositions specified in the Research Plan.

(b) Following the Series A Financing Close, in the event that SutroVax desires Sutro to manufacture and supply cGMP Vaccine Compositions, then SutroVax shall inform Sutro in writing thereof, and if requested by SutroVax, on a Vaccine Composition-by-Vaccine Composition basis, Sutro shall supply to SutroVax the quantities of Vaccine Composition(s) reasonably requested by SutroVax, in each case under a supply agreement for such Vaccine Composition(s) (each, a "**Vaccine Composition Supply Agreement**"), that shall contain such terms and conditions as are reasonable and customary for arrangements of this type (but excluding, for clarity, any provision granting to SutroVax or its Affiliates or Sublicensees any right to obtain or use any Sutro Core Know-How), which terms shall be negotiated in good faith by the Parties, provided that the price for each Vaccine Composition shall not exceed [***] of the Fully Burdened Manufacturing Cost thereof.

(c) If Sutro engages one or more CMO(s) to manufacture and supply cGMP proteins using the Sutro Platform, Sutro will promptly notify SutroVax. In the event SutroVax wishes the CMO to supply cGMP Vaccine Compositions to SutroVax, SutroVax shall notify Sutro thereof. At SutroVax's request, Sutro agrees to authorize (and cooperate in good faith to facilitate) such CMO to supply to SutroVax SutroVax's reasonable requirements of such cGMP Vaccine Compositions under an agreement to be entered into by SutroVax and CMO, it being understood that Sutro shall not be liable to SutroVax or such CMO for any breach of such agreement by such CMO or SutroVax, respectively. SutroVax shall at Sutro's request provide to Sutro a copy of such agreement. Following the execution of such agreement, Sutro shall (i) upon SutroVax's written request, transfer to such CMO any item of Sutro Know-How related to Vaccine Compositions (excluding for clarity any Sutro Core Know-How) reasonably necessary for such CMO to manufacture the specific cGMP Vaccine Compositions identified in such agreement for the sole purpose of such CMO manufacturing Vaccine Compositions under the agreement with SutroVax, and (ii) make Sutro Personnel reasonably available to such CMO for scientific and technical explanations and on-site support that may reasonably be requested by such CMO to perform the activities set forth in this Section 3.2(c), provided however, that [***].

(d) Subject to the terms of the Agreement, following the Series A Financing Close, SutroVax shall be allowed to select and engage a CMO, subject to Sutro's approval not to be unreasonably withheld, conditioned or delayed by Sutro, to supply to SutroVax SutroVax's reasonable requirements of cGMP Vaccine Compositions under an agreement to be entered into by SutroVax and CMO, it being understood that Sutro shall not be liable to SutroVax or such CMO for any breach of such agreement by such CMO or SutroVax, respectively. To the extent that, following the execution of such agreement, any item of Sutro Know-How related to Vaccine Compositions (excluding for clarity any Sutro Core Know-How) is reasonably necessary for such CMO to manufacture for SutroVax the specific cGMP Vaccine Compositions identified in the agreement, then Sutro shall transfer such Sutro Know-How to SutroVax and SutroVax shall be responsible for providing such Sutro Know-How to such CMO for the sole purpose of such CMO manufacturing Vaccine Compositions under the agreement with SutroVax, provided however, that SutroVax shall [***]. For clarity, in the event the CMO engaged or established under Section 3.2(d) discontinues the supply of Vaccine Compositions to SutroVax and is unable to resume such supply in a reasonable timeframe (whether due to bankruptcy, Change of Control or otherwise), at SutroVax's request, Sutro shall, as soon as reasonable practicable, assist SutroVax in establishing another CMO in accordance with the terms and conditions set forth in this Section 3.2(d) (including for clarity SutroVax's payment obligation set forth above).

(e) Notwithstanding Section 4.2, once a CMO (selected and/or approved by Sutro, as applicable) is established in accordance with this Section 3.2, SutroVax shall have the right to supply to such CMO Extracts obtained by SutroVax in accordance with Section 3.1, in each case solely for use for the purpose of such CMO manufacturing and supplying Vaccine Compositions to SutroVax, its Affiliates and Sublicensees in accordance with this Agreement.

(f) For clarity, and notwithstanding the foregoing, it is understood that Sutro shall be obligated to supply only those Vaccine Compositions, or components of such Vaccine Compositions (such as an adjuvant), that are produced using Extract, and the provisions of this Article 3 shall apply with respect to such components in the same manner as they apply to Vaccine Compositions (mutatis mutandis).

3.3 **Additional CMO Terms**. For clarity, except as set forth in Section 15.3, in no event shall SutroVax, its Affiliates or Sublicensees have the right to access to any processes, documents, and materials or other Know-How owned or controlled by Sutro that relate to the manufacture or supply of Extracts (including, but not limited to, Know-How regarding the generation and/or use of strains from which Extract is produced) (collectively, "**Sutro Core Know-How**"), whether directly from Sutro or its Affiliates or through a CMO or otherwise, and SutroVax, its Affiliates and Sublicensees shall not require, request or solicit any CMO to deliver any Sutro Core Know-How to SutroVax, its Affiliates and/or its Sublicensees, and no agreement between any CMO and Sutro, its Affiliates and Subsidiaries shall contain any provision granting to SutroVax or its Affiliates or Sublicensees any right to obtain or use any Sutro Core Know-How. Without limiting the foregoing, in the event any item of Sutro Core Know-How is delivered to SutroVax, its Affiliates and/or its Sublicensees (except as set forth in Section 15.3), SutroVax, its Affiliates and Sublicensees shall immediately return such item to Sutro. Notwithstanding the foregoing, to the extent SutroVax or its Sublicensee is required by a regulatory authority (or applicable law) in the United States, Europe or Japan to confidentially disclose, as part of the applicable regulatory filings with respect to a Vaccine Composition, any Sutro Core Know-How (for clarity, excluding any tangible embodiments of such Sutro Core Know-How other than information and documentation), Sutro shall, upon SutroVax's written request, confidentially disclose such Sutro Core Know-How as part of the applicable regulatory filings, subject to the payment obligations set forth in Section 5.4 of this Agreement.

3.4 **No Additional Royalties**. The Parties acknowledge and agree that the only payments to be made by SutroVax to Sutro, directly or indirectly, in consideration for the rights licensed under Section 4.1(a), with respect to Vaccine Compositions will be the royalties and Net Sublicense Fees specified in Article 6 of this Agreement. Accordingly, Sutro shall not charge additional royalties or other similar payments in consideration for such rights from any CMO engaged or approved by Sutro pursuant to Section 3.1 or 3.2 with respect to the supply of Extracts or Vaccine Compositions (as applicable) which would flow through to SutroVax on Extracts or Vaccine Compositions supplied by such CMO to SutroVax, its Affiliates or Sublicensees (as applicable). For clarity, this Section 3.4 shall not be construed to prevent or restrict Sutro from charging the applicable CMO and/or SutroVax a reasonable transfer price (with respect to supply to SutroVax, subject to the applicable price set forth in Section 3.1) for the supply of Extract following the Series A Financing Close.

**4. SUTROVAX RIGHTS**

4.1 **License Grant**.

(a) Subject to the terms of this Agreement, Sutro hereby grants to SutroVax an exclusive, royalty-bearing license, under Sutro Patents and Sutro Know-How, with the right to grant and authorize sublicenses in accordance with Section 4.3 (only with respect to the rights granted under the following sub-clause (i)), solely to (i) research, develop , use, sell, offer for sale, export, import or otherwise exploit Vaccine Compositions, and (ii) to manufacture, itself or through any CMO established or approved by Sutro pursuant to Section 3.2, both cGMP grade and non-cGMP grade Vaccine Compositions from Extracts obtained from Sutro or any CMO established or approved by Sutro as described in Section 3.1, in each case in the Territory during the Term in accordance with the terms of the Agreement. For clarity, to the extent a CMO established in accordance with Section 3.2 above utilizes Sutro Patents or Sutro Know-how solely to supply Vaccine Composition to SutroVax in accordance with Section 3.2, such arrangement shall not be deemed a sublicense by SutroVax. In addition, it is understood and agreed that:

(A) If components of a Vaccine Composition (such as an adjuvant) can be used for purposes other than a Vaccine Composition, the exclusive license under this Section 4.1 shall not be deemed to restrict Sutro from using, licensing or otherwise exploiting such components for such other purposes (i.e., purposes other than to induce an immune response specific to a Vaccine Antigen to treat or prevent the disease against which such Vaccine Antigen is directed by means of such specific immune response); and

(B) If a Vaccine Composition or component thereof can be used for purposes other than those permitted under Section 1.32, such use shall not be deemed licensed under this Section 4.1, but a third party's use or administration of a composition for such an unpermitted use shall not cause such composition to cease being a Vaccine Composition, provided that SutroVax uses diligent efforts to prevent such unpermitted use.

(b) For clarity, SutroVax [***], and shall use the Extracts supplied to it by Sutro or a CMO authorized by Sutro solely to express Vaccine Compositions in the Territory solely for use in conjunction with the exercise, and within the scope, of the license granted in Section 4.1(a).

(c) Subject to the terms of the Agreement and except as otherwise set forth hereunder, Sutro shall not, during the Term, provide Extract or Vaccine Compositions to any Third Party for uses that would be within the scope of the license granted in Section 4.1(a) or use or otherwise exploit Extract or Vaccine Compositions for uses that would be within the scope of the license granted in Section 4.1(a), provided that, for clarity, (A) Sutro retains the right (i) to produce Extracts, to supply Extracts to SutroVax and Third Parties, and to authorize CMOs to produce Extracts, in each case for purposes of manufacturing Vaccine Compositions for SutroVax and its designees; and (ii) to perform Sutro's obligations under Article 3, and (B) as between the Parties, Sutro retains all rights to produce, use and exploit Extracts outside the Vaccine Field.

(d) Notwithstanding the foregoing, in the event any Sutro Know-How or Sutro Patents are first in-licensed or first acquired following the Effective Date from a Third Party on a royalty-, fee- or other similar basis, then, to the extent Sutro has the right to grant a license to such Sutro Know-How or Sutro patents under Section 4.1(a), the inclusion of such Sutro Know-How and Sutro Patents in such license shall be conditioned upon the Parties' mutual written agreement for SutroVax to reimburse Sutro for any amount payable by Sutro to such Third Party as a result of SutroVax's exercise of its license to such Sutro Know-How and Sutro Patents under this Agreement.

(e) Notwithstanding anything to the contrary, this Agreement, including the licenses granted under this Section 4.1 shall be subject to, and limited by, the terms of the [***] In-License, and SutroVax agrees to comply with the terms set forth in Exhibit E.

4.2 **No Other Uses**. SutroVax covenants not to use the Extract except for use in conjunction with the exercise, and within the scope, of the license granted in Section 4.1(a). Without limiting the foregoing, SutroVax shall not (a) [***], sell, transfer, lease, exchange or otherwise dispose of or provide Extract to any Third Party, (b) engineer or reverse-engineer any E. coli strain for the purpose of producing extract in connection with cell-free protein synthesis, (c) knowingly use Extract to produce cancer vaccines or any other proteins except for Vaccine Compositions, and (d) use Extract in human subjects, in clinical trials, or for diagnostic purposes involving human subjects. In addition, SutroVax will store and use the Extract and Vaccine Compositions supplied to it hereunder in compliance with all applicable laws, regulations, and guidelines, including without limitation those governing handling and disposal of hazardous materials. In the event of breach of this Section 4.2 by SutroVax, its Affiliates or Sublicensees, notwithstanding Section 8.2, Sutro may immediately terminate this Agreement upon notice to SutroVax.

4.3 **Further Development**. Subject to the terms of this Agreement, SutroVax may grant and authorize sublicenses to Affiliates and Third Parties under the licenses granted to it under Section 4.1(a)(i), to further develop, offer to sell, import, export and otherwise exploit Vaccine Compositions discovered or generated at least in part by SutroVax or its Affiliate under the terms of this Agreement (or derivatives thereof with a substantially similar biological function), provided that (a) in no event shall any such Affiliate or Third Party be granted the right to independently develop additional Vaccine Compositions that were not discovered or developed at least in part by SutroVax or its Affiliate (or that are not derivatives thereof with a substantially similar biological function), and (b) each such Affiliate or Third Party shall enter into a written agreement (each, a "**Sublicense Agreement**") the terms of which are consistent with the terms of this Agreement. For clarity, in no event shall SutroVax grant or authorize sublicenses to Third Parties to use the Extracts to independently discover or generate Vaccine Compositions. SutroVax shall remain responsible for its obligations under this Agreement, and shall ensure that each such agreement contains terms and conditions requiring the applicable Affiliate or Third Party to comply with the terms and conditions under Sections 12.1(a) (and the corresponding provisions of Section 12.3) and 12.4, in each case to the extent applicable to activities of the Sublicensee. SutroVax shall deliver to Sutro a true, correct, and complete copy of any Sublicense Agreement no later than [***] days after the execution of such agreement, provided that any Sublicense Agreement shall be deemed Discloser's Information of SutroVax under Article 10 below.

4.4 **Technology Transfer**. Upon request by SutroVax, Sutro shall provide SutroVax with (i) copies of, or access to, the then-existing Sutro Know-How that is reasonably necessary to enable SutroVax to exercise the rights granted to it in Section 4.1(a) and listed in Exhibit F (excluding for clarity any Sutro Core Know-How), (ii) reasonable on-site training at Sutro's premises to enable SutroVax to implement such Sutro Know-How, and (iii) reasonable access, during ordinary business hours, to Sutro's personnel knowledgeable of the Sutro Platform for technical advice with respect to the implementation of such Sutro Know-How, whether by teleconference or in-person meeting. After the initial transfer under (i) above, upon request no more than [***], Sutro shall provide to SutroVax copies of, or access to, any

Sutro Know-How developed or acquired following the initial transfer and falling in the categories set forth in Exhibit F, in each case as reasonably necessary to enable SutroVax to exercise the rights granted to it in Section 4.1(a) and was not previously provided to SutroVax under this Section 4.4 (excluding for clarity any Sutro Core Know-How). Sutro shall perform the activities set forth in this Section 4.4 at no cost to SutroVax, provided, however, that following the Series A Financing Close, the performance of the activities set forth in the foregoing sub-clauses (ii) and (iii) shall be subject to the payment to Sutro of all documented time spent by Sutro's personnel to perform such transfer (on an FTE basis) and out-of-pocket costs incurred by Sutro in connection with performing such activities, in accordance with a budget reasonably approved in advance by SutroVax.

4.5 **Grant-Back**. Subject to the terms and conditions of this Agreement, SutroVax hereby grants to Sutro and its Affiliates, and shall cause its Sublicensees to grant to Sutro and its Affiliates, an exclusive (including as to SutroVax, its Affiliates and Sublicensees), perpetual, royalty-free, worldwide license, with the right to sublicense through multiple tiers, to exploit any SutroVax Platform Improvements in any field other than the Vaccine Field (except as may be necessary for Sutro to fulfill its obligations under this Agreement or any manufacturing or supply agreement entered into hereunder).

**5. REGULATORY ACTIVITIES**

5.1 As between the Parties, SutroVax shall be solely responsible for preparing and filing of any and all regulatory submissions for Vaccine Compositions in the Territory and shall own all related regulatory materials, provided, however , that Sutro shall have the authority to approve, and have final responsibility for, the CMC portions of such submissions and materials to the extent relating to the manufacturing of Extracts.

5.2 SutroVax shall keep Sutro informed of pre-clinical, clinical and regulatory developments relating to Vaccine Compositions in the Territory through regular reports to Sutro as set forth in Section 7.3, and SutroVax shall promptly notify Sutro of any Regulatory Approval received for each Vaccine Composition in the Territory. SutroVax shall provide Sutro for review and comment the relevant CMC portions and portions concerning product safety of draft material regulatory filings with respect to Vaccine Compositions at least [***] days in advance of their intended date of submission to a regulatory authority in the Territory and shall consider in good faith any comments thereto provided by Sutro. SutroVax shall promptly notify Sutro with copies of any such CMC portions and portions concerning product safety of material regulatory submissions or communications submitted to or received from any regulatory authority in the Territory and shall provide Sutro with copies thereof within [***] days after submission or receipt. SutroVax shall provide Sutro with reasonable advance notice of all meetings, conferences, and discussions scheduled with any regulatory authority in the Territory in each case to the extent concerning relevant CMC information, adverse events or other safety information with respect to a Vaccine Composition, and shall consider in good faith any input from Sutro in preparing for such meetings, conferences or discussion. To the extent permitted by applicable laws, Sutro shall have the right to participate, in any such meetings, conferences or discussions to the extent the same concern CMC information, CMC activities, adverse events or other safety information with respect to any Vaccine Composition. For clarity, and notwithstanding any of the foregoing, SutroVax's obligations under this Section 5.2, including with respect to any regulatory developments, Regulatory Approvals, regulatory filings, submissions, communications, meetings, conferences, and discussions, and safety information , shall in each case (i) apply only to the extent they are directed to CMC information or CMC activities, adverse events or other safety information that are pertinent to use of the Sutro Platform within the Vaccine Field and (ii) to the extent that SutroVax has the right to comply under its agreements with Third Parties; provided that in any case SutroVax shall use Commercially Reasonable Efforts to keep Sutro reasonably informed regarding progress of the Vaccine Compositions.

5.3 SutroVax shall (i) promptly provide Sutro any and all relevant CMC data and evaluations, adverse event reports and other safety information controlled by SutroVax that are generated from development and testing (including without limitation human clinical trials) performed or sponsored by any of SutroVax, its Affiliates, or Sublicensees with respect to any Vaccine Composition, all to the extent the same contain CMC information, adverse event or other safety information pertinent to use of the Sutro Platform outside the Vaccine Field, and (ii) grant Sutro, its Affiliates and Third Party licensees to whom Sutro has granted rights to the Sutro Platform, the right to reference any regulatory filings and Regulatory Approvals controlled by SutroVax that are filed by SutroVax, its Affiliates or Sublicensees with respect to any Vaccine Compositions, to the extent reasonably necessary or useful for obtaining Regulatory Approvals for products produced using the Sutro Platform outside the Vaccine Field (in each case of (i) and (ii), to the extent SutroVax has the right to grant such rights to Sutro). Similarly, upon SutroVax's request, Sutro agrees to grant SutroVax, its Affiliates and Sublicensees the right to reference any regulatory filings and Regulatory Approvals controlled by Sutro that are filed by Sutro, its Affiliates or Third Party licensees with respect to any products produced using the Sutro Platform, to the extent reasonably necessary or useful for obtaining Regulatory Approvals for Vaccine Compositions (in each case, to the extent Sutro has the right to grant such rights to SutroVax).

5.4 As requested by SutroVax from time to time, Sutro shall reasonably cooperate with and provide assistance to SutroVax in connection with the preparation, submission and maintenance of regulatory applications and other filings to regulatory authorities regarding any Vaccine Composition, to the extent they require information controlled by Sutro or its contractors, provided, however, that following the Series A Financing Close, the performance of the foregoing activities shall be subject to the payment to Sutro of all documented time spent by Sutro's personnel to perform such assistance and/or out-of-pocket costs for performing such activities. Accordingly, Sutro shall promptly provide SutroVax upon SutroVax's written request with all available information controlled by Sutro or its Affiliates as reasonably necessary for SutroVax to apply for, obtain, and maintain such regulatory applications and filings in any country regarding any Vaccine Composition. To the extent that Sutro may reasonably satisfy such requirements by submitting and maintaining one or more Drug Master Files or other similar regulatory filings with the FDA and other regulatory authorities for the Extracts or Vaccine Compositions, Sutro may satisfy its obligation under this Section 5.4 by doing so and providing SutroVax, its Affiliates and Sublicensees appropriate rights to reference such Drug Master Files or such other confidential regulatory materials, and Sutro further agrees to make such filings and provide such rights of reference if requested by SutroVax (it being understood that SutroVax, its Affiliates and Sublicensees shall not have access to the information contained of such Drug Master Files or other confidential regulatory materials). Further, Sutro agrees, at SutroVax's request and expense, to execute, acknowledge and deliver such further instruments, and take such other actions, all as promptly as possible, which may reasonably be necessary or appropriate to assist in the filing for, preparation, submission and maintenance of such regulatory applications, filings and communications, to the extent Sutro has the right to do so. Without limiting the foregoing, Sutro shall keep SutroVax reasonably informed on regulatory matters affecting or implicating the Sutro Platform generally to the extent such matters would be reasonably expected to have a material impact on Vaccine Compositions. For clarity, and notwithstanding any of the foregoing, Sutro's obligations under this Section 5.4, shall (i) apply only to the extent the regulatory information is directed to CMC information or CMC activities, adverse events or other safety information that are pertinent to use of the Sutro Platform within the Vaccine Field or (subject to the last sentence of Section 5.4) is otherwise reasonably necessary for the preparation, submission and maintenance of regulatory applications and other filings to regulatory authorities in the United States, Europe or Japan regarding any Vaccine Composition, and (ii) to the extent that Sutro has the right to comply under its agreements with Third Parties.

5.5 Sutro shall permit applicable regulatory authorities to conduct inspections of its manufacturing facilities, inspect and make copies of any relevant records (or copies thereof, as applicable) as they may request and shall cooperate with such regulatory agencies with respect to the inspections and any related matters, in each case which is related to any Vaccine Composition or the manufacture thereof. Sutro shall give SutroVax prior notice, to the extent practicable, of any inspections of its facilities relevant to use of the Sutro Platform for Vaccine Compositions, and keep SutroVax informed about the results and conclusions of each such regulatory inspection, including actions taken to remedy conditions cited in the inspections. Sutro will promptly provide SutroVax with copies of any written inspection reports issued by the applicable regulatory authority and all correspondence between Sutro and regulatory authorities, in each case to the extent the same relate to the production of Extract for Vaccine Compositions or production of Vaccine Compositions supplied hereunder and similarly, Sutro agrees to promptly notify and provide SutroVax copies of any request, directive or other communication of regulatory authority relating to Extracts related to Vaccine Compositions or Vaccine Compositions supplied hereunder, and to cooperate with SutroVax in responding to such requests, directives and communications, it being understood that any materials provided to SutroVax under this Section 5.5 shall be deemed Discloser's Information of Sutro under Section 10.1; each as further described in the applicable Extract Supply Agreement or Vaccine Composition Supply Agreement, as applicable.

5.6 Sutro further agrees to reasonably cooperate with SutroVax to allow SutroVax's potential Sublicensees or partners to conduct reasonable due diligence with respect to the supply of Extracts or Vaccine Compositions prior to execution of a Sublicense agreement (but excluding for clarity any audit of Sutro's processes, documentation and personnel). The applicable Extract Supply Agreement or Vaccine Composition Supply Agreement for the particular Vaccine Composition(s) licensed to such Sublicensee will include reasonable and customary provisions for Sublicensees, after execution of a Sublicense agreement, to perform quality assurance reviews relevant to the production of Vaccine Compositions; provided that such provisions will limit the Sublicensee's access to confidential information of Sutro pertaining to methods, parameters, processes and the like used to produce Extract. Sutro shall use Commercially Reasonable Efforts to obtain from its contractors commitments similar to those contemplated in this Section 5.6.

**6. FINANCIAL TERMS**

6.1 SutroVax shall pay to Sutro the following royalties during the applicable Royalty Term:

(a) four percent (4%) of aggregate Net Sales of Vaccine Compositions for human health use;

(b) two percent (2%) of aggregate Net Sales of Vaccine Compositions for animal health use.

6.2 Royalties shall be due under Section 6.1, on a Vaccine Composition-by-Vaccine Composition basis, until the end of the Royalty Term for such Vaccine Composition, provided that the amounts set forth in Section 6.1 shall be reduced, on a country-by-country and Vaccine Composition by-Vaccine Composition basis, by [***], during any portion of the Royalty Term in which (a) there is not at least one Valid Claim of Sutro Patents covering the manufacture, use, sale, offer for sale or importation of the applicable Vaccine Composition in the country of sale, and (b) extract for cell-free protein synthesis that has been qualified for production of proteins by the applicable regulatory authority is commercially available from at least one supplier other than Sutro, its Affiliates or Third Parties licensed or engaged by Sutro.

6.3 In the event that a Vaccine Composition is being sold by a Sublicensee and SutroVax is receiving royalties from such Sublicensee on Net Sales by such Sublicensee at a royalty rate that is [***], to the extent the Sublicensee has the right to reduce its royalty payment to SutroVax with respect to such Net Sales in connection with the launch of one or more biosimilar, biocomparable, biogeneric, bioequivalent or the like with respect to any Vaccine Composition under the applicable Sublicense

Agreement, SutroVax's royalty obligation to Sutro with respect to Net Sales of the applicable Vaccine Composition by such Sublicensee shall be [***] (by way of example, if a Sublicensee has the right to reduce royalty payment to SutroVax by [***], SutroVax shall have the right to reduce royalty payment to Sutro based on Net Sales of the applicable Vaccine Composition by such Sublicensee by [***]), provided that in no event shall the applicable royalty rate for Net Sales of such Vaccine Composition be reduced pursuant to this Section 6.3 by more than [***] from the applicable rate set forth in Section 6.1 above.

6.4 If SutroVax, its Affiliate or Sublicensee determines to license any Patent or other intellectual property rights owned by a Third Party in order to make, use, or sell any product incorporating Vaccine Composition, SutroVax will have the right, upon obtaining such a license from such Third Party, to credit [***] of any [***] made to such Third Party with respect to such product against up to [***] of the royalties otherwise payable to Sutro with respect to the same product under Section 6.1.

6.5 Notwithstanding anything to the contrary, to the extent that Sutro owes royalties under the [***] In-License on sales of Vaccine Compositions by SutroVax, its Affiliates and/or Sublicensees greater than the royalties that would be payable to Sutro under Sections 6.1-6.4 (or owes royalties on sales for which no royalties would be payable to Sutro under Sections 6.1-6.4), then SutroVax shall pay to Sutro any such royalties due under the [***] In-License upon Sutro's written request, provided that the amount of royalties payable under this Section 6.5 shall not exceed the amount of royalties Sutro would owe to [***] under the [***] In-License on sales of Vaccine Compositions by SutroVax as of the Effective Date.

6.6 In addition to the royalties payable under Section 6.1, subject to Section 15.2(e) below, SutroVax shall pay to Sutro a percentage of any and all Net Sublicense Fees obtained by SutroVax, as described in the following table:

| Timing of Sublicense Agreement Execution | Percentage of Net Sublicense Fees |
|---|---|
| [***] | [***] |
| [***] | [***] |

If SutroVax, its Affiliate or Sublicensee grants a Third Party an option or contingent right to enter into a Sublicense Agreement, and the exercise of such right or option results in such Sublicense Agreement, the time when such initial grant of such option or other contingent right was made shall be deemed to be the time when such agreement was entered for purposes of this Section 6.5. For the avoidance of doubt, SutroVax shall not be obligated to pay to Sutro any Net Sublicense Fees received under a Sublicense Agreement executed [***].

6.7 All amounts payable pursuant to Sections 6.1 and 6.6 of this Agreement shall be due quarterly (i) within [***] days following the end of each Calendar Quarter in respect of Net Sales by SutroVax or its Affiliate, or within [***] days following SutroVax's receipt of royalty payments from its Sublicensee with respect to Net Sales by such Sublicensee, and (ii) within [***] days after the end of each Calendar Quarter in respect of Net Sublicense Fees, received in such quarter. Each such payment shall be accompanied by a statement of Net Sales and Net Sublicense Fees for the applicable Calendar Quarter and the calculation of amounts payable hereunder, itemized on a Vaccine Composition-by-Vaccine Composition basis.

6.8 SutroVax shall, during the Term and for [***] years thereafter, keep complete, true and accurate records for the purpose of showing the derivation of all amounts payable to Sutro under this Agreement. Sutro shall have the right to access, inspect, copy, and audit such records at any time within [***] years following the end of the Calendar Quarter for which such payment was due. The cost of any such inspection or audit shall be paid by Sutro; provided, however, if such audit uncovers an underpayment by SutroVax that exceeds [***] of the total amounts owed for the audited period, then SutroVax shall pay the reasonable out-of-pocket costs of such inspection or audit. SutroVax shall have reciprocal rights as provided in this Section 6.8 (including the allocation of costs) to audit Sutro with respect to amounts due to Sutro under Article 3 above.

6.9 All payments by SutroVax to Sutro hereunder shall be made in United States dollars in immediately available funds by wire transfer from a bank account located in the United States to such bank account in the United States as may be designated in writing by Sutro from time to time. Any late payments due hereunder shall bear interest at the rate of prime rate plus [***], as reported in The Wall Street Journal (U.S. Internet Edition at www.wsj.com), on the due date (or, if the due date is not a business day, on the last business day prior to such due date), or the maximum allowable by law if less.

**7. DILIGENCE**

7.1 **General**. SutroVax shall, on a continuing basis throughout the Term, exert Commercially Reasonable Efforts to develop, obtain Regulatory Approvals for, and commercialize in the Territory, or to engage one or more Sublicensees to do so with respect to, Vaccine Compositions supplied or licensed to SutroVax hereunder.

7.2 **Diligence Milestones**. Without limiting Section 7.1, SutroVax shall meet the diligence milestones set forth in Exhibit C, directly or through one or more Affiliates or Sublicensees (except that the financial diligence milestone shall be achieved by SutroVax). In the event SutroVax fails to meet any diligence milestones within the applicable timelines set forth in Exhibit C despite using its Commercially Reasonable Efforts to do so, due to delays which are out of the reasonable control of SutroVax (e.g., changes to the regulatory pathways or other regulatory delays), Sutro agrees to [***]. The Parties agree that prior to the Amendment Effective Date SutroVax met the diligence milestones set forth in clauses 1, 2(a) and 2(b) of Exhibit C.

7.3 **Reporting**. SutroVax will provide Sutro with (a) semi-annual reports summarizing in reasonable detail the development and regulatory activities by SutroVax , its Affiliates and/or Sublicensees with respect to Vaccine Compositions, and (b) annual commercialization reports summarizing in reasonable detail the commercialization activities with respect to Vaccine Compositions by SutroVax, its Affiliates and/or Sublicensees. Upon Sutro's request, SutroVax will also provide a copy of the then-applicable development and/or commercialization plan, and any other information reasonably requested by Sutro with respect to the development and/or commercialization of Vaccine Compositions under this Agreement.

**8. TERM AND TERMINATION**

8.1 **Term**. The term of this Agreement shall begin on the Effective Date and shall continue until terminated as provided herein (the "**Term**").

8.2 **Mutual Termination for Breach**. If either Party materially breaches any of the material terms, conditions or agreements contained in this Agreement to be kept, observed or performed by it, the other Party may terminate this Agreement, at its option and without prejudice to any of its other legal or equitable rights or remedies, by giving the Party who committed the breach sixty (60) days' prior written notice, unless the notified Party shall have cured the breach within such 60-day period, subject to Section 14.5.

8.3 **SutroVax Termination Rights**.

(a) SutroVax may at its option terminate this Agreement upon at least sixty (60) days' prior written notice to Sutro.

(b) [Intentionally left blank]

8.4 **Sutro Termination Rights**.

(a) Sutro may terminate this Agreement if SutroVax or (subject to Section 15.2(d)) any of its Affiliates (directly or indirectly, individually or in association with any other person or entity) brings an action or asserts a claim in any forum or administrative body that challenges the validity or enforceability of any claim of a Sutro Patent, immediately upon written notice. In addition, Sutro may terminate this Agreement if a Sublicensee brings such an action or asserts such a claim, if such action or claim pertains to a Vaccine Composition (or expression thereof) within the scope of the Sublicense granted to such Sublicensee, unless the Sublicensee withdraws such action or claim, or SutroVax terminates the applicable sublicense agreement with such Sublicensee, in each case within [***] days after written request by SutroVax to do so. Notwithstanding the foregoing, subject for clarity to the [***] In-License, in the event that Sutro or any of its Affiliates or Sublicensees first initiates or participates in a legal proceeding against SutroVax or any of its Affiliates or Sublicensees in which a Sutro Patent is asserted against SutroVax or any of its Affiliates or Sublicensees, then SutroVax or its Affiliates or Sublicensees shall have the right to participate in such action, including by challenging such Sutro Patent, and no such challenge shall give Sutro a termination right under this Section 8.4(a).

(b) Sutro may terminate this Agreement immediately upon notice in the event SutroVax fails to meet any of the diligence milestones set forth in Exhibit C, subject to any extensions thereof granted by Sutro under Section 7.2 or Section 8.5, as applicable, unless (limited to diligence milestones other than the Financial Diligence Milestone) SutroVax cures such failure within [***] days after written notice from Sutro.

(c) Sutro may terminate this Agreement immediately upon notice in the event SutroVax undergoes a Change of Control pursuant to which a Sutro Competitor will (i) own a majority of SutroVax's voting securities, (ii) merge into or consolidate with SutroVax, or (iii) purchase all or substantially all of SutroVax's assets.

8.5 [Intentionally left blank].

8.6 **Survival**. Termination of this Agreement for any reason shall not relieve either Party of any obligation accruing on or prior to such termination, or which is attributable to a period prior to such termination, nor preclude either Party from pursuing any rights and remedies it may have under this Agreement, or at law or in equity, which accrued or are based upon any event occurring prior to such termination. In addition:

(a) The provisions of Articles 1, 6 (with respect to payments accrued prior to the effective date of termination), 8, 10, 12, 13, 14 and 15 shall survive termination of this Agreement for any reason; and

(b) Sublicenses granted by SutroVax under Section 4.1(a) shall survive termination of this Agreement for any reason, provided that the particular Sublicensee promptly agrees in writing to be bound by the terms and conditions of this Agreement, to the extent applicable to the scope of its sublicense and to the activities of the particular Sublicensee. In such case, the Sublicensee shall be deemed the direct Party to this Agreement with respect to such terms (to such extent), and SutroVax and the Sublicensee shall promptly prepare and execute a direct license agreement between them setting forth such terms. For clarity, notwithstanding the foregoing, the Sublicensee shall have no greater rights under this Agreement (or the agreement to be put in place between Sutro and the Sublicensee) than the Sublicensee had under its sublicense agreement with SutroVax (and without limiting the foregoing, the Sublicensee's rights shall be limited to the Vaccine Composition(s) covered by the sublicense agreement with SutroVax at the time of termination of this Agreement, subject to Section 4.3), and Sutro shall have no greater obligations to such Sublicensee than it would otherwise have under this Agreement. Accordingly, the Sublicensee shall have no right to obtain Extract from Sutro or a CMO hereunder, and Sutro shall have no obligation to the Sublicensee (or any other person) under Section 3.1 above; similarly, the provisions of Section 8.4(a) shall be applicable to the Sublicensee only as applicable to a Sublicensee under the second sentence thereof. In addition, and notwithstanding the foregoing, Sutro shall have no obligation to the Sublicensee (or any other person) under Section 3.2, provided, however, that Sutro shall negotiate in good faith with the Sublicensee the terms of a supply arrangement for Vaccine Compositions following termination of this Agreement, upon the Sublicensee's written request.

**9. PATENT PROSECUTION AND ENFORCEMENT**

9.1 **Patent Prosecution**. For clarity, the Parties acknowledge and agree that this Section 9.1(a) shall be subject to the terms of the [***] In-License with respect to Sutro Patents in-licensed thereunder.

(a) **Sutro Patents.** Subject to Sections 9.1(a)(i) and (ii) below, Sutro shall be solely responsible for the Prosecution and Maintenance (as defined below) of the Sutro Patents at its own expense.

(i) Notwithstanding Section 9.1(a) above, Sutro agrees to cooperate reasonably with SutroVax to seek and obtain Patents within the Sutro Patents, subject to SutroVax providing all data in possession of SutroVax and its Affiliates reasonably necessary for such purpose: (1) that claim and contain disclosure supporting claims directed only to Vaccine Compositions generally, and to particular Vaccine Compositions specifically, their manufacture, and other subject matter within the Vaccine Field; (2) that do not contain claims, and will not be amended to contain claims, directed to any subject matter other than as described in (1) above; and (3) that have coverage and scope reasonable and customary for Patents of that type ("**Vaccine Composition-Specific Patents**"). Sutro shall have the [***] to Prosecute and Maintain the Vaccine Composition-Specific Patents, and SutroVax shall [***], provided that such [***]. Sutro will use Commercially Reasonable Efforts to [***]. SutroVax may elect to [***], by giving Sutro [***] days prior written notice, in which case (A) [***]; and (B) [***].

(ii) Sutro agrees to keep SutroVax informed and updated, and the Parties shall cooperate reasonably with regard to the Prosecution and Maintenance of the Vaccine Composition-Specific Patents and, to the extent they would cover a Vaccine Composition, its use or manufacture, other Sutro Patents. Without limiting the foregoing, before making any material filing or material response to the applicable patent office with respect to any Vaccine Composition-Specific Patent or, to the extent it would cover a Vaccine Composition, its use or manufacture, other Sutro Patents, Sutro will provide SutroVax with the reasonable opportunity to comment on the proposed filing or response. Sutro shall (1) [***] and (2) [***].

(iii) SutroVax may exclude from the definition of Sutro Patents any particular patent application that would otherwise be within the Sutro Patents and is filed after the Amendment Effective Date (globally or in a particular country) upon written notice to Sutro, in which case such patent application shall cease to be a Sutro Patent for all purposes of this Agreement, and SutroVax shall have no further rights or obligations under this Agreement. For clarity, as of the receipt of such notice by Sutro (i) the patent application(s) identified in such notice shall no longer be included in the license granted in Section 4.1(a), and (ii) in no event shall a claim of such patent application(s) be deemed a Valid Claim.

(b) **Joint Vaccine Composition Patents**. As between the Parties, notwithstanding Section 9.1(a) above, SutroVax shall have the [***] to control the Prosecution and Maintenance of Patents claiming any inventions made jointly by the Parties in connection with the performance of the Research Plan or the production of Vaccine Compositions contemplated hereunder that pertain to Vaccine Compositions generally, or particular Vaccine Compositions specifically, their manufacture, or other subject matter within the Vaccine Field (such Patents collectively referred to as "**Joint Vaccine Composition Patents**"), provided that SutroVax (i) shall [***], and, [***], (ii) shall [***], and (iii) in the event Sutro wishes to[***], SutroVax shall [***]. For the avoidance of doubt, Sutro's joint interest in the Joint Vaccine Composition Patents shall be included in the Sutro Patents and shall be within the exclusive licenses granted to SutroVax for the Vaccine Field under Section 4.1(a).

(c) **SutroVax Platform Improvement Patents.** SutroVax shall have the right to control the Prosecution and Maintenance of the SutroVax Platform Improvement Patents at its expense, provided that SutroVax shall [***], and, [***]. SutroVax may elect, at its sole discretion, to discontinue prosecution of any SutroVax Platform Improvement Patent, and/or not to file any patent applications that would otherwise be covered by a SutroVax Platform Improvement Patent, provided, in each case, that it provide timely notice of such decision to Sutro such that Sutro has the opportunity to continue at its cost the prosecution and maintenance of the applicable SutroVax Platform Improvement Patent, with SutroVax' consent (not to be withheld unreasonably).

(d) For clarity, it is understood and agreed that, as between the Parties, inventions (and Patent rights therein) shall be owned by the inventor(s) thereof. Accordingly, as between the Parties, Sutro shall own all inventions solely made by Sutro's employees and contractors, and SutroVax shall own all inventions solely made by SutroVax's employees and contractors, without exception, and nothing in this Agreement shall be deemed to assign ownership thereof to the other Party.

(e) As used herein, "**Prosecution and Maintenance**" means, with respect to a Patent, the preparing, filing, prosecuting and maintenance of such Patent, as well as re-examinations, reissues, requests for Patent term extensions and the like with respect to such Patent, together with the conduct of interferences, the defense of oppositions and other similar proceedings with respect to the particular Patent; and "**Prosecute and Maintain**" shall have the correlative meaning.

9.2 **Patent Enforcement**. For clarity, the Parties acknowledge and agree that this Section 9.2(a) shall be subject to the terms of the [***] In-License with respect to Sutro Patents in-licensed thereunder.

(a) **Sutro Patents**.

(i) **Notice.** If either Party reasonably believes that any Sutro Patent is being infringed by a Third Party with respect to activities within the Vaccine Field or is subject to a declaratory judgment action arising from such activities (a "**Vaccine Field Infringement**"), such Party shall promptly notify the other Party and the Parties shall discuss in good faith how best to respond.

(ii) **Vaccine Composition-Specific Patents and Joint Vaccine Composition Patents.** As between the Parties, SutroVax shall have the first right but not the obligation, itself or through a designee, to enforce any Vaccine Composition-Specific Patent and any Joint Vaccine Composition Patent, including (1) initiating or prosecuting an infringement or other appropriate suit or action against such Third Party; and (2) defending any declaratory judgment action with respect thereto (the type of action described in each of (1) and (2), an "**Enforcement Action**").

(iii) **Other Sutro Patents.** As between the Parties, Sutro shall have the sole right to initiate and control any Enforcement Action for Sutro Patents, other than the Vaccine Composition-Specific Patents and any Joint Vaccine Composition Patents, with respect to any Vaccine Field Infringement.

(iv) **Secondary Enforcement.** Reasonably in advance of undertaking any Enforcement Action under Section 9.2(a)(ii), the Party with the first right to undertake such Enforcement Action (the "**Lead Enforcement Party**") will notify the other Party of its intent to take such action. In the event a Party does not initiate an Enforcement Action with respect to a particular Patent for which it is the Lead Enforcement Party within [***] days of a request from the other Party to do so, such other Party shall have the right but not the obligation, itself or through a designee, to initiate and control such Enforcement Action at its discretion and expense.

(v) **Recoveries.** Any amounts recovered by SutroVax or Sutro with respect to an Enforcement Action under this Section 9.2(a) will be used first to reimburse the reasonable costs and expenses, including attorneys' fees, incurred in bringing and maintaining the applicable Enforcement Action, then to satisfy any Third Party obligations with respect to such recovery, and any remainder by SutroVax or Sutro shall be allocated between the Parties as follows: (a) if SutroVax is the enforcing Party: fifteen percent (15%) shall be paid to Sutro, and the remainder shall be retained by SutroVax; (b) if Sutro is the enforcing Party: thirty percent (30%) shall be retained by Sutro, and seventy percent (70%) shall be paid to SutroVax; provided that if another patent controlled by SutroVax or its licensee is also being enforced with respect to the same infringing party or product, then the portion retained by Sutro under (b) shall be twenty-two-and-one-half percent (22.5%) (and 77.5% shall be paid to SutroVax).

(b) **SutroVax Improvement Patents.** If either Party reasonably believes that any SutroVax Improvement Patent is being infringed by a Third Party or is subject to a declaratory judgment action, such Party shall promptly notify the other Party. As between the Parties:

(i) Sutro shall be solely responsible for the enforcement of the SutroVax Platform Improvement Patents outside the Vaccine Field, at its discretion and expense, and shall be entitled to retain all resulting recoveries.

(ii) SutroVax shall be solely responsible for the enforcement of the SutroVax Platform Improvement Patents in the Vaccine Field, at its discretion and expense, and shall be entitled to retain all resulting recoveries.

(c) **Cooperation.** If a Party brings an Enforcement Action in accordance with this Section 9.2, the other Party shall reasonably cooperate, including, if required to bring such action, joining as a named party. The Parties shall keep one another informed of the status of their respective activities regarding any Enforcement Action pursuant to this Section 9.2 or settlement thereof, and the Parties shall assist one another and cooperate in any such action at the other's reasonable request. Neither Party shall have the right to settle any Enforcement Action under this Section 9.2 in a manner that admits the invalidity or unenforceability of the other Party's Patents, a Vaccine Composition-Specific Patent or a Joint Vaccine Composition Patent, without the prior written consent of the other Party, which shall not be unreasonably withheld.

9.3 **Patent Term Extensions**. Notwithstanding Section 9.1 above, but subject to the terms of the [***] In-License with respect to Sutro Patents in-licensed thereunder, SutroVax shall have the exclusive right, itself or through a designee, to seek patent term extensions and similar supplemental protections ("**Patent Term Extensions**") as may be available with respect to Vaccine Composition-Specific Patents, Joint Vaccine Composition Patents and products incorporating Vaccine Proteins; provided that SutroVax shall not have the right to seek or obtain any Patent Term Extensions with respect to any Sutro Patents, other than the Vaccine Composition-Specific Patents and any Joint Vaccine Composition Patents, without Sutro's consent.

9.4 **SutroVax Name**.

(a) **License Grant.** Subject to the terms and conditions of this Agreement, Sutro hereby grants to SutroVax an exclusive license to use the SUTROVAX trademark ("**Mark**") in connection with the research, development, creation and commercialization of Vaccine Compositions in accordance with the Agreement, with the right to grant and authorize sublicenses in accordance with Section 4.3 in the Territory during the Term of this Agreement.

(b) **Acknowledgement of Ownership.** SutroVax acknowledges Sutro's rights in and to the Mark and the SUTRO BIOPHARMA mark and that use of the Mark by SutroVax inures to the benefit of Sutro. Sutro shall file a trademark application for the Mark with the United States Trademark Office and other jurisdictions worldwide as necessary to protect its rights in the Mark, in each case at SutroVax's cost. SutroVax shall not oppose, seek to cancel or otherwise challenge Sutro's ownership of the Mark, the SUTRO BIOPHARMA mark or their validity. SutroVax shall not procure or attempt to procure any trademark registration for the Mark, the SUTRO BIOPHARMA mark or any other SUTRO-variant mark.

(c) **Quality Control.** SutroVax agrees to use the Mark in conformance with Sutro's trademark usage policies as communicated to SutroVax from time to time. Sutro shall have the right, on a periodic basis and with reasonable notice, to inspect SutroVax's packaging, advertisements, labels, marketing, and promotional materials, bearing the Mark to ensure that SutroVax is in compliance with Sutro's high quality standards.

(d) **Notification of Third Party Claims.** SutroVax shall promptly notify Sutro of any claim, of which SutroVax is notified or otherwise becomes aware, by any third party alleging infringement, unfair competition, or similar wrongs relating to use of the Mark by SutroVax.

(e) **Enforcement Against Third Party Infringements.** In the event that SutroVax believes or has reason to believe that any third party is infringing upon the Mark, SutroVax shall promptly notify Sutro of all facts known to it relating to such infringement. Thereupon Sutro shall conduct its own investigation of such alleged infringement and [***]. SutroVax shall [***]. SutroVax shall cooperate fully with Sutro in connection with the prosecution of any claim by Sutro against any such alleged infringer.

(f) Indemnities. SutroVax shall indemnify and hold Sutro harmless from and against any claims, damages, liabilities, and costs (including reasonable attorneys' fees) arising out of or in connection with any claim that SutroVax's use of the Mark infringes any trademark or other rights of any third party, subject to Section 12.3.

(g) Termination. Upon termination of the Agreement, SutroVax shall immediately cease using the Mark.

**10. CONFIDENTIALITY**

10.1 In the course of performing the transactions contemplated by this Agreement, whether before or after the Effective Date, a Party may disclose, or may have disclosed, to the other confidential information owned or controlled by the disclosing Party ("**Discloser's Information**"). The receiving Party will maintain in confidence the Discloser's Information and will not use it for any purpose except for purposes authorized hereunder, and shall use Commercially Reasonable Efforts to safeguard such information against disclosure to Third Parties, including without limitation employees and persons working or consulting for such Party that do not have an established, current need to know such information for purposes authorized under this Agreement. This obligation of confidentiality does not apply to restrict use or disclosure by the receiving Party of technology, information or material that meet one or more of the following criteria:

(a) they were properly in the possession of the receiving Party, without any restriction on use or disclosure, prior to receipt from the other Party;

(b) they are at the time of disclosure hereunder in the public domain by public use, publication, or general knowledge;

(c) they become general or public knowledge through no fault of the receiving Party following disclosure hereunder;

(d) they are properly obtained by the receiving Party from a Third Party not under a confidentiality obligation to the disclosing Party hereto; or

(e) they are independently developed by or on behalf of the receiving Party without the assistance of the confidential information of the other Party.

Subject to the exceptions in (a)-(c) above, and notwithstanding the definition of "**Discloser's Information**" above, all data and results generated with respect to Vaccine Compositions from the performance of Research Plan or from Sutro's manufacturing and supply of Vaccine Compositions under this Agreement shall be deemed Discloser's Information of SutroVax and the terms and conditions of this Agreement shall be deemed Discloser's Information of both Parties.

10.2 Each Party may use and disclose Discloser's Information of the other Party as follows:

(a) under appropriate confidentiality provisions substantially equivalent to those in this Agreement in connection with the performance of its obligations or exercise of rights granted to such Party in this Agreement; and

(b) in communication with, whether existing or potential, investors, acquirers, lenders, consultants, advisors (including financial advisors, lawyers and accountants), (sub)licensees, collaborators or service providers, in each case on a need to know basis under appropriate confidentiality provisions substantially equivalent to those of this Agreement.

(c) If a Party is required by judicial or administrative process to disclose the Discloser's Information of the other Party hereto, it shall promptly inform such other Party of the anticipated disclosure in order to provide it an opportunity to challenge or limit the disclosure obligations. Discloser's Information that is disclosed by judicial or administrative process shall remain otherwise subject to the confidentiality and non-use provisions of this Agreement, and, in disclosing the other Party's Discloser's Information pursuant to law or court order, each Party shall take reasonable steps to ensure the continued confidential treatment of such Discloser's Information;

(d) Notwithstanding Section 10.2(c) above, a receiving Party may disclose Discloser's Information of the other Party to governmental entities as required by securities laws or rules of securities exchanges, provided that the receiving Party shall provide reasonable advance notice to the other Party of such disclosure and use Commercially Reasonable Efforts, to oppose such disclosure or to request confidential treatment of such Discloser's Information and, in any event, shall only disclose the minimum information, as reasonably determined by the receiving Party's legal counsel, that is necessary to comply with such requirements.

**11. REPRESENTATIONS AND WARRANTIES**

11.1 Each Party represents and warrants to the other Party that it has the right to enter into this Agreement and grant the rights granted hereunder.

11.2 Each Party represents and warrants to the other Party that it has and will at all times during the term of this Agreement comply with all applicable laws in all material respects, including obtaining all necessary licenses, permits and authorizations necessary to perform this Agreement and to exploit any license granted to it hereunder, as now or hereafter required under any applicable statutes, laws, ordinances, rules and regulations.

11.3 SutroVax represents and warrants to Sutro that it has not prior to the Effective Date and shall not during the Term (i) have been debarred under Article 306 of the FDCA, 21 U.S.C. §335a(a) or (b), or any equivalent foreign or local law, rule or regulation; or (ii) use or employ in any capacity related to the performance of Research Plan or manufacturing Vaccine Compositions or other activities hereunder any individual, corporation, partnership, or association which has been debarred under Article 306 of the FDCA, 21 U.S.C. §335a(a) or (b), or any equivalent foreign or local law, rule or regulation.

11.4 Sutro represents and warrants to SutroVax that:

(a) as of the Amendment Effective Date to the best of its knowledge, the practice of the Sutro Platform does not infringe on any Third Party patents;

(b) as of the Amendment Effective Date, Exhibit B contains a complete and accurate list of all Sutro Patents, and Sutro and its Affiliates do not own or control any other Patents covering the Sutro Platform, Extracts, Vaccine Compositions, or the manufacture or use thereof;

(c) it has not granted prior to the Effective Date, and will not grant during the Term, rights to any Third Party that are inconsistent with the rights granted to SutroVax hereunder;

(d) during the Term, it will not amend or terminate the [***] In-License in any manner that would adversely affect SutroVax's rights under this Agreement; and

(e) it has not prior to the Effective Date and shall not during the Term (i) have been debarred under Article 306 of the FDCA, 21 U.S.C. §335a(a) or (b), or any equivalent foreign or local law, rule or regulation; or (ii) use or employ in any capacity related to the performance of Research Plan or manufacturing of Extracts or Vaccine Compositions any individual, corporation, partnership, or association which has been debarred under Article 306 of the FDCA, 21 U.S.C. §335a(a) or (b), or any equivalent foreign or local law, rule or regulation.

**12. INDEMNITIES**

12.1 SutroVax agrees to indemnify and hold harmless Sutro and its Affiliates and Sublicensees, and their respective agents, directors, officers and employees and their respective successors and assigns (the "**Sutro Indemnitees**") from and against any Third Party claim, suit, demand, investigation or proceeding brought by a Third Party (each a "Claim") based on (a) the development, use, manufacture, distribution or sale of any Vaccine Composition, including, but not limited to, [***], injury, damage, death or other consequence occurring to any person claimed to result, directly or indirectly, from the possession, use or consumption of, or treatment with, any such product, whether claimed by reason of breach of warranty, negligence, product defect or otherwise, and regardless of the form or forum in which any such claim is made, or (b) any breach of any representation, warranty, covenant or obligation of SutroVax in this Agreement. This indemnification shall not apply to the extent that the relevant Claim is due to the negligence or willful misconduct of a Sutro Indemnitee or a material breach of any of Sutro's representations, warranties, covenants and/or obligations under this Agreement or any supply agreement between the Parties as contemplated hereunder.

12.2 Sutro agrees to indemnify and hold harmless SutroVax and its Affiliates, and Sublicensees, and their respective agents, directors, officers and employees and their respective successors and assigns (the "**SutroVax Indemnitees**") from and against any Claim any breach of any representation, warranty, covenant or obligation of Sutro in this Agreement. This indemnification shall not apply to the extent that the relevant Claim is due to the negligence or willful misconduct of a SutroVax Indemnitee or a material breach of any of SutroVax's representations, warranties, covenants and/or obligations under this Agreement.

12.3 The obligation to indemnify pursuant to this Section 12 shall be contingent upon timely notification by the indemnitee to the indemnitor of any claims, suits or service of process; the tender by the indemnitee to the indemnitor of full control over the conduct and disposition of any claim, demand or suit; and reasonable cooperation by the indemnitee in the defense of the claim, demand or suit. No indemnitor will be bound by or liable with respect to any settlement or admission entered or made by any indemnitee without the prior written consent of the indemnitor. The indemnitee will have the right to retain its own counsel to participate in its defense in any proceeding hereunder. The indemnitee shall pay for its own counsel except to the extent it is determined that (a) one or more legal defenses may be available to it which are different from or additional to those available to the indemnitor, or (b) representation of two Parties by the same counsel would be inappropriate due to actual or potential differing interests between them. In any such case and to such extent, the indemnitor shall be responsible to pay for the reasonable costs and expenses of the separate counsel retained to participate in the defense of the indemnitee, provided that such expenses are otherwise among those covered by the indemnitor's indemnity agreement hereunder.

12.4 At such time as any Vaccine Composition is being commercially distributed or sold or tested in clinical trials by SutroVax or under its sponsorship and thereafter with respect to coverage tail periods consistent with prevailing industry norms, SutroVax shall, at its sole cost and expense, procure and maintain liability insurance coverage appropriate, under prevailing industry norms, to the risk in marketing such Vaccine Composition(s) and shall cause Sutro and its Affiliates, licensors and employees to be added thereto as additional insureds. SutroVax will, following Sutro's reasonable request from time to time, present evidence to Sutro that the coverage is being maintained in accordance with the foregoing. In addition, SutroVax shall give Sutro, or require that its insurers agree to give Sutro, at least [***] days ' prior written notice of any material change in or cancellation of the insurance coverage.

**13. DISCLAIMER AND LIMITS OF LIABILITY**

13.1 THE WARRANTIES AND INDEMNITIES STATED IN THIS AGREEMENT ARE IN LIEU OF, AND THE PARTIES EACH DISCLAIM, ALL OTHER WARRANTIES, EXPRESS, IMPLIED OR ARISING BY LAW, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. WIHTOUT LIMITING THE FOREGOING, SUTRO MAKES NO REPRESENTATION THAT ITS PERFORMANCE OF THE RESEARCH PLAN OR ANY OF THE RESULTS THEREOF WILL BE SUCCESFUL.

13.2 Except for breaches of Section 4.1, 4.2 or 10, neither Party shall be liable under this Agreement for any indirect, incidental, punitive, exemplary, special or consequential damages of any kind; provided, however, that this limitation will not reduce or affect either Party's indemnification obligations under Section 12, and shall not apply to willful or intentional breaches of this Agreement.

**14. COMMUNICATION AND DISPUTE RESOLUTION**

14.1 Each Party will appoint an individual employed by it to serve as its "Principal Contact" for purposes of this Agreement. Either Party may from time to time replace its Principal Contact with a different employee, but unless required due to events beyond its control, neither Party will replace its Principal Contact without at least [***] days prior notice to the other Party. The two Principal Contacts shall communicate with each other regularly during the Term as the Parties may agree or as the Principal Contacts shall mutually determine to be useful.

14.2 The Parties intend that, to the maximum extent practicable, they shall reach decisions hereunder cooperatively through discussions among the Principal Contacts and by mutual consent of the Parties. In situations in which that does not occur, disputes or differences arising out of or in connection with this Agreement shall initially be referred for review by the Parties' respective Senior Managements (as defined below). Such Senior Managements shall discuss the proposed dispute or difference, and shall meet with respect thereto if either of them believes a meeting or meetings are likely to be useful. If the Senior Managements do not resolve the dispute or difference within [***] days (or such lesser or longer period as they may agree is a useful period for their discussions), then either Party may pursue its other available remedies, consistent with this Agreement. As used herein, Sutro's "Senior Management" means its then-current CEO, and SutroVax's "Senior Management" means its then-current CEO.

14.3 If the Senior Managements are not able to resolve such dispute referred to them under Section 14.2 within such [***] day period, then subject to Sections 14.4 and 14.5, such dispute shall be resolved by final and binding arbitration as follows: The Parties shall select a mutually agreeable arbitrator who has significant relevant experience in the subject matter of the disputed issue and no affiliation or pre-existing relationship with either Party. If the Parties cannot agree on an arbitrator within [***] days after the end of the [***] day period referred in Section 14.2, either Party may request the Judicial and Mediation Services ("**JAMS**") in San Francisco, CA to appoint an arbitrator on behalf of the Parties in accordance with the commercial arbitration rules of JAMS, and the proceeding shall be conducted in accordance with JAMS rules. The arbitrator may decide any issue as to whether, or as to the extent to which, any dispute is subject to the arbitration and other dispute resolution provisions in this Agreement. The arbitrator must base the award on the provisions of this Agreement and must render the award in a writing which must include an explanation of the reasons for such award. Judgment upon the award rendered by the arbitrator may be entered by any court having jurisdiction thereof. The arbitrator's fees and expenses shall be shared equally by the Parties, unless the arbitrator in the award assesses such fees and expenses against one of the Parties or allocates such fees and expenses other than equally between the Parties. Each Party shall bear and pay its own expenses incurred in connection with any

dispute resolution under this Section 14.3. Notwithstanding the foregoing, either Party shall have the right, without waiving any right or remedy available to such Party under this Agreement or otherwise, to seek and obtain from any court of competent jurisdiction any interim or provisional relief that is necessary or desirable to protect the rights or property of such Party, pending the selection of the arbitrator hereunder or pending the arbitrator's decision of the dispute subject to arbitration.

14.4 Notwithstanding Section 14.3, any dispute, controversy or claim relating to the scope, validity, enforceability or infringement of any patent or of any trademark rights relating to any Vaccine Composition shall be submitted to a court of competent jurisdiction in the country in which such patent or trademark rights were granted or arose.

14.5 In the event a Party disputes in good faith whether it is in breach of this Agreement and so notifies the other Party in writing prior to the expiration of the applicable cure period set forth in Section 8.2 above, the cure period shall be tolled from the date of such notice. Promptly following the initiation of a proceeding under Section 14.3 above with respect to such dispute, the arbitrator shall make a determination as to whether there is a good faith dispute as to the existence of a material breach of this Agreement. If the arbitrator determines that there is no good faith dispute by the breaching Party as to the existence of a material breach of this Agreement, then the Agreement shall be deemed terminated, unless the breach is cured within the remainder (if any) of the cure period set forth in Section 8.2 (after giving effect to the tolling of such cure period up to the date of such determination). If the arbitrator determines that there is a good faith dispute as to the existence of a material breach of this Agreement, the non-breaching Party shall not have the right to terminate this Agreement unless and until it has been finally determined in accordance with Section 14.3 above that a breach actually occurred, and the breaching Party fails to cure such breach within [***] days after such final determination (or such longer period as the arbitrator may specify).

**15. MISCELLANEOUS**

15.1 Neither Party may assign or transfer this Agreement, including by merger, operation of law, or otherwise, without the other Party's prior written consent (which shall not be withheld unreasonably) except each Party may assign this Agreement without the other Party's consent in the case of assignment or transfer to a Third Party that succeeds to all or substantially all of the assigning Party's business and assets relating to the subject matter of this Agreement, whether by sale, merger, operation of law or otherwise. Any attempted assignment by a Party in violation of this Section without the written consent of the other Party will be null and void. Except as above limited, this Agreement is binding upon and will inure to the benefit of each of the Parties, its successors and assigns. Without limiting the foregoing, in the event that a Party is acquired, the acquiring Party shall agree in writing to abide by the terms of this Agreement

15.2 In the event of a Change of Control of either Party, notwithstanding Section 15.1 above:

(a) Patents, know-how and other intellectual property that were controlled by the Acquirer prior to such Change of Control shall not for purposes of this Agreement be included within the Sutro Patents, the Sutro Know-How (including for clarity information to be provided to SutroVax under Section 5.4), SutroVax Platform Improvements or the SutroVax Platform Improvement Patents.

(b) Patents, know-how and other intellectual property that, following such Change of Control, are developed, made or otherwise acquired or controlled by the Acquirer without material use of proprietary know-how of the Acquired Party or confidential Discloser's Information of the other Party (such proprietary know-how of the Acquired Party and confidential Discloser's Information of the other Party, the "**Segregated Technology**") shall not for purposes of this Agreement be included within the Sutro Patents and the Sutro Know-How (in event of a Change of Control of Sutro) or the SutroVax Platform Improvements or SutroVax Platform Improvement Patents (in event of a Change of Control of SutroVax);

(c) In the event of a Change of Control of SutroVax, to the extent the Acquirer does not use or exploit Segregated Technology pertaining to Extracts or rights licensed to SutroVax under this Agreement, Section 4.2(b) shall not apply to the Acquirer of SutroVax. In the event of a Change of Control of Sutro, to the extent the Acquirer does not use Segregated Technology pertaining to Extracts, the restrictive covenants under Section 4.1(c), shall not apply to the Acquirer of Sutro. For clarity, Section 4.2(b) shall apply to an Acquirer of SutroVax only with respect to activities of the Acquirer involving the use of Segregated Technology of SutroVax or rights licensed to SutroVax under this Agreement; and Section 4.1(c) shall apply to an Acquirer of Sutro only with respect to activities of the Acquirer involving the use of Segregated Technology of Sutro.

(d) The Acquirer shall not be deemed an Affiliate for purposes Section 8.4(a) above, but shall be deemed a Sublicensee (whether or not it has been granted a sublicense) for such purposes with respect to any action or claim that challenges the validity or enforceability of a Sutro Patent with respect to a Vaccine Composition (or expression thereof).

(e) Notwithstanding the foregoing, if rights to Segregated Technology were granted to the Acquirer prior to the Change of Control, then the use of such Segregated Technology in accordance with such grant (and consistent with the exclusive licenses granted under this Agreement) shall not be deemed use of Segregated Technology for purposes of this Section 15.2.

(f) SutroVax's obligation to pay Net Sublicense Fees to Sutro under Section 6.6 shall terminate upon a Change of Control of Sutro.

(g) As used herein, "**Acquirer**" means the Third Party involved in the Change of Control, and any Affiliate of such Third Party that was not an Affiliate of the Acquired Party immediately prior to the Change of Control; and "**Acquired Party**" means the Party that was the subject of such Change of Control, together with any entity that was its Affiliate immediately prior to the Change of Control.

15.3 The Parties acknowledge and agree that all rights and licenses now or hereafter granted under or pursuant to any Section of this Agreement, including the backup manufacturing license granted below, are rights to "intellectual property" as defined in Section 101(35A) of Title 11 of the United States Code. In the event that a case under Title 11 is commenced by or against either Party (the "**Bankrupt Party**"), the other Party may elect to retain and may fully exercise all of its rights and elections under Section 365(n) of Title 11 of the United States Code.

(a) In recognition that Sutro may become a Bankrupt Party, Sutro hereby grants to SutroVax a non-exclusive, royalty-free (subject to the terms of the Agreement, including, without limitation, SutroVax's payment obligations under Article 6) license under Sutro Patents and Sutro Know-How, effective upon such time, if any, when Sutro has become a Bankrupt Party, to make or have made Extracts under Sutro Patents and Sutro Know-How solely for use in manufacturing Vaccine Compositions for SutroVax, its Affiliates and Sublicensees solely for use in conjunction with the exercise, and within the scope, of the license granted in Section 4.1(a)(i), and Sutro shall, following such time, if any, when Sutro has become a Bankrupt Party, transfer to SutroVax or its designee, the relevant processes, documents, and materials and other Know-How included in the Sutro Platform, as necessary or reasonably useful for such manufacture and supply of Extracts.

(b) During the Term, each Party shall create and maintain current copies to the extent practicable of all intellectual property licensed hereunder to the other Party. Without limiting the Parties' rights under Section 365(n) of Title 11, if a case under Title 11 is commenced by or against the Bankrupt Party, the other Party shall be entitled to a copy of any and all such intellectual property and all embodiments of such intellectual property, and the same, if not in the possession of such other Party, shall be promptly delivered to it (i) before this Agreement is rejected by or on behalf of the Bankrupt Party, within [***] days after the other Party's written request, unless the Bankrupt Party, or its trustee or receiver, elects within [***] days to continue to perform all of its obligations under this Agreement, or (ii) after any rejection of this Agreement by or on behalf of the Bankrupt Party, if not previously delivered as provided under clause (i) above.

15.4 This Agreement incorporates the Exhibits referenced herein. This Agreement constitutes the entire agreement and supersedes all prior agreements and understandings, both written and oral, between the Parties hereto with respect to its subject matter. For clarity, it is understood that this Agreement supersedes and replaces the Original Agreement in its entirety.

15.5 All notices, requests or other communication provided for or permitted hereunder shall be given in writing and shall be hand delivered or sent by confirmed facsimile, reputable courier or by registered or certified mail, postage prepaid, return receipt requested, to the address set forth on the signature page of this Agreement, or to such other address of which either Party may inform the other in writing. Notices will be deemed delivered on the earliest of transmission by facsimile, actual receipt or [***] days after mailing as described herein.

15.6 This Agreement may be amended, modified or waived only in a writing signed by the Party or Parties to be bound thereby.

15.7 If any provision of this Agreement shall be held invalid, illegal or unenforceable, such provision shall be enforced to the maximum extent permitted by law and the Parties' fundamental intentions hereunder, and the remaining provisions shall not be affected or impaired.

15.8 Nothing herein contained shall constitute this a joint venture agreement and, except as expressly set forth herein, nothing herein shall constitute any Party as a partner, principal or agent of any other, this being an Agreement between independent contracting entities. Except as expressly set forth herein, no Party shall have the authority to bind any other in any respect whatsoever to Third Parties. Except as provided herein, nothing contained in this Agreement shall be construed as conferring any right on any Party to use any name, trade name, trademark or other designation of any other Party hereto, unless the express, written permission of such other Party has been obtained.

15.9 This Agreement has been submitted to the scrutiny of, and has been negotiated by, both Parties and their counsel, and shall be given a fair and reasonable interpretation in accordance with its terms, without consideration or weight being given to any such term's having been drafted by any Party or its counsel.

15.10 This Agreement shall be governed by, and construed and enforced in accordance with, the laws of the State of California, without regard to any conflict of laws rules to the contrary.

15.11 This Agreement may be executed in two (2) or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. Facsimile and other electronically scanned signatures shall have the same effect as their originals.

IN WITNESS WHEREOF, the Parties hereto executed and acknowledged this Agreement as of the date first written above. Each of the persons signing this Agreement affirms that he or she is duly authorized to do so and thereby to bind the indicated entity.

**SUTRO BIOPHARMA, INC.**

By: /s/ William J. Newell
Name: William J. Newell
Title: CEO

**SUTROVAX, INC.**

By: /s/ Grant E. Pickering
Name: Grant E. Pickering
Title: President & CEO

**Exhibit A**

**Research Plan**

{6 pages omitted}

[***]

**Exhibit B**

**Sutro Patents**

{22 pages omitted}

[***]

**Exhibit C**

**Diligence Milestones**

[***]

**Exhibit D**

**Sutro Competitors**

[***]

**Exhibit E**

**[***] In-License Provisions**

SutroVax, Inc. ("**SUTROVAX**") hereby agrees to be bound by the following terms and conditions from the [***] In-License, as a sublicensee of Sutro Biopharma, Inc. (formerly known as Fundamental Applied Biology, Inc., or "**FAB**") ("**SUTRO**").

Sec. 1. The following provisions of the [***] In-License (Articles 9 and 10) are hereby included in the Agreement (as if references to SUTRO were references to SUTROVAX), and [***] is hereby named as a third party beneficiary of such provisions:

"9 WARRANTIES AND NEGATION OF WARRANTIES

9.1 Warranties. [***] warrants and represents that (a) it has the right and authority to enter into this Agreement and to grant licenses of the scope granted in this Agreement and (b) [***] has not previously granted any rights in the Licensed Patents other than the rights and licenses granted in the Pre-Existing Licenses and will not grant any further rights in the Licensed Patents that are inconsistent with the rights and licenses granted to SUTRO herein. For purposes of clarity, SUTRO acknowledges that it has been made aware by [***] of the scope of the field of use of the Pre-Existing Licenses.

9.2 Negation of Warranties. Except as expressly set forth in this Agreement, [***] makes no representations and extends no warranties of any kind, either express or implied. Among other things, [***] disclaims any express or implied warranty:

(A) of merchantability, of fitness for a particular purpose,

(B) of non-infringement or

(C) arising out of any course of dealing.

9.2 No Representation of Licensed Patent. SUTRO also acknowledges that [***] does not represent or warrant:

(A) the validity or scope of any Licensed Patent, or

(B) that the exploitation of Licensed Patent or Technology will be successful.

10 INDEMNITY

10.1. Indemnification. SUTRO will indemnify, hold harmless, and defend all [***] Indemnitees against any and all third party claims for death, illness, personal injury, property damage, and improper business practices arising out of the manufacture, use, sale, or other disposition of the Licensed Patents or Licensed Products by SUTRO or any sublicensee, unless resulting from a claimed breach by [***] of its warranties or the gross negligence or willful misconduct of any [***] Indemnitee; provided that:

(A) SUTRO receives prompt notice of any such claim,

(B) SUTRO shall not be obligated to indemnify any [***] Indemnitee in connection with any settlement for any claim unless SUTRO consents in writing to such settlement (which consent shall not be unreasonably withheld), and

(C) SUTRO shall have the first right to defend any such claim and, if SUTRO elects to exercise such first right, the exclusive right to control the defense thereof.

Notwithstanding the foregoing, SUTRO shall have no obligations for any third party claim or demand that may be the subject of this Section 10.1 if the [***] Indemnitee seeking indemnification makes any admission regarding such claim without the prior written consent of SUTRO, which consent shall not be unreasonably withheld.

10.2. No Indirect Liability. Neither party shall be liable for any special, consequential, lost profit, expectation, punitive or other indirect damages in connection with any claim arising out of or related to this Agreement, whether grounded in tort (including negligence), strict liability. contract, or otherwise arising out of or in connection with solely this Agreement under any theory of liability; provided, however, that the foregoing shall not apply to any right of action for infringement, contributory infringement or inducement of infringement [***] may have under any applicable law. Except as provided in Section 9.1, [***] shall not have any responsibilities or liabilities whatsoever with respect to Licensed Products.

10.3. Workers' Compensation. SUTRO will comply with all statutory workers' compensation and employers' liability requirements for activities performed under this Agreement.

10.4. Insurance. During the term of this Agreement , SUTRO will maintain Comprehensive General Liability Insurance, including Product Liability Insurance, with a reputable and financially secure insurance carrier to cover the activities of SUTRO and its sublicensees. Upon introduction of Licensed Product into humans, such insurance will provide minimum limits of liability of [***] and will include all [***] Indemnitees as additional insureds. Such insurance shall be written to cover claims incurred, discovered, manifested, or made during or after the expiration of this Agreement and must be placed with carriers with ratings of at least A- as rated by A.M. Best. Within [***] days of the introduction of Licensed Product into humans. SUTRO will furnish a Certificate of Insurance evidencing primary coverage and additional insured requirements. SUTRO will provide to [***] days prior written notice of cancellation or material change to this insurance coverage. SUTRO will advise [***] in writing that it maintains excess liability coverage (following form) over primary insurance for at least the minimum limits set forth above. All insurance of SUTRO will be primary coverage; insurance of [***] and [***] will be excess and noncontributory. Notwithstanding the foregoing, if SUTRO proposes alternative coverage under this Section 10.4, [***] shall not unreasonably withhold its consent to such alternative coverage in lieu of the coverage detailed in this Section 10.4, so long as the proposed coverage is reasonable and customary for the industry and reasonably protects [***]'s interests.**"**

**Sec. 2.** If the [***] In-License is terminated, the applicable obligations with respect to the subject matter covered by the [***] In-License will be transferred to [***] or its designee, and SUTROVAX will assume such obligations, and (to the extent it exercises any rights to such subject matter) SUTROVAX will make any payment thereby due under the [***] In-License by SUTRO directly to [***] or its designee. For purposes of clarity, it is agreed that in the event the [***] In-License is terminated, [***] shall have audit rights vis-à-vis SUTROVAX and its Affiliates substantially similar to those set forth in Section 8.5 of the [***] In-License.

**Sec. 3.** [***] is hereby named as a third party beneficiary of Section 8.4(a) of the Agreement.

**Sec. 4**. Any sublicense granted by SUTROVAX under the Licensed Patents (as defined in the [***] In-License) will not include the right to further sublicense (unless otherwise agreed in writing by [***] and SUTRO).

**Exhibit F**

**Technology Transfer**

[***]

**CERTAIN CONFIDENTIAL INFORMATION CONTAINED IN THIS DOCUMENT, MARKED BY [***], HAS BEEN OMITTED BECAUSE IT IS BOTH (I) NOT MATERIAL AND (II) WOULD LIKELY CAUSE COMPETITIVE HARM IF PUBLICLY DISCLOSED.**

# FIRST AMENDMENT TO AMENDED AND RESTATED SUTROVAX AGREEMENT

This First Amendment ("**Amendment No. 1**") to the Amended and Restated Sutrovax Agreement dated as of October 12, 2015 ("**Amended and Restated Agreement**") is made as of May 9, 2018 ("**Amendment No. 1 Effective Date**"), by and between Sutro Biopharma, Inc., having its principal place of business at 310 Utah Ave, Suite 150, South San Francisco, CA 94080 ("**Sutro**"), and SutroVax, Inc., having its principal place of business at 353 Hatch Dr., Foster City, CA 94404 ("**SutroVax**"). Sutro and SutroVax are each referred to herein individually as a "**Party**" and collectively as the "**Parties**".

The Parties wish to amend certain provisions of the Amended and Restated Agreement, and in consideration of the promises and covenants set forth herein, Sutro and SutroVax hereby agree as follows:

1. Unless otherwise indicated, defined terms have the same meaning in this Amendment No. 1 as in the Amended and Restated Agreement.

2. The following item shall be deleted in its entirety from Exhibit C:

"[***]"

3. The Parties agrees and acknowledges that SutroVax's obligations under Section 7.2 of the Amended and Restated Agreement, including the remaining diligence milestones in Exhibit C, have been satisfied and, accordingly, the provisions of Sections 8.4(b) shall have no further force or effect.

IN WITNESS WHEREOF, the Parties have caused this Amendment No. 1 to be executed by their duly authorized representatives as of the Amendment No. 1 Effective Date.

**SUTRO BIOPHARMA, INC.**

By: /s/ William S. Newell
Name: William S. Newell
Title: CEO

**SUTROVAX, INC.**

By: /s/ Grant E. Pickering
Name: Grant E. Pickering
Title: President & CEO

**CERTAIN CONFIDENTIAL INFORMATION CONTAINED IN THIS DOCUMENT, MARKED BY [***], HAS BEEN OMITTED BECAUSE IT IS BOTH (I) NOT MATERIAL AND (II) WOULD LIKELY CAUSE COMPETITIVE HARM IF PUBLICLY DISCLOSED.**

# SECOND AMENDMENT TO AMENDED AND RESTATED SUTROVAX AGREEMENT

This Second Amendment ("**Amendment No. 2**") to the Amended and Restated Sutrovax Agreement dated as of October 12, 2015, as amended by that certain First Amendment to Amended and Restated SutroVax Agreement between the Parties dated May 9, 2018, ("**Amended and Restated Agreement**") is made as of May 29, 2018 ("**Amendment No. 2 Effective Date**"), by and between Sutro Biopharma, Inc., having its principal place of business at 310 Utah Ave, Suite 150, South San Francisco, CA 94080 ("**Sutro**"), and SutroVax, Inc., having its principal place of business at 353 Hatch Dr., Foster City, CA 94404 ("**SutroVax**"). Sutro and SutroVax are each referred to herein individually as a "**Party**" and collectively as the "**Parties**".

The Parties wish to amend certain provisions of the Amended and Restated Agreement, and in consideration of the promises and covenants set forth herein, Sutro and SutroVax hereby agree as follows:

1. Unless otherwise indicated, defined terms have the same meaning in this Amendment No. 2 as in the Amended and Restated Agreement. "**Supply Agreement**" means that certain Supply Agreement between the Parties dated May 29, 2018.

2. The phrase "or by or for SutroVax pursuant to Section 15.3(a)" is hereby added after the phrase "or any CMO established or approved by Sutro as described in Section 3.1" in Section 4.1(a) of the Amended and Restated Agreement.

3. The phrase "[***]" is hereby deleted in Section 4.1(b) of the Amended and Restated Agreement and the following is hereby appended to the end of Section 4.1(b) of the Amended and Restated Agreement:

> "For further clarity, and without limiting the license granted in Section 15.3, the license granted in Section 4.1(a) does not include the right to manufacture Extracts. Nothing in this Section 4.1 shall be deemed to limit SutroVax's obligation to purchase SutroVax's requirements of Extract from Sutro in Section 2.20 of the Supply Agreement. In addition, manufacturing of Extracts in breach of Section 2.20 of the Supply Agreement shall be deemed a material breach of this Agreement and the Supply Agreement by SutroVax."

4. The phrase "[***]" is hereby deleted in Section 4.2(a) of the Amended and Restated Agreement.

5. The phrases "In recognition that Sutro may become a Bankrupt Party," and ", effective upon such time, if any, when Sutro has become a Bankrupt Party," are hereby deleted in their entirety in Section 15.3(a) of the Amended and Restated Agreement; the phrase "and Section 4.1(a)(ii)" is hereby added after the phrase "granted in Section 4.1(a)(i)" in Section 15.3(a) of the Amended and Restated Agreement; and the following is hereby appended to the end of Section 15.3(a) of the Amended and Restated Agreement:

> "It is understood that the foregoing license shall not be deemed to limit SutroVax's obligation to purchase SutroVax's requirements of Extract from Sutro in Section 2.20 of the Supply Agreement."

6. The phrase “elects within [***] days to continue to perform all of its obligations under this Agreement” in Section 15.3(b) of the Amended and Restated Agreement is hereby replaced with the phrase “within [***] days assumes this Agreement in accordance with 11 U.S.C. §§ 365(a) and 365(b)”.

7. The following is hereby appended to the end of Section 15.3(b) of the Amended and Restated Agreement:

> “In the case where Sutro is the Bankrupt Party, the delivery shall include: copies of, or access to, the then-existing Sutro Know-How and Sutro Core Know-How that is reasonably necessary to enable SutroVax to exercise the rights granted in Section 15.3(a); reasonable on-site training at Sutro’s premises to enable SutroVax to implement such Sutro Know-How Sutro Core Know-How (subject to the payment of reasonable fees to Sutro); and reasonable access during ordinary business hours to Sutro’s personnel knowledgeable of the Sutro Platform and Extract for technical advice with respect to the implementation of such Sutro Know-How and Sutro Core Know-How, whether by teleconference or in-person meeting (subject to the payment of reasonable fees to Sutro). In addition, in the case where Sutro is the Bankrupt Party, if Sutro defaults in its disclosure obligation, SutroVax may obtain the Sutro Know-How or Sutro Core Know-How from the first two CMOs qualified by Sutro to manufacture Extract, provided that, for clarity, Sutro has conducted a Process Transfer (as defined in the Supply Agreement) to each such CMO, and, such Sutro Know-How and Sutro Core Know-How are made available by each such CMO to SutroVax per the terms of the agreement referenced below. Prior to executing its agreement with each such CMO, Sutro will provide SutroVax a reasonable opportunity to comment on the provisions of such agreement that relate to SutroVax’s access to such Sutro Know-How and/or Sutro Core Know-How. Nothing in this Section 15.3 shall be deemed to limit SutroVax’s obligation to purchase SutroVax’s requirements of Extract from Sutro in Section 2.20 of the Supply Agreement.”

8. The following new Section 15.12 is hereby added to the Amended and Restated Agreement:

> 15.12 Each Party acknowledges that the other Party may likely suffer irreparable harm from such Party’s breach or threatened breach of this Agreement and the other Party, in such cases, would therefore be entitled, without waiving any other right or remedy available to, to injunctive relief (including specific performance) without the requirement to post a bond, provided the waiver by such Party of the other Party’s requirement to post a bond shall expire on the Change of Control of the other Party, and each party agrees that the arbitrator selected under Section 14.3 shall have the power to grant such injunctive relief (or order specific performance). The Parties shall comply with any such injunctive relief (including specific performance) ordered by the arbitrator and agree that such order may, to the extent not precluded by applicable law, be enforceable as a final award in any court of competent jurisdiction.

IN WITNESS WHEREOF, the Parties have caused this Amendment No. 2 to be executed by their duly authorized representatives as of the Amendment No. 2 Effective Date.

**SUTRO BIOPHARMA, INC.**

By: /s/ William S. Newell
Name: William S. Newell
Title: CEO

**SUTROVAX, INC.**

By: /s/ Grant E. Pickering
Name: Grant E. Pickering
Title: President & CEO

**CERTAIN CONFIDENTIAL INFORMATION CONTAINED IN THIS DOCUMENT, MARKED BY [***], HAS BEEN OMITTED BECAUSE IT IS BOTH (I) NOT MATERIAL AND (II) WOULD LIKELY CAUSE COMPETITIVE HARM IF PUBLICLY DISCLOSED.**

# SUPPLY AGREEMENT

This **SUPPLY AGREEMENT** ("**Supply Agreement**") is made as of May 29, 2018 (the "**Effective Date**") by and between SutroVax, Inc., a Delaware corporation having principal offices at 353 Hatch Dr., Foster City, CA 94404 ("**SutroVax**") and Sutro Biopharma, Inc., a Delaware corporation, having principal offices at 310 Utah Ave, Suite 150, South San Francisco, CA, 94080 ("**Sutro**"). SutroVax and Sutro may be referred to herein by name or individually, as a "**Party**" and collectively, as the "**Parties.**"

## BACKGROUND

A. Sutro controls certain proprietary technology which permits cell-free expression of proteins, and Sutro licensed such technology to SutroVax under that certain Amended and Restated SutroVax Agreement dated as of October 12, 2015 (the "**License Agreement**").

B. SutroVax is a vaccine company primarily in the business of developing, manufacturing and marketing vaccine products; and

C. SutroVax desires to purchase from Sutro, and Sutro desires to supply to SutroVax, the Extracts and Custom Reagents (as defined below) upon the terms and subject to the conditions set forth herein.

**NOW, THEREFORE**, in consideration of the covenants, conditions and undertakings hereinafter set forth, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties hereby agree as follows:

## AGREEMENT

## ARTICLE 1

## DEFINITIONS/ INTERPRETATION

For the purposes of this Supply Agreement, the following capitalized words and phrases shall have the following meanings:

**1.1** "**Affiliate**" means, with respect to either Party, any business entity controlling, controlled by, or under common control with such Party. For the purpose of this definition only, "control" means (i) the possession, directly or indirectly, of the power to direct the management or policies of a business entity, whether through the ownership of voting securities, by contract or otherwise, or (ii) the ownership, directly or indirectly, of at least fifty percent (50%) of the voting securities or other ownership interest of a business entity. Notwithstanding the above, in no event shall Sutro (or any entity that would be an Affiliate of SutroVax solely because it is an Affiliate of Sutro) be deemed an Affiliate of SutroVax, or SutroVax (or any entity that would be an Affiliate of Sutro solely because it is an Affiliate of SutroVax) an Affiliate of Sutro.

**1.2** "**Applicable Law**" means all laws, ordinances, rules, rulings, directives and regulations of any Governmental Authority that apply to the development, manufacture or supply of any Product or the other activities contemplated under this Supply Agreement, including (i) all applicable federal, state and local laws, rules and regulations; (ii) the U.S. Federal Food, Drug and Cosmetic Act; (iii) regulations and guidelines of the FDA and other Regulatory Authorities, including cGMPs, if applicable; and (iv) any applicable non-U.S. equivalents of any of the foregoing, including guidelines of the International Conference on Harmonization of Technical Requirements for Registration of Pharmaceuticals for Human Use (as amended from time to time).

**1.3** "**cGMPs**" means current good manufacturing practices and standards as set forth (and as amended from time to time) in the current Good Manufacturing Practice Regulations of the U.S. Code of Federal Regulations, including 21 C.F.R. Sections 210 and 211, the European Community Directive 2003/94/EC and the ICH Harmonised Tripartite Guideline, Good Manufacturing Practice Guides for Active Pharmaceutical Ingredients (Q7).

**1.4** "**Components**" means any product or material used in the Manufacture of the Products including the packaging materials.

**1.5** "**Extract**" means Sutro's extract derived from strains of *E. coli* identified on Schedule 1 attached hereto, as may be amended from time to time in accordance with Section 12.7, and any new versions and improvements thereof that may be included in Schedule 1 by written agreement of the Parties in accordance with Section 12.7.

**1.6** "**Facility**" or "**Facilities**" means the facilities where Product will be Manufactured as set forth in Schedule 1. Schedule 1 may be amended from time to time in accordance with this Supply Agreement to add or remove facilities.

**1.7** "**FDA**" means the United States Food and Drug Administration, or any successor agency thereto performing similar functions.

**1.8** "**Fully Burdened Manufacturing Costs**" means, with respect to a Product, Sutro's costs of manufacturing such Product, which manufacturing costs shall mean: (a) [***], and (b) [***], in each case to the extent directly allocated to and incurred in the manufacture by Sutro of such Product supplied to SutroVax, its Affiliates and Sublicensees. Fully Burdened Manufacturing Costs shall not include any [***] and shall be calculated in accordance with the foregoing, GAAP and Sutro's policies and procedures for its other products, in each case consistently applied (and such plant operations and support services costs shall be allocated consistent with GAAP and other products of Sutro in that facility).

**1.9** "**Governmental Authority**" means any court, agency, department, authority or other instrumentality of any nation, state, country, city or other political subdivision, including any Regulatory Authority.

**1.10** "**Manufacture**" or "**Manufacturing**" means the processes and procedures for the supply of the Products, including, (a) the supply and quality control of the Components; (b) the manufacture of the Products in bulk; (c) the Packaging and labeling of the Products; (d) the quality control of the Products; and (e) the storage of the Products until shipment.

**1.11** "**Package**" or "**Packaging**" means packaging Product(s) in accordance with applicable Specifications.

**1.12** "**Person**" means an individual, a corporation, a partnership, an association, a trust or other entity or organization, including a government or political subdivision or an agency thereof.

**1.13** "**Price**" means the price to be paid by SutroVax for each Product as set forth on Schedule 1 of this Supply Agreement and as may be modified from time to time in accordance with Section 3.2.

**1.14** "**Product(s)**" means the Extract and Custom Reagents.

**1.15** "**Custom Reagents**" means Sutro's custom reagents identified on Schedule 1 attached hereto, and any new versions and improvements thereof that may be included in Schedule 1 by written agreement of the Parties in accordance with Section 12.7.

**1.16** "**Regulatory Approval**" means, with respect to a product, all approvals, licenses, registrations or authorizations necessary to market and sell such product in a particular jurisdiction in the Territory (including applicable approvals of labeling, price and reimbursement for such product in such jurisdiction).

**1.17** "**Regulatory Authority**" means any federal, national, multinational, state, provincial or local regulatory agency, department, bureau or other governmental entity, including the FDA, with authority over the development, Manufacture or commercialization (including approval of Regulatory Approvals) of any Product(s) in any jurisdiction in the Territory.

**1.18** "**Regulatory Materials**" means regulatory applications, submissions, notifications, communications, correspondence, registrations, Regulatory Approvals and/or other filings made to, received from or otherwise conducted with a Regulatory Authority (including minutes of meeting with Regulatory Authorities) that are necessary or reasonably desirable to access in connection with the development, manufacture, marketing, sale or other commercialization of any Product in a particular country or regulatory jurisdiction. Regulatory Materials include, without limitation, INDs, NDAs, BLAs, clinical trial applications, marketing approval applications and applications for pricing approvals.

**1.19** "**Required Standards**" means Applicable Law, the Specifications, and the warranties given by Sutro in Section 7.3, provided that Required Standards shall not include compliance with cGMPs for Custom Reagents, Extract identified as "research grade" Extract or Other Extracts.

**1.20** "**Specifications**" means, with respect to a Product or applicable Component thereof, all written product, regulatory, Manufacturing, release criterion, quality control and quality assurance procedures, processes, practices, standards, instructions and specifications applicable to the Manufacture of such Product or Component, as agreed to by the Parties in writing from time to time. The initial Specifications for the Products are attached hereto as Schedule 2.

**1.21** "**SutroVax CMO**" means any contract manufacturer responsible for supplying or manufacturing a Vaccine Composition on behalf of SutroVax or its Affiliates, selected in accordance with Section .2.

**1.22** "**Territory**" means worldwide.

**1.23** "**Third Party**" means any Person other than SutroVax, Sutro, or their respective Affiliates.

**1.24 Additional Definitions.** Each of the following terms shall have the meaning described in the corresponding Section of this Supply Agreement indicated below:

| Term | Section Defined | Term | Section Defined |
|---|---|---|---|
| Alternate Supplier | 2.15 | Phase 3/Commercial Supply Agreement | 2.14 |
| Acceptance Period | 4.2 | Q1, Q2 or Q3 | 2.3 |
| COA/COC | 4.1 | Quality Agreement | 6.7 |
| CMC | 6.2 | Senior Management | 11.2 |
| CMO | 2.15 | Short Dated Product | 2.11 |
| Delivery Time Period | 2.9.2 | Sutro | Preamble |
| Disputed Matter | 11.4 | Sutro Activity Criteria | 4.1 |
| Drug Master File | 6.2 | Sutro Activity Test | 4.1 |
| Effective Date | Preamble | Sutro Indemnitees | 9.1.2 |
| Force Majeure | 12.3 | SutroVax | Preamble |
| Forecast | 2.3 | SutroVax Activity Criteria | 4.1 |
| Indemnify | 9.1.1 | SutroVax Activity Test | 4.1 |
| Laboratory | 4.3 | SutroVax Indemnitees | 9.1.1 |
| Latent Defect | 4.2 | Supply Agreement | Preamble |
| Liabilities | 9.1.1 | Term | 10.1 |
| License Agreement | Background | Third-Party Claim | 9.1.1 |
| Manufacturing Change | 6.6 | Transfer Addendum | 2.15 |
| MSDS | 4.1 | Work Order | 2.3 |
| Other Extract | 2.16 | | |
| Party or Parties | Preamble | | |

**1.25 Interpretation.** The captions and headings to this Supply Agreement are for convenience only, and are to be of no force or effect in construing or interpreting any of the provisions of this Supply Agreement. Unless specified to the contrary, references to Articles, Sections, Schedules or Exhibits mean the particular Articles, Sections, Schedules or Exhibits to this Supply Agreement and references to this Supply Agreement include all Schedules and Exhibits hereto. Unless context clearly requires otherwise, whenever used in this Supply Agreement: (i) the words "include" or "including" shall be construed as incorporating, also, "but not limited to" or "without limitation;" (ii) the word "or" shall have its inclusive meaning of "and/or;" (iii) the word "notice" shall require notice in writing (whether or not specifically stated) and shall include notices, consents, approvals and other written communications contemplated under this Supply Agreement; (iv) the words "hereof," "herein," "hereunder," "hereby" and derivative or similar words refer to this Supply Agreement (including any Schedules and

Exhibits); (v) provisions that require that a Party or the Parties "agree," "consent" or "approve" or the like shall require that such agreement, consent or approval be specific and in writing; (vi) words of any gender include the other gender; (vii) words using the singular or plural number also include the plural or singular number, respectively; (viii) references to any specific law, or article, section or other division thereof, shall be deemed to include the then-current amendments thereto or any replacement thereof; (ix) neither Party shall be deemed to be acting "under the authority" of the other Party; and (x) any capitalized terms used and not defined in this Supply Agreement shall have the meaning set forth in the License Agreement.

## ARTICLE 2
## SUPPLY

**2.1 Supply.** Pursuant to the terms and conditions of this Supply Agreement, Sutro agrees that it will Manufacture the Product(s) at the Facility(ies) for SutroVax and shall supply the Product(s) to SutroVax, its Affiliates, and any SutroVax CMO, for purposes of production of Vaccine Compositions (including development of processes for the production of Vaccine Compositions), solely for non-clinical research purposes or in Phase I or Phase II clinical trials of such Vaccine Compositions..

**2.2 Transfer of Product.** Subject to Section 2.1, SutroVax may transfer Products to SutroVax CMOs selected by SutroVax and that are reasonably acceptable to Sutro (the acceptance of which by Sutro not to be unreasonably withheld, conditioned or delayed) or previously approved by Sutro.

**2.3 Work Orders.** From time to time, Sutro and SutroVax may execute one or more work orders, that describe the Product to be Manufactured, the quantities of each Product to be Manufactured and supplied to SutroVax, the Price to be charged by Sutro (which shall be as set forth in Section 3.2) and paid by SutroVax for the Product, and the delivery date(s) for such Product, (as executed, a "**Work Order**"). Each Work Order will expressly refer to this Supply Agreement, will form a part of this Supply Agreement, and will be subject to the terms and conditions contained herein. Sutro shall not unreasonably withhold its agreement to any proposed Work Order requested by SutroVax. Sutro shall be obligated to execute proposed Work Orders requested by SutroVax (except with respect to Other Extracts) with respect to quantities in such proposed Work Order for delivery at least [***] months after SutroVax's request to the extent such quantities of Product (when added to the quantities of such Product in Work Orders previously agreed between the Parties for delivery within the one (1) calendar year period prior to the requested delivery date of the proposed Work Order) are less than (a) [***] liters with respect to Extract or (b) a corresponding amount of each Custom Reagent to support use of [***] liters of Extract. Sutro shall notify SutroVax as soon as possible if Sutro believes it will be unable to deliver Product in accordance with the applicable Work Order. Sutro's providing of such notification shall not be interpreted in any manner as relieving Sutro of its obligations under this Supply Agreement, nor shall it prevent SutroVax from pursuing any and all rights and remedies SutroVax may have based on Sutro's failure to be able to deliver any Product in accordance with the terms of this Supply Agreement.

**2.4 Orders.**

2.4.1 Purchase Orders. Once both parties have executed a Work Order, SutroVax shall place a purchase order for the amounts of Products to be purchased under such Work Order with delivery dates for such amounts consistent with such Work Order. Additionally, SutroVax may from time to time place purchase orders for additional quantities specifying requested delivery dates in accordance with reasonable delivery schedules and lead times; in each case, as may be agreed upon from time to time by the Parties. Each purchase order placed by SutroVax shall specify the quantity of Product, destination(s) and requested delivery dates. Sutro shall promptly accept all purchase orders with respect to the amounts of Products to be purchased under the applicable Work Order and shall accept or reject any amount in the purchase order in excess of the amounts of Products to be purchased under the applicable Work Order and all other purchase orders for Product submitted by SutroVax in accordance with this Article 2 within [***] days from receipt of the order; provided however that Sutro shall use Commercially Reasonable Efforts to accept such amounts and purchase orders. Accepted purchase orders may not be cancelled without the prior written agreement of both Parties except as set forth in Sections 2.5. Unless otherwise directed by SutroVax, Sutro shall fill all accepted purchase orders for Product in accordance with the requested due dates as set forth in further detail in Section 2.9.2.

2.4.2 No Conflicting Terms. The terms and conditions of this Supply Agreement shall be controlling over any conflicting terms and conditions stated in SutroVax's purchase order or Sutro's invoice, confirmation or other standardized document. Any purchase order, order acknowledgement, invoice, proposal or other document which conflicts with or adds to the terms and conditions of this Supply Agreement with respect to the Manufacture and supply of Product for the Territory is hereby rejected, unless the Parties mutually agree to the contrary in writing.

2.4.3 Initial Order. Notwithstanding Section 2.3 or this Section 2.4, Sutro accepts and agrees to fulfil the order previously placed by or on behalf of SutroVax (or to be placed by or on behalf of SutroVax, if no already placed) for the quantities of Product set forth in Schedule 3 by the delivery date set forth therein (the "**Initial Order**").

**2.5 Cancellation.** Notwithstanding anything herein to the contrary, SutroVax may not modify or cancel purchase orders with respect to the amounts of Product to be purchased under the applicable Work Order, however SutroVax may modify or cancel other purchase orders (including amounts in a purchase order in excess of the amounts of Product to be purchased under the applicable Work Order) for the Products provided that such modification or change is made further in advance of the originally requested delivery date than the required lead time, where the agreed required lead time for the applicable purchase order has been evidenced in writing (including, for example, by email) between the Parties.

**2.6 Delivery and Risk of Loss.** Sutro shall mark Product for delivery to the destination(s) specified by SutroVax. All shipments of Product(s) shall be delivered [***] (lncoterms 2010) Sutro Facility. Title and risk of loss and damage to the Product(s) shall remain with Sutro until the Product(s) are delivered in accordance with the foregoing, at which time title and risk ofloss and damage to the Product(s) shall pass to SutroVax. SutroVax will arrange for shipping from Sutro's Facility to the destination specified by SutroVax at SutroVax's cost and expense.

**2.7 Packaging.** Sutro shall provide the Product to SutroVax in Packaged form in accordance with the Required Standards.

**2.8 Conformance to Required Standards.** Sutro shall Manufacture the Product(s) in accordance with the Required Standards, as the same may be amended or supplemented from time to time. Each Party shall keep the other promptly and fully advised of any new requirements of the applicable Regulatory Authority or Applicable Law of which it becomes aware and Sutro shall promptly implement such requirements as described in Section 6.6.

**2.9 Supply and Delivery.**

2.9.1 Shortage. Sutro shall use reasonable efforts to promptly notify SutroVax in writing in the event that Sutro is unable or anticipates that it will be unable to supply compliant Product in accordance with the requirements of this Supply Agreement, including the Quality Agreement and all Required Standards, and each Work Order. Sutro shall use Commercially Reasonable Efforts to overcome any inability or anticipated inability to so supply compliant Product to SutroVax.

2.9.2 Delivery Delays. Subject to Section 2.4.1 (including applicable lead times agreed upon in accordance with Section 2.4.1) Sutro shall make deliveries of Product(s) in accordance with Section 2.6, no more than [***] days before or [***] after the delivery dates specified by SutroVax in the relevant purchase order (provided that such delivery date is in accordance with the applicable Work Order or such purchase order was otherwise accepted by Sutro) (the "**Delivery Time Period**"). For any failure to supply compliant Product(s) in the later of the Delivery Time Period and the period ending [***] after the delivery date specified under the Work Order, without limiting SutroVax's other remedies, subject to this Section 2.9.2 and Section 9.3 (Limitation of Liability), Sutro shall be liable for any non-cancelable Third Party penalties, costs and expenses incurred by SutroVax as a result of Sutro's failure to supply Product(s) as aforesaid, subject to receipt by Sutro of appropriate documentary evidence of such penalties, costs and expenses to the extent such evidence of such amounts may be provided by SutroVax without breaching SutroVax's or its Affiliates' duties of confidentiality to such Third Party (and provided that SutroVax shall use commercially reasonable efforts to (i) minimize or eliminate such penalties, costs and expenses and (ii) where provision of such evidence to Sutro would result in a breach of such duties of confidentiality, to obtain the consent of the applicable Third Party to the provision of such evidence to Sutro). In the event that Sutro makes a Manufacturing Change and is not able to Manufacture and supply Product in conformance with the Required Standards within [***] days of the delivery date identified on the applicable purchase order, Sutro shall Manufacture such Product without such Manufacturing Change. The rights of SutroVax set forth in this paragraph are in addition to any other rights set forth in this Supply Agreement.

**2.10 Allocation.** Without limiting any other rights or remedies available to SutroVax, if the demand for a Product in aggregate exceeds available supply or Sutro otherwise concludes that it may be unable to supply a Product in accordance with the requirements of this Supply Agreement in the quantities and within the time periods specified in each Work Order and the corresponding purchase orders that have been accepted by Sutro, Sutro shall immediately notify SutroVax of such shortfall (or anticipated shortfall), and shall use Commercially Reasonable

Efforts to procure Components and capacity adequate to meet accepted purchase orders and supply compliant Product in accordance with the requirements of this Supply Agreement. Sutro shall allocate its available Components and manufacturing capacity to provide SutroVax with quantities of such Product at least equal to the greater of (a) [***] of the amount of Product (or products equivalent to Product) that Sutro allocates for itself and its Affiliates (but in no event less than [***] liters of Extract per month and the minimum allocation volume set out in Schedule 1 of each Custom Reagent per month), provided that SutroVax demonstrates actual need for the applicable quantities of Extract, and (b) the [***]. Without limiting the foregoing, if there is a shortage of supply of Product, Sutro shall provide Product to SutroVax for any quantities of Product ordered by SutroVax in accordance with the applicable Work Order or purchase order in priority to any subsequent Third Party purchase orders, but not in priority to any Third Party purchase orders or other binding commitment placed before placement of the applicable SutroVax Work Order or purchase order.

**2.11 Short Dated Product.** Sutro agrees to ship all Product(s) so that they are delivered to SutroVax and will remain compliant with the Specifications for at least [***] months from the date of delivery in accordance with this Supply Agreement.

**2.12 Subcontracting by Sutro.** Sutro shall (a) ensure that any subcontractor or delegatee of Sutro's obligations under this Supply Agreement has and maintains all appropriate qualifications; (b) enter into a quality agreement with each such subcontractor and delegatee which terms are similar to the terms of the Quality Agreement between SutroVax and Sutro; and (c) be responsible for each subcontractor's and delegatee's performance hereunder (including performance or non-performance by such subcontractor or delegatee that would constitute a breach of this Supply Agreement or such quality agreement if conducted by Sutro) as if Sutro were itself performing such activities. Sutro shall not subcontract the Manufacture of Product to a Third Party without SutroVax's prior consent other than to an Alternate Supplier as expressly set forth in Section 2.15.

**2.13 CMOs.** Notwithstanding anything to the contrary in this Supply Agreement, SutroVax shall have the rights to purchase Available Extracts and Extracts from CMOs (as defined in the License Agreement) to the extent provided in section 3.1 of the License Agreement.

**2.14 Phase 3/Commercial Supply Agreement.** If requested by SutroVax in writing (which request shall not be made prior to [***]), the Parties shall negotiate in good faith reasonable terms and conditions of an agreement for the supply by Sutro of the Products for the production of Vaccine Compositions for use in phase 3 clinical studies and for commercial purposes ("**Phase 3/Commercial Supply Agreement**"). The price for the Products Manufactured by Sutro under the Phase 3/Commercial Supply Agreement shall not exceed [***] of the Fully Burdened Manufacturing Cost thereof. If the Parties have not entered into the Phase 3/Commercial Supply Agreement within [***] after SutroVax's request to negotiate the Phase 3/Commercial Supply Agreement, upon either Party's request by written notice to the other Party the terms and conditions of the Phase 3/Commercial Supply Agreement shall be determined by binding arbitration in accordance with the procedures set forth in Section 11.4. Upon the selection of one draft Phase 3/Commercial Supply Agreement by the arbitrator pursuant to Section 11.4, unless SutroVax elects not to enter into such Phase 3/Commercial Supply

Agreement by written notice thereof to Sutro within [***] days after such selection, the Parties shall execute the definitive Phase 3/Commercial Supply Agreement selected by the arbitrator (but excluding, for clarity, any provision granting to SutroVax or its Affiliates or Sublicensees any right to obtain or use any Sutro Core Know-How); and if SutroVax elects to not enter into the Phase 3/Commercial Supply Agreement selected by the arbitrator by providing notice thereof within such [***] day period, then neither Party shall be obligated to enter into the Phase 3/Commercial Supply Agreement.

**2.15 Qualification of Alternate Supplier.**

2.15.1 Transfer Addendum.

(a) *Transfer Addendum*. Upon SutroVax' written request, the Parties agree to negotiate in good faith an addendum to this Supply Agreement setting forth the terms and conditions pursuant to which Sutro will conduct a Process Transfer to a Third Party contract manufacturer ("**CMO**") and/or engage such CMO to establish Capacity to Manufacture Extract (as Process Transfer and Capacity are defined below), in each case for the Manufacture and supply of such Extract for SutroVax' (or its Affiliate's or SutroVax CMO's) use to manufacture Vaccine Compositions, consistent with the remainder of this Section 2.15 (such addendum, a "**Transfer Addendum**"). As requested by SutroVax, this procedure may also be used in the event that SutroVax wishes Sutro to conduct a Process Transfer to a Third Party CMO in order to establish Capacity to Manufacture Custom Reagents. In connection with such request, SutroVax shall provide to Sutro a description of the desired Process Transfer and/or Capacity, including timing and other requirements thereof. Such Transfer Addendum shall:

(i) include a plan and budget for the conduct of the Process Transfer and/or establishment of such Capacity, which shall include amounts charged by the CMO (as defined further below, the "**Alternate Supplier**") to receive and conduct such Process Transfer and/or establish such Capacity, as well as reasonable FTE costs for Sutro personnel performing and managing technology transfer activities in accordance with the Transfer Addendum·

(ii) require SutroVax to fund the costs incurred by Sutro to conduct Process Transfer and/or establish such Capacity in accordance with such budget;

(iii) provide for initiation and completion of the Process Transfer and establishment of Capacity as requested by SutroVax, to the extent possible;

(iv) to the extent requested by SutroVax, be designed to enable the Alternate Supplier to Manufacture Extract of suitable quality for use in Phase 3 clinical trials and commercialization of a Vaccine Composition at a capacity to support SutroVax' projected commercial requirements for Extract (or other capacity identified by SutroVax in connection with the negotiation of the Transfer Addendum), as requested by SutroVax;

(v) require the Parties to fully cooperate to verify that the Extract supplied by the Alternate Supplier meets the Specifications, to validate the Manufacturing process implemented at the Alternate Supplier and to qualify the Alternate Supplier, in each case to supply Extract for SutroVax' use in Phase 3 clinical trials and commercialization of a Vaccine Composition (collectively, with respect to Capacity established, "**Validating**" such Capacity);

(vi) include mechanisms for keeping SutroVax fully informed, at scheduled intervals not to exceed once per quarter, of the progress of the Process Transfer and establishing such Capacity, as applicable, including with respect to the anticipated date for qualifying the Alternate Supplier and any changes to such anticipated date;

(vii) provide a right for SutroVax to modify the timing of or terminate the Process Transfer, Capacity or specified aspects thereof on reasonable notice, subject to SutroVax' agreement to bear any resulting termination or cancellation fees charged by the Alternative Supplier; and

(viii) include a mechanism for Sutro to cooperate with SutroVax and keep SutroVax reasonably informed with respect to Sutro's negotiation of an agreement with a potential Alternate Supplier for a Process Transfer and/or establishment of Capacity, including with respect to pricing for Extract from the Alternate Supplier to Sutro and any commitments to purchase quantities of Extract from the Alternate Supplier that SutroVax would be obligated to assume (e.g., in connection with establishing Capacity), if any, and require Sutro to obtain SutroVax' approval (not to be withheld unreasonably) of the terms of such agreement prior to entering into such agreement to the extent that the terms apply to SutroVax (it being understood that Sutro may redact any terms that are not relevant to SutroVax).

(b) *Scope*. As used above, "Process Transfer" means a technology transfer of Sutro's know-how and information as is necessary or useful for the Third Party CMO to Manufacture in its own facilities Extract that meets SutroVax' requirements, including any such information and know-how as would be needed for such CMO to scale up such Manufacture to the requested commercial volumes. To establish "**Capacity**" means that the CMO would take such actions as are necessary (including validation and if necessary adapting or reserving existing facilities, establishing new facilities and/or procuring necessary equipment) to Manufacture Extract meeting SutroVax' requirements for Phase 3 and commercial supply in such quantities as SutroVax designates. It is understood that SutroVax may request that the Process Transfer and establishment of Capacity be undertaken in separate steps, for example by undertaking an initial Process Transfer to demonstrate the CMO's ability to Manufacture Extract, and then later establishing Capacity for Phase 3 and commercial supply, as requested by SutroVax in accordance with Section 2.15.1(a) (i.e., in separate requests).

(c) *Selection of Alternate Supplier*. The "Alternate Supplier" will be selected by Sutro, provided that Sutro must select an "Alternate Supplier" that is substantially similar to those CMOs identified on Schedule 2.15.1 hereto and provided further that SutroVax shall have the right to veto such selection based only on a genuine and material conflict of interest between SutroVax and the Alternate Supplier. Additional CMOs may be added to Schedule 2.15.1 by Sutro with SutroVax's approval (not to be withheld unreasonably).

(d) *Alternate Supplier as Subcontractor*. It is understood that the Alternate Supplier established under the Transfer Addendum shall operate as a subcontractor of Sutro under this Supply Agreement and the Phase 3/Commercial Supply Agreement, and as such SutroVax will order from Sutro thereunder any Extract to be Manufactured by such Alternate Supplier. Subject to the foregoing, the Transfer Addendum and the Phase 3/Commercial Supply Agreement will include reasonable and customary rights for SutroVax to conduct audits/inspections, site visits, quarterly meetings, each such audit/inspection, site visit and quarterly meeting to be coordinated by Sutro and to occur in the presence of a representative for Sutro and SutroVax, in connection with the Alternate Supplier's manufacture of Extract for supply to SutroVax. For clarity, SutroVax shall not conduct any business discussions for the supply of Extract with the Alternate Supplier in a manner that induces the Alternate Supplier to breach its agreement with Sutro. Notwithstanding the foregoing, in the event Sutro undergoes a Change of Control or Sutro permits any third party to acquire Extract directly from an Alternate Supplier established under the Transfer Addendum, then SutroVax shall thereafter have the right to establish a supply agreement with and obtain supply of Extract directly from such Alternate Supplier.

(e) *Quotations*. Upon SutroVax's request (which request, for clarity, may be before a request to negotiate a Transfer Addendum), Sutro shall seek quotations from one or more Third Party CMO(s) for such a Process Transfer and/or establishment of such Capacity, in each case as requested by SutroVax, and the Parties shall reasonably cooperate to establish requests for quotations for such purposes.

(f) *Arbitration*. If the Parties have not agreed upon a Transfer Addendum within [***] after SutroVax' request, upon SutroVax' request by written notice to Sutro, the terms and conditions of the Transfer Addendum shall be determined by binding arbitration in accordance with the procedures set forth in Section 11.4. For clarity, however, it is understood that a Transfer Addendum shall not include any provision granting to SutroVax or its Affiliates or Sublicens.ee s any right to obtain or use any Sutro Core Know-How.

2.15.2 Source of Supply. It is understood that after the Alternate Supplier is qualified, SutroVax shall have the right under this Supply Agreement and the Phase 3/Commercial Supply Agreement to specify whether Extract ordered from Sutro pursuant to this Agreement or the Phase 3/Commercial Supply Agreement will be Manufactured at Sutro's Facility or at the Alternate Supplier's facilities (and to the extent Extract from the Alternate Supplier is ordered under this Supply Agreement or the Phase 3/Commercial Supply Agreement, the facility of the Alternate Supplier shall be deemed a Facility for purposes of this Supply Agreement and the Phase 3/Commercial Supply Agreement). Notwithstanding the foregoing, to the extent the FDA and EMA have confirmed that Extract manufactured at Sutro's Facility and the Alternate Supplier's Facility are interchangeable and can be supplied from either such Facility without any additional regulatory requirements or regulatory delay with respect to the applicable Vaccine Composition, and such Extract otherwise meets SutroVax' requirements, then with SutroVax' consent (not to be withheld unreasonably) Sutro may supply Extract from either Sutro's Facility or the Alternate Supplier's Facility.

2.15.3 Price. To the extent Sutro or its Affiliate Manufactures Extract supplied to SutroVax, the Price (per unit volume or unit weight) under this Supply Agreement and the Phase 3/Commercial Supply Agreement for such Extract shall not exceed [***] of the Fully Burdened Manufacturing Costs of such Extract; and to the extent the Extract to be supplied to SutroVax is Manufactured by a Third Party (including the Alternate Supplier), the Price to be

charged to SutroVax under this Supply Agreement and the Phase 3/Commercial Supply Agreement for such Extract shall equal the amount Sutro paid such Third Party for such Extract ("**OOP Cost**") plus an amount reasonably calculated to cover Sutro's FTE costs to procure and manage the relationship with such Third Party, such amount not to exceed [***] of the OOP Cost for such Extract. To the extent that Sutro or its Affiliate receives any portion of the amounts paid to such Third Party to Manufacture Extract (e.g., as a profit share or otherwise), the Price to be charged SutroVax shall be the lesser of i) [***], or ii) [***]; in either case, [***]. For clarity, Section 3.4 of the License Agreement shall apply with respect to the Alternate Supplier.

2.15.4 Sutro/Third Party use of Alternate Supplier. Once the Alternate Supplier is qualified pursuant to this Section 2.15, SutroVax shall have the first right (as between SutroVax and Sutro or Third Parties supplied or authorized by Sutro) to obtain Extract Manufactured by the Alternate Supplier up to the Capacity established pursuant to the Transfer Addendum for a period ending the later of [***] or [***], and provided SutroVax commits to [***] or [***].

**2.16 Other Extracts.** From time-to-time, subject to an agreed-upon Work Order, SutroVax may place purchase orders for quantities of research grade extract derived from strains of *E. Coli* other than that set forth on Schedule 1 attached hereto (each an "**Other Extract**"). Sutro shall use Commercially Reasonable Efforts to accept such purchase orders (and shall accept such purchase orders placed consistent with an agreed-upon Work Order) and manufacture and supply to SutroVax such Other Extracts. For the purpose of calculating the Price for Other Extracts in accordance with this Section, the Price will be the cost of materials and Sutro's labor at an FTE rate of [***] per year for Sutro laboratory scientists. Upon Sutro's acceptance of a purchase order for Other Extract, such Other Extract in such purchase order shall be deemed Extract for purposes of Sections 2.1, 2.2, 2.3, 2.4.1 (solely with respect to the last two sentences thereof), 2.5, 2.6, 2.7, 2.8, 2.9.1 , 3.1, 4, 5, 6, 7 and 9.

**2.17 Manufacture of Custom Reagents.** For clarity, SutroVax may Manufacture Custom Reagents itself or obtain supply thereof through a Third Party independent of this Supply Agreement and nothing in this Supply Agreement is intended to restrict SutroVax from doing so. Upon SutroVax's request, and subject to the remainder of the terms of this Section 2.17, Sutro shall (a) transfer to SutroVax or a contract manufacturer designated by SutroVax (which contract manufacturer is reasonably acceptable to Sutro, the approval of which shall not be unreasonably withheld, conditions or delayed by Sutro) as soon as reasonably practicable the process to Manufacture each Custom Reagent and the items of Sutro Know-How reasonably necessary for SutroVax or its designee to Manufacture each Custom Reagent, including cell lines, standard operating procedures, protocols, batch records, analytical method standard operating procedures and analytical method transfer protocols and (b) make Sutro Personnel reasonably available to SutroVax or its designee for scientific and technical explanations and on-site support that may reasonably be requested by SutroVax or its designee to Manufacture the Custom Reagents; provided however, that SutroVax shall fully reimburse Sutro for all documented time spent by Sutro's personnel to perform such transfer (on an FTE basis, each such FTE charged at an annual rate of [***]) and out-of-pocket costs incurred by Sutro in connection with all of the activities under the preceding sub-clauses (a) and (b), in accordance with a budget reasonably approved in advance by SutroVax. Upon such SutroVax request, Sutro and SutroVax shall, within [***] days, agree on a scope of work for such transfer, including

scale, timeline, estimated budget, and required materials; both parties shall use reasonable efforts to complete the transfer as soon as reasonably practical. If requested by SutroVax (including if such request is prior to agreement on a scope of work), Sutro shall promptly transfer to SutroVax or its designee the cell lines, manufacturing instructions and analytical methods used for Manufacture of each Custom Reagent. For clarity, SutroVax shall have the right to enter into an agreement directly with such designee for the Manufacture and supply of Custom Reagents directly to SutroVax, its Affiliates, and any SutroVax CMO and, upon SutroVax's request, to the extent necessary, Sutro shall authorize such designee to enter into such agreement with SutroVax and perform such activities. For further clarity, Sutro shall not be responsible for any damages resulting from delay or failure in establishing the processes for Manufacture of Custom Reagents at SutroVax's designee resulting from action or inaction on the part of the designee or to the extent beyond Sutro's control. SutroVax shall have the right to obtain from such designee such items of Sutro Know-How transferred to such designee and use such items in connection with the exercise of its rights pursuant to the License Agreement, including for the Manufacture of Custom Reagents and the management of such designee. SutroVax shall use such Sutro Know-How transferred under this Section 2.17 (to the extent it is Discloser's Information of Sutro and does not meet one or more the criteria in clause (a) through (e) of Section 10.1 of the License Agreement) only for the Manufacture of Custom Reagents or otherwise within the scope of rights and licenses granted SutroVax in the License Agreement. In case of such a transfer to SutroVax or its designee, SutroVax will share with Sutro (i) the proposed process for manufacture of Custom Reagents through a Third Party so that Sutro may provide feedback and ensure that the process and Specifications are consistent with Sutro's process, and (ii) all regulatory submissions (including DMFs with respect to Custom Reagents) at least [***] days in advance of their intended date of submission to a Regulatory Authority in the Territory, and shall take into account Sutro's feedback to ensure alignment with Sutro's regulatory submissions and Regulatory Approvals with respect to Custom Reagents. Following completion of the transfer set forth above, Sutro shall provide reasonable support for the use of Third Party Custom Reagents in conjunction with Extract supplied by or on behalf of Sutro. In addition, Extract supplied by Sutro that conforms to the Required Standards when tested with Custom Reagents supplied by Sutro but not with Custom Reagents manufactured under this Section shall be deemed to conform to the Required Standards and SutroVax may not reject such Extract as a result of such non-conformance to the Required Standards when tested with Custom Reagents. SutroVax shall not prevent Sutro from separately contracting with the contract manufacturer for Manufacture of Custom Reagents for use on its own behalf or on behalf of other third parties.

**2.18 Sutro Core Know-How.** Notwithstanding anything to the contrary, except as set forth in Section 15.3 of the License Agreement, in no event shall SutroVax, its Affiliates or Sublicensees have the right to access any Sutro Core Know-How (as defined in the License Agreement), whether directly from Sutro or its Affiliates or through a CMO or otherwise, and SutroVax, its Affiliates and Sublicensees shall not require, request or solicit any CMO to deliver any Sutro Core Know-How to SutroVax, its Affiliates and/or its Sublicensees, and no agreement between any CMO and Sutro, its Affiliates and Subsidiaries shall contain any provision granting to SutroVax or its Affiliates or Sublicensees any right to obtain or use any Sutro Core Know-How. Without limiting the foregoing, in the event any item of Sutro Core Know-How is delivered to SutroVax, its Affiliates and/or its Sublicensees (except as set forth in Section 15.3 of the License Agreement), SutroVax, its Affiliates and Sublicensees shall immediately return such item to Sutro. Notwithstanding the foregoing, to the extent SutroVax or any of its Affiliates

or Sublicensees is required by a Regulatory Authority (or Applicable Law) in the United States, Europe or Japan to confidentially disclose, as part of the applicable regulatory filings with respect to a Vaccine Composition, any Sutro Core Know-How (for clarity, excluding any tangible embodiments of such Sutro Core Know-How other than information and documentation), Sutro shall, upon SutroVax's written request, confidentially disclose such Sutro Core Know-How as part of the applicable regulatory filings, subject to the payment obligations set forth in Section 5.4 of the License Agreement.

**2.19 Express Rights.** Except as expressly set forth in this Supply Agreement, no rights or licenses are granted to SutroVax under this Supply Agreement.

**2.20 Extract Requirements.** SutroVax agrees to purchase all its requirements of Extract from Sutro in accordance with this Agreement, except to the extent SutroVax is allowed to purchase Extract from (a) Alternate Suppliers engaged by Sutro in accordance with Section 2.15 of this Agreement; (b) a CMO engaged or established and authorized by Sutro under Section 3.l(d) of the License Agreement; or (c) a CMO authorized by Sutro under Section 3.l(e) of the License Agreement. Manufacturing of Extracts in breach of this Section 2.20 shall be deemed a material breach of this Agreement and the License Agreement by SutroVax.

## ARTICLE 3
## PRICING AND PAYMENT

**3.1 Invoices.** Sutro shall invoice SutroVax at the time of each shipment of Product(s) for the Price for such shipment. SutroVax will pay such invoices within [***] days of receipt of invoice (including all required documentation) by SutroVax.

**3.2 Prices.** The Prices for the Products shall not exceed [***] of the Fully Burdened Manufacturing Costs of such Product at the time such Product is manufactured and shall be set forth in the applicable Work Order. Upon SutroVax's request from time-to-time, Sutro shall disclose to SutroVax the then-current Price for Product. The Price for the Products as of the Effective Date is set forth in Schedule 1.

**3.3 Recordkeeping.** During the Term and for [***] years thereafter, or for such longer period as may be required by Applicable Law, Sutro shall prepare and retain, and shall cause its subcontractors to prepare and retain, accurate books and records related to transactions made pursuant to this Supply Agreement and Prices. Such records shall be made available for reasonable review, audit and inspection upon reasonable notice and with reasonable frequency, upon SutroVax's request for the purpose of verifying Sutro's calculations of amounts due hereunder, the basis for such calculations (including Sutro's calculation of the Fully Burdened Manufacturing Costs) or payments and Sutro's compliance with the terms and conditions of this Supply Agreement. Audits and inspections may be conducted by SutroVax's own personnel or retained consultant(s), subject to the confidentiality obligations set forth in this Supply Agreement.

**3.4 Taxes.** The Prices are exclusive of all Taxes. SutroVax will pay all taxes and duties that are assessed by any national, federal, state or local governmental authority on SutroVax's purchase or use of the Products, including, without limitation, sales, use, excise, value-added and withholding taxes, but excluding any taxes based on Sutro's income or gross receipts (collectively, "**Taxes**"). Sutro will separately identify all such Taxes on Sutro's invoice.

## ARTICLE 4
## PRODUCT TESTING

**4.1 Product Testing and Inspections.** Each shipment of Product shall be accompanied by a certificate of analysis describing all current requirements of the Specifications and results of tests performed on such Product and a certificate of conformity certifying that the quantities of Product supplied have been Manufactured, controlled and released according to the Required Standards ("**COA/COC**") as set forth in the applicable Quality Agreement (subject to SutroVax's conduct of the SutroVax Activity Test to confirm Extract meets the SutroVax Activity Criteria). The COA/COC acceptance criteria for each Product shall be set forth in the Specification for such Product. Two of the tests and corresponding COA/COC acceptance criteria for the Extract shall be the performance of a productivity (Activity) test of the applicable Sutro protein (the "**Sutro Activity Test**" and "**Sutro Activity Criteria**") and the performance of a productivity (activity) test of the applicable Vaccine Composition (the "**SutroVax Activity Test**" and "**SutroVax Activity Criteria**"). Sutro shall perform the Sutro Activity Test to confirm that all shipments of Extract meet the Sutro Activity Criteria and SutroVax (or its designee) shall perform the SutroVax Activity Test to confirm that all shipments of Extract meet the SutroVax Activity Criteria. Sutro will also provide SutroVax with Material Safety Data Sheets ("**MSDS**") or an equivalent instrument recognized by the applicable Regulatory Authority as required for the Product(s), and updates of the same as necessary.

**4.2 Acceptance/Rejection of Non-Conforming Goods.** SutroVax or its designee shall have a period of [***] calendar days from the date of delivery of the Product(s) in accordance with Section 2.6 and the COA/COCs or the equivalent instrument recognized by the applicable Regulatory Authority for such Product(s) ("**Acceptance Period**"), to inspect any shipment of Product(s) and conduct the SutroVax Activity Test to determine whether such shipment conforms to the Required Standards. If SutroVax determines that the Product(s) do not conform to the Required Standards, it hall notify Sutro within the Acceptance Period, and, if requested by Sutro, SutroVax shall ship a sample of such non-conforming Product(s) to Sutro at Sutro's expense. SutroVax's failure to notify Sutro of the non-conformity within the Acceptance Period will be deemed for purposes of this Supply Agreement to constitute SutroVax's acceptance of such shipment, provided, however, that such acceptance shall be subject to SutroVax's right to reject Product(s) until [***] days from the delivery date of the applicable Product, in each case, due to discovery by SutroVax or SutroVax's Affiliates or designees that the applicable Product does not conform to the Required Standards and such non-conformance could not reasonably be discovered within the Acceptance Period ("**Latent Defects**") provided that SutroVax gives Sutro with written notice of such Latent Defect within [***] days of SutroVax or any SutroVax Affiliate or designee becoming aware of such defect.

**4.3 Disputes Regarding Conformance to Required Standards.** If Sutro does not agree with SutroVax's determination that Product fails to conform to the Required Standards, then Sutro shall so notify SutroVax in writing within [***] days of its receipt of SutroVax's notice of non-conformity with respect to such Product and (if requested) Product sample. Sutro and SutroVax shall use reasonable efforts to resolve such disagreement as promptly as possible.

Without limiting the foregoing, Sutro and SutroVax shall discuss in good faith mutually acceptable testing procedures pursuant to which both Sutro and SutroVax will re-test a sample of the disputed Product to determine whether such Product meets the Required Standards. Notwithstanding the foregoing, in the event that Sutro and SutroVax are unable to resolve such disagreement within [***] days of the date of the applicable rejection notice, either Party may submit a sample of the allegedly non-conforming Product for testing and a determination as to whether or not such Product conforms to the Required Standards to an independent testing organization, or to a consultant of recognized repute within the United States pharmaceutical industry, in either case mutually agreed upon by the Parties (such organization or consultant, the "**Laboratory**"), the appointment of which shall not be unreasonably withheld or delayed by either Party. The determination of the Laboratory with respect to all or part of any shipment of Product shall be final and binding upon the Parties. The fees and expenses of the Laboratory making such determination shall be borne by Sutro, in the event that the Laboratory determines that the Product was non-conforming and by SutroVax, in the event that the Laboratory determines that the Product did conform to the Required Standards.

**4.4 Return and Replacement of Non-Conforming Goods.** Product that is either rejected by SutroVax as not meeting the Required Standards, or that is determined by the Laboratory not to meet such Required Standards, shall, [***], be returned by SutroVax to Sutro, or destroyed pursuant to Applicable Law, at Sutro's reasonable expense. Sutro shall replace any non-conforming Product(s) within the shortest possible time. SutroVax shall have no responsibility to Sutro for the amounts invoiced for non-conforming Product(s), and shall be credited for any amounts paid, but shall pay Sutro the applicable Price for the replacement Product(s) under the terms of Section 3.1.

## ARTICLE 5
## INSPECTION

**5.1 Right to Audit.** During the Term and the [***] period thereafter, SutroVax or a SutroVax Affiliate may, during normal working hours and upon reasonable advance notice perform site audits and inspect, or request information relating to, Sutro's or its subcontractor's Facilities and records directly or indirectly involved in the performance of this Supply Agreement or related to the Product(s). Such requests should be made in writing and Sutro will allow for such audits or inspection to occur within [***] days from request (excepting for cause audits) for Sutro's Facilities and within [***] days' from request (excepting for cause audits) for Sutro's subcontractor's facilities. Reasonable advance notice for audits for cause shall not require more than [***] advance notice. During such an inspection or request for information the inspectors may inquire about the progress of the work being carried out by Sutro or its subcontractor, and are in particular but not exclusively authorized to:

5.1.1 Inspect the Facilities, documents and equipment used, or to be used, in the Manufacture of the Product(s);

5.1.2 Verify the qualifications of the employees and subcontractors carrying out such work and their use of the relevant equipment;

5.1.3 Evaluate all scientific techniques used by Sutro, its subcontractors and their respective employees in the performance of this Supply Agreement and the procedures used in the creation and storage of samples of the Product(s), provided that nothing in this Section 5.1.3 shall require Sutroto disclose any Sutro Core Know-How;

5.1.4 Verify and evaluate information relating to the utilization of the Manufacturing capacity of Sutro's Facilities or its subcontractor's Facilities;

5.1.5 Review correspondence, reports, filings and other documents from Regulatory Authorities to the extent related to the Manufacturing activities hereunder;

5.1.6 Evaluate the implementation of all Manufacturing and process changes made with respect to the Product, including pursuant to any corrective action plan; and

5.1.7 Ascertain compliance with Applicable Laws, the Specifications and this Supply Agreement.

**5.2 Access.** Sutro shall provide SutroVax's and its Affiliate's and Sublicensee's inspectors with access to its Facilities, and information related to such Facilities, in order that the inspectors may carry out the inspections or inquiries referred to in the provisions of this Article 5. For the avoidance of doubt, neither SutroVax nor any of its Affiliates or Sublicensees (or their respective inspectors) shall have the right to observe the Manufacture of the Extract or be present at Sutro and its subcontractors' Facilities at such times when Extract is being Manufactured. Sutro shall use Commercially Reasonable Efforts to obtain from its subcontractors commitments similar to those contemplated in this Section 5.2. Audits and inspections may be conducted by SutroVax's own personnel or retained consultant(s), subject to the confidentiality obligations set forth in this Supply Agreement.

**5.3 Sutro Audits.** Without limiting the foregoing; Sutro is responsible for auditing the facilities of the suppliers of Components, if any, periodically, and Sutro agrees to provide SutroVax, upon SutroVax's request with a current copy of the audit report of such facilities and to incorporate SutroVax's comments with respect to any corrective action plan related to the Product.

## ARTICLE 6
## REGULATORY AND QUALITY RESPONSIBILITIES

**6.1 Regulatory Responsibilities.** Sutro shall obtain and maintain any and all regulatory and governmental permits, licenses and approvals that are necessary for Sutro to Manufacture the Product(s) for SutroVax or its Affiliates in accordance with the terms of this Supply Agreement and Applicable Law. As between the Parties, SutroVax shall have the sole responsibility for all Regulatory Approvals of the Vaccine Compositions.

**6.2 Right of Reference; Drug Master Files.** Sutro shall (a) file Drug Master File(s) for the Products with the FDA as requested by SutroVax, and with Regulatory Authorities in the European Union (including the United Kingdom) and Japan in accordance with timelines to be mutually agreed upon (such agreement not to be unreasonably withheld by either Party) (provided at SutroVax's request, Sutro shall do so within [***] of SutroVax's request using

Regulatory Filings that comprise versions of the DMF(s) filed with the FDA that have been reformatted to comply with EU and Japanese requirements), and (b) provide the appropriate authorizations to such Regulatory Authority(ies) allowing the Regulatory Authority the right to review and SutroVax or its designee to reference such Drug Master File(s) in support of (and other Regulatory Materials, to the extent necessary to support) an application for Regulatory Approval submitted by SutroVax (or its permitted designee) for any Vaccine Composition produced using the Product the subject of the applicable Drug Master File (it being understood that SutroVax, its Affiliates· and Sublicensees shall not have access to the information contained in such Drug Master Files (or other confidential Regulatory Materials submitted for a similar purpose as a Drug Master File (e.g., a clinical trial application for such purpose in the European Union)) as a result of such authorization and right to reference). Sutro shall file such Drug Master File in coordination with SutroVax's efforts to file and prosecute the applicable regulatory filings to such Regulatory Authority and Sutro shall be responsible, at SutroVax's sole expense (subject to a budget reasonably approved in advance by SutroVax), for providing the applicable Regulatory Authorities with such additional data as they may request (which may in some cases require Sutro to conduct additional studies), and for correcting any deficiencies of such Drug Master File identified by such Regulatory Authority, in each case in a reasonably prompt and efficient manner so as to prevent any delay in obtaining Regulatory Approvals for any Vaccine Composition based on such Drug Master File. In addition, Sutro shall be responsible for maintaining such Drug Master File in accordance with applicable Laws as necessary to support filing and prosecuting the applicable regulatory filing(s) and obtaining and maintaining the applicable Regulatory Approval(s) for Vaccine Compositions produced using the Products. For further clarity, to the extent Sutro discloses. Sutro Know-How to SutroVax, SutroVax shall have the right to include (and authorize the inclusion of) such Sutro Know-How in Regulatory Materials to the extent it is necessary or useful for the purpose of obtaining Regulatory Approval of a Vaccine Composition. Sutro's obligations under this Section 6.2 shall [***]. Sutro shall cause its personnel to record time spent performing such activities to a job code specific to such activities. For purposes of this Article 6 "**Drug Master File**" or "**DMF**" means a submission to a Regulatory Authority of information concerning the chemistry, manufacturing and controls ("**CMC**") of the Products to permit such Regulatory Authority to review this information in support of any application for Regulatory Approval for a product submitted by a party that has been granted a right to reference such submission without disclosing the contents of such submission to such party. Sutro shall file DMF(s) for the Products with other Regulatory Authorities in the Territory in accordance with the terms and conditions of the Phase 3/Commercial Supply Agreement referenced in Section 2.14 (and, for clarity, shall file DMF(s) for the Products with Regulatory Authorities in the European Union (including the United Kingdom) and Japan as necessary to comply with the requirements of such Regulatory Authorities, to the extent not filed under this Supply Agreement).

6.2.1 Compliance. Subject to the foregoing, Sutro shall provide the information set forth under this Section 6.2 in a timely manner and compliant with the reporting requirements of the Regulatory Authorities.

6.2.2 Safety Data. Each Party understands and acknowledges that the other Party and its Affiliates and respective licensees or sublicensees may need to access and utilize and include certain safety data (*e.g.*, adverse event reports) pertaining to product made using Products that is generated or received by such Party and its Affiliates and respective licensees or sublicensees in its Regulatory Materials in its respective Territory as required by applicable Laws. Each Party shall have the right to share any and all such safety data generated by the other Party or the other Party's Affiliates or licensees or sublicensees with its Affiliates and Third Parties (including its licensees and sublicensees) as permitted under section 10.2 of the License Agreement.

6.2.3 Cooperation. Each Party agrees to (i) make its personnel reasonably available at their respective places of employment to consult with the other Party on issues related to the activities conducted in accordance with this Article 6 or otherwise relating to the development of the Products or Vaccine Compositions and thereafter in connection with any request from any Regulatory Authority, including with respect to regulatory, scientific, technical and clinical testing issues, or otherwise, throughout the Term, and (ii) otherwise provide such assistance as may be reasonably requested by the other from time-to-time in connection with the activities to be conducted under this Article 6 or otherwise relating to the development of the Vaccine Compositions or Products.

**6.3 Recalls.** Each of SutroVax and Sutro will immediately inform the other in writing if it believes one or more lots of any Product(s), or any products made by Sutro or its licensees using the Products (to the extent such products are made using Products from the same batch provided to SutroVax), or any Vaccine Compositions should be subject to recall from distribution, withdrawal or some other field action, or that potential adulteration, misbranding, and/or other issues have arisen that relate to the safety or efficacy of such Product. SutroVax shall have the final decision-making authority as to any such recall or field action and the sole right to initiate any such recall or field action with respect to Vaccine Compositions made using the Products. Sutro shall cooperate in the conduct of any recall or field action with respect to the Vaccine Compositions as reasonably requested by SutroVax. In the event it is determined that such a recall resulted from a breach by either Party of any of its representations, warranties, duties or obligations under this Supply Agreement, such Party shall be responsible for the costs of the recall and shall reimburse the other Party as necessary; provided that if both Parties share responsibility with respect to such recall, the costs shall be shared in the ratio of the Parties' contributory responsibility.

**6.4 Retention of Samples.** Sutro shall prepare and retain, and shall cause its subcontractors to prepare and retain, such samples and records in respect of the Product(s) and the Manufacture thereof as are required by Applicable Law (including, as applicable, cGMPs).

**6.5 Regulatory Authority Inspections and Correspondence.** Sutro shall permit Regulatory Authorities to conduct such inspections of any Facility at which any of the Manufacturing activities relating to the Product(s) are performed, as such Regulatory Authorities may request, including pre-approval inspections,· and shall cooperate with such Regulatory Authorities with respect to such inspections and any related matters, in each case that is related to the Manufacture of Product(s). Sutro shall give SutroVax or its Affiliates prior written notice of any such inspections, and shall keep SutroVax informed about the results and conclusions of each such regulatory inspection, including actions taken by Sutro to remedy conditions cited in such inspections. Sutro shall provide SutroVax with copies of any written inspection reports issued by anyRegulatory Authority and all correspondence between Sutro and any Regulatory Authority with respect thereto, including any notices of observation and all related

correspondence, in each case relating to the Product(s) or its Manufacture or to general manufacturing concerns (e.g., facility compliance or the like) that are reasonably likely to impact the Product(s) to the extent such general manufacturing matters would be reasonably expected to have a material effect on the manufacture of Vaccine Compositions; provided that Sutro may redact from any such report and correspondence any Sutro Core Know-How and any information subject to an obligation of confidentiality to a Third Party. In addition, Sutro agrees to promptly notify and provide SutroVax copies of any material request, directive, or other written communication to or from Regulatory Authorities related to the Product or its Manufacture that would reasonably be expected to have a material effect on the manufacture of Vaccine Compositions (it being understood that SutroVax, its Affiliates and Sublicensees shall not have access to Sutro Core Know How (which Sutro may redact from such reports or correspondence provided to SutroVax) or Sutro's Drug Master Files or other confidential Regulatory Materials submitted for a similar purpose as a Drug Master File). Sutro shall provide SutroVax with a copy of the applicable portion of any correspondence made by Sutro to a Regulatory Authority for review and comment prior to submission to the applicable Regulatory Authority solely to the extent such correspondence made by Sutro is related to SutroVax or is in response to a request, directive or correspondence from the applicable Regulatory Authority regarding SutroVax or a Vaccine Composition (e.g., in response to a report regarding a pre-approval inspection for SutroVax). Sutro will consider in good faith any comments received from SutroVax within the time period indicated by Sutro (which shall not be less than [***], to the extent consistent with the require timeline for Sutro's response) with respect to any matter that relates to SutroVax. In addition, Sutro shall notify SutroVax of any occurrences or information that arise out of Sutro's Manufacturing activities that have, or could reasonably be expected to have, adverse regulatory compliance or reporting consequences concerning any Product(s) or which might otherwise be reasonably expected to adversely affect the supply by Sutro of Product(s) to SutroVax.

**6.6 Changes or Modifications in Manufacturing Activities.** Sutro shall not make any changes to the Specifications, processes, Facilities, raw materials, raw material suppliers or any other item that would affect the Manufacturing activities related to the Product (a "**Manufacturing Change**") that (a) would require a change to the applicable Drug Master File, (b) would be reasonably expected to cause SutroVax to be materially delayed obtaining any Regulatory Approval with respect to Vaccine Compositions or (c) causes the Product to not meet the Specification therefor (including the Activity Test with respect to Extract); without SutroVax's prior written consent (not to be unreasonably withheld, conditioned or delated). Notwithstanding the foregoing, Sutro shall promptly make and implement such changes as are required by Applicable Law provided that, prior to implementation, Sutro shall provide notice thereof to SutroVax and confer with SutroVax with respect to its timelines, estimated effect on Price and other issues regarding such implementation. Sutro shall provide SutroVax at least [***] days' written notice prior to implementing any Manufacturing Change. Sutro shall not make any change to the Specification for a Product without SutroVax's prior written consent. In addition, SutroVax shall have the right to request changes in or modifications to the Specifications and Sutro will consider in good faith any such requested changes or modifications. All such changes or modifications shall be documented in writing and shall be signed by an authorized representative of SutroVax and Sutro. If such changes or modifications result in a material change in Sutro's Manufacturing costs or lead times, the Parties shall agree upon an appropriate adjustment to the Price or in the delivery schedules, as the case may be, for Product(s) to be provided by Sutro hereunder. Sutro shall promptly implement any agreed upon changes to the Specifications.

**6.7 Quality Agreement.** As soon as reasonably practicable after the Effective Date, the Parties shall enter into a quality agreement governing Sutro's supply of Products (the "**Quality Agreement**"), which Quality Agreement shall include the Specifications for the Product(s) consistent with the Specifications set forth in Schedule 2. Accordingly, to permit the Quality Agreement to be finalized within such period, Sutro shall provide SutroVax or its designee access to Sutro's Facilities and records to enable SutroVax or its designee to complete an audit pursuant to Section 5.1 within [***] days after the Effective Date.

## ARTICLE 7
## REPRESENTATION AND WARRANTIES

**7.1 SutroVax Warranties and Representations.** SutroVax represents and warrants the following:

7.1.1 SutroVax is a corporation duly organized, validly existing and in good standing under the laws of the State of Delaware.

7.1.2 SutroVax has all requisite power and authority to enter into this Supply Agreement. The person signing this Supply Agreement has the necessary corporate authority to legally bind SutroVax to the terms set forth herein.

7.1.3 SutroVax's execution of this Supply Agreement and performance of the terms set forth herein will not cause SutroVax to be in conflict with or constitute a breach of its organizational documents nor any other agreement, court order, consent decree or other arrangement, whether written or oral, by which it is bound.

7.1.4 SutroVax's execution of this Supply Agreement and performance hereunder are in, and will be in, compliance with any Applicable Law in all material respects.

7.1.5 This Supply Agreement is its legal, valid and binding obligation, enforceable against SutroVax in accordance with the terms and conditions hereof, except as such enforceability may be limited by applicable bankruptcy, insolvency, reorganization, moratorium or similar laws affecting creditors' rights generally or by the principles governing the availability of equitable remedies.

**7.2 Sutro Warranties and Representations.** Sutro represents and warrants the following:

7.2.1 Sutro is a corporation duly organized, validly existing and in good standing under the laws of the State of Delaware.

7.2.2 Sutro has all requisite power and authority to enter into this Supply Agreement and has the requisite skill, knowledge, staffing, financial resources, capacity and ability to carry out its obligations hereunder. The person signing this Supply Agreement has the necessary authority to legally bind Sutro to the terms set forth herein.

7.2.3 Sutro's execution of this Supply Agreement and performance of the terms set forth herein will not cause Sutro to be in conflict with or constitute a breach of its organizational documents nor any other agreement, court order, consent decree or other arrangement, whether written or oral, by which it is bound.

7.2.4 Sutro's execution of this Supply Agreement and performance hereunder are in, and will be in, compliance with any Applicable Law in all material respects.

7.2.5 Sutro has and will maintain throughout the Term all permits, licenses, registrations and other forms of governmental authorization. and approval as required by Applicable Law in order for Sutro to execute and deliver this Supply Agreement and to perform its obligations hereunder in accordance with all Applicable Law.

7.2.6 as of the Effective Date, to the best of Sutro's knowledge, the practice of the Sutro Platform, including the use of the Products, does not infringe any Third Party patents.

7.2.7 7.2.7 Sutro is not debarred and Sutro has not and will not use in any capacity the services of any person debarred under subsection 306(a) or (b) of the U.S. Generic Drug Enforcement Act of 1992, or other Applicable Law, nor have debarment proceedings against Sutro or any of its employees or permitted subcontractors been commenced.

7.2.8 This Supply Agreement is its legal, valid and binding obligation, enforceable against Sutro in accordance with the terms and conditions hereof, except as such enforceability may be limited by applicable bankruptcy, insolvency, reorganization, moratorium or similar laws affecting creditors' rights generally or by the principles governing the availability of equitable remedies.

7.2.9 As of the Effective Date, there are no claims, judgments or settlements against or owed by Sutro or its Affiliates, or pending or, to the best of Sutro's knowledge, threatened claims or litigation, relating to the Product(s).

**7.3 Product Warranties.** Sutro represents and warrants that:

7.3.1 Sutro's Facility and all Product (as delivered in accordance with Section 2.1 and until the expiration date thereof) supplied hereunder (and the Manufacture thereof) shall comply with this Supply Agreement, all Applicable Law (including cGMPs, if applicable),·be free from defects in material and workmanship, and meet all Specifications.

7.3.2 Title to all Product(s) provided under this Supply Agreement shall pass to SutroVax as set forth in Section 2.6, free and clear of any security interest, lien, or other encumbrance.

**7.4 Disclaimer.** EACH PARTY AGREES AND ACKNOWLEDGES THAT, EXCEPT AS SET FORTH IN THIS ARTICLE 7, NEITHER PARTY MAKES ANY REPRESENTATIONS OR WARRANTIES OF ANY KIND WHATSOEVER, IMPLIED OR STATUTORY, AND EACH PARTY HEREBY EXPRESSLY DISCLAIMS ALL REPRESENTATIONS AND WARRANTIES, IMPLIED OR STATUTORY, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AGAINST NON-INFRINGEMENT OR THE LIKE, OR ARISING FROM COURSE OF PERFORMANCE.

## ARTICLE 8
## CONFIDENTIALITY

**8.1** Article 10 of the License Agreement (Confidentiality) is hereby incorporated into this Supply Agreement by reference. The terms and provisions of this Supply Agreement (which shall be the Discloser's Information of both Parties) and all other information and data, including all notes, books, papers, diagrams, documents, reports, e-mail, memoranda, visual observations, oral communications and all other data or information in whatever form, that one Party or any of its Affiliates or representatives supplies or otherwise makes available to the other Party or its Affiliates or representatives pursuant to this Supply Agreement shall be deemed Discloser's Information pursuant to Article 10 of the License Agreement.

## ARTICLE 9
## INDEMNIFICATION AND INSURANCE

**9.1 Indemnification.**

9.1.1 Indemnification by Sutro. Sutro hereby agrees, at its sole cost and expense, to defend, hold harmless and indemnify, to the extent permitted by Applicable Law, (collectively, "**Indemnify**") SutroVax and its Affiliates and their respective agents, directors, officers and employees of such Persons and the respective successors and assigns of any of the foregoing (the "**SutroVax Indemnitees**") from and against any and all liabilities, damages, penalties, fines, costs and expenses (including, reasonable attorneys' fees and other expenses of litigation) (collectively, "**Liabilities**") resulting from suits, claims, actions and demands, in each case brought by a Third Party (each, a "**Third-Party Claim**") against any SutroVax Indemnitee and arising from or occurring as a result of: [***]. Sutro's obligation to Indemnify the SutroVax Indemnitees pursuant to this Section 9.1.1 shall not apply to the extent that any such Liabilities are the result of a material breach by SutroVax of its obligations, representations, warranties or covenants under this Supply Agreement or the License Agreement or any SutroVax Indemnitee' s negligence or willful misconduct.

9.1.2 Indemnification by SutroVax. SutroVax hereby agrees to Indemnify Sutro and its agents, directors, officers and employees and the respective successors and assigns of any of the foregoing (the "**Sutro lndemnitees**") from and against any and all Liabilities resulting from Third-Party Claims against any Sutro Indemnitee arising from or occurring as a result of: [***]. SutroVax's obligation to Indemnify the Sutro Indemnitees pursuant to this Section 9.1.2 shall not apply to the extent that any such Liabilities are the result of a material breach by Sutro of its obligations, representations, warranties or covenants under this Supply Agreement or the License Agreement or any Sutro Indemnitee's negligence or willful misconduct.

9.1.3 Procedure. To be eligible to be Indemnified hereunder, the indemnified Person shall provide the indemnifying Party with prompt written notice of the Third-Party Claim giving rise to the indemnification obligation pursuant to this Section 9.1 and the right to control the defense (with the reasonable cooperation of the indemnified Person) or settlement any such claim; provided, however, that the indemnifying Party shall not enter into any settlement that admits fault, wrongdoing or damages without the indemnified Person's written consent, such consent not to be unreasonably withheld or delayed. The indemnified Person shall have the right to join, but not to control, at its own expense and with counsel of its choice, the defense of any claim or suit that has been assumed by the indemnifying Party.

**9.2 Insurance.** Each Party shall procure and maintain insurance, including clinical trials and product liability insurance, adequate to cover its obligations hereunder and consistent with normal business practices of prudent companies similarly situated at all times during which any Product or Vaccine Compositions is being clinically tested in human subjects or commercially distributed or sold by such Party. It is understood that such insurance shall not be construed to create a limit of either Party's liability or indemnification obligations under this Article 9, or that the maintenance of such insurance shall not be construed to relieve either Party of its other obligations under this Supply Agreement. Each Party shall provide the other with written evidence of such insurance upon request. Each Party shall provide the other with written notice at least [***] days prior to the cancellation, non renewal or material change in such insurance.

**9.3 LIMITATION OF LIABILITY.** EXCEPT (I) WITH RESPECT TO ANY BREACH OF ARTICLE 8 (CONFIDENTIALITY), (II) FOR THIRD PARTY PENALTIES, COSTS AND EXPENSES AS SET FORTH IN SECTION 2.9, OR (III) FOR [***], TO THE MAXIMUM EXTENT PERMITTED BY LAW, (A) NEITHER PARTY SHALL BE LIABLE TO THE OTHER PARTY FOR ANY INDIRECT, INCIDENTAL, CONSEQUENTIAL, SPECIAL OR PUNITIVE DAMAGES, WHETHER LIABILITY IS ASSERTED IN CONTRACT, TORT (INCLUDING NEGLIGENCE), STRICT LIABILITY, OR ANY OTHER THEORY OR FORM OF ACTION, EVEN IF SUCH PARTY HAS BEEN ADVISED OF THE POSSIBILITY THEREOF; AND (B) EACH PARTY'S TOTAL LIABILITY TO THE OTHER PARTY UNDER THIS SUPPLY AGREEMENT SHALL NOT EXCEED [***]. SUTRO'S LIABITY TO SUTROVAX FOR THIRD PARTY PENALTIES, COSTS AND EXPENSES UNDER SECTION 2.9 SHALL NOT EXCEED [***].

## ARTICLE 10
## TERM AND TERMINATION

**10.1 Term.** The term of this Supply Agreement shall begin on the Effective Date first set forth above and shall remain in effect until the later of (a) July 31, 2021 or (b) the date that the Parties enter into the Phase 3/Commercial Supply Agreement and Sutro is supplying to SutroVax each Product under the Phase 3/Commercial Supply Agreement (the "**Term**"), unless it is terminated earlier in accordance with Section 10.2.

**10.2 Termination.** Notwithstanding anything to the contrary in this Supply Agreement, this Supply Agreement may be terminated:

10.2.1 in its entirety or with respect to one or more Products, on a Product-by-Product basis, by mutual written consent of Sutro and SutroVax;

10.2.2 in its entirety by a Party if the other Party materially breaches any of the material terms, conditions or agreements contained in this Supply Agreement to be kept, observed or performed by the other Party, by giving the Party who committed the breach [***] days' prior written notice, unless the notified Party shall have cured the breach within such [***]-day period; and

10.2.3 in its entirety or with respect to one or more Products, on a Product-by-Product basis, by SutroVax upon [***] days' prior written notice to Sutro for any reason.

**10.3 Effects of Termination.** Upon the expiration of the Term or termination of this Supply Agreement, in its entirety or with respect to one or more Products, this Supply Agreement shall, except as otherwise provided in this Section 10.3 or Section 10.5, be of no further force or effect; provided, however, that (a) in the event this Supply Agreement is terminated by SutroVax pursuant to Section 10.2.3 and there are outstanding Work Orders or other purchase orders accepted by Sutro that would not be fulfilled as a result of such termination, SutroVax shall reimburse Sutro for all supplies and materials purchased by Sutro and time incurred by Sutro personnel (to the extent incurred solely for manufacture of Product for SutroVax) for the manufacture, or preparation for the manufacture, of Products for any Work Orders placed by SutroVax and any other purchase orders accepted by Sutro prior to such expiration or termination, in each case to the extent Sutro cannot otherwise reasonably mitigate such the costs and expenses of such supplies, materials and time (e.g., by use of resulting supplies, materials and work-in-progress Product for other purposes); provided that to the extent SutroVax pays for any supplies or materials, upon SutroVax's request Sutro shall promptly transfer and deliver such supplies and materials to SutroVax; and (b) if this Supply Agreement is terminated with respect to one or more Products, but not all Products, then this Supply Agreement shall continue in full force and effect with respect to the applicable Product(s) for which it is not terminated.

**10.4 Nonexclusive Remedy.** Exercise of any right of termination afforded to either Party under this Supply Agreement (i) shall not prejudice any other legal rights or remedies either Party have against the other in respect of any breach of the terms and conditions of this Supply Agreement, and (ii) shall be without any obligation or liability arising from such termination other than such obligations expressly arising from termination of this Supply Agreement.

**10.5 Survival.** Expiration of the Term or termination of this Supply Agreement (for any reason) shall not affect any accrued rights or liabilities of either Party. Article 4 (Product Testing), Article 5 (Inspection), Article 8 (Confidentiality), Article 9 (Indemnification and Insurance), Article 11 (Disputes), Article 12 (Miscellaneous), and Sections 2.2 (Transfer of Product), 2.14 (Phase 3/Commercial Supply Agreement), 2.15 (Qualification of Alternate Supplier), 2.17 (Manufacture of Custom Reagents), 3.3 (Recordkeeping), 3.4 (Taxes), 6.2 (Right of Reference; Drug Master Files), 6.3 (Recalls), 6.4 (Retention of Samples), 6.5 Regulatory Authority Inspections and Correspondence), 7.3 (Product Warranties), 7.4 (Disclaimer), 10.3 (Effects of Termination), 10.4 (Nonexclusive Remedy), and 10.5 (Survival) shall survive any expiration of the Term or termination of this Supply Agreement.

## ARTICLE 11
## DISPUTE RESOLUTION

**11.1 Principal Contacts.** Each Party will appoint an individual employed by it to serve as its "Principal Contact" for purposes of this Supply Agreement. Either Party may from time to time replace its Principal Contact with a different employee, but unless required due to events beyond its control, neither Party will replace its Principal Contact without at least [***] days prior notice to the other Party. The two Principal Contacts shall communicate with each other regularly during the Term as the Parties may agree or as the Principal Contacts shall mutually determine to be useful.

**11.2 Escalation.** The Parties intend that, to the maximum extent practicable, they shall reach decisions hereunder cooperatively through discussions among the Principal Contacts and by mutual consent of the Parties. In situations in which that does not occur, disputes or differences arising out of or in connection with this Supply Agreement shall initially be referred for review by the Parties' respective Senior Managements (as defined below). Such Senior Managements shall discuss the proposed dispute or difference, and shall meet with respect thereto if either of them believes a meeting or meetings are likely to be useful. If the Senior Managements do not resolve the dispute or difference within [***] days (or such lesser or longer period as they may agree is a useful period for their discussions), then either Party may pursue its other available remedies, consistent with this Supply Agreement. As used herein, Sutro's "**Senior Management**" means its then-current CEO, and SutroVax's "**Senior Management**" means its then-current CEO. For clarity, there shall be no obligation for any Disputed Matter arising out of Section 2.14 or 2.15 to be referred to the Senior Management to review prior to such matters being resolved by arbitration pursuant to Sections 11.3 and 11.4.

**11.3 Arbitration.** If the Senior Managements are not able to resolve such dispute referred to them under Section 11.2 within such [***] day period, then such dispute shall be resolved by final and binding arbitration as follows: The Parties shall select a mutually agreeable arbitrator who has significant relevant experience in the subject matter of the disputed issue and no affiliation or pre-existing relationship with either Party. If the Parties cannot agree on an arbitrator within [***] days after the end of the [***] day period referred in Section 11.2 (or with respect to a Disputed Matter described in Section 11.4, after referral by a Party of such Disputed Matter to arbitration), either Party may request the Judicial and Mediation Services ("**JAMS**") in San Francisco, CA to appoint an arbitrator on behalf of the Parties in accordance with the commercial arbitration rules of JAMS, and the proceeding shall be conducted in accordance with JAMS rules. The arbitrator may decide any issue as to whether, or as to the extent to which, any dispute is subject to the arbitration and other dispute resolution provisions in this Supply Agreement. The arbitrator must base the award on the provisions of this Supply Agreement and must render the award in a writing which must include an explanation of the reasons for such award. Judgment upon the award rendered by the arbitrator may be entered by any court having jurisdiction thereof. The arbitrator's fees and expenses shall be shared equally by the Parties, unless the arbitrator in the award assesses such fees and expenses against one of the Parties or allocates such fees and expenses other than equally between the Parties. Each Party shall bear and pay its own expenses incurred in connection with any dispute resolution under this Section 11.3. Notwithstanding the foregoing, either Party shall have the right, without waiving any right or remedy available to such Party under this Supply Agreement or otherwise, to seek and obtain from any court of competent jurisdiction any interim or provisional relief that is necessary or desirable to protect the rights or property of such Party, pending the selection of the arbitrator hereunder or pending the arbitrator's decision of the dispute subject to arbitration.

**11.4 Baseball Arbitration.** In the event (a) the Parties do not enter into a Phase 3/Commercial Supply Agreement as described in Section 2.14 or (b) the Parties do not enter into a Transfer Addendum as described in Section 2.15 ("**Disputed Matter**"), then upon either Party's request with respect to the Disputed Matter in clause (a) or SutroVax's request with respect to the Disputed Matter in clause (b), such Disputed Matter shall be resolved by binding arbitration conducted pursuant to Section 11.3, except that the procedures for the conduct of such arbitration shall be as follows:

11.4.1 Each Party shall provide the arbitrator and the other Party with a written report setting forth its position with respect to the substance of such Disputed Matter and a full draft Phase 3/Commercial Supply Agreement or Transfer Addendum, as applicable, and may submit a revised report, position and draft Phase 3/Commercial Supply Agreement or Transfer Addendum, as applicable, to the arbitrator within [***] days of receiving the other Party's report and draft Phase 3/Commercial Supply Agreement or Transfer Addendum, as applicable. If so requested by the arbitrator, each Party shall make oral and/or other written submissions to the arbitrator in accordance with procedures to be established by the arbitrator; provided that other Party shall have the right to be present during any oral submissions. The arbitrator shall select one of the Party's draft Phase 3/Commercial Supply Agreement or Transfer Addendum, as applicable, as his or her decision, based on what is most reasonable and equitable to each of the Parties under the circumstances and reflective of reasonable and customary terms in the biopharmaceutical industry for agreements of this type and most closely reflects the Parties' intent as expressed in this Supply Agreement and the License Agreement, and shall not have the authority to render any substantive decision other than to so select the draft Phase 3/Commercial Supply Agreement or Transfer Addendum, as applicable, of Sutro or SutroVax (as initially submitted, or as revised in accordance with the foregoing, as applicable). For clarity, it is understood that the Parties intend the arbitration under this Section 11.4 to be a "baseball arbitration" type proceeding; and the arbitrator may fashion such detailed procedures as the arbitrator considers appropriate to implement this intent. Notwithstanding anything to the contrary, in no event shall the Phase 3/Commercial Supply Agreement or Transfer Addendum contain any provision granting to SutroVax or its Affiliates or Sublicensees any right to obtain or use any Sutro Core Know-How.

11.4.2 In any arbitration under this Section 11.4, the arbitrator and the Parties shall use their best efforts to resolve such Disputed Matter within [***] days after the selection of the arbitrator, or as soon thereafter as is practicable.

## ARTICLE 12
## MISCELLANEOUS

**12.1 Expenses.** Except as otherwise expressly provided herein, each Party shall bear its own costs, fees and expenses incurred by such Party in connection with this Supply Agreement.

**12.2 Licenses and Permits.** Each Party shall, at its sole cost and expense, maintain in full force and affect all necessary licenses, permits, and other authorizations required by Applicable Law in order to carry out its duties and obligations hereunder.

**12.3 Force Majeure.** No Party shall be liable for a failure or delay in performing any of its obligations under this Supply Agreement if, but only to the extent that such failure or delay is due to causes beyond the reasonable control of the affected Party, including: (a) acts of God; (b) fire, explosion, or unusually severe weather; (c) war, invasion, riot, terrorism, or other civil unrest; (d) governmental laws, orders, restrictions, actions, embargo or blockages; (e) national or regional emergency; (f) strikes or industrial disputes at a national level which directly impact the affected Party's performance under this Supply Agreement; or (g) other similar cause outside of the reasonable control of such Party ("**Force Majeure**"); provided that the Party affected shall promptly notify the other of the Force Majeure condition and shall use reasonable efforts to eliminate, cure or overcome any such causes and resume performance of its obligations as soon as possible. If the performance of any obligation of a Party under this Supply Agreement is delayed owing to such a Force Majeure for any continuous period of more than [***] days, the other Party shall have the right to terminate this Supply Agreement.

**12.4** Neither Party may assign or transfer this Supply Agreement, including by merger, operation of law, or otherwise, without the other Party's prior written consent (which shall not be withheld unreasonably) except each Party may assign this Supply Agreement without the other Party's consent in the case of assignment or transfer to a Third Party that succeeds to all or substantially all of the assigning Party's business and assets relating to the subject matter of this Supply Agreement, whether by sale, merger, operation of law or otherwise. Any attempted assignment by a Party in violation of this Section without the written consent of the other Party will be null and void. Except as above limited, this Supply Agreement is binding upon and will inure to the benefit of each of the Parties, its successors and assigns. Without limiting the foregoing, in the event that a Party is acquired, the acquiring Party shall agree in writing to abide by the terms of this Supply Agreement. Sutro agrees that if it assigns the License Agreement to any successor as allowed under section 15.1 of the License Agreement, it will also assign to such successor this Supply Agreement in accordance with this Section 12.4.

**12.5** This Supply Agreement incorporates the Exhibits referenced herein. This Supply Agreement, together with the License Agreement, constitutes the entire agreement and supersedes all prior agreements and understandings, both written and oral, between the Parties hereto with respect to its subject matter. To the extent of any conflict between this Agreement and the License Agreement, the License Agreement shall govern and control.

**12.6** All notices, requests or other communication provided for or permitted hereunder shall be given in writing and shall be hand delivered or sent by confirmed facsimile, reputable courier or by registered or certified mail, postage prepaid, return receipt requested, to the address set forth below, or to such other address of which either Party may inform the other in writing. Notices will be deemed delivered on the earliest of transmission by facsimile, actual receipt or [***] days after mailing as described herein.

If to Sutro: Sutro Biopharma, Inc.
310 Utah Ave., Suite 150
South San Francisco, CA 94080
Attention: Chief Executive Officer

If to SutroVax: SutroVax, Inc.
353 Hatch Dr.
Foster City, CA 94404
Attention: Chief Executive Officer

**12.7** This Supply Agreement may be amended, modified or waived only in a writing signed by the Party or Parties to be bound thereby.

**12.8** If any provision of this Supply Agreement shall be held invalid, illegal or unenforceable, such provision shall be enforced to the maximum extent permitted by law and the Parties' fundamental intentions hereunder, and the remaining provisions shall not be affected or impaired.

**12.9** Nothing herein contained shall constitute this a joint venture agreement and nothing herein shall constitute any Party as a partner, principal or agent of any other, this being an agreement between independent contracting entities. Except as expressly set forth herein, no Party shall have the authority to bind any other in any respect whatsoever to Third Parties. Except as provided herein, nothing contained in this Supply Agreement shall be construed as conferring any right on any Party to use any name, trade name, trademark or other designation of any other Party hereto, unless the express, written permission of such other Party has been obtained.

**12.10** This Supply Agreement has been submitted to the scrutiny of, and has been negotiated by, both Parties and their counsel, and shall be given a fair and reasonable interpretation in accordance with its terms, without consideration or weight being given to any such term's having been drafted by any Party or its counsel.

**12.11** This Supply Agreement shall be governed by, and construed and enforced in accordance with, the laws of the State of California, without regard to any conflict of laws rules to the contrary.

**12.12** Each Party acknowledges that the other Party may likely suffer irreparable harm from such Party's breach or threatened breach of this Agreement and the other Party, in such cases, would therefore be entitled, without waiving any other right or remedy available to, to injunctive relief (including specific performance) without the requirement to post a bond, provided the waiver by such Party of the other Party's requirement to post a bond shall expire on the Change of Control of the other Party, and each party agrees that the arbitrator selected under Section 11.3 shall have the power to grant such injunctive relief (or order specific performance). The Parties shall comply with any such injunctive relief (including specific performance) ordered by the arbitrator and agree that such order may, to the extent not precluded by applicable law, be enforceable as a final award in any court of competent jurisdiction.

**12.13** This Supply Agreement may be executed in two (2) or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. Facsimile and other electronically scanned signatures shall have the same effect as their originals.

[*The remainder of this page is left intentionally blank*]

**IN WITNESS WHEREOF**, the Parties have caused this Supply Agreement to be executed by their respective duly authorized officers as of the Effective Date, each copy of which will for all purposes be deemed to be an original.

**SUTRO BIOPHARMA, INC.**

By: /s/ William J. Newell
Name: William J. Newell
Title: CEO

**SUTROVAX, INC.**

By: /s/ Grant E. Pickering
Name: Grant E. Pickering
Title: President & CEO

**SCHEDULE 1**

PRODUCTS AND PRICE

[***]

**SCHEDULE2**

SPECIFICATIONS

{6 pages omitted}

[***]

**SCHEDULE3**

INITIAL ORDER

[***]

**SCHEDULE 2.15.1**

REPRESENTATIVE CMOS

[***]

**CERTAIN CONFIDENTIAL INFORMATION CONTAINED IN THIS DOCUMENT, MARKED BY [***], HAS BEEN OMITTED BECAUSE IT IS BOTH (I) NOT MATERIAL AND (II) WOULD LIKELY CAUSE COMPETITIVE HARM IF PUBLICLY DISCLOSED.**

# LICENSE AGREEMENT

This agreement ("Agreement") is entered into as of the date of last signature (the "Effective Date") by and between SutroVax, Inc. a Delaware corporation having an address at 353 Hatch Drive, Foster City, California 94404 ("LICENSEE") and The Regents of the University of California, a California public corporation having its statewide administrative offices at 1111 Franklin Street, Oakland, California 94607-5200 ("UNIVERSITY"), represented by its San Diego campus having an address at University of California San Diego, Office of Innovation and Commercialization, Mail Code 0910, 9500 Gilman Drive, La Jolla, California 92093-0910 ("UC SAN DIEGO").

## BACKGROUND

A. The invention and material disclosed in UC SAN DIEGO Disclosure No. SD2012-011 and titled "Novel Group A Streptococcal Vaccine and Therapeutics" and claimed in U.S. patent application number 15/265,800 (Pub. No.: US 2017/019696) ("Invention" and "Material"), was made in the course of research at UC SAN DIEGO by Dr. Victor Nizet and his associates (hereinafter and collectively, the "Inventors") and are covered by Patent Rights as defined below.

B. The research was sponsored in part by the Government of the United States of America and as a consequence this license is subject to overriding obligations to the Federal Government under 35 U.S.C. §§ 200-212 and applicable regulations;

C. LICENSEE entered into a Letter of Intent (UC Control No. 2017-30-0064) with UNIVERSITY, effective August 17, 2017, for the purpose of negotiating this Agreement and is desirous of obtaining an exclusive license to Patent Rights and a non-exclusive license to Material (defined below) from UNIVERSITY to research, develop, manufacture, sell, offer for sale, export, import or otherwise use the Invention, and the UNIVERSITY is willing to grant such rights. Additionally, the UNIVERSITY will provide SutroVax with the Material defined below.

The parties agree as follows:

## ARTICLE 1. DEFINITIONS

The terms, as defined herein, have the same meanings in both their singular and plural forms.

1.1 "Affiliate" means any corporation, firm, limited liability company, partnership or other entity that directly or indirectly Controls or is Controlled by or is under common control with LICENSEE. "Control" means (i) having the actual, present capacity to elect a majority of the directors of such entity; (ii) having the power to direct at least [***] of the voting rights entitled to elect directors; or (iii) in any country where the local law will not permit foreign equity participation of a majority, ownership or control, directly or indirectly, of the maximum percentage of such outstanding stock or voting rights permitted by local law.

1.2 “Commercially Reasonable Efforts” means exerting such diligent efforts and employing such resources as would normally and objectively be exerted or employed by a similarly situated company for a product of similar market potential, profit potential and strategic value at a similar stage of its product life, taking into account the competitiveness of the relevant marketplace, the patent, intellectual property and development positions of third parties, the applicable regulatory situation, the pricing/reimbursement situation, the commercial viability of the product and other relevant development and commercialization factors based upon then-prevailing conditions.

1.3 “Field” means any vaccine against Group A *Streptococcus* for all human uses.

1.4 “Licensed Product” means any service, composition or product which is composed of or incorporates, or is directly or indirectly discovered, developed and/or identified using, the Invention or Material or is derived from the use of the Material or that is claimed in Patent Rights, or the research, development, manufacture, sale, offer for sale, exportation, importation or otherwise use of which would constitute, but for the license granted to LICENSEE under this Agreement, an infringement, an inducement to infringe or contributory infringement, of any pending or issued claim within the Patent Rights.

1.5 “Material” means the *Streptococcus pyogenes* strain designed to produce the polysaccharide provided by UNIVERSITY.

1.6 “Net Sales” means the total of the gross invoice prices of Licensed Products sold or leased by LICENSEE or its Sublicensee or Affiliate, or any combination thereof, less the sum of the following actual and customary deductions where applicable and separately listed (consistently applied in accordance with GAAP): [***] discounts or rebates, [***], credits and chargebacks (as allowed under applicable law); sales tax, use tax, tariff, import/export duties, value-added tax (but only to the extent of amounts actually incurred and not refundable, reimbursable or creditable) or other excise taxes imposed on particular sales or other governmental charges in connection with Licensed Products (except for income taxes imposed on the sales of Licensed Product in foreign countries); [***]; and credits to customers because of rejections, recalls or returns. For purposes of calculating Net Sales, transfers among LICENSEE and its Sublicensees and Affiliates of Licensed Product shall not be treated as Net Sales; provided that the subsequent resales of such Licensed Product by LICENSEE, its Sublicensee or Affiliate to a third party shall be treated as Net Sales. Reasonable quantities of Licensed Products that are provided [***] in connection with research and development, clinical trials towards regulatory approval, compassionate use, humanitarian and charitable donations or indigent programs will be excluded from Net Sales.

1.7 “Patent Costs” means all out-of-pocket expenses for the preparation, filing, prosecution, and maintenance of all United States and foreign patents included in Patent Rights. Patent Costs include out-of-pocket expenses for patentability opinions, inventorship determination, preparation and prosecution of patent application, re-examination, re-issue, interference, post-grant review and other administrative proceedings in patent offices, and opposition activities, and the like, related to patents or applications in Patent Rights.

1.8 “Patent Rights” means UNIVERSITY’s rights in the claims of any of the following: the U.S. patent application number 15/265,800 (Pub. No.: US 2017/019696); and continuing applications thereof including divisions, substitutions, and continuations-in-part (but only to the extent the claims thereof are entirely supported in the specification and entitled to the priority date of the parent application); any patents issuing on said applications including reissues, reexaminations and extensions; and any corresponding foreign applications or patents.

1.9 “Property Rights” means UNIVERSITY’S right, title and interest in the tangible personal property embodied in the Material.

1.10 “Sponsor’s Rights” means all the applicable provisions of any license to the United States Government executed by UNIVERSITY and the overriding obligations to the Federal Government under 35 U.S.C. §§ 200-212 and applicable governmental implementing regulations.

1.11 “Sublicense” means an agreement into which LICENSEE enters with a third party that is not an Affiliate for the purpose of (a) granting certain rights; (b) granting an option to certain rights; or (c) forbearing the exercise of any rights, in each case, granted by UNIVERSITY to LICENSEE in the license under this Agreement “Sublicensee” means a third party with whom LICENSEE enters into a Sublicense. LICENSEE may further grant to its Affiliates and Sublicensee(s) the right to grant their own Sublicense(s) to Sublicensee(s), who together will be considered Sublicensee(s) holding a Sublicense for all purposes of this Agreement. For clarity, a Sublicense shall not include any assignments made to a purchaser of all or substantially all of LICENSEE’s assets or business in connection with Licensed Product, including by way of acquisition, merger, consolidation, stock sale, asset sale or other form of reorganization.

1.12 “Term” means the period of time beginning on the Effective Date and ending on the expiration date of the longest-lived Patent Rights.

1.13 “Territory” with respect to Patent and non-Material rights worldwide, to the extent Patent Rights exist. With respect to Material rights, “Territory” means rights to the extent this license can be legally granted.

## ARTICLE 2. GRANTS

2.1 **License**. Subject to the limitations set forth in this Agreement and to the extent that it may lawfully do so, UNIVERSITY hereby grants to LICENSEE an exclusive license under Patent Rights to research, develop, make, sell, offer for sale, export, import or otherwise use Licensed Products in the Field within the Territory and during the Term. LICENSEE may extend such license to its AFFILIATES, provided that LICENSEE will be responsible for such AFFILIATES.

2.2 **Sublicense**.

(a) The license granted in Paragraph 2.1 includes the right of LICENSEE to grant Sublicenses to third parties during the Term but only for as long as the license to Patent Rights is exclusive at the time of such grant.

(b) With respect to Sublicense granted pursuant to Paragraph 2.2(a), LICENSEE shall:

(i) not receive, or agree to receive, anything of value in lieu of cash as consideration from a third party under Sublicense without the express written consent of UNIVERSITY, such permission not to be unreasonably withheld or delayed;

(ii) to the extent applicable, include all of the rights of and obligations due to UNIVERSITY (and, if applicable, the Sponsor's Rights) and contained in this Agreement;

(iii) promptly provide UNIVERSITY with a copy of each Sublicense issued; and

(iv) use commercially reasonable efforts to collect and assure payment of all payments due, directly or indirectly, to UNIVERSITY from Sublicensees and summarize and deliver all reports due, directly or indirectly, to UNIVERSITY from Sublicensees.

(c) Upon termination of this Agreement for any reason, LICENSEE will have the right to assign, effective as of the effective date of termination of this Agreement, this Agreement to any and all Sublicensees, and this Agreement will survive with respect to such Sublicensees; provided that (i) the Sublicensee is in good standing upon termination of this Agreement with LICENSEE; (ii) the Sublicensee is not currently involved in litigation as an adverse party to the UNIVERSITY and (iii) Sublicensee is not conducting business in a country barred by statute or executive order. In the event this Agreement is assigned to any Sublicensee and survives with respect to such Sublicensee, the Sublicensee will promptly agree in writing to be bound by the terms of this Agreement, including but not limited to payment to the UNIVERSITY of milestone, earned royalty, sublicense fees, and patent reimbursement required under Article 3. If this Agreement is assigned to and survives with respect to more than one Sublicense, the payment obligations described above may be prorated among the Sublicensees. Where a full Assignment of all rights is provided to a sublicensee, sublicensee shall assume all rights and obligations of Licensee.

2.3 **Reservation of Rights**. UNIVERSITY reserves the right to:

(a) possess and use the Material and use the Invention and Patent Rights solely for educational and research purposes;

(b) publish or otherwise disseminate any information about the Material, Invention and Patent Rights.

(c) allow other nonprofit institutions to use, publish, or otherwise disseminate any information about the Material, Invention and Patent Rights for educational and research purposes.

## ARTICLE 3. CONSIDERATION

3.1 **Fees and Royalties**. The parties hereto understand that the fees and royalties payable by LICENSEE to UNIVERSITY under this Agreement are partial consideration for the license granted herein to LICENSEE under Patent Rights. LICENSEE shall pay UNIVERSITY:

(a) a license issue fee of ten thousand dollars (US$10,000), within [***] days after the Effective Date;

This Paragraph 3.1(a) will survive the termination, expiration or assignment of this Agreement.

(b) license maintenance fees of [***] per year and payable on the first anniversary of the Effective Date and annually thereafter on each anniversary; provided however, that such maintenance fees will be creditable against earned royalties in any given payment period;

(c) LICENSEE shall pay UNIVERSITY the following milestone payments for each Licensed Product:

(i) [***]
(ii) [***]
(iii) [***]
(iv) [***]
(v) [***]
(vi) [***]
(vii) [***]

Each of the milestone payments set forth in this Paragraph 3.1(c) will be payable upon each action only once for each unique Licensed Product.

(d) an earned royalty of [***] on Net Sales of Licensed Products by LICENSEE, Sublicensees, and/or Affiliates, provided, however, that: (i) in the event LICENSEE is required to pay royalties, to one or more third parties for patent rights necessary to make, use or sell Licensed Products, LICENSEE may deduct [***] from the earned royalties payable to UNIVERSITY for every [***] LICENSEE [***] to said third parties; provided, however, in no event shall the amount payable to UNIVERSITY be less than [***] of the amount otherwise due. For clarity, LICENSEE shall only pay an earned royalty for Licensed Product made or sold in the Territory; royalties shall not accrue (and LICENSEE shall pay no royalties) on any other sale of Licensed Products.

(e) [***] of all Sublicense fees received by LICENSEE from its Sublicensees that are not earned royalties or for reimbursement of research and development expenses up to a maximum of [***], however, if LICENSEE grants a sublicense to a SUBLICENSEE in accordance with Paragraph 2.2 for further research or development, but not sale, of such Licensed Products, then no percentage of Sublicense fees shall be owed to UNIVERSITY.

All fees and royalty payments specified in Paragraphs 3.1(a) through 3.1(e) above shall be paid by LICENSEE pursuant to Paragraph 4.3 and shall be delivered by LICENSEE to UNIVERSITY as noted in Paragraph 10.1.

3.2 **Patent Costs.**

LICENSEE will coordinate with UNIVERSITY, and UNIVERISTY shall participate in good faith, to discuss and estimate future Patent Costs each calendar year. LICENSEE shall reimburse UNIVERSITY for all future (on or after the Effective Date) out-of-pocket Patent Costs incurred during the Term and in the Territory within [***] days following the date an itemized invoice is sent from UNIVERSITY to LICENSEE.

3.3 **Due Diligence.**

(a) LICENSEE shall, either directly or through its Affiliate(s) or Sublicensee(s) use Commercially Reasonable Efforts to:

(i) diligently develop, manufacture, and sell Licensed Products; and

(ii) achieve the diligence milestones described in Exhibit A:

(b) If LICENSEE fails to materially perform any of its obligations specified in Paragraphs 3.3(a) (i)-(ii), then UNIVERSITY shall have the right and option to either terminate this Agreement or change LICENSEE's exclusive license under Patent Rights to a nonexclusive license. This right, if exercised by UNIVERSITY, supersedes the rights granted in Article 2; *provided*, *however,* that if, despite LICENSEE's efforts, LICENSEE is unable to meet any of its diligence obligations due to delays caused by [***] or any inaction of any federal or state agency whose approval is required for commercial sale of products, the parties shall [***], and ultimately any such [***]. To exercise the right to terminate this Agreement or to reduce the exclusive license to a non-exclusive license for lack of diligence, UNIVERSITY shall give LICENSEE written notice of such deficiency. LICENSEE shall thereafter have ninety (90) days to cure such deficiency. If UNIVERSITY has not received satisfactory evidence that such deficiency has been cured by the end of the ninety (90) day period, then UNIVERSITY may, at its option, either terminate this Agreement or reduce the exclusive license to a non-exclusive license by giving written notice to LICENSEE.

## ARTICLE 4. REPORTS, RECORDS AND PAYMENTS

4.1 **Reports.**

(a) **Progress Reports.**

Beginning [***] after the Effective Date and within [***] days after the end of each of LICENSEE's fiscal years, Licensee shall furnish UNIVERSITY with a written report on the progress of its efforts during the immediately preceding fiscal year to develop and commercialize Licensed Products.

(b) **Royalty Reports.**

After the first commercial sale of a Licensed Product anywhere in the world, LICENSEE shall submit to UNIVERSITY annual royalty reports on or before [***] of each year Each royalty report shall cover LICENSEE's (and each Affiliate's and Sublicensee's) most recently completed calendar year and shall show:

(i) the date of first commercial sale of a Licensed Product in each country;

(ii) the gross sales, deductions as provided in Paragraph 1.4 (Net Sales), and Net Sales during the most recently completed calendar year and the royalties, in US dollars, payable with respect thereto;

(iii) the number of each type of Licensed Product sold;

(iv) Sublicense fees and royalties received during the most recently completed calendar year in US dollars, payable with respect thereto;

(v) the method used to calculate the royalties; and

(vi) the exchange rates used.

If no sales of Licensed Products have been made and no Sublicense revenue has been received by LICENSEE during any reporting period, LICENSEE shall so report. The reports referred to in this Paragraph 4.1(b) should be marked with the following title and case number "License Agreement between UC SAN DIEGO and SutroVax, Inc. for case SD2012-011. Reports shall be submitted as an attachment to UC SAN DIEGO's email address: [***]. Such reports and information contained therein shall be deemed confidential information of LICENSEE.

4.2 **Records & Audits.**

(a) LICENSEE shall keep, and shall require its Affiliates and Sublicensees to keep, accurate and correct records of all Licensed Products manufactured, used, sold, offered for sale, and imported and Sublicense fees received under this Agreement. Such records shall be retained by LICENSEE for at least [***] years following a given reporting period.

(b) UNIVERSITY shall have the right to request an inspection of records no more than [***]. All records shall be available during normal business hours for inspection at the expense of UNIVERSITY by UNIVERSITY's Internal Audit Department or by a Certified Public Accountant selected by UNIVERSITY and in compliance with the other terms of this Agreement for the sole purpose of verifying reports and payments or other compliance issues. Such inspector shall not disclose to UNIVERSITY any information other than information relating to the accuracy of reports and payments made under this Agreement or other compliance issues. In the event that any such inspection shows an under reporting and underpayment in excess of [***] for any [***] period, then LICENSEE shall pay the reasonably out-of-pocket cost of the audit as well as any additional sum that would have *been* payable to UNIVERSITY had the LICENSEE reported correctly. For underpayment not in excess of [***] for any [***] period, LICENSEE shall pay the difference within [***] days without inspection cost. All information obtained by UNIVERSITY in connection with such audit shall be deemed to be confidential information of LICENSEE.

4.3 **Payments.**

(a) All fees, reimbursements and royalties due UNIVERSITY shall be paid in US dollars and all checks shall be made payable to "The Regents of the University of California", referencing "UC SAN DIEGO OIC", and sent to UNIVERSITY according to Paragraph 10.1 (Correspondence).

(b) Royalty Payments.

(i) Royalties shall accrue when Licensed Products are invoiced, or if not invoiced, when delivered to a third party or Affiliate for commercial sale or end use.

(ii) LICENSEE shall pay earned royalties annually on or before [***] of each calendar year Each such payment shall be for earned royalties accrued within LICENSEE's most recently completed calendar year.

(iii) LICENSEE shall not collect royalties from, or cause to be paid on Licensed Products sold to the account of the US Government or any agency thereof as provided for in the license to the US Government.

(iv) For clarity, LICENSEE shall only pay an earned royalty for Licensed Product sold or made (entirely or partially) in the Territory; royalties shall not accrue (and LICENSEE shall pay no royalties) on any other sale of Licensed Products.

(c) Late Payments. In the event royalty, reimbursement and/or fee payments are not received by UNIVERSITY when due (following a [***] day grace period), LICENSEE shall pay to UNIVERSITY interest charges at a rate of [***] per year. Such interest shall be calculated from the date payment was due until actually received by UNIVERSITY.

(d) Taxes. Taxes imposed by any governmental agency on any payments to be made to UNIVERSITY by LICENSEE hereunder shall be paid by LICENSEE without deduction from any payment due to UNIVERSITY hereunder, except those taxes allowed to be deducted under the definition of Net Sales.

## ARTICLE 5. PATENT MATTERS

5.1 **Patent Prosecution and Maintenance.**

(a) Provided that LICENSEE has reimbursed UNIVERSITY for Patent Costs pursuant to Paragraph 3.2, UNIVERSITY shall diligently prosecute and maintain the United States and, if available, foreign patents, and applications in Patent Rights using Gavrilovich, Dodd & Lindsey, LLP as counsel. For purposes of clarity, if LICENSEE is not current in reimbursing UNIVERSITY for such Patent Costs, UNIVERSITY shall have no obligation to incur any new Patent Costs under this Agreement or to further prosecute Patent Rights or file any new patent applications under Patent Rights. UNIVERSITY shall provide LICENSEE with copies of all relevant documentation relating to such

prosecution and LICENSEE shall keep this documentation confidential. The counsel shall take instructions only from UNIVERSITY, however unless allowed by law, all patents and patent applications in Patent Rights shall be assigned solely to UNIVERSITY. Regular communication between the UNIVERSITY and LICENSEE shall take place regarding prosecution of the Patent Rights. UNIVERSITY shall in good faith [***]. UNIVERSITY shall in any event control all patent filings and all patent prosecution decisions and related filings (e.g., responses to office actions) shall be [***] (prosecution includes, but is not limited to, interferences, oppositions and any other *inter parts* or *ex parte* matters originating in a patent office).

(b) Should LICENSEE fail to maintain the Patent Costs or elect to terminate its reimbursement obligations with respect to any patent application or patent in Patent Rights, LICENSEE shall have no further license with respect to such Patent Rights under this Agreement. Non-payment of any portion of Patent Costs with respect to any application or patent may be deemed by UNIVERSITY as an election by LICENSEE to terminate its reimbursement obligations with respect to such application or patent, provided UNIVERSITY has given LICENSEE a ninety (90) day notice to cure and that period has run. UNIVERSITY is not obligated at any time to file, prosecute, or maintain Patent Rights in a country, where, for that country's patent application or patent LICENSEE is not paying Patent Costs, or to file, prosecute, or maintain Patent Rights to which LICENSEE has terminated its license hereunder.

5.2 **Patent Infringement.**

(a) In the event that UNIVERSITY (to the extent of the actual knowledge of the licensing professional responsible for the administration of this Invention) or LICENSEE learns of infringement of potential commercial significance of any patent licensed under this Agreement, the knowledgeable party will provide the other (i) with written notice of such infringement and (ii) with any evidence of such infringement available to it (the "Infringement Notice"). During the period in which, and in the jurisdiction where, LICENSEE has exclusive rights under this Agreement, neither UNIVERSITY nor LICENSEE will notify a third party (including the infringer) of infringement or put such third party on notice of the existence of any Patent Rights without first obtaining consent of the other. If LICENSEE notifies a third party of infringement or puts such third party on notice of the existence of any Patent Rights with respect to such infringement without first obtaining the written consent of UNIVERSITY and UNIVERSITY is sued in declaratory judgment, UNIVERSITY shall have the right to terminate this Agreement immediately by providing [***] days' notice as set forth in Paragraph 7.1. Both UNIVERSITY and LICENSEE will use their diligent efforts to cooperate with each other to terminate such infringement without litigation.

(b) If infringing activity of potential commercial significance by the infringer has not been abated within [***] days following the date the Infringement Notice takes effect, LICENSEE may institute suit for patent infringement against the infringer. UNIVERSITY may voluntarily join such suit at its own expense, but may not thereafter commence suit against the infringer for the acts of infringement that are the subject of LICENSEE's suit or any judgment rendered in that suit. LICENSEE may not join UNIVERSITY in a suit initiated by LICENSEE without UNIVERSITY'S prior written consent. If UNIVERSITY joins a suit at the request of LICENSEE, LICENSEE will pay any costs incurred by UNIVERSITY arising out of such suit, including but not limited to, any legal fees of counsel that UNIVERSITY selects and retains to represent it in the suit.

(c) If, within [***] days following the date the Infringement Notice takes effect, infringing activity of potential commercial significance by the infringer has not been abated and if LICENSEE has not brought suit against the infringer, UNIVERSITY may institute suit for patent infringement against the infringer. If UNIVERSITY institutes such suit, LICENSEE may not join such suit without UNIVERSITY'S consent and may not thereafter commence suit against the infringer for the acts of infringement that are the subject of UNIVERSITY'S suit or any judgment rendered in that suit.

(d) Notwithstanding anything to the contrary in this Agreement, in the event that the infringement or potential infringement pertains to an issued patent included within the Patent Rights and written notice is given under any statute expediting litigation (e.g. the Drug Price Competition and Patent Term Restoration Act of 1984 and/or foreign counterparts of this Law) ("Act"), then the party in receipt of such notice under the Act (in the case of UNIVERSITY to the extent of the actual knowledge of the licensing officer responsible for the administration of this Agreement) shall provide the Infringement Notice to the other party promptly. If the time period is such that the LICENSEE will lose the right to pursue legal remedy for infringement by not notifying a third party or by not filing suit, the notification period and the time period to file suit will be accelerated to within [***] days of the date of such notice under the Act to either party.

(e) Any recovery or settlement received in connection with any suit will first be shared by UNIVERSITY and LICENSEE equally1 to cover the litigation costs each incurred, and next shall be paid to UNIVERSITY or LICENSEE to cover any litigation costs it incurred in excess of the litigation costs of the other. In any suit initiated by LICENSEE where there is a recovery in excess of litigation costs, UNIVERSITY will receive (i) [***] or (ii) [***].

(f) Any agreement made by LICENSEE for purposes of settling litigation or other dispute shall comply with the requirements of Section 2.2 (Sublicenses) of this Agreement.

(g) Each party will cooperate with the other in litigation proceedings instituted hereunder but at the expense of the party who initiated the suit (unless such suit is being jointly prosecuted by the parties).

(h) Any litigation proceedings will be controlled by the party bringing the suit, except that UNIVERSITY may be represented by counsel of its choice in any suit brought by LICENSEE.

5.3 **Patent Marking.**

LICENSEE shall mark all Licensed Products made, used, sold, offered for sale, or imported under the terms of this Agreement, or their containers, to the extent required by the applicable patent marking laws. LICENSEE shall be responsible for all monetary and legal liabilities arising from or caused by (a) failure to abide by applicable patent marking laws and (b) any type of incorrect or improper patent marking.

## ARTICLE 6. EXPORT CONTROL AND REGISTRATION

6.1 **Governmental Approval or Registration.** If this Agreement or any associated transaction is required by the law of any nation to be either approved or registered with any governmental agency, LICENSEE shall assume all legal obligations to do so. LICENSEE shall notify UNIVERSITY if it becomes aware that this Agreement is subject to a United States or foreign government reporting or approval requirement. LICENSEE shall make all necessary filings and pay all costs including fees, penalties, and all other out-of-pocket costs associated with such reporting or approval process.

6.2 **Export Control.** LICENSEE shall observe all applicable United States and foreign laws with respect to the transfer of Material or Licensed Products and related technical data to foreign countries, including, without limitation, the International Traffic in Arms Regulations and the Export Administration Regulations, to the extent applicable.

6.3 **Preference for United States Industry.** If LICENSEE sells a Licensed Product in the US, LICENSEE shall manufacture said product substantially in the US, as required under 35 U.S.C. §§ 204, as applicable, and applicable regulations. The UNIVERSITY will allow and support LICENSEE's request of a waiver to manufacture outside of the US if LICENSEE decides it is appropriate.

6.4 **Disposition of Material and Licensed Products on Hand.** Upon termination or expiration of this Agreement, LICENSEE may dispose of all previously made or partially made Material or Licensed Product within a period of [***] days of the effective date of such termination or expiration provided that the sale of such Licensed Product by LICENSEE or Affiliates shall be subject to the terms of this Agreement, including but not limited to the rendering of reports and payment of royalties required under this Agreement.

## ARTICLE 7. TERMINATION OR EXPIRATION OF THE AGREEMENT

7.1 **Termination by UNIVERSITY.**

(a) Subject to Paragraph 7.1(b), UNIVERSITY may terminate this agreement if LICENSEE:

(i) is delinquent on any report or payment after providing written notice to cure to LICENSEE;

(ii) is not diligently developing and commercializing Licensed Product;

(iii) misses a diligence milestone described in Exhibit B;

(iv) is in breach of any provision;

(v) provides any intentional false report; or

(vi) files a claim including in any way the assertion that any portion of UNIVERSITY's Patent Rights is invalid or unenforceable.

(b) Except as otherwise provided by Paragraph 3.3, UNIVERSITY may give written notice of a Default Event ("Notice of Default") to LICENSEE. If LICENSEE fails to cure such Default Event within ninety (90) days of the Notice of Default, UNIVERSITY may terminate this Agreement and the License by a second written notice ("Notice of Termination") to LICENSEE. If a Notice of Termination is sent to LICENSEE, this Agreement shall automatically terminate on the date of transmission of that notice.

7.2 **Termination by LICENSEE.**

(a) LICENSEE shall have the right at any time and for any reason to terminate this Agreement upon a ninety (90)-day written notice to UNIVERSITY.

(b) Any termination under Paragraph 7.2(a) shall not relieve LICENSEE of any obligation or liability accrued under this Agreement prior to termination or rescind any payment made to UNIVERSITY or action by LICENSEE prior to the time termination becomes effective. Termination shall not affect in any manner any rights of UNIVERSITY arising under this Agreement prior to termination.

7.3 **Survival on Termination or Expiration.** The rights and obligations under Paragraphs and Articles 3.1(a) (license issue fee), 4 (Reports, Records and Payments), 6.4 (Disposition of Material and Licensed Products on Hand), 8 (Limited Warranty and Indemnification), 9 (Use of Names and Trademarks), 10.2 (Secrecy), and 10.5 (Failure to Perform) shall survive the termination or expiration of this Agreement.

## ARTICLE 8. LIMITED WARRANTY AND INDEMNIFICATION

8.1 **No Warranty.**

(a) To the extent of the actual knowledge of the licensing professional responsible for administering this Agreement as of the Effective Date, the license granted herein is provided “AS IS” and without WARRANTY OF MERCHANTABILITY or WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE or any other warranty, express or implied. UNIVERSITY makes no representation or warranty that the Material or Licensed Product or the use of Patent Rights will not infringe any other patent or other proprietary rights. Notwithstanding the foregoing, to the knowledge of the licensing professional responsible for administering this Agreement as of the Effective Date, UNIVERSITY hereby warrants that UNIVERSITY is the sole owner of the Patent Rights; that is has not granted any rights to any third party with respect to the Patent Rights in a manner that is inconsistent with the exclusive license granted to LICENSEE hereunder; and that it has the lawful right to grant this License.

EXCEPT AS SET FORTH IN SECTION 8.2 (INDEMNIFICATION), NEITHER PARTY WILL BE LIABLE FOR ANY LOST PROFITS, COSTS OF PROCURING SUBSTITUTE GOODS OR SERVICES, LOST BUSINESS, ENHANCED DAMAGES FOR INTELLECTUAL PROPERTY INFRINGEMENT OR FOR ANY INDIRECT, INCIDENTAL, CONSEQUENTIAL, PUNITIVE, OR OTHER SPECIAL DAMAGES SUFFERED BY LICENSEE, SUBLICENSEES, JOINT VENTURES, OR AFFILIATES ARISING OUT OF OR RELATED TO THIS AGREEMENT FOR ALL CAUSES OF ACTION OF ANY KIND (INCLUDING TORT, CONTRACT, NEGLIGENCE, STRICT LIABILITY AND BREACH OF WARRANTY) EVEN IF THE PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

(b) Nothing in this Agreement shall be construed as:

(i) a warranty or representation by UNIVERSITY as to the validity, enforceability, or scope of any Patent Rights;

(ii) a warranty or representation that anything made, used, sold or otherwise disposed of under any license granted in this Agreement is or shall be free from infringement of patents of third parties;

(iii) an obligation to bring or prosecute actions or suits against third parties for patent infringement except as provided in Paragraph 5.2 hereof;

(iv) conferring by implication, estoppel or otherwise any license or rights under any patents of UNIVERSITY other than Patent Rights, or any technology, regardless of whether those patents are dominant or subordinate to Patent Rights;

(v) an obligation to furnish any know-how not provided in Patent Rights.

8.2 **Indemnification and Insurance.**

(a) LICENSEE will, and will require Sublicensees to, indemnify, hold harmless, and defend UNIVERSITY and its officers, employees, and agents; the sponsors of the research that led to the Material and Invention; and inventors of patents or patent applications under Patent Rights, and their employers; in each case, against any and all third party claims, suits, losses, damages, costs, fees, and expenses resulting from, or arising out of, the exercise of this license or any Sublicense. This indemnification will include, but will not be limited to, any product liability, except to the extent arising from UNIVERSITY's breach of this Agreement, gross negligence or willful misconduct.

(b) LICENSEE, at its sole cost and expense, shall insure its activities in connection with the work under this Agreement and obtain, keep in force and maintain insurance as follows:

(i) commercial general liability insurance (contractual liability included) with limits of at least:

1. prior to first use in humans:

(A) each occurrence, [***]; (B) personal and advertising injury, [***]; and (C) general aggregate [***]. If the above insurance is written on a claims-made form, it shall continue for [***] years following termination or expiration of this Agreement or the commencement of clinical trial obligations as identified in section 8.2(b) (i) (2). The insurance shall have a retroactive date of placement prior to or coinciding with the Effective Date;

2. at initiation of first use in humans:

(A) each occurrence, [***]; (B) products/completed operations aggregate, [***]; (C) personal and advertising injury, [***]; and (D) general aggregate [***]). If the above insurance is written on a claims-made form, it shall continue for [***] years following termination or expiration of this Agreement. The insurance shall have a retroactive date of placement prior to or coinciding with the Effective Date;

(ii) Worker's Compensation as legally required in the jurisdiction in which the LICENSEE is doing business; and

(iii) the coverage and limits referred to above shall not in any way limit the liability of LICENSEE.

(c) Pursuant to written request, LICENSEE shall furnish UNIVERSITY with certificates of insurance showing compliance with all requirements. Such certificates shall: (i) provide for [***] days' advance written notice to UNIVERSITY of any modification; (ii) indicate that UNIVERSITY has been endorsed as an additionally insured party under the coverage referred to above; and (iii) include a provision that the coverage shall be primary and shall not participate with nor shall be excess over any valid and collectable insurance or program of self-insurance carried or maintained by UNIVERSITY.

(d) UNIVERSITY shall notify LICENSEE in writing of any claim or suit brought against UNIVERSITY in respect of which UNIVERSITY intends to invoke the provisions of this Article. LICENSEE shall keep UNIVERSITY informed on a current basis of its defense of any claims under this Article. LICENSEE will not settle any claim against UNIVERSITY without UNIVERSITY's written consent, such consent not to be unreasonably delayed or withheld, where (a) such settlement would include any admission of liability or wrongdoing on the part of UNIVERSITY or other indemnified party, (b) such settlement would impose any restriction on UNIVERSITY/indemnified party's conduct of any of its activities, or (c) such settlement would not include an unconditional release of UNIVERSITY/indemnified party from all liability for claims that are the subject matter of the settled claim.

## ARTICLE 9. USE OF NAMES AND TRADEMARKS

9.1 Nothing contained in this Agreement confers any right to use in advertising, publicity, or other promotional activities any name, trade name, trademark, or other designation of UNIVERSITY by LICENSEE without prior written approval by UNIVERSITY (including contraction, abbreviation or simulation of any of the foregoing). Notwithstanding the foregoing, UNIVERSITY hereby grants permission for LICENSEE to acknowledge that it has obtained an exclusive license from UNIVERSITY under the Patent Rights. Nothing contained herein, shall prevent LICENSEE from identifying UNIVERSITY in any regulatory or securities filing as required by law or regulation.

9.2 LICENSEE hereby grants permission for UNIVERSITY (including UC SAN DIEGO) to include LICENSEE's name and a link to LICENSEE's website in UNIVERSITY's and UC SAN DIEGO's annual reports and on UNIVERSITY's (including UC SAN DIEGO's) websites that showcase innovation and commercialization stories.

## ARTICLE 10. MISCELLANEOUS PROVISIONS

10.1 **Correspondence.** Any notice or payment required to be given to either party under this Agreement shall be deemed to have been properly given and effective:

(a) on the date of delivery if delivered in person,

(b) [***] days after mailing if mailed by first-class or certified mail, postage paid, to the respective addresses given below, or to such other address as is designated by written notice given to the other party, or

(c) upon confirmation by recognized national overnight courier, confirmed electronic transmission, or confirmed electronic mail, to the following physical addresses or email address of the parties:

If sent to LICENSEE:
SutroVax, Inc.
353 Hatch Drive
Foster City, California 94404
Attention: Chief Executive Officer
Phone: [***]
e-mail: gpickering@sutrovax.com
with mandatory copy to SutroVax Legal Department

If sent to UNIVERSITY by mail:
University of California San Diego
Office of Innovation and Commercialization
9500 Gilman Drive, Mail Code 0910
La Jolla, CA 92093-0910
Attention: Director

If sent to UNIVERSITY by overnight delivery
University of California San Diego
Office of Innovation and Commercialization
10300 North Torrey Pines Road
Torrey Pines Center North, Third Floor
La Jolla, CA 92037
Attention: Director

10.2 **Secrecy.**

(a) “Confidential information” shall mean information relating to the Invention and disclosed by UNIVERSITY to LICENSEE during the term of this Agreement, which if disclosed in writing shall be marked “Confidential”, or if first disclosed otherwise, shall within [***] days of such disclosure be reduced to writing by UNIVERSITY and sent to LICENSEE.

(b) LICENSEE shall, with respect to confidential information of UNIVERSITY

(i) use the Confidential Information for the sole purpose of performing under the terms of this Agreement;

(ii) safeguard Confidential Information against disclosure to others with the same degree of care as it exercises with its own data of a similar nature;

(iii) not disclose Confidential Information to others (except to its employees, agents or consultants who are bound by a like obligation of confidentiality) without the express written permission of the other party, except that shall not be prevented from using or disclosing any of the Confidential Information that:

(A) LICENSEE can demonstrate by written records was previously known to it;

(B) is now, or becomes in the future, public knowledge other than through acts or omissions of LICENSEE;

(C) is lawfully obtained by LICENSEE from sources independent of UNIVERSITY; or

(D) is required to be disclosed by law or a court of competent jurisdiction

(c) The secrecy obligations of LICENSEE with respect to Confidential Information in this Paragraph 10.2 shall continue for a period ending [***] years from the expiration or termination date of this Agreement.

(d) Notwithstanding the foregoing, UNIVERSITY may disclose to the Inventors, senior administrators employed by UNIVERSITY, and individual Regents the terms and conditions of this Agreement upon their request If such disclosure is made, UNIVERSITY shall request that the individuals not disclose such terms and conditions to others. UNIVERSITY may acknowledge the existence of this Agreement and the extent of the grant in Article 2 to third parties, but UNIVERSITY shall not disclose the negotiable financial terms of this Agreement to third parties, except where UNIVERSITY is required by law to do so, such as under the California Public Records Act.

(e) Notwithstanding the foregoing, LICENSEE may disclose confidential information of UNIVERSITY to its actual and potential Sublicensees and may disclose the terms of this Agreement to third parties in connection with due diligence investigations of the LICENSEE, provided that such parties are bound by a duty of confidentiality on terms consistent with those found in this Paragraph 10.2.

10.3 **Assignability.** This Agreement may be assigned by UNIVERSITY, but is personal to LICENSEE and assignable by LICENSEE only with the written consent of UNIVERSITY, which shall not be unreasonably withheld or delayed; provided that, LICENSEE may assign this Agreement or any rights and obligations hereunder without the written consent of UNIVERSITY to: (i) an Affiliate of LICENSEE and a payment of an assignment fee of [***], but only after [***], or (ii) a purchaser of all or substantially all of LICENSEE's assets or business in connection with Licensed Product, including by way of acquisition, merger, consolidation, stock sale, asset sale or other form of reorganization. Within [***] days of an assignment of this Agreement by LICENSEE to a purchaser of all or substantially all of LICENSEE's assets or business pursuant to Paragraph 10.3(ii) LICENSEE shall make a one-time cash milestone payment to UNIVERSITY, in accordance with the following scale: (a) [***] USD, if the aggregate proceeds actually received by LICENSEE from such purchase is less than or equal to [***] USD; (b) [***] USD, if the aggregate proceeds actually received by LICENSEE from such purchaser is greater than [***] but less than [***]; and (c) [***], if the aggregate proceeds actually received by LICENSEE from such purchaser is greater than [***] USD.

10.4 **No Waiver.** No waiver by either party of any breach or default of any agreement set forth in this Agreement shall be deemed a waiver as to any subsequent and/or similar breach or default.

10.5 **Failure to Perform.** In the event of a failure of performance due under this Agreement and if it becomes necessary for either party to undertake legal action against the other on account thereof, then the prevailing party shall be entitled to reasonable attorneys' fees in addition to costs and necessary disbursements.

10.6 **Governing Laws.** THIS AGREEMENT SHALL BE INTERPRETED AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE STATE OF CALIFORNIA, but the scope and validity of any patent or patent application shalt be governed by the applicable laws of the country of the patent or patent application.

10.7 **Force Majeure.** A party to this Agreement may be excused from any performance required herein if such performance is rendered impossible or unfeasible due to any catastrophe or other major event beyond its reasonable control, including, without limitation, war, riot, and insurrection; laws, proclamations, edicts, ordinances, or regulations; strikes, lockouts, or other serious labor disputes; and floods, fires, explosions, or other natural disasters. When such events have abated, the non-performing party's obligations herein shall resume.

10.8 **Headings.** The headings of the several sections are inserted for convenience of reference only and are not intended to be a part of or to affect the meaning or interpretation of this Agreement.

10.9 **Entire Agreement.** This Agreement, including Exhibits A and B, embodies the entire understanding of the parties and supersedes all previous communications, representations or understandings, either oral or written, between the parties relating to the subject matter hereof.

10.10 **Amendments.** No amendment or modification of this Agreement shall be valid or binding on the parties unless made in writing and signed on behalf of each party.

10.11 **Severability.** In the event that any of the provisions contained in this Agreement is held to be invalid, illegal, or unenforceable in any respect, such invalidity, illegality or unenforceability shall not affect any other provisions of this Agreement, and this Agreement shall be construed as if the invalid, illegal, or unenforceable provisions had never been contained in it.

***Signature page follows***

**SUTROVAX, INC.:**

By: */s/ Grant E. Pickering*
(Signature)
Name: Grant E. Pickering
Title: President & CEO
Date: February 4, 2019

**THE REGENTS OF THE UNIVERSITY OF CALIFORNIA:**

By: */s/ David G. Gibbons*
(Signature)
David G. Gibbons
Assistant Director
Date: Feb 1, 2019

Exhibit A – Due Diligence for Licensed Products

LICENSEE will accomplish the following:

[***]

The parties agree that should one of the milestones be delayed due to product development challenges and/or regulatory delays [***] any subsequent milestones will be based on completion of the prior milestone. LICENSEE shall inform UNIVERSITY within [***] days should milestones need to be extended [***] and the parties agree [***].

***STANDARD NNN LEASE***
***[MULTI-TENANT PROJECT]***

1. ***BASIC LEASE PROVISIONS.***

| | | |
|---|---|---|
| 1.1 | ***DATE FOR REFERENCE PURPOSES:*** | July 22, 2016 |
| 1.2 | ***LANDLORD:*** | Gray Peak Fork, LLC, a Nevada limited liability company and Gray Peak Fork, Series A, LLC, A Nevada Limited Liability company, jointly and severally |
| 1.3 | ***TENANT:*** | SutroVax, Inc., a Delaware corporation |
| 1.4 | ***BUILDING ADDRESS:*** | 353 Hatch Drive, Foster City, California |
| 1.5 | ***SUITE NUMBER:*** | n/a |
| 1.6 | ***RENTABLE AREA OF PREMISES:*** | Approximately 13,173 square feet |
| 1.7 | ***USE:*** | Administrative and staff offices, research and development, laboratory, production, training, sales, and related legal uses. |
| 1.8 | ***TERM:*** | Sixty (60) months<br>Two (2), 30-month options to extend |
| 1.9 | ***COMMENCEMENT DATE:*** | September 1, 2016 |
| 1.10 | ***MONTHLY BASE RENT:*** | Commencement Date through<br>12th full calendar month: $32,932.50<br>13th – 24th month: $33,920.48<br>25th – 36th month: $34,938.09<br>37th – 48th month: $35,986.23<br>49th – 60th month: $37,065.82 |
| 1.11 | ***SECURITY DEPOSIT:*** | $197,595 |
| 1.12 | ***TENANT'S SHARE:*** | 40% |
| 1.13 | ***REAL ESTATE BROKER:*** | |
| | **LANDLORD:** | Coldwell Banker Commercial |
| | **TENANT:** | VentureSite |
| 1.14 | ***EXHIBITS ATTACHED TO LEASE:*** | Exhibit A – "Premises";<br>Exhibit B – "Project Site"<br>Exhibit C – "Verification Letter" |
| 1.15 | ***ADDRESSES FOR NOTICES:*** | |
| | **LANDLORD:** | Fred C. Bertetta, III<br>President<br>Gray Peak Fork, LLC<br>1300 Industrial Road, Suite 2<br>San Carlos, CA 94070 |
| | **TENANT:** | Prior to the Commencement Date:<br>Grant E. Pickering<br>President & CEO<br>400 E Jamie Ct, Suite 205<br>S San Francisco, CA 94080<br><br>After the Commencement Date:<br>Grant E. Pickering, President & CEO<br>Premises |

1.16 ***INTERPRETATION***. The Basic Lease Provisions shall be interpreted in conjunction with all of the other terms and conditions of this Lease. Other terms and conditions of this Lease modify and expand on the Basic Lease Provisions. If there is a conflict between the Basic Lease Provisions and the other terms and conditions of this Lease, the other terms and conditions shall control.

**2. *PREMISES.***

2.1 ***LEASE OF PREMISES AND DEFINITION OF PROJECT***. The "**Premises**" shall mean the area shown on Exhibit "A" to this Lease. Landlord hereby leases to Tenant, and Tenant hereby leases from Landlord, upon all of the conditions set forth herein the Premises, together with certain rights to the Common Areas (as defined below) as hereinafter specified. The building of which the Premises is a part (the "**Building**"), the Common Areas, and the land upon which the same are located (which may be multiple parcels), along with all other buildings and improvements designated by Landlord are herein collectively referred to as the "**Project.**" The Project is depicted on Exhibit "**B**".

2.2 ***CALCULATION OF SIZE OF BUILDING AND PREMISES***. While the approximate square footage of the Premises may have been used in the marketing of the Premises for purposes of comparison, the Base Rent stated herein is not tied to square footage and is not subject to adjustment should the actual size be determined to be different. The Premises shall be deemed to contain the number of rentable square feet set forth in Section 1.6 and the number of rentable square feet shall not be subject to change.

2.3 ***COMMON AREAS-DEFINED***. The term "**Common Areas**" is defined as all areas and facilities outside the Premises and Building and within the exterior boundary line of the Project that are designated for the general non-exclusive use of Landlord, Tenant and the other tenants of the Project and their respective employees, suppliers, customers and invitees, including, but not limited to, parking areas, loading and unloading areas, landscaped areas, roadways and sidewalks. Tenant shall not store any property in the Common Areas or use the Common Areas for any purpose not approved by Landlord, in Landlord's sole discretion. Landlord may also designate other land and improvements outside the boundaries of the Project to be a part of the Common Areas, provided that such other land and improvements have a reasonable and functional relationship to the Project.

2.4 ***DELIVERY OF PREMISES***. Landlord shall deliver the Premises to Tenant on the Commencement Date, broom clean, in reasonable repair, and with all systems in good working condition, including, without limitation, the roof, HVAC, and the electrical, life safety and plumbing systems, and with the following improvements: (a) removal of the unfinished ceiling in the locker room; (b) installation of a wall to demise the Premises from adjacent office space; (c) replacement of the exterior double-doors [on the East side of the building] and; (d) completion of any Necessary Repairs (as defined in Section 2.6). Tenant shall have access to the Premises on a 24 hour, 7 days a week, basis.

2.5 ***EARLY ACCESS***. Tenant shall have early access to the Premises as of the mutual execution and delivery of this Lease for the purposes of (a) inspecting the Premises in accordance with Section 2.6, and (b) performing Tenant's Alterations in accordance with Section 7.3(b). During such early access, all of the provisions of the Lease shall apply with respect to such access, except for the payment of Rent. Landlord and Tenant shall reasonably cooperate with each other so as to prevent unreasonable interference with the other party's work within the Premises during such early access period.

2.6 ***INSPECTIONS***. From and after the mutual execution and delivery of this Lease, and before the Commencement Date, Tenant shall have the right to cause an inspector to conduct commercially reasonable physical inspections of the Premises and Project for purposes of determining whether there is any need for repairs necessary for Tenant's occupancy and use of the Premises ("**Necessary Repairs**").

**3. *TERM AND COMMENCEMENT DATE***. The term and Commencement Date of this Lease are as specified in Sections 1.8 and

3.1 If the actual Commencement Date does not occur on the first day of a calendar month, the term of this Lease shall be extended by the number of days between the actual Commencement Date and the first day of the next calendar month, it being the intention of Landlord and Tenant that the term of the Lease end on the last day of a calendar month. When the actual Commencement Date is established by Landlord, Landlord shall complete the letter attached hereto as Exhibit "**C**" and Tenant shall, within five (5) days after Landlord's request, execute the letter and deliver it to Landlord if such letter is accurate.

**4. *RENT***.

4.1 ***BASE RENT***. Tenant shall pay to Landlord, in advance, the Base Rent for the Premises set forth in Section 1.10, without offset, demand or deduction on or before the first day of each calendar month (the "**Due Date**"). At the time Tenant executes this Lease it shall pay to Landlord the advance Base Rent for the first full month. Base Rent for any period during the term hereof which is for less than one month shall be prorated based upon the actual number of days of the calendar month involved. Base Rent and all other amounts payable to Landlord hereunder shall be payable to Landlord in lawful money of the United States, and Tenant shall be responsible for delivering said amounts to Landlord at the address stated herein or to such other persons or to such other places as Landlord may designate in writing.

4.2 ***COMMON AREA EXPENSES***. Tenant shall pay to Landlord during the term hereof, in addition to the Base Rent, Tenant's Share of all Common Area Expenses. If less than 95% of the rentable square feet in the Project is occupied by tenants or Landlord is not supplying services to 95% of the rentable square feet of the Project at any time during any calendar year, Common Area Expenses for such calendar year shall be an amount equal to the Common Area Expenses which would normally be expected to be incurred had 95% of the Project's rentable square feet been occupied and had Landlord been supplying services to 95% of the Project's rentable square feet throughout such calendar year. Tenant's Share of Common Area Expenses shall be determined in accordance with the following provisions:

(a) "**Tenant's Share**" is defined as the percentage set forth in Section 1.12, which percentage has been determined by dividing the number of rentable square feet in the Premises by the number of rentable square feet in the Project and multiplying the resulting quotient by one hundred (100).

(b) Subject to the limitations set forth in (c) below, "**Common Area Expenses**" shall include all costs, expenses and fees incurred by Landlord in connection with or attributable to the Project Common Areas, including but not limited to, the following items: (A) the maintenance and replacement of all parking areas, loading and unloading areas, trash areas, roadways, sidewalks, landscaped areas, striping, bumpers, irrigation systems, exterior lighting facilities, fences and gates; (B) the cost of trash disposal; (C) the cost of all insurance purchased by Landlord and enumerated in Section 8 of this Lease, including any commercially reasonable deductibles; (D) the cost of water and other utilities serving the Common Areas, (E) the costs identified in section 7.1 as being payable as Common Area Expenses; and (F) a fee for general and administrative expenses (the "**Property Management Fee**") equal to three percent (3%) of the Base Rent, as adjusted from time to time pursuant to this Lease. Real Property Taxes shall be paid in accordance with Section 10 below and shall not be included in Common Area Expenses.

(c) Notwithstanding anything to the contrary contained in the Lease, Common Area Expenses shall be defined so as to exclude the following: (i) all costs associated with defending any lawsuits with any mortgagee or tenant and costs of selling, syndicating, financing, mortgaging or hypothecating any of the Landlord's interest in the Building; (ii) all costs (including permit, license and inspection fees) incurred in order to construct tenant improvements in space to be occupied exclusively by tenants or in renovating or redecorating vacant space which is intended for the exclusive occupancy by tenants in the future, including the cost of alterations or improvements to the Premises; (iii) leasing commissions and attorney fees incurred in connection with leasing space in the Project to tenants; (iv) reserves for equipment or capital replacement; (v) depreciation and amortization of the Building; (vi) interest on debt or amortization payments on any mortgages or deeds of trust or any other debt instrument encumbering the Building; (vii) bad debt loss, rent loss, or reserves for bad debt or rent loss; (viii) costs of services, supplies or other materials provided by Landlord or its affiliates directly, to the extent that the cost of such services, supplies or materials exceeds the fair market value of such services, supplies or materials; (ix) advertising and promotional costs; (x) Landlord's income taxes, inheritance taxes and estate taxes; (xi) the cost of repairs or other work undertaken by reason of fire, windstorm or other casualty, or by the exercise of the right of eminent domain, to the extent that Landlord actually receives reimbursement for such costs from insurance proceeds (except that commercially reasonable insurance deductibles shall be included in Common Area Expenses) or condemnation awards; (xii) costs of repair or replacement for any item covered by a warranty if the cost of repair is actually reimbursed to Landlord by the entity providing the warranty; (xiii) costs for which Landlord actually receives reimbursement by its insurance carrier or by any tenant's insurance carrier; (xiv) fines, penalties, interest or costs resulting from the negligence or willful misconduct of the Landlord; (xv) rental payments and any related costs pursuant to any ground lease of land underlying all or any portion of the Building; (xvi) costs, fees, dues, contributions or similar expenses for political or charitable organizations (Common Area Expenses may include the cost of fees and dues of industry associations); (xvii) costs of items considered capital replacements or improvements under generally accepted accounting principles consistently applied ("**Capital Items**"), except for the annual amortized cost incurred by Landlord after the Commencement Date for any capital improvements installed or paid for by Landlord and required by any new (or change in) laws, rules or regulations of any governmental or quasi-governmental authority which are enacted or first enforced after the Commencement Date; (xviii) except for the Management Fee, costs associated with the operation of the business of the entity which constitutes Landlord, as the same are distinguished from the costs of operation of the Project; (xix) costs incurred to comply with laws relating to the removal of Hazardous Substances which was in existence in the Project prior to the Commencement Date; (xx) fees payable by Landlord for management of the Project; and (xxi) ) the wages and benefits of any employee.

(d) If pursuant to (c) above Landlord is required to amortize a capital improvement, the cost shall be amortized over the useful life of the capital improvement, as reasonably determined by Landlord.

(e) Tenant's Share of Common Area Expenses shall be payable by Tenant within thirty (30) days after a reasonably detailed statement of actual expenses is presented to Tenant by Landlord. At Landlord's option, however, Landlord may, from time to time, estimate what Tenant's Share of Common Area Expenses will be, and the same shall be payable by Tenant monthly on the same day as the Base Rent is due hereunder. In the event that Tenant pays Landlord's estimate of Tenant's Share of Common Area Expenses, Landlord shall use commercially reasonable efforts to deliver to Tenant within one hundred eighty (180) days after the expiration of each year a reasonably detailed statement (the "**Statement**") showing Tenant's Share of the actual Common Area Expenses incurred during such year. Landlord's failure to deliver the Statement to Tenant within said

period shall not constitute Landlord's waiver of its right to collect said amounts or otherwise prejudice Landlord's rights hereunder. If Tenant's payments under this Section 4.2(e) during said year exceed Tenant's Share as indicated on the Statement, Tenant shall be entitled to credit the amount of such overpayment against Tenant's Share of Common Area Expenses next falling due. If Tenant's payments under this Section 4.2(e) during said year were less than Tenant's Share as indicated on the Statement, Tenant shall pay to Landlord the amount of the deficiency within thirty (30) days after delivery by Landlord to Tenant of the Statement. Landlord and Tenant shall forthwith adjust between them by cash payment any balance determined to exist with respect to that portion of the last year for which Tenant is responsible for Common Area Expenses, notwithstanding that the Lease term may have terminated before the end of such year; and this provision shall survive the expiration or earlier termination of the Lease.

(f) The computation of Tenant's Share of Common Area Expenses is intended to provide a formula for the sharing of costs by Landlord and Tenant and will not necessarily result in the reimbursement to Landlord of the exact costs it has incurred. Landlord shall not collect or be entitled to collect Common Area Expenses from all of its tenants in an amount which is in excess of 100% of the Common Area Expenses actually paid by Landlord in connection with the operation of the Project.

(g) If Tenant disputes the amount set forth in the Statement, Tenant shall have the right, not later than sixty (60) days following receipt of such Statement, to cause Landlord's books and records with respect to the calendar year which is the subject of the Statement to be audited by a certified public accountant mutually acceptable to Landlord and Tenant. The audit shall take place at the offices of Landlord where its books and records are located at a mutually convenient time during Landlord's regular business hours. Tenant's Share of Common Area Expenses shall be appropriately adjusted based upon the results of such audit, and the results of such audit shall be final and binding upon Landlord and Tenant. The accountant conducting the audit shall be compensated on an hourly basis and shall not be compensated based upon a percentage of overcharges it discovers. No subtenant shall have any right to conduct an audit, and no assignee shall conduct an audit for any period during which such assignee was not in possession of the Premises. Tenant's right to undertake an audit with respect to any calendar year shall expire six (6) months after Tenant's receipt of the Statement for such calendar year, and such Statement shall be final and binding upon Tenant and shall, as between the parties, be conclusively deemed correct, at the end of such period, unless prior thereto Tenant shall have given Landlord written notice of its intention to audit Common Area Expenses for the calendar year which is the subject of the Statement. Tenant agrees that the results of any Common Area Expense audit shall be kept strictly confidential by Tenant and shall not be disclosed to any other person or entity. Tenant shall pay all costs and expenses of the audit unless the final determination in such audit is, or Landlord and Tenant mutually agree, that Landlord overstated Common Area Expenses for the year being audited by more than ten percent (10%), in which case Landlord shall pay all costs and expenses of the audit.

**5. *SECURITY DEPOSIT***. Contemporaneously with the execution of this Lease, Tenant shall pay to Landlord the amount of Security Deposit specified in Section 1.11, which shall be held by Landlord to secure the payment by Tenant of any and all present and future debts and liabilities of Tenant to Landlord and for Tenant's performance of its obligations under this Lease. No portion of the Security Deposit shall be considered an advance by Tenant of the last month's rent. If Tenant defaults with respect to any provision of this Lease, including, without limitation, the provisions relating to the payment of Rent, Landlord may, but shall not be required to, reasonably use, apply or retain all or any part of the Security Deposit (i) for the payment of any Rent or any other sum in default, (ii) for the payment of any other amount which Landlord may spend or become obligated to spend by reason of such default by Tenant, and (iii) to compensate Landlord for any other loss or damage which Landlord may suffer by reason of such default by Tenant. If any portion of the Security Deposit is so used or applied, Tenant shall, upon demand therefor by Landlord, deposit with Landlord cash in an amount sufficient to restore the Security Deposit to the amount required to be maintained by Tenant hereunder. Landlord shall return to Tenant the remaining portion of the Security Deposit within thirty (30) days after the date that Landlord receives possession of the Premises, unless a determination of the amount Landlord is entitled to retain reasonably takes more than thirty days, in which case the remaining portion of the Security Deposit shall be returned to tenant within thirty days after such determination. Landlord shall not be required to keep the Security Deposit separate from its general funds, and any interest paid thereon shall become funds of the Landlord, and shall not accrue to the benefit of Tenant. If Landlord conveys, assigns or otherwise disposes of its interest in this Lease, Landlord shall deliver or credit the Security Deposit to its successor, and shall give Tenant notice thereof as required by California Civil Code Section 1950.7 or any successor statute, and Landlord thereafter shall have no further liability for the return of the Security Deposit. So long as Tenant is not then in default under this Lease (beyond any applicable notice and cure period), and has paid rent not later than five (5) days after the Due Date for each of the preceding twelve calendar months, as of the first anniversary, second anniversary and third anniversary of the Commencement Date, the Security Deposit shall be reduced by $32,932.50 (for a total reduction of $98,797.50), and the reduced amount held by Landlord shall be promptly returned to Tenant.

**6. *USE***.

6.1 ***USE***. The Premises shall be used and occupied only for the purpose set forth in Section 1.7 and for no other purpose. Notwithstanding any permitted use inserted in Section 1.7, Tenant shall not use the Premises for any purpose which would violate applicable laws. No exclusive use has been granted to Tenant hereunder. In no event shall Tenant use all or any part of the Premises for the production, processing, sale or distribution of marijuana.

6.2 ***COMPLIANCE WITH LAW.***

(a) Landlord warrants to Tenant that, in the state existing as of the date set forth in Section 1.1, but without regard to alterations or improvements to be made by Tenant or the use for which Tenant will occupy the Premises, does not violate any covenants or restrictions of record, or any applicable building code, regulation or ordinance in effect on such date. Landlord's representation and warranty that improvements comply with applicable building codes, regulations and ordinances shall mean that the improvements complied with the codes, regulations and ordinances in effect when the improvements were originally constructed. The Premises has not undergone an inspection by a certified access specialist.

(b) Tenant shall, at Tenant's sole expense, comply with all applicable laws, ordinances, rules, regulations, orders, certificates of occupancy, conditional use or other permits, variances, covenants and restrictions of record, the recommendations of Landlord's engineers or other consultants, and requirements of any fire insurance underwriters, rating bureaus or government agencies, now in effect or which may hereafter come into effect, whether or not they reflect a change in policy from that now existing, during the term or any part of the term hereof, relating in any manner to the particular use by Tenant of the Premises ("**Legal Requirements**"). Tenant shall conduct its business and use the Premises in a lawful manner and shall not use or permit the use of the Premises or the Common Areas in any manner that will tend to create dangerous situations, waste or a nuisance or shall tend to unreasonably disturb other occupants of the Project. Tenant shall obtain, at its sole expense, any permit or other governmental authorization required to operate its business from the Premises. Landlord shall not be liable for the failure of any other tenant or person to abide by the requirements of this section or to otherwise comply with applicable laws and regulations, and Tenant shall not be excused from the performance of its obligations under this Lease due to such a failure.

**7.** ***MAINTENANCE, REPAIRS AND ALTERATIONS***.

7.1 ***LANDLORD'S OBLIGATIONS***. Landlord shall keep the Common Area, electrical, heating, ventilation, air conditioning ("**HVAC**"), exterior doors, plumbing, fire, mechanical, and life safety systems and equipment, and the roof membrane in good condition and repair, and shall include the cost of the same as a Common Area Expense. Landlord shall maintain, repair and replace the structural components of the roof, exterior walls, foundations, and floor slabs of the Project,. at Landlord's sole cost and expense (and not as an Common Area Expense). Notwithstanding the foregoing, or any other provision in this Lease, Landlord shall not be required to perform any maintenance, repair or replacements necessitated by the act(s) or omission(s) of Tenant, or Tenant's employees, agents, invitees, or contractors, or by Tenant's failure to comply with this Lease.

7.2 ***TENANT'S OBLIGATIONS.***

(a) Tenant shall be responsible for keeping the Premises, including, without limitation, interior walls, floors, ceiling, and exterior plate glass, and all building systems exclusively serving the Premises, in good condition and repair, at Tenant's sole expense. In addition, Tenant shall be responsible for the installation, maintenance and repair of all telephone, computer and related cabling throughout the Premises, and Tenant shall be responsible for any loss, cost, damage, liability and expense (including attorneys' fees) arising out of or related to the installation, maintenance, repair and replacement of such cabling. If Tenant fails to keep the Premises in good condition and repair, Landlord may, but shall not be obligated to, make any necessary repairs, following ten (10) days notice to Tenant and opportunity to begin to cure. If Landlord makes such repairs, Landlord may bill Tenant for the cost of the repairs as additional rent, and said additional rent shall be payable by Tenant within ten (10) days.

(b) On the last day of the term hereof, or on any sooner termination, Tenant shall surrender the Premises to Landlord in good condition, ordinary wear and tear and casualty damage excepted, clean and free of debris and Tenant's personal property. Tenant shall repair any damage to the Premises occasioned by the installation or removal of Tenant's trade fixtures, furnishings and equipment. Landlord shall have the right to require Tenant to (i) remove any telecommunications or other cabling installed by Tenant in the Premises as part of the original tenant improvements (whether constructed by Landlord or Tenant) (collectively, "**Cabling**") or (ii) leave all or part of the Cabling. If Landlord requires Tenant to leave all or part of the Cabling, each individual cable left by Tenant shall be tagged by Tenant both at the end of the cable in the Premises and at the end of the cable in the riser closet so that Landlord can easily determine where each individual cable begins and ends.

7.3 ***ALTERATIONS AND ADDITIONS.***

(a) Except as provided below, Tenant shall not, without Landlord's prior written consent, which may be given or withheld in Landlord's commercially reasonable discretion, make any alterations, improvements, additions, utility installations or repairs (hereinafter collectively referred to as "**Alterations**") in, on or about the Premises. Notwithstanding the foregoing, Landlord's prior consent shall not be required for any non-structural Alterations ("**Notice Only Alterations**") to the Premises that do not (i) involve the expenditure of more than $25,000 in the aggregate in any calendar year, (ii) affect the exterior appearance of the Building, (iii) affect the Building's electrical, plumbing, HVAC, life, fire, safety or security systems, (iv) affect the structural elements of the Building or (v) adversely affect any other tenant of the Project; provided that Tenant shall provide Landlord with prior written notice of any Notice Only Alteration at least fifteen (15) business days' prior to Tenant's commencement of same. At the expiration of the term, Landlord may require the removal of any Alterations installed by Tenant and the restoration of the Premises to their prior condition, at Tenant's expense; provided, however, notwithstanding the foregoing, Landlord shall notify Tenant whether the applicable Alteration will be required to be removed pursuant to the terms of this Section 7.3(a) at the time of Tenant's request for Landlord's consent to any Alteration.

(b) Notwithstanding the foregoing, Tenant shall be permitted to install the following tenant improvements within the Premises as an Alteration, at Tenant's sole cost and expense, which may be removed (but shall not be required to be removed) by Tenant upon the expiration or earlier termination of this Lease: (i) removal of the wall recently installed in constructing the newer server room; (ii) update of kitchen and reception area; (iii) installation of lab benches, fume hoods, glass wash, and a water deionizer system; (iv) installation of appropriate tile floor in lab space; and (v) additional offices and conference rooms within the office area.

(c) Any Alterations in or about the Premises that Tenant shall desire to make shall be presented to Landlord in written form, with plans and specifications which are sufficiently detailed to obtain a building permit, if a building permit is required. If Landlord consents to an Alteration and the Alteration requires a building permit, the consent shall be deemed conditioned upon Tenant acquiring a building permit from the applicable governmental agencies, furnishing a copy thereof to Landlord prior to the commencement of the work, and compliance by Tenant with all conditions of said permit in a prompt and expeditious manner. Tenant shall provide Landlord with as-built plans and specifications for any Alterations made to the Premises.

(d) Tenant shall pay, when due, all claims for labor or materials furnished or alleged to have been furnished to or for Tenant at or for use in the Premises, which claims are or may be secured by any mechanic's or materialmen's lien against the Premises or the Project, or any interest therein. If Tenant shall, in good faith, contest the validity of any such lien, Tenant shall furnish to Landlord a surety bond satisfactory to Landlord in an amount equal to not less than one and one half times the amount of such contested lien claim indemnifying Landlord against liability arising out of such lien or claim. Such bond shall be sufficient in form and amount to free the Project from the effect of such lien. In addition, Landlord may require Tenant to pay Landlord's reasonable attorneys' fees and costs incurred as a result of any such lien.

(e) Tenant shall give Landlord not less than ten (10) days' advance written notice prior to the commencement of any work in the Premises by Tenant, and Landlord shall have the right to post notices of non-responsibility in or on the Premises or the Project.

(f) All Alterations (whether or not such Alterations constitute trade fixtures of Tenant) which may be made to the Premises by Tenant shall be paid for by Tenant, at Tenant's sole expense, and shall be made and done in a good and workmanlike manner, and in compliance with all applicable, laws, regulations, building codes and ordinances. Tenant's personal property, fixtures and equipment, other than that which is affixed to the Premises so that it cannot be removed without material damage to the Premises or the Project, shall remain the property of Tenant and may be removed by Tenant.

**8.** ***INSURANCE***.

8.1 ***INSURANCE-TENANT.***

(a) Tenant shall obtain and keep in force during the term of this Lease a commercial general liability policy of insurance with coverages acceptable to Landlord, in Landlord's reasonable discretion, which, by way of example and not limitation, protects Tenant and Landlord (as an additional insured) against claims for bodily injury, personal injury and property damage based upon, involving or arising out of the ownership, use, occupancy or maintenance of the Premises and all areas appurtenant thereto. Such insurance shall be on an occurrence basis providing coverage in an amount not less than $1,000,000 per occurrence and not less than $2,000,000 in the aggregate.

(b) Tenant shall obtain and keep in force during the term of this Lease "Causes of Loss – Special Form" extended coverage property insurance (previously known as "all risk" property insurance) with coverages acceptable to Landlord, in Landlord's reasonable discretion. Said insurance shall be written on a one hundred percent (100%) replacement cost basis on Tenant's personal property, all tenant improvements installed at the Premises by Landlord or Tenant, Tenant's trade fixtures and other property. By way of example, and not limitation, such policies shall provide protection against any peril included within the classification "fire and extended coverage," against vandalism and malicious mischief, theft and sprinkler leakage. To the extent that Tenant's policy covers tenant improvements to the Premises, Landlord shall be a loss payee on such policy. If insurance proceeds are available to repair the tenant improvements, at Landlord's option, all insurance proceeds Tenant is entitled to receive to repair the tenant improvements shall be paid by the insurance company directly to Landlord, Landlord shall select the contractor to repair and/or replace the tenant improvements, and Landlord shall cause the tenant improvements to be repaired and/or replaced to the extent insurance proceeds are available.

(c) Tenant shall, at all times during the term hereof, maintain the following insurance with coverages reasonably acceptable to Landlord: (i) workers' compensation insurance as required by applicable law, (ii) employers liability insurance, and (iii) business interruption insurance.

8.2 ***INSURANCE-LANDLORD.***

(a) Landlord shall obtain and keep in force a policy of general liability insurance with coverage against such risks and in such amounts as Landlord deems advisable insuring Landlord against liability arising out of the ownership, operation and management of the Project.

(b) Landlord (subject to Tenant's obligation to pay Tenant's share of Operating Expenses) shall maintain a policy or policies of replacement cost "special causes of loss" property insurance covering loss or damage to the structural and shell components of the Building and all improvements and alterations to the Building existing as of the Commencement Date (the "**Structure and Shell**") for fire and such other hazards (including flood if Landlord so chooses) as are normally included in a "special loss" (formerly referred to as "all risk") policy of insurance, or which are required by any lender of Landlord, with such deductibles as Landlord reasonably may determine. Landlord shall carry general liability insurance with policy limits of at least One Million Dollars ($1,000,000), which, if Landlord so chooses, will include a Loss of rent endorsement. Landlord also shall maintain an umbrella policy with policy limits of at least Five Million Dollars ($5,000,000).. In addition, Landlord shall have the right to obtain such additional insurance as is customarily carried by owners or operators of other comparable office buildings in the geographical area of the Project. Tenant will not be named as an additional insured in any insurance policies carried by Landlord and shall have no right to any proceeds therefrom. The policies purchased by Landlord shall contain such deductibles as Landlord may reasonably determine. In addition to amounts payable by Tenant in accordance with Section 4.2, Tenant shall pay any increase in the property insurance premiums for the Project over what was payable immediately prior to the increase to the extent the increase is specified by Landlord's insurance carrier as being caused by the nature of Tenant's occupancy.

8.3 ***INSURANCE POLICIES***. Tenant shall deliver to Landlord certificates for the insurance policies required under Section 8.1 concurrently with the execution of this Lease using an ACORD 28 form or a similar form approved by Landlord. Tenant's insurance policies shall provide that the insurance company shall endeavor to provide Landlord with at least thirty (30) days' prior notice of cancellation, reduction of coverage or other material modification. Tenant shall, at least thirty (30) days prior to the expiration of such policies, furnish Landlord with renewals thereof. Tenant's insurance policies shall be issued by insurance companies authorized to do business in the state in which the Project is located, and said companies shall maintain during the policy term a "General Policyholder's Rating" of at least A and a financial rating of at least "Class VII" (or such other rating as may be required by any lender having a lien on the Project) as set forth in the most recent edition of "**Best Insurance Reports.**" All insurance obtained by Tenant shall be primary to and not contributory with any similar insurance carried by Landlord, whose insurance shall be considered excess insurance only. Landlord, Landlord's property manager and lender(s) and their respective officers, shareholders, directors, partners, members, managers, employees, successors and assigns, shall be included as additional insureds under Tenant's commercial general liability policy and under the Tenant's excess or umbrella policy, if any, using ISO additional insured endorsement CG 20 11 or a substitute providing equivalent coverage.

8.4 ***WAIVER OF SUBROGATION***. Landlord waives any and all rights of recovery against Tenant and Tenant's employees and agents for or arising out of damage to, or destruction of, the Project to the extent that Landlord's insurance policies then in force insure against such damage or destruction (or to the extent of what would have been covered had Landlord maintained the insurance required to be carried under this Lease) and permit such waiver. Tenant waives any and all rights of recovery against Landlord and Landlord's employees and agents for or arising out of damage to, or destruction of, the Project to the extent that Tenant's insurance policies then in force insure against such damage or destruction (or to the extent of what would have been covered had Tenant maintained the insurance required to be carried under this Lease) and permit such waiver. Tenant shall cause the insurance policies it obtains in accordance with Section 8.1 relating to property damage to provide that the insurance company waives all right of recovery by subrogation against Landlord in connection with any liability or damage covered by Tenant's insurance policies.

**9.** ***DAMAGE OR DESTRUCTION***.

9.1 ***EFFECT OF DAMAGE OR DESTRUCTION***. If all or part of the Project is damaged by fire, earthquake, flood, explosion, the elements, riot, the release or existence of Hazardous Substances (as defined below) or by any other cause whatsoever (hereinafter collectively referred to as "**Damages**"), but the Damages are not material (as defined in Section 9.2 below), Landlord shall repair the Damages to the Project as soon as is reasonably possible, and this Lease shall remain in full force and effect. If all or part of the Project is destroyed or materially damaged (as defined in Section 9.2 below), Landlord shall have the right, in its sole and complete discretion, to repair or to rebuild the Project or to terminate this Lease. Landlord shall within thirty (30) days after the discovery of such material damage or destruction notify Tenant in writing of Landlord's intention to repair or to rebuild or to terminate this Lease. Tenant shall in no event be entitled to compensation or damages on account of annoyance or inconvenience in making any repairs, or on account of construction, or on account of Landlord's election to terminate this Lease. Notwithstanding the foregoing, if Landlord shall elect to rebuild or repair the Project after material damage or destruction, but in good faith determines that the Premises cannot be substantially repaired within ninety (90) days after the date of the discovery of the material damage or destruction, without payment of overtime or other premiums, and the damage to the Project will render the Premises unusable during said ninety (90) day period for Tenant's intended use, Landlord shall notify Tenant thereof in writing at the time of Landlord's election to rebuild or repair, and Tenant shall thereafter have a period of fifteen (15) days within which Tenant may elect to terminate this Lease, upon thirty (30) days' advance written notice to Landlord. Tenant's termination right described in the preceding sentence shall not apply if the damage was caused by the negligent or intentional acts of Tenant or its employees, agents, contractors or invitees. Failure of Tenant to exercise said election within said fifteen (15) day period shall constitute Tenant's agreement to accept delivery of the Premises under this Lease whenever tendered by Landlord, provided Landlord thereafter pursues reconstruction or restoration diligently to completion, subject to delays caused by Force Majeure Events.

9.2 ***Definition of Material Damage***. Damage to the Project shall be deemed material if, in Landlord's reasonable judgment, the uninsured cost of repairing the damage will exceed $50,000 (in excess of any deductible), unless Tenant agrees in its sole discretion to pay the excess uninsured cost over $50,000. Damage to the Project shall also be deemed material if (a) the Project cannot be rebuilt or repaired to substantially the same condition it was in prior to the damage due to laws or regulations in effect at the time the repairs will be made, (b) the holder of any mortgage or deed of trust encumbering the Project requires that insurance proceeds available to repair the damage in excess of $50,000 be applied to the repayment of the indebtedness secured by the mortgage or the deed of trust, or (c) the damage occurs during the last twelve (12) months of the Lease term.

9.3 ***Abatement of Rent***. In the event that Tenant is prevented from using, and does not use, the Premises or any portion thereof as a result of damage to the Premises, and the damage was not caused by the negligence or intentional acts of Tenant or its employees, agents, contractors or invitees, then Tenant's Base Rent and Tenant's Share of Common Area Expense or Real Property Tax shall be abated or reduced, as the case may be, for such time that Tenant continues to be so prevented from using, and does not use, the Premises or a portion thereof, in the proportion that the rentable area of the portion of the Premises that Tenant is prevented from using, and does not use, bears to the total rentable area of the Premises.

9.4 ***Tenant's Property***. Subject to Section 8.1(b), Tenant shall repair or replace all of Tenant's property at Tenant's sole cost and expense. Tenant acknowledges that it is Tenant's sole responsibility to obtain adequate insurance coverage to compensate Tenant for damage to Tenant's property.

9.5 ***Waiver***. Landlord and Tenant hereby waive the provisions of any present or future statutes which relate to the termination of leases when leased property is damaged or destroyed and agree that such event shall be governed by the terms of this Lease.

**10.** ***Real and Personal Property Taxes***.

10.1 ***Payment of Taxes***. Tenant shall pay to Landlord during the term of this Lease, in addition to Base Rent and Tenant's Share of Common Area Expenses, Tenant's Share of the amount of all "**Real Property Taxes**" (as defined in Section 10.2 below) accruing during the Term. Tenant's Share of Real Property Taxes shall be payable by Tenant at the same time, in the same manner and under the same terms and conditions as Tenant pays Tenant's Share of Common Area Expenses.

10.2 ***Definition of "Real Property Tax***". As used herein, the term "**Real Property Taxes**" shall include any form of real estate tax or assessment, general, special, ordinary or extraordinary, improvement bond or bonds imposed on the Project or any portion thereof by any authority having the direct or indirect power to tax, including any city, county, state or federal government, or any school, agricultural, sanitary, fire, street, drainage or other improvement district thereof, as against any legal or equitable interest of Landlord in the Project or in any portion thereof, unless such tax is defined as an Common Area Expense by Section 4.2(b). Real Property Taxes shall not include income, inheritance, gift taxes, excess profits taxes, franchise taxes, capital stock taxes, inheritance and succession taxes, estate taxes, and other taxes to the extent applicable to Landlord's general or net income (as opposed to rents, receipts or income attributable to operations at the Project), or any items included as Common Area Expenses.

10.3 ***Personal Property Taxes***. Tenant shall pay prior to delinquency all taxes assessed against and levied upon trade fixtures, furnishings, equipment and all other personal property of Tenant contained in the Premises or related to Tenant's use of the Premises. If any of Tenant's personal property shall be assessed with Landlord's real or personal property, Tenant shall pay to Landlord the taxes attributable to Tenant within ten (10) days after receipt of a written statement from Landlord setting forth the taxes applicable to Tenant's property.

10.4 ***Reassessments***. From time to time Landlord may challenge the assessed value of the Project as determined by applicable taxing authorities and/or Landlord may attempt to cause the Real Property Taxes to be reduced on other grounds. If Landlord is successful in causing the Real Property Taxes to be reduced or in obtaining a refund, rebate, credit or similar benefit (hereinafter collectively referred to as a "**Reduction**"), Landlord shall, to the extent practicable, credit the Reduction(s) to Real Property Taxes for the calendar year to which a Reduction applies and recalculate the Real Property Taxes owed by Tenant for years after the year in which the Reduction applies based on the reduced Real Property Taxes (if a Reduction applies to Tenant's Base Year, the Base Year Real Property Taxes shall be reduced by the amount of the Reduction and Tenant's Share of Real Property Taxes shall be recalculated for all years following the year of the Reduction based on the lower Base Year amount). All costs incurred by Landlord in obtaining and/or processing the Real Property Tax reductions (e.g., consulting fees, accounting fees, etc.) may be included in Common Area Expenses or deducted from the Reduction. Landlord shall have the right to compensate a person or entity it employs to obtain a Reduction by giving such person or entity a percentage of any Reduction obtained.

**11.** ***UTILITIES***.

11.1 ***SERVICES PROVIDED BY LANDLORD***. Subject to all governmental rules, regulations and guidelines applicable thereto, and as a n element of Common Area Expenses, Landlord shall provide water and electricity for the Common Areas and trash removal for the Project.

11.2 ***UTILITIES***. Tenant shall, at its cost, provide for all utility service for utilities that are separately metered to the Premises from the appropriate utility service providers. Tenant shall pay all charges of such Utilities actually used on the Premises during the Term of this Lease.

**12.** ***ASSIGNMENT AND SUBLETTING.***

12.1 ***LANDLORD'S CONSENT REQUIRED***. Tenant shall not voluntarily or by operation of law assign, transfer, hypothecate, mortgage, sublet, or otherwise transfer or encumber all or any part of Tenant's interest in this Lease or in the Premises (hereinafter collectively a "**Transfer**"), without Landlord's prior written consent, which shall not be unreasonably withheld. Landlord shall respond to Tenant's written request for consent hereunder within fifteen (15) days after Landlord's receipt of the written request from Tenant. Any attempted Transfer without such consent shall be void and shall constitute a default and breach of this Lease. Tenant's written request for Landlord's consent shall include, and Landlord's within fifteen (15) day response period referred to above shall not commence, unless and until Landlord has received from Tenant, all of the following information: (a) financial statements for the proposed assignee or subtenant prepared in accordance with accounting principles consistently applied for the lesser of (i) the past three (3) years or (ii) the time period the assignee or subtenant has been in existence, (b) a detailed description of the business the assignee or subtenant intends to operate at the Premises, (c) the proposed effective date of the assignment or sublease, (d) a copy of the proposed sublease or assignment agreement which includes all of the terms and conditions of the proposed assignment or sublease, (e) a detailed description of any ownership or commercial relationship between Tenant and the proposed assignee or subtenant and (f) a detailed description of any Alterations the proposed assignee or subtenant desires to make to the Premises. Notwithstanding anything to the contrary contained in this Lease, an assignment or subletting of all or a portion of the Premises: (x) to a corporation or other business entity ("**Successor Entity**") into or with which Tenant shall be merged or consolidated, or to which substantially all of the assets of Tenant may be transferred, and provided that the successor corporation shall assume in writing all of the obligations and liabilities of Tenant under this Lease; or (y) to a corporation or other business entity (herein sometimes referred to as a "**Related Entity**") which shall control, be controlled by or be under common control with Tenant (any such assignee or sublessee described in items (x) and (y) of this Section 12.1 hereinafter referred to as a "**Permitted Transferee**"), shall not be considered a Transfer, provided that (i) Tenant notifies Landlord of any such assignment or sublease and promptly supplies Landlord with any documents or information reasonably requested by Landlord regarding such transfer or transferee as set forth above, (ii) such assignment or sublease is not a subterfuge by Tenant to avoid its obligations under this Lease, it being understood that such Transferee shall thereafter become liable under this Lease, on a joint and several basis, with Tenant, (iii) any Permitted Transferee shall be of a character and reputation consistent with the quality of the Building, (iv) in the case of an assignment, such Successor Entity or Related Entity, as applicable, together with the original Tenant, shall have a tangible net worth (not including goodwill as an asset) computed in accordance with generally accepted accounting principles (excluding goodwill as an asset) at least equal to that of original Tenant as of the date of this Lease, and, in Landlord's reasonable judgment, is otherwise equally able as Tenant to meet the Tenant's financial obligations under this Lease as and when they are due and payable, and (v) any lender of Landlord's which is required to give consent to the transfer does so. "**Control,**" as used in this Section 12.1, shall mean the ownership, directly or indirectly, of at least fifty-one percent (51%) of the voting securities of, or possession of the right to vote, in the ordinary direction of its affairs, of at least fifty-one percent (51%) of the voting interest in, any person or entity.

12.2 ***STANDARD FOR APPROVAL***. Landlord shall not unreasonably withhold its consent to a Transfer provided that Tenant has complied with each and every requirement, term and condition of this Section 12. Tenant acknowledges and agrees that each requirement, term and condition in this Section 12 is a reasonable requirement, term or condition. It shall be deemed reasonable for Landlord to withhold its consent to a Transfer if any requirement, term or condition of this Section 12 is not complied with or: (a) the Transfer would cause Landlord to be in violation of its obligations under another lease or agreement to which Landlord is a party; (b) in Landlord's reasonable judgment, a proposed assignee or subtenant has, together with the net worth of the original Tenant, a smaller net worth than Tenant had on the date this Lease was entered into with Tenant or is less able financially to pay the rents due under this Lease as and when they are due and payable; (c) the terms of a proposed assignment or subletting will allow the proposed assignee or subtenant to exercise a right of renewal, right of expansion, right of first offer, right of first refusal or similar right held by Tenant; (d) a proposed assignee or subtenant refuses to enter into a written assignment agreement or sublease, reasonably satisfactory to Landlord, which provides that it will abide by and assume all of the terms and conditions of this Lease for the term of any assignment or sublease and containing such other terms and conditions as Landlord reasonably deems necessary; (e) the use of the Premises by the proposed assignee or subtenant is not permitted by this Lease; (f) any guarantor of this Lease refuses to consent to the Transfer or to execute a written agreement reaffirming the guaranty; (g) Tenant is in default as defined in Section 13.1 at the time of the request; (h) if requested by Landlord, the assignee or subtenant refuses to sign a non-disturbance and attornment agreement in favor of Landlord's lender; (i) Landlord has sued or been sued by the proposed assignee or subtenant or has otherwise been involved in a legal dispute with the proposed assignee or subtenant; (j) the assignee or subtenant is involved in a business which is not in keeping with the then current standards of the Project; or (k) the assignee or subtenant is a governmental or quasi-governmental entity or an agency, department or instrumentality of a governmental or quasi-governmental agency.

12.3 ***TRANSFER PREMIUM FROM ASSIGNMENT OR SUBLETTING***. Landlord shall be entitled to receive from Tenant (as and when received by Tenant) as an item of additional rent one-half of all amounts received by Tenant from the assignee or subtenant in excess of the amounts payable by Tenant to Landlord hereunder (the "**Transfer Premium**"). The Transfer Premium shall be reduced by the reasonable brokerage commissions, tenant improvement costs and legal fees actually paid by Tenant in order to assign the Lease or to sublet all or part of the Premises. "**Transfer Premium**" shall mean all Base Rent, additional rent or other consideration of any type whatsoever payable by the assignee or subtenant in excess of the Base Rent and additional rent payable by Tenant under this Lease. If less than all of the Premises is subleased, for purposes of calculating the Transfer Premium, the Base Rent and the additional rent due under this Lease shall be allocated to the subleased premises on a per rentable square foot basis (e.g., if one-half of the Premises is subleased, for purposes of determining the amount of the Transfer Premium, one-half of the Base Rent and additional rent due under this Lease would be allocated to the subleased premises, and this amount would be subtracted from the base rent, additional rent and other monies payable to Tenant under the sublease). "**Transfer Premium**" shall also include, but not be limited to, key money and bonus money paid by the assignee or subtenant to Tenant in connection with such Transfer, and any payment in excess of fair market value for services rendered by Tenant to the assignee or subtenant or for assets, fixtures, inventory, equipment, or furniture transferred by Tenant to the assignee or subtenant in connection with such Transfer. Landlord and Tenant agree that the foregoing Transfer Premium is reasonable.

12.4 ***LANDLORD'S EXPENSES***. In the event Tenant shall assign this Lease or sublet the Premises or request the consent of Landlord to any Transfer, then Tenant shall pay Landlord's reasonable out-of-pocket costs and expenses incurred in connection therewith, including, but not limited to, attorneys', architects', accountants', engineers' or other consultants' fees, in an amount not to exceed $2,500.

**13.** ***DEFAULT; REMEDIES***.

13.1 ***DEFAULT BY TENANT***. Landlord and Tenant hereby agree that the occurrence of any one or more of the following events is a default by Tenant under this Lease and that said default shall give Landlord the rights described in Section 13.2. Landlord or Landlord's authorized agent shall have the right to execute and to deliver any notice of default, notice to pay rent or quit or any other notice Landlord gives Tenant.

(a) Tenant's failure to make any payment of Base Rent, Tenant's Share of Common Area Expense increases, Tenant's Share of Real Property Taxes, late charges, or any other payment required to be made by Tenant hereunder, as and when due, where such failure shall continue for a period of three (3) business days after written notice thereof from Landlord to Tenant.

(b) Tenant's failure to make any payment of Base Rent, Tenant's Share of Common Area Expenses, Tenant's Share of Real Property Taxes, late charges, or any other payment required to be made by Tenant hereunder, as and when due, more than three times in succession, or, in the case of Base Rent, more than four times in any twelve month period,

(c) The abandonment of the Premises by Tenant coupled with the nonpayment of rent in which event Landlord shall not be obligated to give any notice of default to Tenant.

(d) The failure by Tenant to observe or perform any of the covenants, conditions or provisions of this Lease to be observed or performed by Tenant (other than those referenced in Sections 13.1(a) and (b), above), where such failure shall continue for a period of thirty (30) days after written notice thereof from Landlord to Tenant; provided, however, that if the nature of Tenant's non-performance is such that more than thirty (30) days are reasonably required for its cure, then Tenant shall not be deemed to be in default if Tenant commences such cure within said thirty (30) day period and thereafter diligently pursues such cure to completion.

(e) (i) The making by Tenant or any guarantor of Tenant's obligations hereunder of any general arrangement or general assignment for the benefit of creditors; (ii) Tenant or any guarantor becoming a "**debtor**" as defined in 11 U.S.C. 101 or any successor statute thereto (unless, in the case of a petition filed against Tenant or guarantor, the same is dismissed within sixty (60) days); (iii) the appointment of a trustee or receiver to take possession of substantially all of Tenant's assets located at the Premises or of Tenant's interest in this Lease, where possession is not restored to Tenant within thirty (30) days; (iv) the attachment, execution or other judicial seizure of substantially all of Tenant's assets located at the Premises or of Tenant's interest in this Lease, where such seizure is not discharged within thirty (30) days; or (v) the insolvency of Tenant. In the event that any provision of this Section 13.1(d) is unenforceable under applicable law, such provision shall be of no force or effect.

13.2 ***REMEDIES***.

(a) In the event of any default or breach of this Lease by Tenant, Landlord may, at any time thereafter, with or without notice or demand, and without limiting Landlord in the exercise of any other right or remedy which Landlord may have by reason of such default:

(i) terminate Tenant's right to possession of the Premises by any lawful means, in which case this Lease and the term hereof shall terminate and Tenant shall immediately surrender possession of the Premises to Landlord. If Landlord terminates this Lease, Landlord may recover from Tenant (A) the worth at the time of award of the unpaid rent which had been earned at the time of termination; (B) the worth at the time of award of the amount by which the unpaid rent which would have been earned after termination until the time of award exceeds the amount of such rental loss that Tenant proves could have been reasonably avoided; (C) the worth at the time of award of the amount by which the unpaid rent for the balance of the term after the time of award exceeds the amount of such rental loss that Tenant proves could be reasonably avoided; and (D) any other amount necessary to compensate Landlord for all detriment proximately caused by Tenant's failure to perform its obligations under the Lease or which in the ordinary course of things would be likely to result therefrom, including, but not limited to, the cost of recovering possession of the Premises, expenses of releasing, including necessary renovation and alteration of the Premises, reasonable attorneys' fees, any real estate commissions actually paid by Landlord and the unamortized value of any free rent, reduced rent, tenant improvement allowance or other economic concessions provided by Landlord. The "**worth at time of award**" of the amounts referred to in Section 13.2(a)(i)(A) and (B) shall be computed by allowing interest at ten percent (10%) per annum. The worth at the time of award of the amount referred to in Section 13.2(a)(i)(C) shall be computed by discounting such amount at the discount rate of the Federal Reserve Bank of San Francisco at the time of award plus one percent (1%). For purposes of this Section 13.2(a)(i), "**rent**" shall be deemed to be all monetary obligations required to be paid by Tenant pursuant to the terms of this Lease;

(ii) maintain Tenant's right of possession in which event Landlord shall have the remedy described in California Civil Code Section 1951.4 which permits Landlord to continue this Lease in effect after Tenant's breach and abandonment and recover rent as it becomes due. In the event Landlord elects to continue this Lease in effect, Tenant shall have the right to sublet the Premises or assign Tenant's interest in the Lease subject to the reasonable requirements contained in Section 12 of this Lease and provided further that Landlord shall not require compliance with any standard or condition contained in Section 12 that has become unreasonable at the time Tenant seeks to sublet or assign the Premises pursuant to this Section 13.2(a)(ii);

(iii) collect sublease rents (or appoint a receiver to collect such rent) and otherwise perform Tenant's obligations at the Premises, it being agreed, however, that the appointment of a receiver for Tenant shall not constitute an election by Landlord to terminate this Lease; and

(iv) pursue any other remedy now or hereafter available to Landlord under the laws or judicial decisions of the state in which the Premises are located.

(b) No remedy or election hereunder shall be deemed exclusive, but shall, wherever possible, be cumulative with all other remedies at law or in equity. The expiration or termination of this Lease and/or the termination of Tenant's right to possession of the Premises shall not relieve Tenant of liability under any indemnity provisions of this Lease as to matters occurring or accruing during the term of the Lease or by reason of Tenant's occupancy of the Premises.

(c) If Tenant abandons the Premises, Landlord may re-enter the Premises and such re-entry shall not be deemed to constitute Landlord's election to accept a surrender of the Premises or to otherwise relieve Tenant from liability for its breach of this Lease. No surrender of the Premises shall be effective against Landlord unless Landlord has entered into a written agreement with Tenant in which Landlord expressly agrees to accept a surrender of the Premises and relieve Tenant of liability under the Lease. The delivery by Tenant to Landlord of possession of the Premises shall not constitute the termination of the Lease or the surrender of the Premises, unless agreed in writing by Landlord.

13.3 ***DEFAULT BY LANDLORD***. Landlord shall not be in default under this Lease unless Landlord fails to perform obligations required of Landlord within thirty (30) days after written notice by Tenant to Landlord and to the holder of any mortgage or deed of trust encumbering the Project whose name and address shall have theretofore been furnished to Tenant in writing, specifying wherein Landlord has failed to perform such obligation; provided, however, that if the nature of Landlord's obligation is such that more than thirty (30) days are required for its cure, then Landlord shall not be in default if Landlord commences performance within such thirty (30) day period and thereafter diligently pursues the same to completion.

13.4 ***LATE CHARGES AND DISHONORED CHECK CHARGES***. Tenant hereby acknowledges that late payment by Tenant to Landlord of Base Rent, Tenant's Share of Common Area Expense or Real Property Taxes or other sums due hereunder, or payment of any of the foregoing with a check that is dishonored, will cause Landlord to incur costs not contemplated by this Lease, the exact amount of which will be extremely difficult to ascertain. Such costs include, but are not limited to, processing and accounting charges and late charges which may be imposed on Landlord by the terms of any mortgage or trust deed encumbering the Project. Accordingly, if any installment of Base Rent, Tenant's Share of Common Area Expense or Real Property Taxes, or any other sum due from Tenant shall not be received by Landlord within five (5) days of the date when such amount shall be due, or if any check tendered by Tenant id dishonored by the issuing bank, then, without any requirement for notice or demand to Tenant, Tenant shall immediately owe and pay to Landlord a late charge equal to five percent (5%) of such overdue amount. The parties hereby agree that such late charge and dishonored check charge represent a fair and reasonable estimate of the costs Landlord will incur by reason of late payment by Tenant, or dishonored check. Acceptance of such late charge or dishonored check charge by Landlord shall in no event constitute a waiver of Tenant's default with respect to such overdue amount, nor prevent Landlord from exercising any of the other rights and remedies granted hereunder including the assessment of interest under Section 13.5. Notwithstanding the foregoing, Landlord shall waive the application of such late charge or dishonored check charge once per 12-month period provided that Tenant pays the delinquent or unpaid sum within five (5) business days after receipt of written notice from Landlord that such amount was not paid when due.

13.5 ***INTEREST ON PAST-DUE OBLIGATIONS***. Except as expressly herein provided, any amount due to Landlord that is not paid within five (5) days of the date when due shall bear interest at the lesser of ten percent (10%) per annum or the maximum rate permitted by applicable law. Payment of such interest shall not excuse or cure any default by Tenant under this Lease; provided, however, that interest shall not be payable on late charges incurred by Tenant nor on any amounts upon which late charges are paid by Tenant.

13.6 ***PAYMENT OF RENT AND SECURITY DEPOSIT AFTER DEFAULT***. In addition to the remedies provided in section 13.1(b), if Tenant fails to pay Base Rent, Tenant's Share of Common Area Expense or Real Property Taxes or any other monetary obligation due hereunder on the date it is due and such nonpayment results in a default (beyond any applicable notice and cure period), then after Tenant's third failure to pay any monetary obligation on the date it is due, at Landlord's option, all monetary obligations of Tenant hereunder shall thereafter be paid by cashier's check, and Tenant shall, upon demand, provide Landlord with an additional security deposit equal to three (3) multiplied by the monthly Base Rent due on the date of Landlord's demand. If Landlord has required Tenant to make said payments by cashier's check or to provide an additional security deposit, Tenant's failure to make a payment by cashier's check or to provide the additional security deposit shall be a default hereunder.

**14.** ***LANDLORD'S RIGHT TO CURE DEFAULT; PAYMENTS BY TENANT***. All covenants and agreements to be kept or performed by Tenant under this Lease shall be performed by Tenant at Tenant's sole cost and expense and without any reduction of rent. If Tenant shall fail to perform any of its obligations under this Lease, within a reasonable time after such performance is required by the terms of this Lease, Landlord may, but shall not be obligated to, after three (3) days prior written notice to Tenant, make any such payment or perform any such act on Tenant's behalf without waiving its rights based upon any default of Tenant and without releasing Tenant from any obligations hereunder. Tenant shall pay to Landlord, within ten (10) days after delivery by Landlord to Tenant of statements therefore, an amount equal to the expenditures reasonably made by Landlord in connection with the remedying by Landlord of Tenant's defaults pursuant to the provisions of this Section 14.

**15.** ***CONDEMNATION***. If any portion of the Premises or the Project are taken under the power of eminent domain, or sold under the threat of the exercise of said power (all of which are herein called "condemnation"), this Lease shall terminate as to the part so taken as of the date the condemning authority takes title or possession, whichever first occurs; provided that if so much of the Premises or Project are taken by such condemnation as would substantially and adversely affect the operation and profitability of Tenant's business conducted from the Premises, and said taking lasts for ninety (90) days or more, Tenant shall have the option, to be exercised only in writing within thirty (30) days after Landlord shall have given Tenant written notice of such taking (or in the absence of such notice, within thirty (30) days after the condemning authority shall have taken possession), to terminate this Lease as of the date the condemning authority takes such possession. If a taking lasts for less than ninety (90) days, Tenant's rent shall be abated during said period but Tenant shall not have the right to terminate this Lease. If Tenant does not terminate this Lease in accordance with the foregoing, this Lease shall remain in full force and effect as to the portion of the Premises remaining, except that the rent and Tenant's Share of Common Area Expenses shall be reduced in the proportion that the usable floor area of the Premises taken bears to the total usable floor area of the Premises. Common Areas taken shall be excluded from the Common Areas usable by Tenant and no reduction of rent shall occur with respect thereto or by reason thereof. Landlord shall have the option in its sole discretion to terminate this Lease as of the taking of possession by the condemning authority, by giving written notice to Tenant of such election within thirty (30) days after receipt of notice of a taking by condemnation of any material part of the Premises or the Project. Any award for the taking of all or any part of the Premises or the Project under the power of eminent domain or any payment made under threat of the exercise of such power shall be the property of Landlord, whether such award shall be made as compensation for diminution in value of the leasehold, for good will, for the taking of the fee, as severance damages, or as damages for tenant improvements; provided, however, that Tenant shall be entitled to any separate award for loss of or damage to Tenant's removable personal property and for moving expenses. In the event that this Lease is not terminated by reason of such condemnation, and subject to the requirements of any lender that has made a loan to Landlord encumbering the Project, Landlord shall to the extent of severance damages received by Landlord in connection with such condemnation, repair any damage to the Project caused by such condemnation except to the extent that Tenant has been reimbursed therefor by the condemning authority. This section, not general principles of law or California Code of Civil Procedure Sections 1230.010 et seq., shall govern the rights and obligations of Landlord and Tenant with respect to the condemnation of all or any portion of the Project.

**16.** ***VEHICLE PARKING***. Tenant shall have the right to 3.3 parking spaces per 1,000 square feet of the Premises, on an unassigned basis within the parking areas serving the Project. Tenant shall have use of the electric charging stations in the Project on a non-exclusive basis. Parking shall be at no charge to Tenant.

**17.** ***BROKER'S FEE***. Tenant and Landlord each represent and warrant to the other that neither has had any dealings or entered into any agreements with any person, entity, broker or finder other than the persons, if any, listed in Section 1.13, in connection with the negotiation of this Lease, and no other broker, person, or entity is entitled to any commission or finder's fee in connection with the negotiation of this Lease, and Tenant and Landlord each agree to indemnify, defend and hold the other harmless from and against any claims, damages, costs, expenses, attorneys' fees or liability for compensation or charges which may be claimed by any such unnamed broker, finder or other similar party by reason of any dealings, actions or agreements of the indemnifying party. Landlord shall pay all commissions owed to the brokers listed in Section 1.13 in connection with this Lease pursuant to a separate agreement.

**18.** ***DELIVERY OF CERTIFICATE***. Tenant shall from time to time upon not less than ten (10) days' prior written notice from Landlord execute, acknowledge and deliver to Landlord a statement in writing certifying the following: (a) that this Lease is unmodified and in full force and effect (or, if modified, stating the nature of such modification and certifying that this Lease, as so modified, is in full force and effect) (b) the date to which the Base Rent and other charges are paid in advance and the amounts so payable, (c) that there are not, to Tenant's knowledge, any uncured defaults or unfulfilled obligations on the part of Landlord, or specifying such defaults or unfulfilled obligations, if any are claimed, (d) that all tenant improvements to be constructed by Landlord, if any, have been completed in accordance with Landlord's obligations and (e) that Tenant has taken possession of the Premises. Any such statement may be conclusively relied upon by any prospective purchaser or encumbrancer of the Project.

**19.** ***FINANCIAL INFORMATION***. From time to time, at Landlord's request (but not more than once in any given 12-month period), Tenant shall cause the following financial information to be delivered to Landlord, at Tenant's sole cost and expense, upon not less than thirty (30) days' advance written notice from Landlord, a current financial statement for Tenant and Tenant's financial statements for the previous two accounting years. All financial statements shall be prepared in accordance with accounting principles consistently applied and, if such is the normal practice of Tenant, shall be audited by an independent certified public accountant if such audited financial statements are then available.

**20.** ***LANDLORD'S LIMITED LIABILITY***. Tenant acknowledges that Landlord shall have the right to transfer all or any portion of its interest in the Project and to assign this Lease to the transferee. Tenant agrees that in the event of such a transfer (and assignment of this Lease to the transferee), Landlord shall automatically be released from all liability under this Lease; and Tenant hereby agrees to look solely to Landlord's transferee for the performance of Landlord's obligations hereunder after the date of the transfer. Upon such a transfer, Landlord shall, at its option, return Tenant's security deposit to Tenant or transfer Tenant's security deposit to Landlord's transferee and, in either event, Landlord shall have no further liability to Tenant for the return of its security deposit. Subject to the rights of any lender holding a mortgage or deed of trust encumbering all or part of the Project, Tenant agrees to look solely to Landlord's equity interest in the Project for the collection of any judgment requiring the payment of money by Landlord arising out of (a) Landlord's failure to perform its obligations under this Lease or (b) the negligence or willful misconduct of Landlord, its partners, employees and agents. No other property or assets of Landlord shall be subject to levy, execution or other enforcement procedure for the satisfaction of any judgment or writ obtained by Tenant against Landlord. No partner, employee, officer, director, member or agent of Landlord shall be personally liable for the performance of Landlord's obligations hereunder or be named as a party in any lawsuit arising out of or related to, directly or indirectly, this Lease and the obligations of Landlord hereunder. The obligations under this Lease do not constitute personal obligations of the individual partners of Landlord, if any, and Tenant shall not seek recourse against the individual partners of Landlord or their assets.

**21.** ***INDEMNITY***. Tenant hereby agrees to indemnify, defend and hold harmless Landlord and its employees, members, officers, managers, partners, agents, property managers, contractors, lenders and ground lessors (said persons and entities are hereinafter collectively referred to as the "**Indemnified Parties**") from and against any and all liability, loss, cost, damage, claims, loss of rents, liens, judgments, penalties, fines, settlement costs, investigation costs, the cost of consultants and experts, attorney's fees, court costs and other legal expenses, the effects of environmental contamination, the cost of environmental testing, the removal, remediation and/or abatement of Hazardous Substances, insurance policy deductibles and other expenses (hereinafter collectively referred to as "**Damages**") arising out of or related to an "**Indemnified Matter**" (as defined below). For purposes of this Section 21, an "**Indemnified Matter**" shall mean any matter for which one or more of the Indemnified Parties incurs liability or Damages if and to the extent the liability or Damages arise out of or involve, directly or indirectly, Tenant's or its employees', agents', contractors', invitees', vendors', subtenants' or other persons working in or visiting the Premises (all of said persons or entities are hereinafter collectively referred to as "**Tenant Parties**") use or occupancy of the Premises or the Project, any act or omission of a Tenant Party; Tenant's breach of or non-compliance with, any of the provisions of this Lease, the existence, receipt, release, storage, use or disposal of any Hazardous Substance (as defined in Section 23 below) brought on or to the Project by a Tenant Party; or any other matters for which Tenant has agreed to indemnify Landlord pursuant to any other provision of this Lease. Tenant's obligations hereunder shall include, but shall not be limited to compensating the Indemnified Parties for Damages arising out of Indemnified Matters within ten (10) days after written demand from an Indemnified Party and providing a defense, with counsel reasonably satisfactory to the Indemnified Party, at Tenant's sole expense, within ten (10) days after written demand from the Indemnified Party, of any claims, action or proceeding arising out of or relating to an Indemnified Matter whether or not litigated or reduced to judgment and whether or not well founded. Landlord shall have the immediate and unconditional right, but not the obligation, without notice or demand to Tenant, to pay the Damages and Tenant shall, upon ten (10) days advance written notice from Landlord, reimburse Landlord for the costs incurred by Landlord for any Damages to the Common Areas, another tenant's premises or to any other part of the Project to be repaired, arising out of an Indemnified Matter. The Indemnified Parties need not first pay any Damages to be indemnified hereunder. Tenant's obligations under this section shall not be released, reduced or otherwise limited because one or more of the Indemnified Parties are or may be actively or passively negligent with respect to an Indemnified Matter. This indemnity is intended to apply to the fullest extent permitted by applicable law. Tenant's obligations under this section shall survive the expiration or termination of this Lease unless specifically waived in writing by Landlord after said expiration or termination.

**22.** ***SIGNS***. Tenant shall place signage upon the Project (exterior to the Premises) with Landlord's prior written consent, which consent shall not be unreasonably withheld or conditioned. Such signage shall be installed and maintained by Tenant at Tenant's sole expense and shall comply at all times with applicable laws.

**23.** ***HAZARDOUS SUBSTANCES***.

23.1 ***DEFINITION AND CONSENT***. The term "**Hazardous Substance**" as used in this Lease shall mean any product, substance, chemical, material or waste whose presence, nature, quantity and/or intensity of existence, use, manufacture, disposal, transportation, spill, release or affect, either by itself or in combination with other materials expected to be on the Premises, is either: (a) potentially injurious to the public health, safety or welfare, the environment, or the Premises, (b) regulated or monitored by any governmental entity, (c) a basis for liability of Landlord to any governmental entity or third party under any federal, state or local statute or common law theory or (d) defined as a hazardous material or substance by any federal, state or local law or regulation. Tenant shall not cause or permit any Hazardous Substance to be delivered to, brought, kept, stored, released, disposed of, or used in or about the Premises or the Project by Tenant, its agents, employees, contractors or invitees in violation of applicable laws, regulations, codes, and /or ordinances.

23.2 ***DUTY TO INFORM LANDLORD***. If Tenant knows, or has reasonable cause to believe, that a Hazardous Substance, or a condition involving or resulting from same, has come to be located in, on or under or about the Premises or the Project in violation of applicable laws, Tenant shall immediately give written notice of such fact to Landlord. Tenant shall also immediately give Landlord (without demand by Landlord) a copy of any statement, report, notice, registration, application, permit, license, given to or received from, any governmental authority or private party, or persons entering or occupying the Premises, concerning the presence, spill, release, discharge of or exposure to, any Hazardous Substance or contamination in, on or about the Premises or the Project.

23.3 ***INSPECTION; COMPLIANCE***. Landlord and Landlord's employees, agents, contractors and lenders shall have the right to enter the Premises at any time in the case of an emergency, and otherwise at reasonable times, for the purpose of inspecting the condition of the Premises and for verifying compliance by Tenant with this Section 23. Landlord shall have the right to employ experts and/or consultants in connection with its examination of the Premises and with respect to the installation, operation, use, monitoring, maintenance, or removal of any Hazardous Substance on or from the Premises. The costs and expenses of any such inspections shall be paid by the party requesting same, unless a contamination, caused or materially contributed to by Tenant, is found to exist or be imminent, or unless the inspection is requested or ordered by governmental authority as the result of any such existing or imminent violation or contamination. In any such case, Tenant shall upon request reimburse Landlord for the cost and expenses of such inspection.

23.4 ***NO LIABILITY FOR ACTS OF OTHERS***. Notwithstanding anything to the contrary contained in this Lease, Tenant shall only be liable pursuant to this Section 23 for the acts of Tenant and Tenant Parties, and Tenant shall not be liable for the acts of persons or entities other than Tenant and Tenant Parties nor shall Tenant be responsible or liable for contamination that existed at the Premises on the Commencement Date or for contamination emanating from neighboring land.

**24.** ***SUBORDINATION***.

24.1 ***EFFECT OF SUBORDINATION***. This Lease, and any Option granted hereby, upon Landlord's written election, shall be subject and subordinate to any ground lease, mortgage, deed of trust, or any other hypothecation or security now or hereafter placed upon the Project and to any and all advances made on the security thereof and to all renewals, modifications, consolidations, replacements and extensions thereof. Notwithstanding such subordination, Tenant's right to quiet possession of the Premises shall not be disturbed if Tenant is not in default and so long as Tenant shall pay the rent and observe and perform all of the provisions of this Lease, unless this Lease is otherwise terminated pursuant to its terms. At the request of any mortgagee, trustee or ground lessor, Tenant shall attorn to such person or entity. If any mortgagee, trustee or ground lessor shall elect to have this Lease and any Options granted hereby prior to the lien of its mortgage, deed of trust or ground lease, and shall give written notice thereof to Tenant, this Lease and such Options shall be deemed prior to such mortgage, deed of trust or ground lease, whether this Lease or such Options are dated prior or subsequent to the date of said mortgage, deed of trust or ground lease or the date of recording thereof. In the event of the foreclosure of a security device, the new owner shall not (a) be liable for any act or omission of any prior landlord or with respect to events occurring prior to its acquisition of title, (b) be liable for the breach of this Lease by any prior landlord, (c) be subject to any offsets or defenses which Tenant may have against the prior landlord or (d) be liable to Tenant for the return of its security deposit.

24.2 ***EXECUTION OF DOCUMENTS***. Tenant agrees to execute and acknowledge any commercially reasonable documents Landlord reasonably requests that Tenant execute to effectuate an attornment, subordination, and non-disturbance to make this Lease or any Option granted herein prior to the lien of any mortgage, deed of trust or ground lease, as the case may be.

**25.** ***OPTION TO EXTEND***.

25.1 ***OPTION GRANT***. Provided no outstanding Event of Default exists under the terms and conditions of the Lease at the time Tenant delivers the notice required by section 25(a), and, in Landlord's reasonable judgment, Tenant's ability to meet its obligations under this Lease is at least equal to its ability to meet said obligations on the date this Lease is entered into, Landlord hereby grants to Tenant an option to extend the term of the Lease for two (2) thirty (30)-month periods (each, an "**Extension Option**") commencing when the then expiring term expires, upon each and all of the following terms and conditions:

(a) On a date which is prior to the date that the option period would commence (if exercised) by at least one hundred eighty (180) days and not more than three hundred sixty (360) days, Landlord shall have received from Tenant a written notice of the exercise of the option to extend the Lease for said additional term (an "**Exercise Notice**"), time being of the essence. If the Exercise Notice is not so given and received, the Extension Option shall automatically expire, Tenant shall no longer have the right to give an Exercise Notice and this section shall be of no further force or effect.

(b) All of the terms and conditions of the Lease except where specifically modified by this section shall apply.

(c) The monthly Base Rent payable during the option term shall be ninety-five (95%) of the then fair market rental value, as determined in accordance with section 25.2.

(d) Landlord shall have the right to require Tenant to execute and to deliver to Landlord an amendment to the Lease that accurately sets forth the extended term of the Lease and the new Base Rent. Landlord's election not to require Tenant to execute an amendment shall not invalidate Tenant's exercise of the Extension Option.

25.2 ***DETERMINATION OF FAIR MARKET VALUE***. Upon the commencement of the extension term, the Base Rent shall be an annual amount equal to ninety-five percent (95%) of the fair market rental value of the Premises in its then current condition, use and configuration, and without regard to any other possible condition, use, configuration or land use entitlements or restrictions with respect to the Premises, determined as follows ("**Fair Market Rent**"):

(a) Landlord shall deliver to Tenant written notice of Landlord's determination of fair market rental value within thirty (30) days after Landlord receives notice from Tenant that Tenant has exercised the Extension Option.

(b) If Tenant disputes Landlord's determination of the fair market rental value as contained in Landlord's notice, Tenant shall notify Landlord in writing within twenty (20) days of its receipt of Landlord's determination, which notice shall set forth Tenant's determination of the fair market rental value. Should Tenant timely notify Landlord as aforesaid, Landlord and Tenant shall attempt to resolve their differences within twenty (20) days following Landlord's receipt of Tenant's notice. Should Tenant fail to timely notify Landlord as aforesaid, then ninety-five percent (95%) of Landlord's determination of fair market rental value as contained in Landlord's notice shall constitute the Fair Market Rent.

(c) Should Tenant timely notify Landlord as aforesaid and if Landlord and Tenant cannot agree on fair market rental value during such ten (10) day period, Landlord and Tenant shall each appoint a disinterested commercial real estate broker specializing in the leasing of similarly situated real property in San Mateo County for at least ten (10) years and give notice of such appointment to the other within ten (10) days after the preceding ten (10) day period. If either Landlord or Tenant shall fail timely to appoint a broker, then the single broker appointed by one party shall proceed to make the determination of fair market rental value. Such broker(s) shall, within thirty (30) days after the appointment of the last of them to be appointed, complete their written determinations of fair market rental value and furnish the same to Landlord and Tenant. Each party shall pay the fees and costs of the broker appointed by it. If the valuations vary by 5% or less of the lower value, the fair market rental value shall be the average of the two valuations.

(d) If the valuations vary by more than 5% of the lower value, the two brokers shall, within ten (10) days after submission of the last appraisal report, appoint a third disinterested broker satisfying the same qualifications. If the two brokers shall be unable to agree in a timely manner on the selection of the third broker, then either broker, on behalf of both, may request appointment of such third disinterested broker by the presiding judge of the Superior Court of the county in which the Premises are located or through the American Arbitration Association process. Such third broker shall, within thirty (30) days after appointment, select one of the two valuations submitted by the first two brokers as such third broker's determination of fair market rental value, and shall submit such decision to Landlord and Tenant. The fair market rental value of the Premises as determined by the third broker shall be controlling. All fees and costs incurred in connection with the determination of fair market rental value by the third broker shall be paid one-half by Landlord and one-half by Tenant.

(e) All valuations done pursuant to this **Section 25.2** shall be based on leases of similar office, research & development, and lab flex buildings in the cities of Foster City, Redwood Shores and San Mateo.

**26.** ***HOLDING OVER***. If Tenant remains in possession of the Premises or any part thereof after the expiration or earlier termination of the term hereof with Landlord's consent, such occupancy shall be a tenancy from month to month upon all the terms and conditions of this Lease pertaining to the obligations of Tenant, except that the Base Rent payable shall be one hundred twenty five percent (125%) of the Base Rent payable immediately preceding the termination date of this Lease, and all Options, if any, shall be deemed terminated and be of no further effect. If Tenant remains in possession of the Premises or any part thereof after the expiration of the term hereof without Landlord's consent, Tenant shall, at Landlord's option, be treated as a tenant at sufferance. Nothing contained herein shall be construed to constitute Landlord's consent to Tenant holding over at the expiration or earlier termination of the Lease term or to give Tenant the right to hold over after the expiration or earlier termination of the Lease term.

**27.** ***LANDLORD'S ACCESS***.

27.1 ***ACCESS***. Landlord and Landlord's agents, contractors and employees shall have the right to enter the Premises at reasonable times upon reasonable advance telephonic notice to Tenant (except in the case of any emergency, where no advance notice shall be required) for the purpose of inspecting the Premises, performing any services required of Landlord, showing the Premises to prospective purchasers, lenders, or tenants (within the last 6 months of the term), undertaking safety measures and making alterations, repairs, improvements or additions to the Premises or to the Project. Tenant shall provide Landlord with any security codes needed by Landlord to gain such access. In the event of an emergency, Landlord may gain access to the Premises by any reasonable means, and Landlord shall not be liable to Tenant for damage to the Premises or to Tenant's property resulting from such access. Landlord may at any time place on or about the Building or the Project for sale or for lease signs. Landlord shall comply with Tenant's reasonable security measures in connection with such access by Landlord.

27.2 ***KEYS***. Landlord shall have the right to retain keys to the locks on the entry doors to the Premises and all interior doors at the Premises (with the exception of Tenant's secured areas). In the event locks are changed, Tenant shall notify Landlord and provide Landlord with replacement keys.

**28.** ***SECURITY MEASURES***. Tenant hereby acknowledges that Landlord shall have no obligation whatsoever to provide guard service or other security measures for the benefit of the Premises or the Project, and Landlord shall have no liability to Tenant due to its failure to provide such services. Tenant assumes all responsibility for the protection of Tenant, its agents, employees, contractors and invitees and the property of Tenant and of Tenant's agents, employees, contractors and invitees from acts of third parties. Nothing herein contained shall prevent Landlord, at Landlord's sole option, from implementing security measures for the Project or any part thereof, in which event Tenant shall participate in such security measures and the cost thereof shall be included within the definition of Common Area Expenses, and Landlord shall have no liability to Tenant and its agents, employees, contractors and invitees arising out of Landlord's negligent provision of security measures. Landlord shall have the right, but not the obligation, to require all persons entering or leaving the Project to identify themselves to a security guard and to reasonably establish that such person should be permitted access to the Project. In no event shall Tenant or its employees, agents or contractors bring firearms or other weapons to the Project or the Premises, and Tenant shall not have the right to employ armed security guards.

**29.** ***EASEMENTS***. Landlord reserves to itself the right, from time to time, to grant such easements, rights and dedications that Landlord deems necessary or desirable, and to cause the recordation of parcel maps and restrictions, so long as such easements, rights, dedications, maps and restrictions do not unreasonably interfere with the use of the Premises by Tenant.

**30.** ***SEVERABILITY***. The invalidity of any provision of this Lease as determined by a court of competent jurisdiction shall in no way affect the validity of any other provision hereof.

**31.** ***TIME OF ESSENCE***. Time is of the essence with respect to each of the obligations to be performed by Tenant and Landlord under this Lease.

**32.** ***DEFINITION OF ADDITIONAL RENT***. All monetary obligations of Tenant to Landlord under the terms of this Lease, including, but not limited to, Base Rent, Tenant's Share of Common Area Expenses and Real Property Taxes and late charges shall be deemed to be rent.

**33.** ***INCORPORATION OF PRIOR AGREEMENTS***. This Lease and the Exhibits contain all agreements of the parties with respect to the lease of the Premises and any other matter mentioned herein. No prior or contemporaneous agreement or understanding pertaining to any such matter shall be effective. Except as otherwise stated in this Lease, Tenant hereby acknowledges that no real estate broker nor Landlord or any employee or agents of any of said persons has made any oral or written warranties or representations to Tenant concerning the condition or use by Tenant of the Premises or the Project or concerning any other matter addressed by this Lease.

**34.** ***AMENDMENTS***. This Lease may be modified in writing only, signed by the parties in interest at the time of the modification. One or more emails signed by one or more parties shall never constitute a writing signed by the parties that is capable of amending or modifying the Lease.

**35.** ***NOTICES***. All notices required or permitted by this Lease shall be in writing and may be delivered (a) in person (by hand, by messenger or by courier service), (b) by U.S. Postal Service regular mail, (c) by U.S. Postal Service certified mail, return receipt requested or (d) by U.S. Postal Service Express Mail, Federal Express or other overnight courier, and shall be deemed sufficiently given if served in a manner specified in this Section 35. Notices may not be given by email, and email notices shall not be binding on Landlord or Tenant for any purpose. Any notice permitted or required hereunder, and any notice to pay rent or quit or similar notice, shall be deemed personally delivered to Tenant on the date the notice is personally delivered to any employee of Tenant at the Premises. The addresses set forth in Section 1.15 of this Lease shall be the address of each party for notice purposes. Landlord or Tenant may by written notice to the other specify a different address for notice purposes, except that upon Tenant's taking possession of the Premises, the Premises shall constitute Tenant's address for the purpose of mailing or delivering notices

to Tenant. A copy of all notices required or permitted to be given to Landlord hereunder shall be concurrently transmitted to such party or parties at such addresses as Landlord may from time to time hereinafter designate by written notice to Tenant. Any notice sent by regular mail or by certified mail, return receipt requested, shall be deemed given three (3) days after deposited with the U.S. Postal Service. Notices delivered by U.S. Express Mail, Federal Express or other courier shall be deemed given on the date delivered by the carrier to the appropriate party's address for notice purposes. If notice is received on Saturday, Sunday or a legal holiday, it shall be deemed received on the next business day. Nothing contained herein shall be construed to limit Landlord's right to serve any notice to pay rent or quit or similar notice by any method permitted by applicable law, and any such notice shall be effective if served in accordance with any method permitted by applicable law whether or not the requirements of this section have been met.

**36.** ***WAIVERS***. No waiver by Landlord or Tenant of any provision hereof shall be deemed a waiver of any other provision hereof or of any subsequent breach by Landlord or Tenant of the same or any other provision. The acceptance of rent hereunder by Landlord shall not be a waiver of any preceding breach by Tenant of any provision hereof, other than the failure of Tenant to pay the particular rent so accepted, regardless of Landlord's knowledge of such preceding breach at the time of acceptance of such rent. No acceptance by Landlord of partial payment of any sum due from Tenant shall be deemed a waiver by Landlord of its right to receive the full amount due, nor shall any endorsement or statement on any check or accompanying letter from Tenant be deemed an accord and satisfaction. Tenant hereby waives California Code of Civil Procedure Section 1179 and Civil Code Section 3275 which allow tenants to obtain relief from the forfeiture of a lease, and Tenant hereby waives any claim it may have against Landlord based on Landlord's failure to comply with Section 1938 of the California Civil Code.

**37.** ***BINDING EFFECT; CHOICE OF LAW***. Subject to any provision hereof restricting assignment or subletting by Tenant, this Lease shall bind the parties, their heirs, personal representatives, successors and assigns. This Lease shall be governed by the laws of the state in which the Project is located and any litigation concerning this Lease between the parties hereto shall be initiated in the county in which the Project is located.

**38.** ***ATTORNEYS' FEES***. If Landlord or Tenant brings an action to enforce the terms hereof or declare rights hereunder, the prevailing party in any such action, or appeal thereon, shall be entitled to its reasonable attorneys' fees and court costs to be paid by the losing party as fixed by the court in the same or separate suit, and whether or not such action is pursued to decision or judgment. The attorneys' fee award shall not be computed in accordance with any court fee schedule, but shall be such as to fully reimburse all attorneys' fees and court costs reasonably incurred in good faith. Landlord shall be entitled to reasonable attorneys' fees and all other costs and expenses incurred in the preparation and service of notices of default and consultations in connection therewith, whether or not a legal action is subsequently commenced in connection with such default. Landlord and Tenant agree that attorneys' fees incurred with respect to defaults and bankruptcy are actual pecuniary losses within the meaning of Section 365(b)(1)(B) of the Bankruptcy Code or any successor statute.

**39.** ***WAIVER OF JURY TRIAL***. TO THE EXTENT PERMITTED BY APPLICABLE LAW, LANDLORD AND TENANT HEREBY WAIVE THEIR RESPECTIVE RIGHT TO TRIAL BY JURY OF ANY CAUSE OF ACTION, CLAIM, COUNTERCLAIM OR CROSS-COMPLAINT IN ANY ACTION, PROCEEDING AND/OR HEARING BROUGHT BY EITHER LANDLORD AGAINST TENANT OR TENANT AGAINST LANDLORD ON ANY MATTER WHATSOEVER ARISING OUT OF, OR IN ANY WAY CONNECTED WITH, THIS LEASE, THE RELATIONSHIP OF LANDLORD AND TENANT, TENANT'S USE OR OCCUPANCY OF THE PREMISES, OR ANY CLAIM OF INJURY OR DAMAGE, OR THE ENFORCEMENT OF ANY REMEDY UNDER ANY LAW, STATUTE, OR REGULATION, EMERGENCY OR OTHERWISE, NOW OR HEREAFTER IN EFFECT.

**40.** ***MERGER***. The voluntary or other surrender of this Lease by Tenant, or a mutual cancellation thereof, or a termination by Landlord, shall not result in the merger of Landlord's and Tenant's estates, and shall, at the option of Landlord, terminate all or any existing subtenancies or may, at the option of Landlord, operate as an assignment to Landlord of any or all of such subtenancies.

**41.** ***QUIET POSSESSION***. Subject to the other terms and conditions of this Lease, and the rights of any lender, and provided Tenant is not in default hereunder, Tenant shall have quiet possession of the Premises for the entire term hereof subject to all of the provisions of this Lease.

**42.** ***AUTHORITY***. If Tenant is a corporation, trust, general or limited partnership, or limited liability company, Tenant, and each individual executing this Lease on behalf of such entity, represents and warrants that such individual is duly authorized to execute and deliver this Lease on behalf of said entity, that said entity is duly authorized to enter into this Lease, and that this Lease is enforceable against said entity in accordance with its terms. If Tenant is a corporation, trust, partnership or limited liability company, Tenant shall deliver to Landlord upon demand evidence of such authority satisfactory to Landlord.

**43.** ***CONFLICT***. Any conflict between the typewritten provisions of this Lease and handwritten provisions, if any, shall be controlled by the handwritten provisions; provided, however, handwritten provisions shall have no force or effect unless separately initialed by both Landlord and Tenant.

**44.** ***MULTIPLE PARTIES***. If more than one person or entity is named as Tenant herein, the obligations of Tenant shall be the joint and several responsibility of all persons or entities named herein as Tenant. Service of a notice on one Tenant shall be deemed service of notice on all Tenants.

**45.** ***INTERPRETATION***. This Lease shall be interpreted as if it was prepared by both parties and ambiguities shall not be resolved in favor of Tenant or Landlord. The captions contained in this Lease are for convenience only and shall not be deemed to limit or alter the meaning of this Lease. As used in this Lease the words tenant and landlord include the plural as well as the singular. Words used in the neuter gender include the masculine and feminine gender.

**46.** ***PROHIBITION AGAINST RECORDING***. Neither this Lease, nor any memorandum, affidavit or other writing with respect thereto, shall be recorded by Tenant or by anyone acting through, under or on behalf of Tenant. Landlord shall have the right to record a memorandum of this Lease, and Tenant shall execute, acknowledge and deliver to Landlord for recording any memorandum prepared by Landlord.

**47.** ***RELATIONSHIP OF PARTIES***. Nothing contained in this Lease shall be deemed or construed by the parties hereto or by any third party to create the relationship of principal and agent, partnership, joint venturer or any association between Landlord and Tenant.

**48.** ***RIGHT TO LEASE***. Landlord reserves the absolute right to effect such other tenancies in the Project as Landlord in its sole discretion shall determine, and Tenant is not relying on any representation that any specific tenant or number of tenants will occupy the Project. Landlord represents and warrants to Tenant that Landlord is the owner of the Building, is in good standing with its state of formation and is qualified to do business in the State of California. Tenant represents and warrants to Landlord that Tenant is in good standing with its state of formation and is qualified to do business in the State of California.

**49.** ***SECURITY FOR PERFORMANCE OF TENANT'S OBLIGATIONS***. Notwithstanding any security deposit held by Landlord pursuant to Section 5, Tenant hereby agrees that in the event of a default by Tenant, Landlord shall be entitled to seek and obtain a writ of attachment and/or a temporary protective order and Tenant hereby waives any rights or defenses to contest such a writ of attachment and/or temporary protective order on the basis of California Code of Civil Procedure Section 483.010 or any other related statute or rule.

**50.** ***ATTACHMENTS***. The Exhibits are a part of this Lease and are incorporated herein by this reference.

**51.** ***PATRIOT ACT***. Tenant represents to Landlord that, (i) neither Tenant nor any person or entity that directly owns a 10% or greater equity interest in it nor any of its officers, directors or managing members is a person or entity (each, a "**Prohibited Person**") with whom U.S. persons or entities are restricted from doing business under regulations of the Office of Foreign Asset Control ("**OFAC**") of the Department of the Treasury (including those named on OFAC's Specially Designated and Blocked Persons List) or under Executive Order 13224 (the "**Executive Order**") signed on September 24, 2001, and entitled "Blocking Property and Prohibiting Transactions with Persons Who Commit, Threaten to Commit, or Support Terrorism), or other governmental action, (ii) Tenant's activities do not violate the International Money Laundering Abatement and Financial Anti-Terrorism Act of 2001 or the regulations or orders promulgated thereunder (as amended from time to time, the "Money Laundering Act") and (iii) throughout the term of this Lease, Tenant shall comply with the Executive Order and with the Money Laundering Act.

**52.** ***COUNTERPARTS***. This Lease and any documents or addenda attached hereto (collectively, the "**Documents**") may be executed in two or more counterpart copies, each of which shall be deemed to be an original and all of which together shall have the same force and effect as if the parties had executed a single copy of the Document. Counterparts may be exchanged electronically by email PDF.

[Signature page follows]

IN WITNESS WHEREOF, Landlord and Tenant have caused this Lease to be executed as of the date first referenced above.

**LANDLORD:**

Gray Peak Fork, LLC, a Nevada limited liability company

By: */s/ Fred C. Bertetta, Ill*

Fred C. Bertetta, Ill
(print name)

Its: President
(print title)

AND

Gray Peak Fork, Series A, LLC, a Nevada limited liability company

By: */s/ Fred C. Bertetta, Ill*

Fred C. Bertetta, Ill
(print name)

Its: President
(print title)

**TENANT:**

SutroVax, Inc., a Delaware corporation

By: */s/ Grant E. Pickering*

Grant E. Pickering
(print name)

Its: President
(print title)

EXHIBIT A

PREMISES

EXHIBIT B

PROJECT SITE

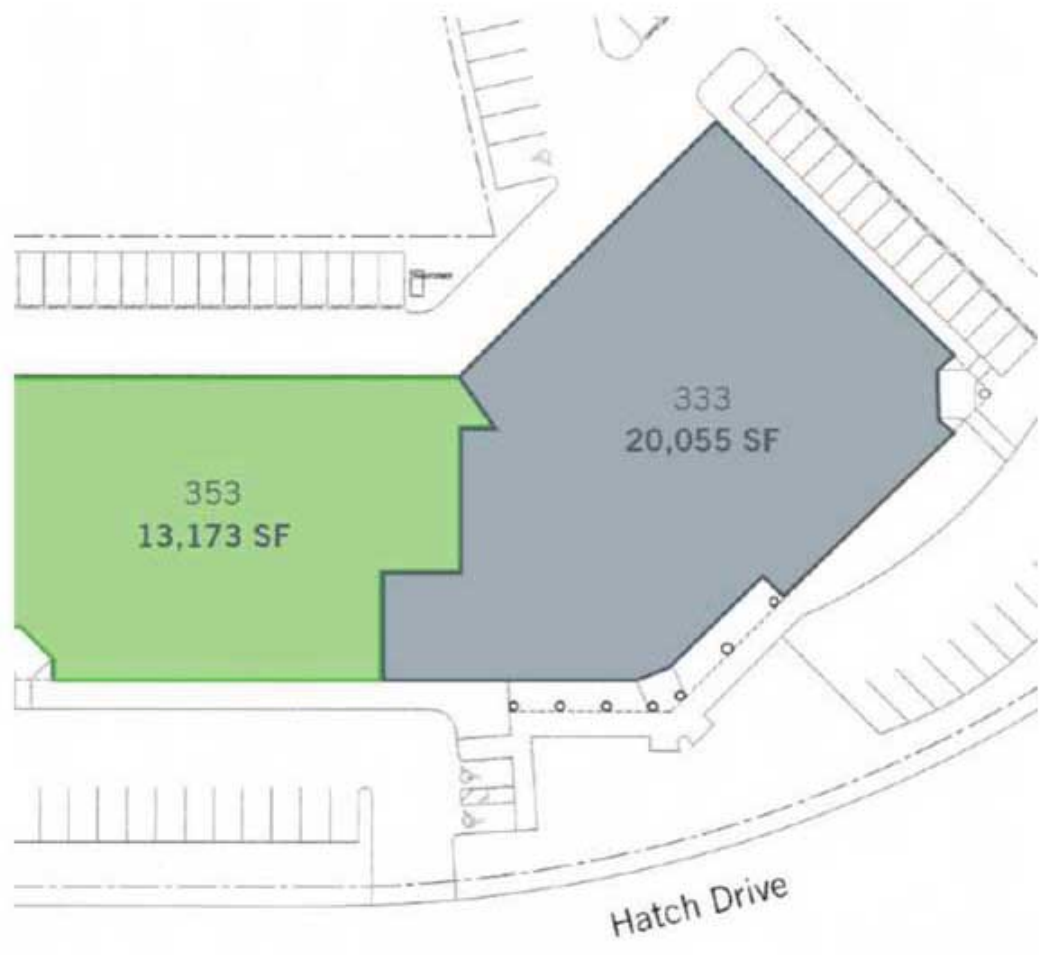


EXHIBIT C

VERIFICATION LETTER

SutroVax, Inc. a Delaware corporation ("**Tenant**") and Gray Peak Fork, LLC a Nevada limited liability company ("**Landlord**") agree to the following information as of the 22nd day of July, 2016:

| | | |
|---|---|---|
| Address of Building | : | 353 Hatch Drive<br>Foster City, CA 94404 |
| Number of Rentable Square Feet in Premises | : | ± 13,173 square feet |
| Commencement Date | : | September 1, 2016 |
| Lease Termination Date | : | August 31, 2021 |
| Initial Base Rent | : | $32,932.50 |
| Billing Address for Tenant | : | SutroVax Inc. |
| | : | 353 Hatch Drive<br>Foster City, CA 94404 |
| Attention | : | Accounts Payable |
| Telephone Number | : | (650) 549-7507 |
| Federal Tax I.D. No. | : | 46-4233385 |

**LANDLORD:**

Gray Peak Fork, LLC, a Nevada limited liability company

By: */s/ Fred C. Bertetta, III*

Fred C. Bertetta, III
(print name)

Its: _____
(print title)

AND

Gray Peak Fork, Series A, LLC, a Nevada limited liability company

By: */s/ Fred C. Bertetta, III*

Fred C. Bertetta, III
(print name)

Its: _____
(print title)

**TENANT**

SutroVax, Inc., a Delaware corporation

By: */s/ Grant E. Pickering*

Grant E. Pickering
(print name)

Its: President
(print title)

AIRCRE

**ASSIGNMENT AND ASSUMPTION OF LEASE**
**AND CONSENT OF LESSOR**

**1. ASSIGNMENT OF LEASE**

**For valuable consideration, the receipt and adequacy of which are hereby acknowledged,** Orchard Therapeutics North America **("ASSIGNOR") hereby assigns and transfers to** SutroVax, Inc. **("ASSIGNEE") all of ASSIGNOR's right, title and interest in and to that certain Lease dated** September 16, 2016, **by and between ASSIGNOR and** Rakesh Kumar and Premila Kumar Revocable Family Trust, **as Lessor, covering those certain Premises located at (street address, city, state, zip)** 1118 Chess Drive, Foster City, CA 94404 **and as is more particularly described in such Lease.**

**This Assignment shall be effective:** July 1, 2019.

~~**In addition, ASSIGNOR hereby transfers ASSIGNEE all of ASSIGNOR's interest in and to any security or other deposits paid to Lessor under the terms of such Lease.**~~

Upon execution, Assignee shall pay to Lessor Fifty Four Thousand Two Hundred Dollars ($54,200.00) which will be held as a Security Deposit as described in Paragraph 1.7(c) of the Lease Agreement dated September 16, 2016. Within five (5) business days following the execution hereof and Lessor's receipt of all monies due from Assignee, Lessor shall refund to Assignor the Security Deposit currently being held by Lessor in the amount of Fifty Four Thousand Two Hundred Dollars ($54,200.00) less any amount due to Lessor pursuant to the Lease Agreement dated September 16, 2016.

The parties acknowledge and agree that, notwithstanding that the Lease was executed by "Orchard Therapeutics," Orchard Therapeutics North America (a California corporation) is the tenant entity under the Lease and the Assignee hereunder.

Dated: _____

Orchard Therapeutics North America

**By:** _____
**Name Printed:** _____
**Title:** _____

**By:** _____
**Name Printed:** _____
**Title:** _____

**Assignor**

**2. ASSUMPTION OF LEASE**

**Assignee acknowledges that it has inspected the Premises and reviewed the Lease and Assignee hereby accepts the foregoing Assignment and assumes and agrees to be bound by and perform all obligations of the Lessee pursuant to the Lease arising on or after the** effective **date of this Assignment and to abide by all of the terms, provisions, covenants and conditions of the Lease.** Lessor and Assignee acknowledge and agree that (i) Assignor has decommissioned the Premises and that the Premises is in compliance with all applicable provisions of the Lease and (ii) Assignee shall accept the Premises in its "as-is" condition on the effective date of this Assignment and be fully responsible for the condition of the Premises thereafter in accordance with the provisions of the Lease.

**Dated:** 6/21/19

SutroVax, Inc.

**By:** */s/ Grant E. Pickering*
**Name Printed:** Grant E. Pickering
**Title:** President & CEO

**By:** _____
**Name Printed:** _____
**Title:** _____

**Assignee**

**3. CONSENT TO ASSIGNMENT**

**Lessor hereby consents to the foregoing Assignment and Assumption of the Lease. It is understood and agreed, however, that the foregoing consent is not a waiver of Lessor's right to consent to or impose restrictions upon any future assignment or subletting. In addition, this assignment does ~~not~~ release Assignor,** including any affiliates of Assignor, **from liability for any of the obligations of the Lessee under the Lease** and any other liabilities arising out of or in connection with the Lease and/or Assignor's occupancy of the Premises arising on or after the Effective Date of this Assignment, excluding Assignor's obligations to indemnify Lessor as required in Section 8.7 of the Lease and Section 68 of the Second Addendum, which will remain if full force and effect, after the effective date of this Assignment, for claims resulting from the acts or omissions to act of Assignor and its affiliates arising or occurring prior to the effective date of this Assignment.

Assignor represents that it has only dealt with Newmark Knight Frank ("Assignor's Broker") as a broker in connection with this Assignment. Assignee represents that it has only dealt with Cushman & Wakefield ("Assignee's Broker") in connection with this Assignment. Lessor represents that it has only dealt with Kidder Mathews ("Lessor's Broker") as a broker in connection with this Assignment. Lessor shall be responsible for the payment of any commissions due to Assignee's Broker and Lessor's Broker pursuant to a separate written agreement. Assignor shall be responsible for the payment of any commissions due to Assignor's Broker pursuant to a separate written agreement.

**Dated:** 6/28/19

Rakesh Kumar and Premila Kumar Revocable Family Trust

**By:** */s/ Rakesh Kumar*
**Name Printed:** Rakesh Kumar
**Title:** Co-Trustee

**By:** */s/ Premila Kumar*
**Name Printed:** Premila Kumar
**Title:** Co-Trustee

**Lessor**

**ATTENTION: NO REPRESENTATION OR RECOMMENDATION IS MADE BY AIR CRE OR BY ANY REAL ESTATE BROKER AS TO THE LEGAL SUFFICIENCY, LEGAL EFFECT, OR TAX CONSEQUENCES OF THIS ASSIGNMENT OR TRANSACTION TO WHICH IT RELATES. THE PARTIES ARE URGED TO:**

**1. SEEK ADVICE OF COUNSEL AS TO THE LEGAL AND TAX CONSEQUENCES OF THIS ASSIGNMENT.**

**2. RETAIN APPROPRIATE COUNSEL TO REVIEW AND INVESTIGATE THE CONDITION OF THE PREMISES. SAID INVESTIGATION WOULD INCLUDE BUT NOT BE LIMITED TO: THE POSSIBLE PRESENCE OF HAZARDOUS SUBSTANCES, THE ZONING OF THE PROPERTY, THE STRUCTURAL INTEGRITY, THE CONDITION OF THE ROOF AND OPERATING SYSTEMS, AND THE SUITABILITY OF THE PREMISES FOR ASSIGNEE'S INTENDED USE.**

**WARNING: IF THE SUBJECT PROPERTY IS LOCATED IN A STATE OTHER THAN CALIFORNIA, CERTAIN PROVISIONS OF THE ASSIGNMENT MAY NEED TO BE REVISED TO COMPLY WITH THE LAWS OF THE STATE IN WHICH THE PROPERTY IS LOCATED.**

AIRCRE

**ASSIGNMENT AND ASSUMPTION OF LEASE**
**AND CONSENT OF LESSOR**

**1. ASSIGNMENT OF LEASE**

**For valuable consideration, the receipt and adequacy of which are hereby acknowledged,** Orchard Therapeutics North America **("ASSIGNOR") hereby assigns and transfers to** SutroVax, Inc. **("ASSIGNEE") all of ASSIGNOR's right, title and interest in and to that certain Lease dated** September 16, 2016, **by and between ASSIGNOR and** Rakesh Kumar and Premila Kumar Revocable Family Trust, **as Lessor, covering those certain Premises located at (street address, city, state, zip)** 1118 Chess Drive, Foster City, CA 94404 **and as is more particularly described in such Lease.**

**This Assignment shall be effective:** July 1, 2019.

~~**In addition, ASSIGNOR hereby transfers ASSIGNEE all of ASSIGNOR's interest in and to any security or other deposits paid to Lessor under the terms of such Lease.**~~

Upon execution, Assignee shall pay to Lessor Fifty Four Thousand Two Hundred Dollars ($54,200.00) which will be held as a Security Deposit as described in Paragraph 1.7(c) of the Lease Agreement dated September 16, 2016. Within five (5) business days following the execution hereof and Lessor's receipt of all monies due from Assignee, Lessor shall refund to Assignor the Security Deposit currently being held by Lessor in the amount of Fifty Four Thousand Two Hundred Dollars ($54,200.00) less any amount due to Lessor pursuant to the Lease Agreement dated September 16, 2016.

The parties acknowledge and agree that, notwithstanding that the Lease was executed by "Orchard Therapeutics," Orchard Therapeutics North America (a California corporation) is the tenant entity under the Lease and the Assignee hereunder.

**Dated:** 21-June-2019

Orchard Therapeutics North America

**By:** */s/ Frank E. Thomas*
**Name Printed:** Frank E. Thomas
**Title:** CFO & Chief Business Officer

**By:** _____
**Name Printed:** _____
**Title:** _____

**Assignor**

**2. ASSUMPTION OF LEASE**

**Assignee acknowledges that it has inspected the Premises and reviewed the Lease and Assignee hereby accepts the foregoing Assignment and assumes and agrees to be bound by and perform all obligations of the Lessee pursuant to the Lease arising on or after the** effective **date of this Assignment and to abide by all of the terms, provisions, covenants and conditions of the Lease.** Lessor and Assignee acknowledge and agree that (i) Assignor has decommissioned the Premises and that the Premises is in compliance with all applicable provisions of the Lease and (ii) Assignee shall accept the Premises in its "as-is" condition on the effective date of this Assignment and be fully responsible for the condition of the Premises thereafter in accordance with the provisions of the Lease.

Dated: _____

SutroVax, Inc.

**By:** _____
**Name Printed:** _____
**Title:** _____

**By:** _____
**Name Printed:** _____
**Title:** _____

**Assignee**

**3. CONSENT TO ASSIGNMENT**

**Lessor hereby consents to the foregoing Assignment and Assumption of the Lease. It is understood and agreed, however, that the foregoing consent is not a waiver of Lessor's right to consent to or impose restrictions upon any future assignment or subletting. In addition, this assignment does ~~not~~ release Assignor,** including any affiliates of Assignor, **from liability for any of the obligations of the Lessee under the Lease** and any other liabilities arising

out of or in connection with the Lease and/or Assignor's occupancy of the Premises arising on or after the Effective Date of this Assignment, excluding Assignor's obligations to indemnify Lessor as required in Section 8.7 of the Lease and Section 68 of the Second Addendum, which will remain if full force and effect, after the effective date of this Assignment, for claims resulting from the acts or omissions to act of Assignor and its affiliates arising or occurring prior to the effective date of this Assignment.

Assignor represents that it has only dealt with Newmark Knight Frank ("Assignor's Broker") as a broker in connection with this Assignment. Assignee represents that it has only dealt with Cushman & Wakefield ("Assignee's Broker") in connection with this Assignment. Lessor represents that it has only dealt with Kidder Mathews ("Lessor's Broker") as a broker in connection with this Assignment. Lessor shall be responsible for the payment of any commissions due to Assignee's Broker and Lessor's Broker pursuant to a separate written agreement. Assignor shall be responsible for the payment of any commissions due to Assignor's Broker pursuant to a separate written agreement.

**Dated:** _____

Rakesh Kumar and Premila Kumar Revocable Family Trust

**By:** _____
**Name Printed:** _____
**Title:** Co-Trustee

**By:** _____
**Name Printed:** _____
**Title:** Co-Trustee

**Lessor**

**ATTENTION: NO REPRESENTATION OR RECOMMENDATION IS MADE BY AIR CRE OR BY ANY REAL ESTATE BROKER AS TO THE LEGAL SUFFICIENCY, LEGAL EFFECT, OR TAX CONSEQUENCES OF THIS ASSIGNMENT OR TRANSACTION TO WHICH IT RELATES. THE PARTIES ARE URGED TO:**

**1. SEEK ADVICE OF COUNSEL AS TO THE LEGAL AND TAX CONSEQUENCES OF THIS ASSIGNMENT.**

**2. RETAIN APPROPRIATE COUNSEL TO REVIEW AND INVESTIGATE THE CONDITION OF THE PREMISES. SAID INVESTIGATION WOULD INCLUDE BUT NOT BE LIMITED TO: THE POSSIBLE PRESENCE OF HAZARDOUS SUBSTANCES, THE ZONING OF THE PROPERTY, THE STRUCTURAL INTEGRITY, THE CONDITION OF THE ROOF AND OPERATING SYSTEMS, AND THE SUITABILITY OF THE PREMISES FOR ASSIGNEE'S INTENDED USE.**

**WARNING: IF THE SUBJECT PROPERTY IS LOCATED IN A STATE OTHER THAN CALIFORNIA, CERTAIN PROVISIONS OF THE ASSIGNMENT MAY NEED TO BE REVISED TO COMPLY WITH THE LAWS OF THE STATE IN WHICH THE PROPERTY IS LOCATED.**

AIR COMMERCIAL REAL ESTATE ASSOCIATION

**STANDARD MULTI-TENANT OFFICE LEASE - NET**

**1. Basic Provisions ("Basic Provisions")**

**1.1 Parties:** This Lease ("**Lease**"), dated for reference purposes only September 16, 2016 is made by and between Rakesh Kumar and Premila Kumar Revocable Family Trust ("**Lessor**") and Orchard Therapeutics ("**Lessee**"), (collectively the "**Parties**", or individually a "**Party**").

**1.2(a) Premises:** That certain portion of the Project (as defined below), known as Suite Number(s) 1st floor(s), consisting of approximately 4,472 rentable square feet ~~and approximately _____ usable square feet ("**Premises**")~~. The Premises are located at: 1118 Chess Drive in the City of Foster City, County of San Mateo County of California, with zip code 94404. In addition to Lessee's rights to use and occupy the Premises as hereinafter specified, Lessee shall have non-exclusive rights to the Common Area (as defined in Paragraph 2.7 below) as hereinafter specified, but shall not have any rights to the roof, the exterior walls, the area above the dropped ceilings, or the utility raceways of the building containing the Premises ("**Building**") or to any other buildings in the Project. The Premises, the Building, the Common Areas, the land upon which they are located, along with all other buildings and improvements thereon, are herein collectively referred to as the "**Project.**" The Project consists of approximately 8,944 rentable square feet. (See also Paragraph 2.)

**1.2(b) Parking:** 15 unreserved ~~and _____ reserved vehicle parking spaces at a monthly cost of $_____ per unreserved space and $_____ per reserved space~~. (See Paragraph 2.6)

**1.3 Term:** 5 years and 1 months ("**Original Term**") commencing October 13, 2016 ("**Commencement Date**") and ending October 31, 2021 ("**Expiration Date**"). (See also Paragraph 3.)

**1.4 Early Access ~~Possession~~:** If the Premises are available Lessee may have non-exclusive access possession of the Premises commencing upon full execution of lease, check per Paragraph 1.7(f) and copy of insurance certificate ("**Early Access ~~Possession~~ Date**"). (See also Paragraphs 3.2 and 3.3)

**1.5 Base Rent:** $16,993.60 per month ("**Base Rent**"), payable on the 1st day of each month commencing November 1, 2016. (See also Paragraph 4)

☒ If this box is checked, there are provisions in this Lease for the Base Rent to be adjusted. See Paragraph 50

**1.6 Lessee's Share of Operating Expenses:** Fifty percent (50 %) ("**Lessee's Share**"). In the event that the size of the Premises and/or the Project are modified during the term of this Lease, Lessor shall recalculate Lessee's Share to reflect such modification.

**1.7 Base Rent and Other Monies Paid Upon Execution:**

**(a)** Base Rent: $16,993.60 for the period November 1, 2016 – November 30, 2016

**(b) Operating Expenses**: $2,512.50 for the period October 1, 2016-October 31, 2016.

**(c) Security Deposit**: $54,200.00 ("**Security Deposit**"). (See also Paragraph 5)

**(d) ~~Parking:~~** ~~$_____ for the period _____~~.

**(e) Other**: $ _____ for the period _____.

**(f) Total Due Upon Execution of this Lease**: $73,706.10.

**1.8 Agreed Use**: Laboratory, General office use and any other legally related uses
(See also Paragraph 6)

**1.9 Insuring Party**. Lessor is the "**Insuring Party**". (See also Paragraph 8)

**1.10 Real Estate Brokers**: (See also Paragraph 15 and 25)

**(a) Representation**: The following real estate brokers (the "**Brokers**") and brokerage relationships exist in this transaction (check applicable boxes):

☐ _____ represents Lessor exclusively ("**Lessor's Broker**");

☐ _____ represents Lessee exclusively ("**Lessee's Broker**"); or

☒ Cornish & Carey Commercial dba Newmark Cornish & Carey represents both Lessor and Lessee ("**Dual Agency**")

**(b) Payment to Brokers**: Upon execution and delivery of this Lease by both Parties, Lessor shall pay to the Brokers for the brokerage services rendered by the Brokers the fee agreed to per a separate agreement. ~~In the attached separate written agreement or if no such agreement is attached, the sum of _____ or _____% of the total Base Rent payable for the Original Term, the sum of _____ or _____ of the total Base Rent payable during any period of time that the Lessee occupies the Premises subsequent to the Original Term, and/or the sum of _____ or _____ % of the purchase price in the event that the Lessee or anyone affiliate with Lessee acquires from Lessor any rights to the Premises.~~

**1.11 ~~Guarantor~~**. ~~The obligations of the Lessee under this Lease shall be guaranteed by _____ ("**Guarantor**"). (See also Paragraph 37)~~

**1.12 ~~Business Hours for the Building~~**: ~~_____ a.m. to _____ p.m., Mondays through Fridays (except Building Holidays) and _____ a.m. to _____ p.m. on Saturdays (except Building Holidays). "**Building Holidays**" shall mean the dates of observation of New Year's Day, President's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day, and _____~~

**1.13 Lessor Supplied Services**. Notwithstanding the provisions of Paragraph 11.1, Lessor is NOT obligated to provide the following within the Premises:

☐ Janitorial services
☐ Electricity
☐ Other (specify): _____

**1.14 Attachments**. Attached hereto are the following, all of Which constitute a part of this Lease:

☒ an Addendum consisting of Paragraphs 50 through 53;
☐ a plot plan depicting the Premises;

☐ a current set of the Rules and Regulations;
☐ a Work Letter;
☐ a janitorial schedule:

☒ other (specify): Agency Disclosure Form

**2. Premises.**

**2.1 Letting**. Lessor hereby leases to Lessee, and Lessee hereby leases from Lessor, the Premises, for the term, at the rental, and upon all of the terms, covenants and conditions set forth in this Lease. While the approximate square footage of the Premises may have been used in the marketing of the Premises for purposes of comparison, the Base Rent Mated herein is NOT tied to square footage and is not subject to adjustment should the actual size be determined to be different. Note: Lessee Is advised to verify the actual size prior to executing this Lease.

**2.2 Condition**. Lessor shall deliver the Premises to Lessee in a clean condition on the Commencement Date or the Early Possession Date, whichever first occurs ("**Start Date**"), and warrants that the existing electrical, plumbing, fire sprinkler, lighting, heating, ventilating and air conditioning systems ("**HVAC**"), and ail other items which the Lessor is obligated to construct pursuant to the Work Letter attached hereto, if any, other than those constructed by Lessee, shall be in good operating condition on said date, that the structural elements of the roof, bearing walls and foundation of the Unit shall be free of material defects, and that the Premises do not contain hazardous levels of any mold or fungi defined as toxic under applicable state or federal law.

**2.3 Compliance**. Lessor warrants that to the best of Its knowledge the improvements comprising the Premises and the Common Areas comply with the building codes that were in effect at the time that each such improvement, or portion thereof, was constructed, and also with all applicable laws, covenants or restrictions of record, regulations, and ordinances ("**Applicable Requirements**") in effect on the Start Date. Said warranty does not apply to the use to which Lessee will put the Premises, modifications which may be required by the Americans with Disabilities Act or any similar laws as a result of Lessee's use (see Paragraph 49), or to any Alterations or Utility Installations (as defined in Paragraph 7.3(a)) made or to be made by Lessee. NOTE: Lessee is responsible for determining whether or not the zoning and other Applicable Requirements are appropriate for Lessee's intended use, and acknowledges that past uses of the Premises may no longer be allowed. If the Premises do not comply with said warranty, Lessor shall, except as otherwise provided, promptly after receipt of written notice from Lessee setting forth with specificity the nature and extent of such non-compliance, rectify the same. If the Applicable Requirements are hereafter changed so as to require during the term of this Lease the construction of an addition to or an alteration of the Premises, the remediation of any Hazardous Substance, or the reinforcement or other physical modification of the Premises ("**Capital Expenditure**"), Lessor and Lessee shall allocate the cost of such work as follows:

**(a)** Subject to Paragraph 2.3(c) below, if such Capital Expenditures are required as a result of the specific and unique use of the Premises by Lessee as compared with uses by tenants in general, Lessee shall be fully responsible for the cost thereof, provided. however that if such Capital Expenditure is required during the last 2 years of this Lease and the cost thereof exceeds 6 months' Base Rent, Lessee may instead terminate this Lease unless Lessor notifies Lessee, in writing, within 10 days after receipt of Lessee's termination notice that Lessor has elected to pay the difference between the actual cost thereof and the amount equal to 6 months' Base Rent. If Lessee elects termination, Lessee shall immediately cease the use of the Premises which requires such Capital Expenditure and deliver to Lessor written notice specifying a termination date at least 90 days thereafter. Such termination date shall, however, In no event be earlier than the last day that Lessee could legally utilize the Premises without commencing such Capital Expenditure.

**(b)** If such Capital Expenditure is not the result of the specific and unique use of the Premises by Lessee (such as, governmentally mandated seismic modifications), then Lessor shall pay for such Capital Expenditure and Lessee shall only be obligated to pay, each month during the remainder of the term of this Lease or any extension thereof, on the date that on which the Base Rent is due, an amount equal to 1 /144th of the portion of such costs reasonably attributable to the Premises. Lessee shall pay Interest on the balance but may prepay its obligation at any time. If. however, such Capital Expenditure is required during the last 2 years of this Lease or if Lessor reasonably determines that it is not economically feasible to pay its. share thereof, Lessor shall have the option to terminate this Lease upon 90 days prior written notice to Lessee unless Lessee notifies Lessor. in writing, within 10 days after receipt of Lessor's termination notice that Lessee will pay for such Capital Expenditure. If Lessor does not elect to terminate, and fails to tender its share of any such Capital Expenditure. Lessee may advance such funds and deduct same, with Interest. from Rent until Lessor's share of such costs have been fully paid. If Lessee is unable to finance Lessor's share, or if the balance of the Rent due and payable for the remainder of this Lease is not sufficient to fully reimburse Lessee on an offset basis, Lessee shall have the right to terminate this Lease upon 30 days written notice to Lessor.

**(c)** Notwithstanding the above, the provisions concerning Capital Expenditures are intended to apply only to non-voluntary, unexpected, and new Applicable Requirements. If the Capital Expenditures are instead triggered by Lessee as a result of an actual or proposed change in use, change in intensity of use, or modification to the Premises then, and in that event, Lessee shall either; (I) immediately cease such changed use or intensity of use and/or take such other steps as may be necessary to eliminate the requirement for such Capital Expenditure, or (ii) complete such Capital Expenditure at its own expense. Lessee shall not have any right to terminate this Lease.

**2.4 Acknowledgements**. Lessee acknowledges that: (a) it has been given an opportunity to inspect and measure the Premises, (b) it has been advised by Lessor and/or Brokers to satisfy itself with respect to the size and condition of the Premises (including but not limited to the electrical. HVAC and fire sprinkler systems, security, environmental aspects, and compliance with Applicable Requirements), and their suitability for Lessee's intended use, (c) Lessee has made such investigation as it deems necessary with reference to such matters and assumes all responsibility Therefor as the same relate to its occupancy of the Premises. (d) it is not relying on any representation as to the size of the Premises made by Brokers or Lessor. (e) the square footage of the Premises was not material to Lessee's decision to lease the Premises and pay the Rent stated herein, and (1) neither Lessor, Lessor's agents, nor Brokers have made any oral or written representations or warranties with respect lo said matters other than as set forth in this Lease. In addition. Lessor acknowledges that: (i) Brokers have made no representations, promises or warranties concerning Lessee's ability to honor the Lease or suitability to occupy the Premises, and (ii) it is Lessor's sole responsibility to investigate the financial capability and/or suitability of all proposed tenants.

**2.5 Lessee as Prior Owner/Occupant**. The warranties made by Lessor in Paragraph 2 shall be of no force or effect if immediately prior to the Start Date Lessee was the owner or occupant of the Premises. In such event. Lessee shall be responsible for any necessary corrective work.

**2.6 Vehicle Parking**. So long as Lessee is not in default. and subject to the Rules and Regulations attached hereto, and as established by Lessor from time to time, Lessee shall be entitled to rent and use the number of parking spaces specified in Paragraph 1.2(b) al the rental rate applicable from time to time for monthly parking as set by Lessor and/or its licensee.

**(a)** If Lessee commits, permits or allows any of the prohibited activities described in the Lease or the rules Men in effect, then Lessor shall have the right, without notice, in addition to such other rights and remedies that it may have, to remove or taw away the vehicle involved and charge the cost to Lessee, which cost shall be immediately payable upon demand by Lessor.

**(b)** The monthly rent per parking space specified in Paragraph 1.2(b) is subject to change upon 30 days prior written notice to Lessee. The rent for the parking is payable one month in advance prior to the first day of each calendar month,

**2.7 Common Areas - Definition**. The term "**Common Areas**" is defined as all areas and facilities outside the Premises and within the exterior boundary line of the Project and interior utility raceways and installations within the Premises that are provided and designated by the Lessor from time to time for the general non-exclusive use of Lessor, Lessee and other tenants of the Project and their respective employees. suppliers, shippers, customers, contractors and invitees, including, but not limited to, common entrances, lobbies, corridors, stairwells, public restrooms, elevators, parking areas, loading and unloading areas, trash areas, roadways, walkways, driveways and landscaped areas.

**2.8 Common Areas - Lessee's Rights**. Lessor grants to Lessee, for the benefit of Lessee and its employees, suppliers, shippers, contractors, customers and invitees, during the term of this Lease, the non-exclusive right to use, in common with others entitled to such use, the Common Areas as they exist from time to time, subject to any rights, powers, and privileges reserved by Lessor under the terms hereof or under the terms of any rules and regulations or restrictions governing the use of the Project. Under no circumstances shall the right herein granted to use the Common Areas be deemed to include the right to store any property, temporarily or permanently, in the Common Areas. Any such storage shall be permitted only by the prior written consent of Lessor or Lessor's designated agent, which consent may be revoked at any time. In the event that any unauthorized storage shall occur then Lessor shall have the right, without notice, in addition to such other rights and remedies that it may have, to remove the property and charge the cost to Lessee, which cost shall be immediately payable upon demand by Lessor.

**2.9 Common Areas - Rules and Regulations**. Lessor or such other person(s) as Lessor may appoint shall have the exclusive control and management of the Common Areas and shall have the right, from time to time, to adopt, modify, amend and enforce reasonable rules and regulations ("Rules and Regulations') for the management, safety, care, and cleanliness of the grounds, the parking and unloading of vehicles and the

preservation of good order, as well as for the convenience of other occupants or tenants of the Building and the Project and their invitees. The Lessee agrees to abide by and conform to all such Rules and Regulations, and shall use its best efforts to cause its employees, suppliers, shippers, customers, contractors and invitees to so abide and conform. Lessor shall not be responsible to Lessee for the non-compliance with said Rules and Regulations by other tenants of the Project.

**2.10 Common Areas - Changes**. Lessor shall have the right, in Lessor's sole discretion, from time to time:

**(a)** To make changes to the Common Areas, including, without limitation. changes in the location, size, shape and number of the lobbies, windows. stairways, air shafts, elevators, escalators, restrooms, driveways, entrances, parking spaces, parking areas, loading and unloading areas, ingress, egress, direction of traffic, landscaped areas, walkways and utility raceways;

**(b)** To close temporarily any of the Common Areas for maintenance purposes so long as reasonable access to the Premises remains available;

**(c)** To designate other land outside the boundaries of the Project to be a part of the Common Areas;

**(d)** To add additional buildings and improvements to the Common Areas:

**(e)** To use the Common Areas while engaged in making additional improvements, repairs or alterations to the Project, or any portion thereof: and

**(f)** To do and perform such other acts and make such other changes in, to or with respect to the Common Areas and Project as Lessor may, in the exercise of sound business judgment, deem to be appropriate.

**3. Term.**

**3.1 Term**. The Commencement Date, Expiration Date and Original Term of this Lease are as specified in Paragraph 1.3.

**3.2 Early Possession**. Any provision herein granting Lessee Early Possession of the Premises is subject to and conditioned upon the Premises being available for such possession prior to the Commencement Date. Any grant of Early Possession only conveys a non-exclusive right to occupy the Premises. If Lessee totally or partially occupies the Premises prior to the Commencement Date, the obligation to pay Base Rent shall be abated for the period of such Early Possession. All other terms of this Lease (Including but not limited to the obligations to pay Lessee's Share of the Operating Expenses) shall be in effect during such period. Any such Early Possession shall not affect the Expiration Date.

**3.3 Delay In Possession**. Lessor agrees to use its best commercially reasonable efforts to deliver possession of the Premises to Lessee by the Commencement Date. If, despite said efforts, Lessor is unable to deliver possession by such date, Lessor shall not be subject to any liability therefor, nor shall such failure affect the Validity of this Lease or change the Expiration Date. Lessee shall not, however, be obligated to pay Rent or perform its other obligations until Lessor delivers possession of the Premises and any period of rent abatement that Lessee would otherwise have enjoyed shall run from the date of delivery of possession and continue for a period equal to what Lessee would otherwise have enjoyed under the terms hereof, but minus any days of delay caused by the acts or omissions of Lessee. If possession is not delivered within 60 days after the Commencement Date, as the same may be extended under the terms of any Work Letter executed be Parties, Lessee may, at its option, by notice in writing within 10 days after the end of such 60 day period, cancel this Lease, in which event the Parties shall be discharged from all obligations hereunder. If such written notice is not received by Lessor within said 10 day period, Lessee's right to cancel shall terminate. If possession of the Premises is not delivered within 120 days after the Commencement Date, this Lease shall terminate unless other agreements are reached between Lessor and Lessee, in writing.

**3.4 Lessee Compliance**. Lessor shall not be required to deliver possession of the Premises to Lessee until Lessee complies with its obligation to provide evidence of insurance (Paragraph 8.5). Pending delivery of such evidence, Lessee shall be required to perform all of its obligations under this Lease from and after the Start Date, Including the payment of Rent, notwithstanding Lessor's election to withhold possession pending receipt of such evidence of insurance. Further, if Lessee is required to perform any other conditions prior to or concurrent with the Start Date, the Start Date shall occur but Lessor may elect to withhold possession until such conditions are satisfied.

**4. Rent**

**4.1 Rent Defined**. All monetary obligations of Lessee to Lessor under the terms of this Lease (except for the Security Deposit) are deemed to be rent ("**Rent**").

**4.2 Operating Expenses**. Lessee shall pay to Lessor during the term hereof, in addition to the Base Rent, Lessee's Share of all Operating Expenses, as hereinafter defined, during each calendar year of the term of this Lease, in accordance with the following provisions:

**(a)** "**Operating Expenses**" include all costs incurred by Lessor relating to the ownership and operation of the Project, calculated as if the Project was at least 95% occupied, including, but not limited to. the following:

**(i)** The operation, repair, and maintenance in neat, clean, safe, good order and condition, of the following:

**(aa)** The Common Areas, including their surfaces, coverings, decorative items, carpets, drapes and window coverings, and including parking areas, loading and unloading areas, trash areas, roadways, sidewalks, walkways, stairways, parkways, driveways, landscaped areas, striping, bumpers, irrigation systems, Common Area lighting facilities, building exteriors and roofs, fences and gates;

**(bb)** All healing, air conditioning, plumbing, electrical systems, life safety equipment, communication systems and other equipment used in common by, or for the benefit of, lessees or occupants of the Project, including elevators and escalators, tenant directories, fire detection systems including sprinkler system maintenance and repair.

**(cc)** All other areas and improvements that are within the exterior boundaries of the Project but outside of the Premises and/or any other space occupied by a tenant.

**(ii)** The cost of trash disposal, janitorial and security services, pest control services, and the costs of any environmental inspections;

**(iii)** The cost of any other service to be provided by Lessor that is elsewhere in this Lease staled to be an "Operating Expense";

**(iv)** The cost of the premiums for the insurance policies maintained by Lessor pursuant to paragraph 8 and any deductible portion of an insured loss concerning the Building or the Common Areas:

**(v)** The amount of the Real Property Taxes payable by Lessor pursuant to paragraph 10:

**(vi)** The cost of water, sewer, gas. electricity, and other publicly mandated services not separately metered;

**(vii)** Labor, salaries, and applicable fringe benefits and costs, materials, supplies and tools, used in maintaining and/or cleaning the Project and accounting and management fees attributable to the operation of the Project;

**(viii)** The cost to replace equipment or capital components such as the roof, foundations, or exterior walls, the cost to replace a Common Area capital improvement, such as the parking lot paving, elevators or fences, and/or the cost of any capital improvement to the Building or the Project not covered under the provisions of Paragraph 2.3. Provided however, that if such equipment or capital component has a useful life for accounting purposes of 5 years or more that Lessor shall allocate the cost of any such capital improvement over a 12 year period and Lessee shall not be required to pay more than Lessee's Share of 1/144th of the cost of such capital improvement in any given month:

**(ix)** The cost to replace equipment or improvements that have a useful life for accounting purposes of 5 years or less;

**(x)** Reserves set aside for maintenance. repair, and/or replacement of Common Area improvements and equipment.

**(b)** Any item of Operating Expense that is specifically attributable to the Premises, the Building or to any other building in the Project or to the operation, repair and maintenance thereof, shall be allocated entirely to such Premises, Building, or other building. However. any such item that is not specifically attributable to the Building or to any other building or to the operation, repair and maintenance thereof, shall be equitably allocated by Lessor to all buildings in the Project.

**(c)** The inclusion of the improvements, facilities and services set forth in Subparagraph 4.2(a) shall not be deemed to impose an obligation upon Lessor to either have said improvements or facilities or to provide those services unless the Project already has the same. Lessor already provides the services, or Lessor has agreed elsewhere in this Lease to provide the same or some of them.

**(d)** Lessee's Share of Operating Expenses is payable monthly on the same day as the Base Rent is due hereunder. The amount of such payments shall be based on Lessor's estimate of the Operating Expenses. Within 60 days after written request (but not more than once each year) Lessor shall deliver to Lessee a reasonably detailed statement showing Lessee's Share of the actual Operating Expenses for the preceding year. If Lessee's payments during such year exceed Lessee's Share, Lessor shall credit the amount of such over-payment against Lessee's future payments. If Lessee's payments during such year were less than Lessee's Share, Lessee shall pay to Lessor the amount of the deficiency within 10 days after delivery by Lessor to Lessee of the statement.

**(e)** Operating Expenses shall not include any expenses paid by any tenant directly to third parties, or as to which Lessor is otherwise reimbursed by any third party, other tenant, or by insurance proceeds.

**4.3 Payment**. Lessee shall cause payment of Rent to be received by Lessor in lawful money of the United Slates, without offset or deduction (except as specifically permitted in this Lease), on or before the day on which it is due. All monetary amounts shall be rounded to the nearest whole dollar. In the event that any invoice prepared by Lessor is inaccurate such inaccuracy shall not constitute a waiver and Lessee shall be obligated to pay the amount set forth in this Lease. Rent for any period during the term hereof which is for less than one full calendar month shall be prorated based upon the actual number of days of said month. Payment of Rent shall be made to Lessor at its address stated herein or to such other persons or place as Lessor may from time to time designate in writing. Acceptance of a payment which is less than the amount then due shall not be a waiver of Lessor's rights to the balance of such Rent, regardless of Lessor's endorsement of any check so stating. In the event that any check, draft, or other instrument of payment given by Lessee to Lessor is dishonored for any reason, Lessee agrees to pay to Lessor the sum of S25 in addition to any Late Charge and Lessor, at its option, may require all future Rent be paid by cashier's check. Payments will be applied first to accrued late charges and attorney's fees, second to accrued interest, then to Base Rent and Operating Expenses, and any remaining amount to any other outstanding charges or costs.

**5. Security Deposit**. Lessee shall deposit with Lessor upon execution hereof the Security Deposit as security for Lessee's faithful performance of its obligations under this Lease. If Lessee fails to pay Rent, or otherwise Defaults under this Lease, Lessor may use, apply or retain all or any portion of said Security Deposit for the payment of any amount already due Lessor, for Rents which will be due in the future, and/ or to reimburse or compensate Lessor for any liability, expense, loss or damage which Lessor may suffer or incur by reason thereof. If Lessor uses or applies all or any portion of the Security Deposit, Lessee shall within 10 days after written request therefor deposit monies with Lessor sufficient to restore said Security Deposit to the full amount required by this Lease. If the Base Rent increases during the term of this Lease, Lessee shall, upon written request from Lessor, deposit additional monies with Lessor so that the total amount of the Security Deposit shall at all times bear the same proportion to the increased Base Rent as the initial Security Deposit bore to the initial Base Rent. Should the Agreed Use be amended to accommodate a material change in the business of Lessee or to accommodate a sublessee or assignee, Lessor shall have the right to increase the Security Deposit to the extent necessary, in Lessor's reasonable judgment, to account for any increased wear and tear that the Premises may suffer as a result thereof. If a change in control of Lessee occurs during this Lease and following such change the financial condition of Lessee is, in Lessor's reasonable judgment, significantly reduced, Lessee shall deposit such additional monies with Lessor as shall be sufficient to cause the Security Deposit to be at a commercially reasonable level based on such change in financial condition. Lessor shall not be required to keep the Security Deposit separate front its general accounts. Within 90 days after the expiration or termination of this Lease, Lessor shall return that portion of the Security Deposit not used or applied by Lessor. No part of the Security Deposit shall be considered to be held in trust, to bear interest or to be prepayment for any monies to be paid by Lessee under this Lease.

**6. Use.**

**6.1 Use**. Lessee shall use and occupy the Premises only for the Agreed Use, or any other legal use which is reasonably comparable thereto, and for no other purpose. Lessee shall not use or permit the use of the Premises in a manner that is unlawful, creates damage, waste or a nuisance, or that disturbs occupants of or causes damage to neighboring premises or properties. Other than guide, signal and seeing eye dogs, Lessee shall not keep or allow in the Premises any pets, animals, birds, fish, or reptiles. Lessor shall not unreasonably withhold or delay its consent to any written request for a modification of the Agreed Use, so long as the same will not impair the structural integrity of the improvements of the Building, will not adversely affect the mechanical, electrical, HVAC, and other systems of the Building, and/or will not affect the exterior appearance of the Building. If Lessor elects to withhold consent, Lessor shall within 7 days after such request give written notification of same, which notice shall include an explanation of Lessor's objections to the change In the Agreed Use.

**6.2 Hazardous Substances**.

**(a) Reportable Uses Require Consent**. The term "**Hazardous Substance**" as used in this Lease shall mean any product, substance, or waste whose presence, use, manufacture, disposal, transportation, or release, either by itself or in combination with other materials expected to be on the Premises, is either: (i) potentially injurious to the public health, safety or welfare, the environment or the Premises, (ii) regulated or monitored by any governmental authority, or (iii) a basis for potential liability of Lessor to any governmental agency or third party under any applicable statute or common law theory. Hazardous Substances shall include, but not be limited to, hydrocarbons, petroleum, gasoline, and/or crude oil or any products, by-products or fractions thereof. Lessee shall not engage in any activity in or on the Premises which constitutes a Reportable Use of Hazardous Substances without the express prior written consent of Lessor and timely compliance (at Lessee's expense) with all Applicable Requirements. "**Reportable Use**" shall mean (i) the installation or use of any above or below ground storage tank, (ii) the generation, possession, storage, use, transportation, or disposal of a Hazardous Substance that requires a permit from, or with respect to which a report, notice, registration or business plan is required to be filed with, any governmental authority, and/or (iii) the presence at the Premises of a Hazardous Substance with respect to which any Applicable Requirements requires that a notice be given to persons entering or occupying the Premises or neighboring properties. Notwithstanding the foregoing, Lessee may use any ordinary and customary materials reasonably required to be used in the normal course of the Agreed Use such as ordinary office supplies (copier toner, liquid paper, glue, etc.) and common household cleaning materials, so long as such use is in compliance with all Applicable Requirements, is not a Reportable Use, and does not expose the Premises or neighboring property to any meaningful risk of contamination or damage or expose Lessor 10 any liability therefor. In addition, Lessor may condition its consent to any Reportable Use upon receiving such additional assurances as Lessor reasonably deems necessary 10 protect itself, the public, the Premises and/or the environment against damage, contamination, injury and/or liability, including, but not limited to, the installation (and removal on or before Lease expiration or termination) of protective modifications (such as concrete encasements) and/or increasing the Security Deposit.

**(b) Duty to Inform Lessor**. If Lessee knows, or has reasonable cause to believe, that a Hazardous Substance has come to be located in, on, under or about the Premises, other than as previously consented to by Lessor, Lessee shall immediately give written notice of such fact to Lessor, and provide Lessor with a copy of any report, notice, claim or other documentation which it has concerning the presence of such Hazardous Substance.

**(c) Lessee Remediation**. Lessee shall not cause or permit any Hazardous Substance lo be spilled or released in, on, under, or about the Premises (including through the plumbing or sanitary sewer system) and shall promptly, at Lessee's expense, comply with all Applicable Requirements and take all investigatory and/or remedial action reasonably recommended, whether or not formally ordered or required, for the cleanup of any contamination of, and for the maintenance, security and/or monitoring of the Premises or neighboring properties, that was caused or materially contributed to by Lessee, or pertaining to or involving any Hazardous Substance brought onto the Premises during the term of this Lease, by or for Lessee, or any third party.

**(d) Lessee Indemnification**. Lessee shall indemnify, defend and hold Lessor, its agents, employees, lenders and ground lessor, if any, harmless from and against any and all loss of rents and/or damages, liabilities, judgments, claims, expenses, penalties, and attorneys' and consultants' fees arising out of or involving any Hazardous Substance brought onto the Premises by or for Lessee, or any third party (provided, however, that Lessee shall have no liability under this Lease with respect to underground migration of any Hazardous Substance under the Premises from areas outside of the Project not caused or contributed to by Lessee). Lessee's obligations shall include, but not be limited to, the effects of any contamination or injury to person, property or the environment created or suffered by Lessee, and the cost of investigation, removal, remediation, restoration and/or abatement, and shall survive the expiration or termination of this Lease. No termination, cancellation or release agreement entered into by Lessor and Lessee shall

release Lessee from its obligations under this Lease with respect to Hazardous Substances, unless specifically so agreed by Lessor in writing at the time of such agreement.

**(e) Lessor Indemnification**. Lessor and its successors and assigns shall indemnify, defend, reimburse and hold Lessee, its employees and lenders, harmless from and against any and all environmental damages, including the cost of remediation, which result from Hazardous Substances which existed on the Premises prior to Lessee's occupancy or which are caused by the gross negligence or willful misconduct of Lessor, its agents or employees. Lessor's obligations, as and when required by the Applicable Requirements, shall include, but not be limited to, the cost of investigation, removal, remediation, restoration and/or abatement, and shall survive the expiration or termination of this Lease.

**(f) Investigations and Remediations**. Lessor shall retain the responsibility and pay for any investigations or remediation measures required by governmental entitles having jurisdiction with reaped to the existence of Hazardous Substances on the Premises prior to Lessee's occupancy, unless such remediation measure is required as a result or Lessee's use (including "Alterations", as defined in paragraph 7.3(a) below) of the Premises, in which event Lessee shall be responsible for such payment. Lessee shall cooperate fully in any such activities at the request of Lessor, including allowing Lessor and Lessor's agents to have reasonable access to the Premises at reasonable times in order to carry out Lessor's investigative and remedial responsibilities.

**(g) Lessor Termination Option**. If a Hazardous Substance Condition (see Paragraph 9.1(e)) occurs during the term of this Lease, unless Lessee is legally responsible therefor (in which case Lessee shall make the investigation and remediation thereof required by the Applicable Requirements and this Lease shall continue in full force and effect, but subject to Lessor's rights under Paragraph 6.2(d) and Paragraph 13), Lessor may, at Lessor's option, either (i) investigate and remediate such Hazardous Substance Condition, if required, as soon as reasonably possible at Lessor's expense, in which event this Lease shall continue in full force and effect, or (ii) if the estimated cost to remediate such condition exceeds 12 times the then monthly Base Rent or $100,000, whichever is greater, give written notice to Lessee, within 30 days after receipt by Lessor of knowledge of the occurrence of such Hazardous Substance Condition, of Lessor's desire to terminate this Lease as of the date 60 days following the date of such notice. In the event Lessor elects to give a termination notice, Lessee may, within 10 days thereafter, give written notice to Lessor of Lessees commitment to pay the amount by which the cost of the remediation of such Hazardous Substance Condition exceeds an amount equal to 12 times the then monthly Base Rent or $100,000, whichever is greater. Lessee shall provide Lessor with said funds or satisfactory assurance thereof within 30 days following such commitment. In such event, this Lease shall continue in full force and effect, and Lessor shall proceed to make such remediation as soon as reasonably possible after the required funds are available. If Lessee does not give such notice and provide the required funds or assurance thereof within the time provided, this Lease shall terminate as of the data specified in Lessor's notice of termination.

**6.3 Lessee's Compliance with Applicable Requirements**. Except as otherwise provided in this Lease, Lessee shall, at Lessee's sole expense, fully, diligently and in a timely manner, materially comply with all Applicable Requirements, the requirements of any applicable fire insurance underwriter or rating bureau, and the recommendations of Lessor's engineers and/or consultants which relate in any manner to the Premises, without regard to whether said requirements are now in effect or become effective after the Start Date. Lessee shall, within 10 days after receipt of Lessor's written request, provide Lessor with copies of all permits and other documents, and other information evidencing Lessee's compliance with any Applicable Requirements specified by Lessor, and shall immediately upon receipt, notify Lessor in writing (with copies of any documents involved) of any threatened or actual claim, notice, citation, warning, complaint or report pertaining to or involving the failure of Lessee or the Premises to comply with any Applicable Requirement. Likewise, Lessee shall immediately give written notice to Lessor of: (i) any water damage to the Premises and any suspected seepage, pooling, dampness or other condition conducive to the production of mold; or (ii) any mustiness or other odors that might indicate the presence of mold in the Premises.

**6.4 Inspection; Compliance**. Lessor and Lessor's "Lender" (as defined in Paragraph 30) and consultants shall have the right to enter into Premises at any time, in the case of an emergency, and otherwise at reasonable times after reasonable notice, for the purpose of inspecting the condition of the Premises and for verifying compliance by Lessee with this Lease. The cost of any such inspections shall be paid by Lessor, unless a violation of Applicable Requirements, or a Hazardous Substance Condition (see paragraph 9.1) is found to exist or be imminent, or the Inspection is requested or ordered by a governmental authority. In such case, Lessee shall upon request reimburse Lessor for the cost of such inspection, so long as such inspection is reasonably related to the violation or contamination. In addition, Lessee shall provide copies of all relevant material safety data sheets (MSDS) to Lessor within 10 days of the receipt of written request therefor.

**7. Maintenance; Repairs, Utility Installations; Trade Fixtures and Alterations.**

**7.1 Lessee's Obligations**. Notwithstanding Lessor's obligation to keep the Premises in good condition and repair, Lessee shall be responsible for payment of the cost thereof to Lessor as additional rent for that portion of the cost of any maintenance and repair of the Premises, or any equipment (wherever located) that serves only Lessee or the Premises, to the extent such cost is attributable to causes beyond normal wear and tear. Lessee shall be responsible for the cost of painting, repairing or replacing wall coverings, and to repair or replace any improvements within the Premises. Lessor may, at its option, upon reasonable notice, elect to have Lessee perform any particular such maintenance or repairs the cost of which is otherwise Lessee's responsibility hereunder.

**7.2 Lessor's Obligations**. Subject to the provisions of Paragraphs 2.2 (Condition), 2.3 (Compliance), 4.2 (Operating Expenses). 6 (Use), 7.1 (Lessee's Obligations), 9 (Damage or Destruction) and 14 (Condemnation), Lessor, subject to reimbursement pursuant to Paragraph 4.2, shall keep in good order, condition and repair the foundations, exterior walls, structural condition of interior bearing walls, exterior roof, fire sprinkler system, fire alarm and/or smoke detection systems, fire hydrants, and the Common Areas. Lessee expressly waives the benefit of any statute now or hereafter in effect to the extent it is inconsistent with the terms of this Lease.

**7.3 Utility Installations; Trade Fixtures; Alterations**.

**(a) Definitions**. The term "**Utility Installations**" refers to all floor and window coverings, air lines, vacuum lines, power panels, electrical distribution, security and fire protection systems, communication cabling, lighting fixtures, HVAC equipment, and plumbing in or on the Premises. The term "**Trade Fixtures**" shall mean Lessee's machinery and equipment that can be removed without doing material damage to the Premises. The term "**Alterations**" shall mean any modification of the improvements, other than Utility Installations or Trade Fixtures, whether by addition or deletion. "**Lessee Owned Alterations and/or Utility Installations**" are defined as Alterations and/or Utility Installations made by Lessee that are not yet owned by Lessor pursuant to Paragraph 7.4(a).

**(b) Consent**. Lessee shall not make any Alterations or Utility installations to the Premises without Lessor's prior written consent. Lessee may, however, make non-structural Alterations or Utility Installations to the interior of the Premises (excluding the roof) without such consent but upon notice to Lessor, as long as they are not visible from the outside, do not involve puncturing, relocating or removing the roof, ceilings, floors or any existing walls, will not affect the electrical, plumbing, HVAC, and/or life safety systems, and the cumulative cost thereof during this Lease as extended does not exceed $2000. Notwithstanding the foregoing, Lessee shall not make or permit any roof penetrations and/or install anything on the roof without the prior written approval of Lessor. Lessor may, as a precondition to granting such approval, require Lessee to utilize a contractor chosen and/or approved by Lessor. Any Alterations or Utility Installations that Lessee shall desire to make and which require the consent of the Lessor shall be presented to Lessor in written form with detailed plans. Consent shall be deemed conditioned upon Lessee's: (i) acquiring all applicable governmental permits, (ii) furnishing Lessor with copies of both the permits and the plans and specifications prior to commencement of the work, and (iii) compliance with all conditions of said permits and other Applicable Requirements in a prompt and expeditious manner. Any Alterations or Utility Installations shall be performed in a workmanlike manner with good and sufficient materials. Lessee shall promptly upon completion furnish Lessor with as-built plans and specifications. For work which costs an amount in excess of one month's Base Rent, Lessor may condition its consent upon Lessee providing a lien and completion bond in an amount equal to 150% of the estimated cost of such Alteration or Utility Installation and/or upon Lessee's posting an additional Security Deposit with Lessor.

**(c) Liens; Bonds**. Lessee shall pay, when due, all claims for labor or materials furnished or alleged to have been furnished to or for Lessee at or for use on the Premises, which claims are or may be secured by any mechanic's or materialmen's lien against the Premises or any interest therein. Lessee shall give Lessor not less than 10 days notice prior to the commencement of any work in, on or about the Premises, and Lessor shall have the right to post notices of non-responsibility. If Lessee shall contest the validity of any such lien, claim or demand, then Lessee shall, at its sole expense defend and protect itself, Lessor and the Premises against the same and shall pay and satisfy any such adverse judgment that may be rendered thereon before the enforcement thereof. If Lessor shall require, Lessee shall furnish a surely bond in an amount equal to 150% of the amount of such contested lien, claim or demand, indemnifying Lessor against liability for the same. If Lessor elects to participate in any such action, Lessee shall pay Lessor's attorneys' fees and costs.

**7.4 Ownership; Removal; Surrender; and Restoration**.

**(a) Ownership**. Subject to Lessor's right to require removal or elect ownership as hereinafter provided, all Alterations and Utility Installations made by Lessee shall be the property of Lessee, but considered a part of the Premises, Lessor may, at any time, elect in writing to be the owner of all or any specified part of the Lessee Owned Alterations and Utility installations. Unless otherwise instructed per paragraph 7.4(b) hereof, all Lessee Owned Alterations and Utility Installations shall, at the expiration or termination of this Lease, become the property of Lessor and be surrendered by Lessee with the Premises,

**(b) Removal**. By delivery to Lessee of written notice from Lessor not earlier than 90 and not later than 30 days prior to the end of the term of this Lease, Lessor may require that any or all Lessee Owned Alterations or Utility Installations be removed by the expiration or termination of this Lease. Lessor may require the removal at any time of all or any part of any Lessee Owned Alterations or Utility installations made without the required consent.

**(c) Surrender; Restoration**. Lessee shall surrender the Premises by the Expiration Date or any earlier termination date, with all of the improvements, parts and surfaces thereof clean and free of debris, and in good operating order, condition and state of repair. ordinary wear and tear excepted. "Ordinary wear and tear" shall not include any damage or deterioration that would have been prevented by good maintenance practice. Notwithstanding the foregoing, if this Lease is for 12 months or less, then Lessee shall surrender the Premises in the same condition as delivered to Lessee on the Start Date with NO allowance for ordinary wear and tear. Lessee shall repair any damage occasioned by the installation, maintenance or removal of Trade Fixtures, Lessee owned Alterations and/or Utility Installations, furnishings, and equipment as well as the

removal of any storage tank installed by or for Lessee. Lessee shall also completely remove from the Premises any and all Hazardous Substances brought onto the Premises by or for Lessee, or any third party (except Hazardous Substances which were deposited via underground migration from areas outside of the Project) even if such removal would require Lessee to perform or pay for work that exceeds statutory requirements. Trade Fixtures shall remain the property of Lessee and shall be removed by Lessee. Any personal property of Lessee not removed on or before the Expiration Date or any earlier termination date shall be deemed to have been abandoned by Lessee and may be disposed of or retained by Lessor as Lessor may desire. The failure by Lessee to timely vacate the Premises pursuant to this Paragraph 1.4(c) without the express written consent of Lessor shall constitute a holdover under the provisions of Paragraph 26 below.

**8. Insurance; Indemnity.**

**8.1 Insurance Premiums**. The cost of the premiums for the insurance policies maintained by Lessor pursuant to paragraph 8 are included as Operating Expenses (see paragraph 4.2 (a)(iv)). Said costs shall include increases in the premiums resulting from additional coverage related to requirements of the holder of a mortgage or deed of trust covering the Premises, Building and/or Project, increased valuation of the Premises, Building and/or Project, and/or a general premium rate increase. Said costs shall not, however, include any premium increases resulting from the nature of the occupancy of any other tenant of the Building. In no event, however, shall Lessee be responsible for any portion of the premium cost attributable to liability insurance coverage in excess of $2,000,000 procured under Paragraph 8.2(b).

**8.2 Liability Insurance**.

**(a) Carried by Lessee**. Lessee shall obtain and keep in force a Commercial General Liability policy of insurance protecting Lessee and Lessor as an additional insured against claims for bodily injury, personal injury and property damage based upon or arising out of the ownership, use, occupancy or maintenance of the Premises and all areas appurtenant thereto. Such insurance shall be on an occurrence basis providing single limit coverage in an amount not less than $1,000,000 per occurrence with an annual aggregate of not less than $2.000,000. Lessee shall add Lessor as an additional insured by means of an endorsement al least as broad as the Insurance Service Organization's "Additional Insured-Managers or Lessors of Premises" Endorsement. The policy shall not contain any intra-insured exclusions as between insured persons or organizations, but shall include coverage for liability assumed under this Lease as an "insured contract" for the performance of Lessee's indemnity obligations under this Lease. The limits of said insurance shall not, however, limit the liability of Lessee nor relieve Lessee of any obligation hereunder. Lessee shall provide an endorsement on its liability policy(ies) which provides that its insurance shall be primary to and not contributory with any similar insurance carried by Lessor, whose insurance shall be considered excess insurance only.

**(b) Carried by Lessor**. Lessor shall maintain liability insurance as described in Paragraph 8.2(a), in addition to, and not in lieu of, the insurance required to be maintained by Lessee. Lessee shall not be named as an additional insured therein.

**8.3 Property Insurance - Building, Improvements and Rental Value**.

**(a) Building and Improvements**. Lessor shall obtain and keep in force a policy or policies of insurance in the name of Lessor, with loss payable to Lessor, any ground-lessor, and to any Lender insuring loss or damage to the Building and/or Project. The amount of such insurance shall be equal to the full insurable replacement cost of the Building and/or Project, as the same shall exist from time to time, or the amount required by any Lender, but in no event more than the commercially reasonable and available insurable value thereof. Lessee Owned Alterations and Utility Installations, Trade Fixtures, and Lessee's personal property shall be insured by Lessee not by Lessor. If the coverage is available and commercially appropriate, such policy or policies shall insure against all risks of direct physical loss or damage (except the perils of flood and/or earthquake unless required by a Lender), including coverage for debris removal and the enforcement of any Applicable Requirements requiring the upgrading, demolition, reconstruction or replacement of any portion of the Premises as the result of a covered loss. Said policy or policies shall also contain an agreed valuation provision in lieu of any coinsurance clause, waiver of subrogation, and inflation guard protection causing an increase In the annual property Insurance coverage amount by a factor of not less than the adjusted U.S. Department of Labor Consumer Price Index for All Urban Consumers for the city nearest to where the Premises are located. If such insurance coverage has a deductible clause, the deductible amount shall not exceed $5,000 per occurrence.

**(b) Rental Value**. Lessor shall also obtain and keep in force a policy or policies in the name of Lessor with loss payable to Lessor and any Lender, insuring the loss of the full Rent for one year with an extended period of indemnity for an additional 180 days (-Rental Value insurance"). Said insurance shall contain an agreed valuation provision in lieu of any coinsurance clause, and the amount of coverage shall be adjusted annually to reflect the projected Rent otherwise payable by Lessee, for the next 12 month period.

**(c) Adjacent Premises**. Lessee shall pay for any increase in the premiums for the property insurance of the Building and for the Common Areas or other buildings in the Project if said increase is caused by Lessee's acts, omissions, use or occupancy of the Premises.

**(d) Lessee's Improvements**. Since Lessor is the Insuring Party, Lessor shall not be required to insure Lessee Owned Alterations and Utility Installations unless the item in question has become the property of Lessor under the terms of this Lease.

**8.4 Lessee's Property; Business Interruption Insurance; Worker's Compensation Insurance**.

**(a) Property Damage**. Lessee shall obtain and maintain insurance coverage on all of Lessee's personal property, Trade Fixtures, and Lessee Owned Alterations and Utility Installations. Such insurance shall be full replacement cost coverage with a deductible of not to exceed $1,000 per occurrence. The proceeds from any such insurance shall be used by Lessee for the replacement of personal property, Trade Fixtures and Lessee Owned Alterations and Utility Installations, Lessee shall provide Lessor with written evidence that such insurance is in force.

**(b) Business Interruption**. Lessee shall obtain and maintain loss of income and extra expense insurance in amounts as will reimburse Lessee for direct or indirect loss of earnings attributable to all perils commonly insured against by prudent lessees in the business of Lessee or attributable to prevention of access to the Premises as a result of such perils.

**(c) Worker's Compensation Insurance**. Lessee shall obtain and maintain Worker's Compensation Insurance in such amount as may be required by Applicable Requirements.

**(d) No Representation of Adequate Coverage**. Lessor makes no representation that the limits or forms of coverage of insurance specified herein are adequate to cover Lessee's property, business operations or obligations under this Lease.

**8.5 Insurance Policies**. Insurance required herein shall be by companies maintaining during the policy term a "General Policyholders Rating" of at least A-, VII, as set forth in the most current issue of "Bests Insurance Guide", or such other rating as may be required by a Lender. Lessee shall not do or permit to be done anything which invalidates the required insurance policies. Lessee shall, prior to the Start Date, deliver to Lessor certified copies of policies of such insurance or certificates with copies of the required endorsements evidencing the existence and amounts of the required insurance. No such policy shall be cancelable or subject to modification except after 30 days prior written notice to Lessor. Lessee shall, at least 10 days prior to the expiration of such policies, furnish Lessor with evidence of renewals or "insurance binders" evidencing renewal thereof, or Lessor may order such insurance and charge the cost thereof to Lessee, which amount shall be payable by Lessee to Lessor upon demand. Such policies shall be for a term of at

least one year, or the length of the remaining term of this Lease, whichever is less. If either Party shall fail to procure and maintain the insurance required to be carried by it, the other Party may, but shall not be required to, procure and maintain the same.

**8.6 Waiver of Subrogation**. Without affecting any other rights or remedies, Lessee and Lessor each hereby release and relieve the other, and waive their entire right to recover damages against the other, for loss of or damage to its property arising out of or incident to the perils required to be insured against herein. The effect of such releases and waivers is not limited by the amount of insurance carried or required, or by any deductibles applicable hereto. The Parties agree to have their respective property damage insurance carriers waive any right to subrogation that such companies may have against Lessor or Lessee, as the case may be, so long as the insurance is not invalidated thereby.

**8.7 Indemnity**. Except for Lessor's gross negligence or willful misconduct, Lessee shall indemnify, protect, defend and hold harmless the Premises, Lessor and its agents, Lessor's master or ground lessor, partners and Lenders, from and against any and all claims, loss of rents and/or damages, liens, judgments, penalties, attorneys' and consultants' fees, expenses and/or liabilities arising out of, involving, or in connection with, the use and/or occupancy of the Premises by Lessee. If any action or proceeding is brought against Lessor by reason of any of the foregoing matters, Lessee shall upon notice defend the same at Lessee's expense by counsel reasonably satisfactory to Lessor and Lessor shall cooperate with Lessee in such defense. Lessor need not have first paid any such claim in order lo be defended or indemnified.

**8.8 Exemption of Lessor and its Agents from Liability**. Notwithstanding the negligence or breach of this Lease by Lessor or its agents, neither Lessor nor its agents shall be liable under any circumstances for: (i) injury or damage to the person or goods, wares, merchandise or other property of Lessee, Lessee's employees, contractors. invitees, customers, or any other person in or about the Premises, whether such damage or injury is caused by or results from fire, steam, electricity, gas, water or rain, indoor air quality, the presence of mold or from the breakage, leakage, obstruction or other defects of pipes, fire sprinklers, wires, appliances, plumbing, HVAC or lighting fixtures, or from any other cause, whether the said injury or damage results from conditions arising upon the Premises or upon other portions of the Building, or from other sources or places, (ii) any damages arising from any act or neglect of any other tenant of Lessor or from the failure of Lessor or its agents to enforce the provisions of any other lease in the Project, or (iii) injury to Lessee's business or for any loss of income or profit therefrom. Instead, it is intended that Lessee's sole recourse in the event of such damages or injury be to file a claim on the insurance policy(ies) that Lessee is required to maintain pursuant to the provisions of paragraph 8.

**8.9 Failure to Provide Insurance**. Lessee acknowledges that any failure on its part to obtain or maintain the insurance required herein will expose Lessor to risks and potentially cause Lessor to incur costs not contemplated by this Lease, the extent of which will be extremely difficult to ascertain. Accordingly, for any month or portion thereof that Lessee does not maintain the required insurance and/or does not provide Lessor with the required binders or certificates evidencing the existence of the required insurance, the Base Rent shall be automatically increased, without any requirement for notice to Lessee, by an amount equal to 10% of the then existing Base Rent or $100 whichever is greater. The parties agree that such increase in Base Rent represents fair and reasonable compensation for the additional risk/costs that Lessor will incur by reason of Lessee's failure to maintain the required insurance. Such increase in Base Rent shall in no event constitute a waiver of Lessee's Default or Breach with respect to the failure to maintain such insurance, prevent the exercise or any of the other rights and remedies granted hereunder nor relieve Lessee of its obligation to maintain the insurance specified in this Lease.

**9. Damage or Destruction.**

**9.1 Definitions**.

**(a)** "**Premises Partial Damage**" shall mean damage. or destruction to the improvements on the Premises, other than Lessee Owned Alterations and Utility Installations, which can reasonably be repaired in 3 months or less from the date of the damage or destruction, and the cost thereof does not exceed a sum equal to 6 month's Base Rent. Lessor shall notify Lessee in writing within 30 days from the date of the damage or destruction as to whether or not the damage is Partial or Total.

**(b)** "**Premises Total Destruction**" shall mean damage or destruction to the improvements on the Premises, other than Lessee Owned Alterations and Utility Installations and Trade Fixtures, which cannot reasonably be repaired in 3 months or less from the date of the damage or destruction and/or the cost thereof exceeds a sum equal to 6 month's Base Rent, Lessor shall notify Lessee in writing within 30 days from the date of the damage or destruction as to whether or not the damage is Partial or Total.

**(c) "Insured Loss**" shall mean damage or destruction to improvements on the Premises, other than Lessee Owned Alterations and Utility Installations and Trade Fixtures, which was caused by an event required to be covered by the insurance described in Paragraph 8.3(a). irrespective of any deductible amounts or coverage limits involved.

**(d)** "**Replacement Cost**" shall mean the cost to repair or rebuild the improvements owned by Lessor at the time of the occurrence to their condition existing immediately prior thereto, including demolition, debris removal and upgrading required by the operation of Applicable Requirements, and without deduction for depreciation.

**(e)** "**Hazardous Substance Condition**" shall mean the occurrence or discovery of a condition involving the presence of, or a contamination by, a Hazardous Substance, in, on, or under the Premises which requires restoration.

**9.2 Partial Damage Insured Loss**. If a Premises Partial Damage that is an Insured Loss occurs, then Lessor shall, at Lessor's expense, repair such damage (but not Lessee's Trade Fixtures or Lessee Owned Alterations and Utility Installations) as soon as reasonably possible and this Lease shall continue in full force and effect; provided, however, that Lessee shall, al Lessor's election, make the repair of any damage or destruction the total cost to repair of which is $5,000 or less, and, in such event, Lessor shall make any applicable insurance proceeds available to Lessee on a reasonable basis for that purpose. Notwithstanding the foregoing, if the required insurance was not in force or the insurance proceeds are not sufficient to effect such repair, the Insuring Party shall promptly contribute the shortage in proceeds as and when required to complete said repairs. In the event, however, such shortage was due to the fact that, by reason of the unique nature of the improvements, full replacement cost insurance coverage was not commercially reasonable and available, Lessor shall have no obligation to pay for the shortage In insurance proceeds or to fully restore the unique aspects of the Premises unless Lessee provides Lessor with the funds to cover same, or adequate assurance thereof. within 10 days following receipt of written notice of such shortage and request therefor. If Lessor receives said funds or adequate assurance thereof within said 10 day period, the party responsible for making the repairs shall complete them as soon as reasonably possible and this Lease shall remain in full force and effect, If such funds or assurance are not received, Lessor may nevertheless elect by written notice to Lessee within 10 days thereafter to: (i) make such restoration and repair as is commercially reasonable with Lessor paying any shortage in proceeds, in which case this Lease shall remain in full force and effect, or (ii) have this Lease terminate 30 days thereafter. Lessee shall not be entitled to reimbursement of any funds contributed by Lessee to repair any such damage or destruction. Premises Partial Damage due to flood or earthquake shall be subject to Paragraph 9.3, notwithstanding that there may be some insurance coverage, but the net proceeds of any such insurance shall be made available for the repairs if made by either Party.

**9.3 Partial Damage Uninsured Loss**. If a Premises Partial Damage that is not an Insured Loss occurs, unless caused by a negligent or willful act of Lessee (in which event Lessee shall make the repairs al Lessee's expense), Lessor may either: (i) repair such damage as soon as reasonably possible at Lessors expense, in which event this Lease shall continue in full force and effect, or (ii) terminate this Lease by giving written notice to Lessee within 30 days after receipt by Lessor of knowledge of the occurrence of such damage. Such termination shall be effective 60 days following the date of such notice. In the event Lessor elects to terminate this Lease, Lessee shall have the right within 10 days after receipt of the termination notice to give written notice to Lector of Lessee's commitment to pay for the repair of such damage without reimbursement from Lessor. Lessee shall provide Lessor with said funds or satisfactory assurance thereof within 30 days after making such commitment. In such event this Lease shall continue in full force and effect, and Lessor shall proceed to make such repairs as soon as reasonably possible after the required funds are available. If Lessee does not make the required commitment, this Lease shall terminate as of the date specified in the termination notice.

**9.4 Total Destruction**. Notwithstanding any other provision hereof, if a Premises Total Destruction occurs, this Lease shall terminate 60 days following such Destruction. If the damage or destruction was caused by the gross negligence or willful misconduct of Lessee, Lessor shall have the right to recover Lessor's damages from Lessee, except as provided in Paragraph 8.6.

**9.5 Damage Near End of Term**. If at any time during the last 6 months of this Lease there is damage for which the cost to repair exceeds one month's Base Rent, whether or not an Insured Loss, Lessor may terminate this Lease effective 60 days following the date of occurrence of such damage by giving a written termination notice to Lessee within 30 days after the date of occurrence of such damage. Notwithstanding the foregoing, if Lessee at that time has an exercisable option to extend this Lease or to purchase the Premises, then Lessee may preserve this Lease by, (a) exercising such option and (b) providing Lessor with any shortage in insurance proceeds (or adequate assurance thereof) needed to make the repairs on or before the earlier of (i) the date which is 10 days after Lessee's receipt of Lessors written notice purporting to terminate this Lease, or (ii) the day prior to the date upon which such option expires. If Lessee duly exercises such option during such period and provides Lessor with funds (or adequate assurance thereof) to cover any shortage in insurance proceeds, Lessor shall. at Lessors commercially reasonable expense, repair such damage as soon as reasonably possible and this Lease shall continue in full force and effect. If Lessee fails to exercise such option and provide such funds or assurance during such period, then this Lease shall terminate on the date specified in the termination notice and Lessee's option shall be extinguished.

**9.6 Abatement of Rent; Lessee's Remedies**.

**(a) Abatement**. In the event of Premises Partial Damage or Premises Total Destruction or a Hazardous Substance Condition for which Lessee Is not responsible under this Lease, the Rent payable by Lessee for the period required for the repair, remediation or restoration of such damage shall be abated in proportion to the degree to which Lessee's use of the Premises is impaired, but not to exceed the proceeds received from the Rental

Value insurance. All other obligations of Lessee hereunder shall be performed by Lessee, and Lessor shall have no liability for any such damage, destruction, remediation. repair or restoration except as provided herein,

**(b) Remedies**. If Lessor shall be obligated to repair or restore the Premises and does not commence, in a substantial and meaningful way, such repair or restoration within 90 days after such obligation shall accrue. Lessee may, at any time prior to the commencement of such repair or restoration, give written notice to Lessor and to any Lenders of which Lessee has actual notice, of Lessee's election to terminate this Lease on a date not less than 60 days following the giving of such notice. If Lessee gives such notice and such repair or restoration is not commenced within 30 days thereafter, this Lease shall terminate as of the date specified in said notice. If the repair or restoration is commenced within such 30 days, this Lease shall continue in full force and effect. "**Commence**" shall mean either the unconditional authorization of the preparation of the required plans, or the beginning of the actual work on the Premises, whichever first occurs.

**9.7 Termination; Advance Payments**. Upon termination of this Lease pursuant to Paragraph 6.2(g) or Paragraph 9, an equitable adjustment shall be made concerning advance Base Rent and any other advance payments made by Lessee to Lessor. Lessor shall, in addition, return to Lessee so much of Lessee's Security Deposit as has not been. or is not then required to be, used by Lessor.

**10. Real Property Taxes.**

**10.1 Definitions**. As used herein, the term "**Real Property Taxes**" shall include any form of assessment; real estate. general. special, ordinary or extraordinary, or rental levy or tax (other than inheritance, personal income or estate taxes); improvement bond; and/or license fee imposed upon or levied against any legal or equitable interest of Lessor in the Project, Lessor's right to other income therefrom, and/or Lessors business of leasing, by any authority having the direct or indirect power to tax and where the funds are generated with reference to the Project address and

where the proceeds so generated are to be applied by the city, county or other local taxing authority of a jurisdiction within which the Project is located. Real Property Taxes shall also include any tax, fee, levy, assessment or charge, or any increase therein (i) imposed by reason of events occurring during the term of this Lease, including but not limited to, a change in the ownership of the Project, (it) a change in the improvements thereon, and/or (iii) levied or assessed on machinery or equipment provided by Lessor to Lessee pursuant to this Lease

**10.2 Payment of Taxes**. Except as otherwise provided in Paragraph 10,3, Lessor shall pay the Real Property Taxes applicable to the Project, and said payments shall be included in the calculation of Operating Expenses in accordance with the provisions of Paragraph 4.2.

**10.3 Additional Improvements**. Operating Expenses shall not include Real Property Taxes specified in the tax assessor's records and work sheets as being caused by additional improvements placed upon the Project by other lessees or by Lessor for the exclusive enjoyment of such other lessees. Notwithstanding Paragraph 10.2 hereof. Lessee shall, however, pay to Lessor at the time Operating Expenses are payable under Paragraph 4.2. the entirety of any increase in Real Property Taxes it assessed solely by reason of Alterations, Trade Fixtures or Utility Installations placed upon the Premises by Lessee or at Lessee's request or by reason of any alterations or improvements to the Premises made by Lessor subsequent to the execution of this Lease by the Parties.

**10.4 Joint Assessment**. if the Building is not separately assessed. Real Property Taxes allocated to the Building shall be an equitable proportion of the Real Property Taxes for all of the land and improvements included within the tax parcel assessed, such proportion to be determined by Lessor from the respective valuations assigned in the assessor's work sheets or such other information as may be reasonably available. Lessors reasonable determination thereof, in good faith. shall be conclusive.

**10.5 Personal Property Taxes**. Lessee shall pay prior to delinquency all taxes assessed against and levied upon Lessee Owned Alterations and Utility Installations, Trade Fixtures, furnishings, equipment and all persona/ property of Lessee contained in the Premises. When possible. Lessee shall cause its Lessee Owned Alterations and Utility Installations, Trade Fixtures, furnishings, equipment and all other personal property to be assessed and billed separately from the real property of Lessor. If any of Lessee's said property shall be assessed with Lessor' real property, Lessee shall pay Lessor the taxes attributable to Lessee's property within 10 days after receipt of a written statement setting forth the taxes applicable to Lessee's property.

**11. Utilities and Services.**

**11.1 Services Provided by Lessor**. Lessor shall provide healing. ventilation, air conditioning, reasonable amounts of electricity for normal lighting and office machines, water for reasonable and normal drinking and lavatory use in connection with an office, and replacement light bulbs and/or fluorescent tubes and ballasts for standard overhead fixtures_ Lessor shall also provide janitorial services to the Premises and Common Areas 5 times per week, excluding Building Holidays, or pursuant to the attached janitorial schedule, If any. Lessor shall not, however, be required to provide janitorial services to kitchens or storage areas included within the Premises.

**11.2 Services Exclusive to Lessee**. Lessee shall pay for all water, gas, heat, light, power, telephone and other utilities and services specially or exclusively supplied and/or metered exclusively to the Premises or to Lessee, together with any taxes thereon. If a service is deleted by Paragraph 1.13 and such service is not separately metered to the Premises, Lessee shall pay at Lessors option, either Lessee's Share or a reasonable proportion to be determined by Lessor of all charges for such jointly metered service.

**11.3 Hours of Service**. Said services and utilities shall be provided during times set forth in Paragraph 1.12. Utilities and services required at other times shall be subject to advance request and reimbursement by Lessee to Lessor of the cost thereof.

**11.4 Excess Usage by Lessee**. Lessee shall not make connection to the utilities except by or through existing outlets and shall not install or use machinery or equipment in or about the Premises that uses excess water, lighting or power, or suffer or permit any act that causes extra burden upon the utilities or services, including but not limited to security and trash services, over standard office usage for the Project. Lessor shall require Lessee to reimburse Lessor for any excess expenses or costs that may arise out of a breach of this subparagraph by Lessee. Lessor may, in its sole discretion, install at Lessee's expense supplemental equipment and/or separate metering applicable to Lessee's excess usage or loading.

**11.5 Interruptions**. There shall be no abatement of rent and Lessor shall not be liable in any respect whatsoever for the inadequacy, stoppage, interruption or discontinuance of any utility or service due to riot, strike, labor dispute, breakdown, accident, repair or other cause beyond Lessor's reasonable control or in cooperation with governmental request or directions.

**12. Assignment and Subletting.**

**12.1 Lessor's Consent Required**.

**(a)** Lessee shall not voluntarily or by operation of law assign, transfer, mortgage or encumber (collectively, "assign or assignment") or sublet all or any part of Lessee's interest in this Lease or in the Premises without Lessors prior written consent.

**(b)** Unless Lessee is a corporation and its stock is publicly traded on a national stock exchange, a change in the control of Lessee shall constitute an assignment requiring consent. The transfer, on a cumulative basis, of 25% or more of the voting control of Lessee shall constitute a change in control for this purpose.

**(c)** The Involvement of Lessee or its assets in any transaction, or series of transactions (by way of merger, sale, acquisition, financing, transfer, leveraged buyout or otherwise), whether or not a formal assignment or hypothecation of this Lease or Lessee's assets occurs, which results or will result in a reduction of the Net Worth of Lessee by an amount greater than 25% of such Net Worth as it was represented at the time of the execution of this Lease or at the time of the most recent assignment to which Lessor has consented, or as it exists Immediately prior to said transaction or transactions constituting such reduction, whichever was or is greater, shall be considered an assignment of this Lease to which Lessor may withhold its consent. "Net Worth of Lessee shall mean the net worth of Lessee (excluding any guarantor's) established under generally accepted accounting principles.

**(d)** An assignment or subletting without consent shall, at Lessor's option, be a Default curable after notice per Paragraph 13.1(c), or a noncurable Breach without the necessity of any notice and grace period. If Lessor elects to treat such unapproved assignment or subletting as a noncurable Breath, Lessor may either: (i) terminate this Lease, or (ii) upon 30 days written notice, increase the monthly Base Rent to 110% of the Base Rent then in effect. Further, in the event of such Breach and rental adjustment, (i) the purchase price of any option to purchase the Premises held by Lessee shall be subject to similar adjustment to 110% of the price previously in effect, and (ii) all fixed and nonfixed rental adjustments scheduled during the remainder of the Lease term shall be increased to 110% of the scheduled adjusted rent.

**(e)** Lessee's remedy for any breach of Paragraph 12.1 by Lessor shall be limited to compensatory damages and/or Injunctive relief.

**(f)** Lessor may reasonably withhold consent to a proposed assignment or subletting if Lessee is In Default at the time consent is requested.

**(g)** Notwithstanding the foregoing, allowing a de minimis portion of the Premises, ie. 20 square feet or less, to be used by a third party vendor in connection with the Installation of a vending machine or payphone shall not constitute a subletting

**12.2 Terms and Conditions Applicable to Assignment and Subletting**.

**(a)** Regardless of Lessors consent, no assignment or subletting shall: (i) be effective without the express written assumption by such assignee or sublessee of the obligations of Lessee under this Lease, (ii) release Lessee of any obligations hereunder, or (iii) alter the primary liability of Lessee for the payment of Rent or for the performance of any other obligations to be performed by Lessee.

**(b)** Lessor may accept Rent or performance of Lessee's obligations from any person other than Lessee pending approval or disapproval of an assignment. Neither a delay in the approval or disapproval of such assignment nor the acceptance of Rent or performance shall constitute a waiver or estoppel of Lessors right to exercise its remedies for Lessee's Default or Breach.

**(c)** Lessors consent to any assignment or subletting shall not constitute a consent to any subsequent assignment or subletting.

**(d)** In the event of any Default or Breach by Lessee, Lessor may proceed directly against Lessee, any Guarantors or anyone else responsible for the performance of Lessee's obligations under this Lease, including any assignee or sublessee, without first exhausting Lessors remedies against any other person or entity responsible therefor to Lessor, or any security held by Lessor.

**(e)** Each request for consent to an assignment or subletting shall be in writing, accompanied by information relevant to Lessor's determination as to the financial and operational responsibility and appropriateness of the proposed assignee or sublessee, including but not limited to the intended use and/or required modification of the Premises, if any, together with a fee of $500 as consideration for Lessors considering and processing said request. Lessee agrees to provide Lessor with such other or additional information and/or documentation as may be reasonably requested. (See also Paragraph 36)

**(f)** Any assignee of, or sublessee under, this Lease shall, by reason of accepting such assignment, entering into such sublease, or entering into possession of the Premises or any portion thereof, be deemed to have assumed and agreed to conform and comply with each and every term, covenant, condition and obligation herein to be observed or performed by Lessee during the term of said assignment or sublease, other than such obligations as are contrary to or inconsistent with provisions of an assignment or sublease to which Lessor has specifically consented to in writing.

**(g)** Lessors consent to any assignment or subletting shall not transfer to the assignee or sublessee any Option granted to the original Lessee by this Lease unless such transfer is specifically consented to by Lessor in writing. (See Paragraph 39.2)

**12.3 Additional Terms and Conditions Applicable to Subletting**. The following terms and conditions shall apply to any subletting by Lessee of all or any part of the Premises and shall be deemed included in all subleases under this Lease whether or not expressly incorporated therein:

**(a)** Lessee hereby assigns and transfers to Lessor all of Lessee's interest in all Rent payable on any sublease, and Lessor may collect such Rent and apply same toward Lessee's obligations under this Lease; provided, however, that until a Breach shall occur in the performance of Lessee's obligations, Lessee may collect said Rent. In the event that the amount collected by Lessor exceeds Lessee's then outstanding obligations any such excess shall be refunded to Lessee. Lessor shall not, by reason of the foregoing or any assignment of such sublease, nor by reason of the collection of Rent, be deemed liable to the sublessee for any failure of Lessee to perform and comply with any of Lessee's obligations to such sublessee. Lessee hereby irrevocably authorizes and directs any such sublessee, upon receipt of a written notice from Lessor stating that a Breach exists in the performance of Lessee's obligations under this Lease, to pay to Lessor all Rent due and to become due under the sublease. Sublessee shall rely upon any such notice from Lessor and shall pay all Rents to Lessor without any obligation or right to inquire as to whether such Breach exists, notwithstanding any claim from Lessee to the contrary.

**(b)** In the event of a Breach by Lessee, Lessor may, at its option, require sublessee to attorn to Lessor, in which event Lessor shall undertake the obligations of the sublessor under such sublease from the time of the exercise of said option to the expiration of such sublease: provided. however, Lessor shall not be liable for any prepaid rents or security deposit paid by such sublessee to such sublessor or for any prior Defaults or Breaches of such sublessor.

**(c)** Any matter requiring the consent of the sublessor under a sublease shall also require the consent of Lessor.

**(d)** No sublessee shall further assign or sublet all or any part of the Premises without Lessors prior written consent.

**(e)** Lessor shall deliver a copy of any notice of Default or Breach by Lessee to the sublessee, who shall have the right to cure the Default of Lessee within the grace pence, if any, specified in such notice. The sublessee shall have a right at reimbursement and offset from and. against Lessee for any such Defaults cured by the sublessee.

**13. Default: Breach; Remedies.**

**13.1 Default: Breach**. A "Default' is defined as a failure by the Lessee to comply with or perform any of the terms, covenants, conditions or Rules and Regulations under this Lease. A "Breach" is defined as the occurrence of one or more of the following Defaults. and the failure of Lessee to cure such Default within any applicable grace period:

**(a)** The abandonment of the Premises: or the vacating of the Premises without providing a commercially reasonable level of security, or where the coverage of the property insurance described in Paragraph 8.3 is jeopardized as a result thereof, or without providing reasonable assurances to minimize potential vandalism.

**(b)** The failure of Lessee to make any payment of Rent or any Security Deposit required to be made by Lessee hereunder, whether to Lessor or to a third party when due to provide reasonable evidence of Insurance or surety bond, or to fulfill any obligation under this Lease which endangers or threatens life or properly, where such failure continues for a period of 3 business days following written notice to Lessee. THE ACCEPTANCE BY LESSOR OF A PARTIAL PAYMENT OF RENT OR SECURITY DEPOSIT SHALL NOT CONSTITUTE A WAIVER OF ANY OF LESSOR'S RIGHTS, INCLUDING LESSORS RIGHT TO RECOVER POSSESSION OF THE PREMISES.

**(c)** The failure of Lessee to allow Lessor and/or its agents access to the Premises or the commission of waste, act or acts constituting public or private nuisance, and/or an illegal activity on the Premises by Lessee, where such actions continue for a period of 3 business days following written notice to Lessee.

**(d)** The failure by Lessee to provide (i) reasonable written evidence of compliance with Applicable Requirements, (ii) the service contracts, (iii) the rescission of an unauthorized assignment or subletting, (iv) an Estoppel Certificate or financial statements. (v) a requested subordination, (vi) evidence concerning any guarantee and/or Guarantor, (vii) any document requested under Paragraph 41, (viii) material data safety sheets (MSDS), or (ix) any other documentation or information which Lessor may reasonably require of Lessee under the terms of this Lease, where any such failure continues for a period of 10 days following written notice to Lessee.

**(e)** A Default by Lessee as to the terms, covenants, conditions or provisions of this Lease, or of the rules adopted under Paragraph 2.9 hereof, other than those described in subparagraphs 13.1(a). (b), (c) or (a), above, where such Default continues for a period of 30 days after written notice; provided, however, that if the nature of Lessee's Default is such that more than 30 days are reasonably required for its cure, then it shall not be deemed to be a Breach if Lessee commences such cure within said 30 day period and thereafter diligently prosecutes such cure to completion.

**(f)** The occurrence of any of the following events: (i) the making of any general arrangement or assignment for the benefit of creditors; (ii) becoming a "debtor as defined in 11 U.S.C. § 101 or any successor statute thereto (unless, in the case of a petition filed against Lessee, the same is dismissed within 60 days); (iii) the appointment of a trustee or receiver to take possession of substantially all of Lessee's assets located at the Premises or of Lessee's interest in this Lease, where possession is not restored to Lessee within 30 days; or (iv) the attachment, execution or other judicial seizure of substantially all of Lessee's assets located at the Premises or of Lessee's interest in this Lease, where such seizure is not discharged within 30 days; provided, however, in the event that any provision of this subparagraph (e) is contrary to any applicable law, such provision shall be of no force or effect, and not affect the validity of the remaining provisions.

**(g)** The discovery that any financial statement of Lessee or of any Guarantor given to Lessor was materially false.

**(h)** If the performance of Lessee's obligations under this Lease is guaranteed: (I) the death of a Guarantor. (ii) the termination of a Guarantor's liability with respect to this Lease other than in accordance with the terms of such guaranty, (iii) a Guarantor's becoming insolvent or the subject of a bankruptcy filing, (iv) a Guarantor's refusal to honor the guaranty, or (v) a Guarantor's breath of its guaranty obligation on an anticipatory basis, and Lessee's failure, within 60 days following written notice of any such event, to provide written alternative assurance or security, which, when coupled with the then existing resources of Lessee, equals or exceeds the combined financial resources of Lessee and the Guarantors that existed at the time of execution of this Lease.

**13.2 Remedies**. If Lessee fails to perform any of its affirmative duties or obligations, within 10 days after written notice (or in case of an emergency, without notice), Lessor may, at its option, perform such duty or obligation on Lessee's behalf, including but not limited to the obtaining of reasonably required bonds, insurance policies, or governmental licenses, permits or approvals. Lessee shall pay to Lessor an amount equal to 115% of the costs and expenses incurred by Lessor in such performance upon receipt of an invoice therefor. In the event of a Breach, Lessor may. with or without further notice or demand, and without limiting Lessor in the exercise of any right or remedy which Lessor may have by reason of such Breach:

**(a)** Terminate Lessee's right to possession of the Premises by any lawful means, in which case this Lease shall terminate and Lessee shall immediately surrender possession to Lessor. In such event Lessor shall be entitled to recover from Lessee: (i) the unpaid Rent which had been earned at the time of termination; (ii) the worth at the time of award of the amount by which the unpaid rent which would have been earned after termination until the time of award exceeds the amount of such rental loss that the Lessee proves could have been reasonably avoided; (iii) the worth at the time or award of the amount by which the unpaid rent for the balance of the term after the time of award exceeds the amount of such rental loss that the Lessee proves could be reasonably avoided; and (iv) any other amount necessary to compensate Lessor for all the detriment proximately caused by the Lessee's failure to perform its obligations under this Lease or which in the ordinary course of things would be likely to result therefrom, including but not limited to the cost of recovering possession of the Premises, expenses of reletting, including necessary renovation and alteration of the Premises, reasonable attorneys' fees, and that portion of any leasing commission paid by Lessor in connection with this Lease applicable to the unexpired term of this Lease. The worth at the time of award of the amount referred to in provision (iii) of the immediately preceding sentence shall be computed by discounting such amount at the discount rate of the Federal Reserve Bank of the District within which the Premises are located at the time of award plus one percent. Efforts by Lessor to mitigate damages caused by Lessee's Breach of this Lease shall not waive Lessor's right to recover damages under Paragraph 12. If termination of this Lease is obtained through the provisional remedy of unlawful detainer, Lessor shall have the right to recover in such proceeding any unpaid Rent and damages as are recoverable therein. or Lessor may reserve the right to recover all or any part thereof in a separate suit. If a notice and grace period required under Paragraph 13.1 was not previously given, a notice to pay rent or quit, or to perform or quit given to Lessee under the unlawful detainer statute shall also constitute the notice required by Paragraph 13.1. In such case, the applicable grace period required by Paragraph 13.1 and the unlawful detainer statute shall run concurrently, and the failure of Lessee to cure the Default within the greater of the two such grace periods shall constitute both an unlawful detainer and a Breach of this Lease entitling Lessor to the remedies provided for in this Lease and/or by said statute.

**(b)** Continue the Lease and Lessee's right to possession and recover the Rent as it becomes due, in which event Lessee may sublet or assign, subject only to reasonable limitations. Acts of maintenance, efforts to relet, and/or the appointment of a receiver to protect the Lessor's interests, shall not constitute a termination of the Lessee's right to possession.

**(c)** Pursue any other remedy now or hereafter available under the laws or judicial decisions of the state wherein the Premises are located. The expiration or termination of this Lease and/or the termination of Lessee's right to possession shall not relieve Lessee from liability under any indemnity provisions of this Lease as to matters occurring or accruing during the term hereof or by reason of Lessee's occupancy of the Premises.

**13.3 Inducement Recapture**. Any agreement for free or abated rent or other charges, or for the giving or paying by Lessor to or for Lessee of any cash or other bonus, inducement or consideration for Lessee's entering into this Lease, all of which concessions are hereinafter referred to as "**Inducement Provisions**", shall be deemed conditioned upon Lessee's lull and faithful performance of all of the terms, covenants and conditions of this Lease. Upon Breach of this Lease by Lessee, any such Inducement Provision shall automatically be deemed deleted from this Lease and of no further force or effect, and any rent, other charge, bonus, inducement or consideration theretofore abated, given or paid by Lessor under such an Inducement Provision shall be immediately due and payable by Lessee to Lessor, notwithstanding any subsequent cure of said Breach by Lessee. The acceptance by Lessor of rent or the cure of the Breach which initialed the operation of this paragraph shall not be deemed a waiver by Lessor of the provisions of this paragraph unless specifically so staled in writing by Lessor at the time of such acceptance.

**13.4 Late Charges**. Lessee hereby acknowledges that late payment by Lessee of Rent will cause Lessor to incur costs not contemplated by this Lease, the exact amount of which will be extremely difficult to ascertain. Such costs include, but are not limited to, processing and accounting charges, and late charges which may be imposed upon Lessor by any Lender. Accordingly, if any Rent shall not be received by Lessor within 5 days after such amount shall be due, then, without any requirement for notice to Lessee, Lessee shall immediately pay to Lessor a one-time late charge equal to 10% of each such overdue amount or 5100, whichever is greater. The parties hereby agree that such late charge represents a fair and reasonable estimate of the costs Lessor will incur by reason of such late payment. Acceptance of such late charge by Lessor shall in no event constitute a waiver of Lessee's Default or Breach with respect to such overdue amount, nor prevent the exercise of any of the other rights and remedies granted hereunder. In the event that a late charge is payable hereunder, whether or not collected, for 3 consecutive installments of Base Rent, then notwithstanding any provision of this Lease to the contrary, Base Rent shall, al Lessor's option, become due and payable quarterly in advance.

**13.5 Interest**. Any monetary payment due Lessor hereunder, other than late charges, not received by Lessor, when due as to scheduled payments (such as Base Rent) or within 30 days following the date on which it was due for non-scheduled payment, shall bear interest from the date when due, as to scheduled payments, or the 31st day after it was due as to non-scheduled payments. The interest ("**Interest**") charged shall be computed at the rate of 10% per annum but shall not exceed the maximum rate showed by law. Interest is payable In addition to the potential late charge presided for in Paragraph 13.4.

**13.6 Breach by Lessor**.

**(a) Notice of Breach**. Lessor shall not he deemed in breach of this Lease unless Lessor fails within a reasonable time to perform an obligation required to be performed by Lessor For purposes of Oils Paragraph, a reasonable time shall in no event be less than 30 days after receipt by Lessor, and any Lender whose name and address shall have been furnished Lessee in writing for such purpose. of written notice specifying wherein such obligation of Lessor has not been performed: provided, however, that if the nature of Lessor's obligation is such that more than 30 days are reasonably required for its performance, then Lessor shall not be in breach if performance is commenced within such 30 day period and thereafter diligently pursued to completion.

**(b) Performance by Lessee on Behalf of Lessor**. In the event that neither Lessor nor Lender cures said breath within 30 days after receipt of said notice, or if having commenced said cure they do not diligently pursue it to completion, then Lessee may elect to cure said breach at Lessees expense and offset from Rent the actual and reasonable cost to perform such cure, provided, however, that such offset shall not exceed an amount equal to the greater of one month's Base Rent or the Security Deposit, reserving Lessee's right to seek reimbursement from Lessor for any such expense in excess of such offset, Lessee shall document the cost of said cure and supply said documentation to Lessor.

**14. Condemnation**. if the Premises or any portion thereof are taken under the power of eminent domain or sold under the threat of the exercise of said power (collectively "**Condemnation**"), this Lease shall terminate as to the part taken as of the date the condemning authority takes title or possession, whichever first occurs. If more than 10% of the rentable floor area of the Premises, or more than 25% of Lessee's Reserved Parking Spaces, if any, are taken by Condemnation, Lessee may. al Lessee's option, to be exercised In writing within 10 days after Lessor shall have given Lessee written notice of such taking (or in the absence of such notice, within 10 days alter the condemning authority shall have taken possession) terminate this Lease as of the date the condemning authority takes such possession. If Lessee does not terminate this Lease in accordance with the foregoing, this Lease shall remain in full force and effect as to the portion of the Premises remaining, except that the Base Rent shall be reduced in proportion to the reduction in utility of the Premises caused by such Condemnation. Condemnation awards and/or payments shall be the properly of Lessor, whether such award shall be made as compensation for diminution in value of the leasehold, the value of the part taken, or for severance damages; provided, however, that Lessee shall be entitled to any compensation paid by the condemnor for Lessee's relocation expenses, loss of business goodwill and/or Trade Fixtures, without regard to whether or not this Lease is terminated pursuant to the provisions of this Paragraph. All Alterations and Utility Installations made to the Premises by Lessee, for purposes of Condemnation only, shall be considered the property of the Lessee and Lessee shall be entitled to any and all compensation which is payable therefor. In the event that this Lease is not terminated by reason of the Condemnation, Lessor shall repair any damage to the Premises caused by such Condemnation.

**15. Brokerage Fees.**

**15.1 Additional Commission**. If a separate brokerage fee agreement is attached then in addition to the payments owed pursuant to Paragraph 1.10 above, and unless Lessor and the Brokers otherwise agree in writing. Lessor agrees that: (a) if Lessee exercises any Option, (b) if Lessee or anyone affiliated with Lessee acquires from Lessor any rights to the Premises or other premises owned by Lessor and located within the Project, (c) if Lessee remains in possession of the Premises, with the consent of Lessor, after the expiration of this Lease, or (d) if Base Rent is increased, whether by agreement or operation of an escalation clause herein, then, Lessor shall pay Brokers a fee in accordance with the schedule attached to such brokerage fee agreement.

**15.2 Assumption of Obligations**. Any buyer or transferee of Lessor's interest in this Lease shall be deemed to have assumed Lessor's obligation hereunder. Brokers shall be third party beneficiaries of the provisions of Paragraphs 1.10, 15, 22 and 31. If Lessor fails to pay to Brokers any amounts due as and for brokerage fees pertaining to this Lease when due, then such amounts shall accrue Interest. In addition, if Lessor fails to pay any amounts to Lessee's Broker when due, Lessee's Broker may send written notice to Lessor and Lessee of such failure and if Lessor fails to pay such amounts within 10 days after said notice, Lessee shall pay said monies to its Broker and offset such amounts against Rent. In addition, Lessee's Broker shall be deemed to be a third party beneficiary of any commission agreement entered into by and/or between Lessor and Lessor's Broker for the limited purpose of collecting any brokerage fee owed.

**15.3** Representations and Indemnities of Broker Relationships. Lessee and Lessor each represent and warrant to the other that it has had no dealings with any person, fern. broker or finder (other than the Brokers, if any) in connection with this Lease, and that no one other than said named Brokers is entitled to any commission or finder's fee in connection herewith. Lessee and Lessor do each hereby agree to indemnify, protect, defend and hold the other harmless from and against liability for compensation or charges which may be claimed by any such unnamed broker, finder or other similar party by reason of any dealings or actions of the indemnifying Party, including any costs, expenses, attorneys' fees reasonably Incurred with respect thereto.

**16. Estoppel Certificates.**

**(a)** Each Party (as "**Responding Party**") shall within 10 days after written notice from the other Party (the "Requesting Party') execute, acknowledge and deliver to the Requesting Party a statement in writing in form similar to the then most current "Estoppel Certificate" form published by the AIR Commercial Real Estate Association, plus such additional information, confirmation and/or statements as may be reasonably requested by the Requesting Party.

**(b)** If the Responding Party shall fail to execute or deliver the Estoppel Certificate within such 10 day period, the Requesting Party may execute an Estoppel Certificate stating that: (i) the Lease is in full force and effect without modification except as may be represented by the Requesting Party, (ii) there are no uncured defaults in the Requesting Party's performance, and (iii) if Lessor is the Requesting Party, not more than one month's rent has been paid in advance. Prospective purchasers and encumbrancers may rely upon the Requesting Party's Estoppel Certificate, and the Responding Party shall be estopped from denying the truth of the facts contained in said Certificate.

**(c)** If Lessor desires to finance, refinance, or sell the Premises, or any part thereof, Lessee and all Guarantors shall within 10 days after written notice from Lessor deliver to any potential lender or purchaser designated by Lessor such financial statements as may be reasonably required by such lender or purchaser, including but not limited to Lessee's financial statements for the past 3 years. All such financial statements shall be received by Lessor and such lender or purchaser in confidence and shall be used only for the purposes herein set forth.

**17. Definition of Lessor**. The term "**Lessor**" as used herein shall mean the owner or owners at the time in question of the fee title to the Premises, or, if this is a sublease, of the Lessee's interest in the prior lease. In the event of a transfer of Lessor's title or interest in the Premises or this Lease, Lessor shall deliver to the transferee or assignee (in cash or by credit) any unused Security Deposit held by Lessor. Upon such transfer or assignment and delivery of the Security Deposit, as aforesaid, the prior Lessor shall be relieved of all liability with respect to the obligations and/or covenants under this Lease thereafter to be performed by the Lessor. Subject to the foregoing, the obligations and/or covenants in this Lease to be performed by the Lessor shall be binding only upon the Lessor as hereinabove defined.

**18. Severability**. The invalidity of any provision of this Lease. as determined by a court of competent jurisdiction, shall in no way affect the validity of any other provision hereof.

**19. Days**. Unless otherwise specifically indicated to the contrary, the word "days" as used in this Lease shall mean and refer to calendar days.

**20. Limitation on Liability**. The obligations of Lessor under this Lease shall not constitute personal obligations of Lessor or its partners, members, directors, officers or shareholders, and Lessee shall look to the Project, and to no other assets of Lessor, for the satisfaction of any liability of Lessor with respect to this Lease, and shall not seek recourse against Lessor's partners, members, directors, officers or shareholders, or any of their personal assets for such satisfaction.

**21. Time of Essence**. Time is of the essence with respect to the performance of all obligations lo be performed or observed by the Parties under this Lease.

**22. No Prior or Other Agreements; Broker Disclaimer**. This Lease contains all agreements between the Parties with respect to any matter mentioned herein, and no other prior or contemporaneous agreement or understanding shall be effective. Lessor and Lessee each represents and warrants to the Brokers that it has made, and is relying solely upon, its own investigation as to the nature, quality, character and financial responsibility of the other Party to this Lease and as to the use, nature, quality and character of the Premises. Brokers have no responsibility with respect thereto or with respect to any default or breach hereof by either Party

**23. Notices.**

**23.1 Notice Requirements**. All notices required or permitted by this Lease or applicable law shall be in writing and may be delivered in person (by hand or by courier) or may be sent by regular, certified or registered mail or U.S. Postal Service Express Mail, with postage prepaid, or by facsimile transmission, and shall be deemed sufficiently given if served in a manner specified in this Paragraph 23. The addresses noted adjacent to a Party's signature on this Lease shall be that Party's address for delivery or mailing of notices. Either Party may by written notice to the other specify a different address for notice, except that upon Lessee's taking possession of the Premises, the Premises shall constitute Lessee's address for notice_ A copy of all notices to Lessor shall be concurrently transmitted to such party or parties at such addresses as Lessor may from time to time hereafter designate in writing.

**23.2 Date of Notice**. Any notice sent by registered or certified mail, return receipt requested, shall be deemed given on the date of delivery shown on the receipt card, or if no delivery date is shown, the postmark thereon. If sent by regular mail the notice shall be deemed given 72 hours after the same is addressed as required herein and mailed with postage prepaid. Notices delivered by United States Express Mail or overnight courier that guarantees next day delivery shall be deemed given 24 hours after delivery of the same to the Postal Service or courier. Notices transmitted by facsimile transmission or similar means shall be deemed delivered upon telephone confirmation of receipt (confirmation report from fax machine is sufficient), provided a copy is also delivered via delivery or mail. If notice is received on a Saturday, Sunday or legal holiday, it shall be deemed received on the next business day.

**24. Waivers.**

**(a)** No waiver by Lessor of the Default or Breach of any term, covenant or condition hereof by Lessee, shall be deemed a waiver of any other term, covenant or condition hereof, or of any subsequent Default or Breach by Lessee or the same or of any other term, covenant or condition hereof. Lessor's consent to or approval of, any act shall riot be deemed to render unnecessary the obtaining of Lessor's consent to, or approval of, any subsequent or similar act by Lessee, or be construed as the basis of an estoppel to enforce the provision or provisions of this Lease requiring such consent.

**(b)** The acceptance of Rent by Lessor shall not be a waiver of any Darnel or Breath by Lessee Any payment by Lessee may be accepted by Lessor on account of moneys or damages due Lessor. notwithstanding any qualifying statements or conditions made by Lessee in connection therewith, which such statements and/or conditions shall be of no force or effect whatsoever unless specifically agreed to in writing by Lessor at or before the time of deposit of such payment,

**(c)** THE PARTIES AGREE THAT THE TERMS OF THIS LEASE SHALL GOVERN WITH REGARD TO ALL MATTERS RELATED THERETO AND HEREBY WAIVE THE PROVISIONS OF ANY PRESENT OR FUTURE STATUTE TO THE EXTENT THAT SUCH STATUTE IS INCONSISTENT WITH THIS LEASE

**25. Disclosures Regarding The Nature of a Real Estate Agency Relationship.**

**(a)** When entering into a discussion with a real estate agent regarding a real estate transaction, a Lessor or Lessee should from the outset understand what type of agency relationship or representation it has with the agent or agents in the transaction. Lessor and Lessee acknowledge being advised by the Brokers in this transaction, as follows:

**(i)** *Lessor's Agent*. A Lessors agent under a listing agreement with the Lessor acts as the agent for the Lessor only. A Lessors agent or subagent has the following affirmative obligations: To the Lessor. A fiduciary duty of utmost care, integrity, honesty. and loyalty in dealings with the Lessor. To the Lessee and the Lessors a. Diligent exercise of reasonable skills and care in performance of the agent's duties. b. A duly of honest and fair dealing and good faith. c. A duty to disclose all facts known to the agent materially affecting the value or desirability of the property that are not known to, or within the diligent attention and observation of, the Parties. An agent is not obligated to reveal to either Party any confidential information obtained from the other Party which does not involve the affirmative duties set forth above.

**(ii)** *Lessee's Agent*. An agent can agree to act as agent for the Lessee only. In these situations, the agent is not the Lessor's agent. even if by agreement the agent may receive compensation for services rendered, either in full or in part from the Lessor. An agent acting only for a Lessee has the following affirmative obligations. To the Lessee: A fiduciary duty of utmost care. integrity, honesty, and loyalty in dealings with the Lessee. To the Lessee and the Lessor: a. Diligent exercise of reasonable skills and care in performance of the agent's duties, b. A duty of honest and fair dealing and good faith. c. A duty to disclose all facts known to the agent materially affecting the value or desirability of the property that are not known to, or within the diligent attention and observation of. the Parties. An agent is not obligated to reveal to either Party any confidential information obtained from the other Party which does not involve the affirmative duties set forth above.

**(iii)** *Agent Representing Both Lessor and Lessee*. A real estate agent, either acting directly or through one or more associate licenses, can legally be the agent of both the Lessor and the Lessee in a transaction, but only with the knowledge and consent of both the Lessor and the Lessee. In a dual agency situation, the agent has the following affirmative obligations to both the Lessor and the Lessee: a. A fiduciary duty of utmost care, integrity, honesty and loyalty In the dealings with either Lessor or the Lessee. b. Other duties to the Lessor and the Lessee as stated above in subparagraphs (i) or (ii). In representing both Lessor and Lessee, the agent may not without the express permission of the respective Party, disclose to the other Party that the Lessor will accept rent in an amount less than that indicated In the listing or that the Lessee is willing to pay a higher rent than that offered. The above duties of the agent in a real estate transaction do not relieve a Lessor or Lessee from the responsibility to protect their own interests. Lessor and Lessee should carefully read all agreements to assure that they adequately express their understanding of the transaction. A real estate agent is a person qualified to advise about real estate. If legal or tax advice is desired, consult a competent professional.

**(b)** Brokers have no responsibility with respect to any default or breach hereof by either Party. The Parties agree that no lawsuit or other legal proceeding involving any breach of duly, error or omission relating to this Lease may be brought against Broker more than one year after the Start Date and that the liability (including court costs and attorneys' fees), of any Broker with respect to any such lawsuit and/or legal proceeding shall not exceed the fee received by such Broker pursuant to this Lease; provided, however, that the foregoing limitation on each Broker's liability shall not be applicable to any gross negligence or willful misconduct of such Broker.

**(c)** Lessor and Lessee agree to identify to Brokers as "Confidential" any communication or information given Brokers that is considered by such Party to be confidential.

**26. No Right To Holdover**. Lessee has no right to retain possession of the Premises or any part thereof beyond the expiration or termination of this Lease. In the event that Lessee holds over, then the Base Rent shall be increased to 150% of the Base Rent applicable immediately preceding the expiration or termination. Nothing contained herein shall be construed as consent by Lessor to any holding over by Lessee.

**27. Cumulative Remedies**. No remedy or election hereunder shall be deemed exclusive but shall, wherever possible, be cumulative with all other remedies at law or in equity.

**28. Covenants and Conditions; Construction of Agreement**. All provisions of this Lease to be observed or performed by Lessee are both covenants and conditions. In construing this Lease. all headings and titles are for the convenience of the Parties only and shall not be considered a part of this Lease. Whenever required by the context, the singular shall include the plural and vice versa. This Lease shall not be construed as if prepared by are of the Parties, but rather according to Its fair meaning as a whole, as if both Parties had prepared it.

**29. Binding Effect; Choice of Law**. This Lease shall be binding upon the Parties, their personal representatives, successors and assigns and be governed by the laws of the State in which the Premises are located. Any litigation between the Parties hereto concerning this Lease shall be initiated in the county in which the Premises are located.

**30. Subordination; Attornment; NonDisturbance**.

**30.1 Subordination**. This Lease and any Option granted hereby shall be subject and subordinate to any ground lease, mortgage, deed of trust, or other hypothecation or security device (collectively, "**Security Device**"), now or hereafter placed upon the Premises, to any and all advances made on the security thereof, and to all renewals, modifications, and extensions thereof. Lessee agrees that the holders of any such Security Devices (in this Lease together referred to as "**Lender**") shall have no liability or obligation to perform any of the obligations of Lessor under this Lease Any Lender may elect to have this Lease and/or any Option granted hereby superior to the lien of its Security Device by giving written notice thereof to Lessee, whereupon this Lease and such Options shall be deemed prior to such Security Device, notwithstanding the relative dates of the documentation or recordation thereof.

**30.2 Attornment**. In the event that Lessor transfers title to the Premises, or the Premises are acquired by another upon the foreclosure or termination of a Security Device to which this Lease is subordinated (i) Lessee shall, subject to the non-disturbance provisions of Paragraph 30.3. attorn to such new owner, and upon request, enter into a new lease, containing all of the terms and provisions of this Lease, with such new owner for the remainder of the term hereof, or. at the election of the new owner, this Lease will automatically become a new lease between Lessee and such new owner, and (ii) Lessor shall thereafter be relieved of any further obligations hereunder and such new owner shall assume all of Lessor's obligations. except that such new owner shall not: (a) be liable far any act or omission of any prior lessor or with respect to events occurring prior to acquisition of ownership: (b) be subject to any offsets or defenses which Lessee might have against any prior lessor, (c) be bound by prepayment of more than one month's rent, or (d) be liable for the return of any security deposit paid to any prior lessor.

**30.3 NonDisturbance**. With respect to Security Devices entered into by Lessor after the execution of this Lease, Lessee's subordination of this Lease shall be subject to receiving a commercially reasonable non-disturbance agreement (a "**NonDisturbance Agreement**") from the Lender which Non-Disturbance Agreement provides that Lessee's possession of the Premises, and this Lease, including any options to extend the term hereof, will not be disturbed so long as Lessee is not in Breach hereof and attorns to the record owner of the Premises. Further, within 60 days after the execution of this Lease, Lessor shall, if requested by Lessee, use its commercially reasonable efforts to obtain a Non-Disturbance Agreement from the holder of any preexisting Security Device which is secured by the Premises. In the event that Lessor is unable to provide the Non-Disturbance Agreement within said 60 days, then Lessee may, al Lessee's option, directly contact Lender and attempt to negotiate for the execution and delivery of a Non-Disturbance Agreement.

**30.4 Self-Executing**. The agreements contained in this Paragraph 30 shall be effective without the execution of any further documents: provided, however. that, upon written leeriest from Lessor or a Lender in connection with a sale, financing or refinancing of the Premises, Lessee and Lessor shall execute such further writings as may be reasonably required to separately document any subordination, attornment and/or Non-Disturbance Agreement provided for herein.

**31. Attorneys' Fees**. If any Party or Broker brings an action or proceeding involving the Premises whether founded in tort, contract or equity, or to declare rights hereunder, the Prevailing Party (as hereafter defined) in any such proceeding, action, or appeal thereon, shall be entitled to reasonable attorneys' fees. Such fees may be awarded in the same suit or recovered in a separate suit, whether or not such action or proceeding is pursued to decision or judgment. The term. "**Prevailing Party**" shall include, without limitation, a Party or Broker who substantially obtains or defeats the relief sought, as the case may be, whether by compromise, settlement, judgment, or the abandonment by the other Party or Broker of its claim or defense. The attorneys' fees award shall not be computed in accordance with any court fee schedule, but shall be such as to fully reimburse all attorneys' fees reasonably incurred. In addition. Lessor shall be entitled to attorneys' fees, costs and expenses incurred in the preparation and service of notices of Default and consultations in connection therewith, whether or not a legal action is subsequently commenced in connection with such Default or resulting Breach ($200 is a reasonable minimum per occurrence for such services and consultation).

**32. Lessor's Access; Showing Premises; Repairs**. Lessor and Lessor's agents shall have the right to enter the Premises at any time, in the case of an emergency, and otherwise at reasonable times after reasonable prior notice for the purpose of showing the same to prospective purchasers, lenders, or tenants, and making such alterations, repairs. improvements or additions to the Premises as Lessor may deem necessary or desirable and the erecting, using and maintaining of utilities, services, pipes and conduits through the Premises and/or other premises as long as there is no material adverse effect to Lessee's use of the Premises. All such activities shall be without abatement of rent or liability to Lessee. In addition, Lessor shall have the right to retain keys to the Premises and to unlock all doors in or upon the Premises other than to files, vaults and safes, and in the case of emergency to enter the Premises by any reasonably appropriate means, and any such entry shall not be deemed a forcible or unlawful entry or detainer of the Premises or an eviction. Lessee waives any charges for damages or injuries or interference with Lessees property or business in connection therewith.

**33. Auctions**. Lessee shall not conduct nor permit to be conducted, any auction upon the Premises without Lessor's prior written consent. Lessor shall not be obligated to exercise any standard of reasonableness in determining whether to permit an auction.

**34. Signs**. Lessor may place on the Premises ordinary "For Sale" signs at any time and ordinary "For Lease" signs during the last 6 months of the term hereof. Lessor may not place any sign on the exterior of the Building that covers any of the windows of the Premises. Except for ordinary "For Sublease signs which may be placed only on the Premises, Lessee shall not place any sign upon the Project without Lessor's prior written consent. All signs must comply with all Applicable Requirements.

**35. Termination; Merger**. Unless specifically stated otherwise in writing by Lessor, the voluntary or other surrender of this Lease by Lessee, the mutual termination or cancellation hereof, or a termination hereof by Lessor for Breach by Lessee, shall automatically terminate any sublease or lesser estate in the Premises; provided, however, that Lessor may elect to continue any one or all existing subtenancies, Lessor's failure within 10 days following any such event to elect to the contrary by written notice to the holder of any such lesser interest, shall constitute Lessor's election to have such event constitute the termination of such interest.

**36. Consents**. Except as otherwise provided herein, wherever in this Lease the consent of a Party is required to an act by or for the other Party, such consent shall not be unreasonably withheld or delayed. Lessor's actual reasonable costs and expenses (including but not limited to architects', attorneys', engineers' and other consultants' fees) incurred in the consideration of, or response to, a request by Lessee for any Lessor consent, including but not limited to consents to an assignment, a subletting or the presence or use of a Hazardous Substance, shall be paid by Lessee upon receipt of an Invoice

and supporting documentation therefor. Lessor's consent to any act, assignment or subletting shall not constitute an acknowledgment that no Default or Breach by Lessee of this Lease exists, nor shall such consent be deemed a waiver of any then existing Default or Breach, except as may be otherwise specifically stated in writing by Lessor at the time of such consent. The failure to specify herein any particular condition to Lessor's consent shall not preclude the imposition by Lessor at the time of consent of such further or other conditions as are then reasonable with reference to the particular matter for which consent is being given. In the event that either Party disagrees with any determination made by the other hereunder and reasonably requests the reasons for such determination, the determining party shall furnish its reasons in writing and in reasonable detail within 10 business days following such request.

**37. Guarantor**.

**37.1 Execution**. The Guarantors, if any, shall each execute a guaranty in the form most recently published by the AIR Commercial Real Estate Association.

**37.2 Default**. It shall constitute a Default of the Lessee if any Guarantor fails or refuses, upon request to provide: (a) evidence of the execution of the guaranty, including the authority of the party signing on Guarantor's behalf to obligate Guarantor, and in the case of a corporate Guarantor, a certified copy of a resolution of its board of directors authorizing the making of such guaranty, (b) current financial statements, (c) an Estoppel Certificate, or (d) written confirmation that the guaranty is still in effect.

**38. Quiet Possession**. Subject to payment by Lessee of the Rent and performance of all of the covenants, conditions and provisions on Lessee's part to be observed and performed under this Lease, Lessee shall have quiet possession and quiet enjoyment of the Premises during the term hereof.

**39. Options**. If Lessee is granted an Option, as defined below, then the following provisions shall apply.

**39.1 Definition**. "**Option**" shall mean: (a) the right to extend or reduce the term of or renew this Lease or to extend or reduce the term of or renew any lease that Lessee has on other property of Lessor; (b) the right of first refusal or first offer to lease either the Premises or other property of Lessor; (c) the right to purchase, the right of first offer to purchase or the right of first refusal to purchase the Premises or other property of Lessor.

**39.2 Options Personal To Original Lessee**. Any Option granted to Lessee in this Lease is personal to the original Lessee. and cannot be assigned or exercised by anyone other than said original Lessee and only while the original Lessee Is in full possession of the Premises and, if requested by Lessor, with Lessee certifying that Lessee has no intention of thereafter assigning or subletting.

**39.3 Multiple Options**. In the event that Lessee has any multiple Options to extend or renew this Lease, a later Option cannot be exercised unless the prior Options have been validly exercised.

**39.4 Effect of Default on Options**.

**(a)** Lessee shall have no right to exercise an Option: (i) during the period commencing with the giving of any notice of Default and continuing until said Default is cured, (ii) during the period of time any Rent is unpaid (without regard to whether notice thereof is given Lessee), (iii) during the time Lessee is in Breach of this Lease, or (iv) in the event that Lessee has been given 3 or more notices of separate Default, whether or not the Defaults are cured, during the 12 month period immediately preceding the exercise of the Option.

**(b)** The period of time within which an Option may be exercised shall not be extended or enlarged by reason of Lessee's inability to exercise an Option because of the provisions of Paragraph 39.4(a).

**(c)** An Option shall terminate and be of no further force or effect, notwithstanding Lessee's due and timely exercise of the Option, if after such exercise and prior to the commencement of the extended term or completion of the purchase, (i) Lessee fails to pay Rent for a period of 30 days after such Rent becomes due (without any necessity of Lessor to give notice thereof) or (ii) if Lessee commits a Breach of this Lease.

**40. Security Measures**. Lessee hereby acknowledges that the Rent payable to Lessor hereunder does not include the cost of guard service or other security measures, and that Lessor shall have no obligation whatsoever to provide same. Lessee assumes all responsibility for the protection of the Premises, Lessee, its agents and invitees and their property from the acts of third parties. In the event, however, that Lessor should elect to provide security services, then the cost thereof shall be an Operating Expense.

**41. Reservations**.

**(a)** Lessor reserves the right: (i) to grant, without the consent or joinder of Lessee, such easements, rights and dedications that Lessor deems necessary, (ii) to cause the recordation of parcel maps and restrictions, (iii) to create and/or install new utility raceways, so long as such easements, rights, dedications, maps, restrictions, and utility raceways do not unreasonably interfere with the use of the Premises by Lessee. Lessor may also: change the name, address or title of the Building or Project upon at least 90 days prior written notice; provide and install, at Lessee's expense. Building standard graphics on the door of the Premises and such portions of the Common Areas as Lessor shall reasonably deem appropriate; grant to any lessee the exclusive right to conduct any business as long as such exclusive right does not conflict with any rights expressly given herein; and to place such signs, notices or displays as Lessor reasonably deems necessary or advisable upon the roof, exterior of the Building or the Project or on pole signs in the Common Areas. Lessee agrees to sign any documents reasonably requested by Lessor to effectuate such rights. The obstruction of Lessee's view, air, or light by any structure erected in the vicinity of the Building, whether by Lessor or third parties. shall in no way affect this Lease or impose any liability upon Lessor.

**(b)** Lessor also reserves the right to move Lessee to other space of comparable size in the Building or Project. Lessor must provide al least 45 days prior written notice of such move, and the new space must contain improvements of comparable quality to those contained within the Premises. Lessor shall pay the reasonable out of pocket costs that Lessee incurs with regard to such relocation, including the expenses of moving and necessary stationary revision costs. In no event, however, shall Lessor be required to pay an amount in excess of two months Base Rent. Lessee may not be relocated more than once during the term of this Lease.

**(c)** Lessee shall not: (i) use a representation (photographic or otherwise) of the Building or Project or their name(s) in connection with Lessee's business; or (ii) suffer or permit anyone, except in emergency, to go upon the roof of the Building.

**42. Performance Under Protest**. If at any time a dispute shall arise as to any amount or sum of money to be paid by one Party to the other under the provisions hereof, the Party against whom the obligation to pay the money is asserted shall have the right to make payment "under protest" and such payment shall not be regarded as a voluntary payment and there shall survive the right on the part of said Party lo institute suit for recovery of such sum. If it shall be adjudged that there was no legal obligation on the part of said Party to pay such sum or any part thereof, said Party shall be entitled to recover such sum or so much thereof as it was not legally required to pay. A Party who does not initiate suit for the recovery of sums paid "under protest" with 6 months shall be deemed to have waived its right to protest such payment.

**43. Authority; Multiple Parties; Execution**.

**(a)** If either Party hereto is a corporation, trust, limited liability company, partnership, or similar entity, each individual executing this Lease on behalf of such entity represents and warrants that he or she is duly authorized to execute and deliver this Lease on its behalf. Each Party shall within 30 days after request, deliver to the other Party satisfactory evidence of such authority.

**(b)** If this Lease is executed by more than one person or entity as "**Lessee**", each such person or entity shall be jointly and severally liable hereunder. It is agreed that any one of the named Lessees shall be empowered to execute any amendment to this Lease, or other document ancillary thereto and bind all of the named Lessees, and Lessor may rely on the same as if all of the named Lessees had executed such document,

**(c)** This Lease may be executed by the Parties In counterparts, each of which shall be deemed an original and all of which together shall constitute one and the same instrument.

**44. Conflict**. Any conflict between the printed previsions of this Lease and the typewritten or handwritten provisions shall be controlled by the typewritten or handwritten provisions.

**45. Offer**. Preparation of this Lease by either party or the agent and submission of same lo the other Party shall not be deemed an offer to lease to the other Party. This Lease is not intended to be binding until executed and delivered by all Parties hereto.

**46. Amendments**. This Lease may be modified only in writing, signed by the Parties in interest at the time of the modification. As long as they do not materially change Lessee's obligations hereunder, Lessee agrees to make such reasonable non-monetary modifications to this Lease as may be

reasonably required by a Lender in connection with the obtaining of normal financing or refinancing of the Premises.

**47. Waiver of Jury Trial**. THE PARTIES HEREBY WAIVE THEIR RESPECTIVE RIGHTS TO TRIAL BY JURY IN ANY ACTION OR PROCEEDING INVOLVING THE PROPERTY OR ARISING OUT OF THIS AGREEMENT.

**48. Arbitration of Disputes**. An Addendum requiring the Arbitration of all disputes between the Parties and/or Brokers arising out of this Lease 1:1 is 121 is not attached to this Lease.

**49. Americans with Disabilities Act**. Since compliance with the Americans with Disabilities Act (ADA) is dependent upon Lessee's specific use of the Premises, Lessor makes no warranty or representation as to whether or not the Premises comply with ADA or any similar legislation_ In the event that Lessee's use of the Premises requires modifications or additions to the Premises in order to be in ADA compliance, Lessee agrees to make any such necessary modifications and/or additions at Lessee's expense.

LESSOR AND LESSEE HAVE CAREFULLY READ AND REVIEWED THIS LEASE AND EACH TERM AND PROVISION CONTAINED HEREIN. AND BY THE EXECUTION OF THIS LEASE SHOW THEIR INFORMED AND VOLUNTARY CONSENT THERETO. THE PARTIES HEREBY AGREE THAT, AT THE TIME THIS LEASE IS EXECUTED. THE TERMS OF THIS LEASE ARE COMMERCIALLY REASONABLE AND EFFECTUATE THE INTENT AND PURPOSE OF LESSOR AND LESSEE WITH RESPECT TO THE PREMISES.

ATTENTION: NO REPRESENTATION OR RECOMMENDATION IS MADE BY THE AIR COMMERCIAL REAL ESTATE ASSOCIATION OR BY ANY BROKER AS TO THE LEGAL SUFFICIENCY, LEGAL EFFECT, OR TAX CONSEQUENCES OF THIS LEASE OR THE TRANSACTION TO WHICH IT RELATES. THE PARTIES ARE URGED TO:

1. SEEK ADVICE OF COUNSEL AS TO THE LEGAL AND TAX CONSEQUENCES OF THIS LEASE.

2. RETAIN APPROPRIATE CONSULTANTS TO REVIEW AND INVESTIGATE THE CONDITION OF THE PREMISES. SAID INVESTIGATION SHOULD INCLUDE BUT NOT BE LIMITED TO: THE POSSIBLE PRESENCE OF HAZARDOUS SUBSTANCES, THE ZONING AND SIZE OF THE PREMISES, THE STRUCTURAL INTEGRITY, THE CONDITION OF THE ROOF AND OPERATING SYSTEMS. COMPLIANCE WITH THE AMERICANS WITH DISABILITIES ACT AND THE SUITABILITY OF THE PREMISES FOR LESSEE'S INTENDED USE.

WARNING: IF THE PREMISES ARE LOCATED IN A STATE OTHER THAN CALIFORNIA, CERTAIN PROVISIONS OF THE LEASE MAY NEED TO BE REVISED TO COMPLY WITH THE LAWS OF THE STATE IN WHICH THE PREMISES ARE LOCATED.

The parties hereto have executed this Lease at the place and on the dates specified above their respective signatures.

Executed at: Foster City, CA 94404
On: 9/21/2016

**By LESSOR:**

PAKESH KUMAR AND PRIMILA KUMAR
REVOCABLE FAMILY TRUST

By: /s/ Rakesh Kumar
Name Printed: Rakesh Kumar
Title: Owner / Trustee

By: */s/ Primila Kumar*

Name Printed: Primila Kumar

Title: Trustee

Address: 1118 Chess Drive

Foster City, CA 94404

Telephone:
Facsimile:
Email:

Email:

Federal ID No.

**LESSOR'S BROKER:**
CORNISH & CAREY COMMERCIAL DBA
NEWMARK CORNISH & CAREY
Attn: Jesse Cardenas / Jay Leslie
Title: Managing Director/Sr. Managing Director
Address: 901 Mariners Island Blvd., Suite 125
San Mateo, CA 94404

Telephone: (650) 358-5251 (650) 358-5273
Facsimile: (650) 341-7024
Email: jcardenas@newmarkccarey.com
jleslie@newmarkccarey.com

Federal ID No.

Broker/Agent DRE License #: 0131661 / 01244555

Executed at: Pacific Grove, CA 93950
On: 20 SEP 16

**By LESSEE:**

ORCHARD THERAPEUTICS

By: /s/ Stewart Craig
Name Printed: Stewart Craig
Title: CMO

By:

Name Printed:

Title:

Address:

Telephone: (___)
Facsimile: (___)
Email:

Email:

Federal ID No.

**LESSEE'S BROKER:**
CORNISH & CAREY COMMERCIAL DBA
NEWMARK CORNISH & CAREY
Attn: John Yandle
Title: Executive Vice President
Address: 2804 Mission College Blvd., Suite 120
Santa Clara, CA 95054

Telephone: (408) 987-4154
Facsimile: (408) 988-5340
Email: jyandle@newmarkccarey.com
Federal ID No.

Broker/Agent DRE License #: 00884818

**NOTICE: These forms are often modified to meet changing requirements of law and industry needs. Always write or call to make sure you are utilizing the most current form: AIR Commercial Real Estate Association, 800 W 6th Street, Suite 800, Los Angeles, CA 90017. Telephone No. (213) 687-8777. Fax No.: (213) 687-8616.**

Newmark
Cornish & Carey

**Lease Addendum**

ADDENDUM TO THE AIR LEASE DATED SEPTEMBER 16, 2016, BY AND BETWEEN RAKESH KUMAR AND PREMILA, CO-TRUSTEES OF THE RAKESH KUMAR AND PREMILA KUMAR REVOCABLE FAMILY TRUST (LESSOR) AND ORCHARD THERAPEUTICS OF NORTH AMERICA, A CALIFORNIA CORPORATION (LESSEE), FOR THOSE PREMISES LOCATED AT 1118 CHESS DRIVE, FOSTER CITY, CALIFORNIA

**50. Rent:**

| Months | Rent per month NNN |
|---|---|
| 1 | Abated |
| 2 – 12 | $ 16,993.60 |
| 13 – 24 | $ 17,503.41 |
| 25 – 36 | $ 18,028.51 |
| 37 – 48 | $ 18,569.37 |
| 49 – 61 | $ 19,126.45 |

During the abated month of rent Lessee shall be responsible for Lessee's Share of Operating Expenses.

**51. Work to Be Completed:**

Lessor at its sole cost and expense shall install 2 sinks in the lab area and install card key access to the front door of the main lobby.

**52. Option to Extend Lease:**

Lessee shall have one (1) option to extend the lease for two (2) years. Lessee shall provide no less than six (6) months' prior written notice of its intention to extend the lease. The rent for the option period shall be at market rent but in no instance shall it be less than 3% increase.

**53. Assignment or Sublease Profits:**

Except as provided in Section 12.1(1) of the AIR Lease, Lessor's consent under Section 12 which shall not be unreasonably withheld or delayed. No response within fifteen (15) days after the date of Lessor's receipt of Lessee's written request for Lessor's consent, shall be deemed as Lessor's consent. Any profits or additional rent generated by said subleasing or assignment of the Premises shall be allocated and paid 50% to Lessor and 50% to Lessee after Lessee recovers all costs associated with the assignment or subleasing.

**Lessor:** RAKESH KUMAR AND PREMILA Co-TRUSTEES OF THE RAKESH KUMAR AND PREMILA KUMAR REVOCABLE FAMILY TRUST

By: */s/ Rakesh Kumar* Date: 9/21/2016
*Rakesh Kumar, Trustee*

By: */s/ Premila Kumar* Date: 9/21/16
*Premila Kumar, Trustee*

**Lessee:** ORCHARD THERAPEUTICS OF NORTH AMERICA, A CALIFORNIA CORPORATION

By: */s/ S. Craig* Date: 20 SEP 16
*S. Craig, President*

**SECOND ADDENDUM TO STANDARD MULTI-TENANT OFFICE LEASE – NET**

THIS SECOND ADDENDUM TO STANDARD MULTI-TENANT OFFICE LEASE - NET (this "***Addendum***") is made and entered into by and between **RAKESH KUMAR AND PREMILA KUMAR CO-TRUSTEES OF THE RAKESH KUMAR AND PREMILA KUMAR REVOCABLE FAMILY TRUST ("Lessor"), and ORCHARD THERAPEUTICS NORTH AMERICA**, a California corporation ("***Lessee***"), as of the date set forth on the first page of that certain Standard Multi-Tenant Office Lease - Net (the "***AIR Lease***") between Lessor and Lessee to which this Addendum is attached and incorporated. The term "***Lease***" shall mean collectively, the AIR Lease (including the exhibits attached thereto), the Addendum attached to the AIR Lease (the "***First Addendum***"), and this Addendum. The terms, covenants, and conditions set forth in this Addendum are intended to and shall have the same force and effect as if set forth at length in the body of the AIR Lease. To the extent that the provisions of this Addendum are inconsistent with any provisions of the AIR Lease, or the First Addendum, the provisions of this Addendum shall supersede and control. Unless otherwise specifically defined in this Addendum, all capitalized terms used in this Addendum shall have the same meanings as ascribed to them in the AIR Lease.

**52. Permitted Use**: Notwithstanding anything to the contrary in Sections 1.8 and 6.1 of the AIR Lease, Lessee may only use the Premises for office and laboratories to support biotechnology product research, development, storage and distribution, marketing and other ancillary uses. A permitted assignee, subtenant or transferee of Lessee's interest as defined in this Addendum may use the Premises for office and laboratory use.

**53. Condition**: Section 2.2 of the AIR Lease is hereby deleted and shall be replaced with the following: Lessor shall deliver the Premises to Lessee in a clean condition on the Commencement Date (the "***Start Date***"), and warrants that the existing electrical, plumbing, fire sprinkler, lighting, heating, ventilating and air conditioning systems ("***HVAC***") shall be in good operating condition on the Start Date, and, to Lessor's actual knowledge, that the structural elements of the roof, bearing walls and foundation of the Premises shall be free of material defects, and that the Premises do not contain hazardous levels of any mold or fungi defined as toxic under applicable state or federal law.

**54. Capital Expenditures**:

a. Compliance. Section 2.3 of the AIR Lease is hereby amended as follows: In the first sentence of Section 2.3, the words "best of are replaced with the word "actual."

b. Section 2.3(a) of the AIR Lease is hereby deleted and shall be replaced with the following:

Subject to Paragraph 2.3(c) below, if such Capital Expenditures are required as a result of the specific and unique use of the Premises by Lessee as compared with uses by tenants, Lessee shall be responsible for the cost thereof. If, however, such Capital Expenditure is required during the last 2 years of this Lease and the cost of the Capital Improvement as identified in an estimate provided by a licensed general contractor equals or exceeds six (6) months Base Rent, Lessee shall have the option to terminate this Lease upon ninety (90) days prior to written notice to Lessor unless Lessor notifies Lessee, in writing, within ten (10) days after receipt of Lessee's termination notice that Lessor will pay for such Capital Expenditure.

c. If such Capital Expenditure is not the result of the specific and unique use of the Premises by Lessee (such as governmentally mandated seismic modifications), then Lessor shall pay for such Capital Expenditure and Lessee shall only be obligated to pay, each month during the remainder of the term of this Lease or any extension thereof, on the date that on which the Base Rent is due, an amount equal to Lessee's Share of the annual amortized useful life costs (calculated on a straight-line basis in accordance with GAAP attributable to the portion of the remaining term) of the portion of such costs reasonably attributable to the Premises. If, however, such Capital Expenditure is required during the last 2 years of this Lease or if Lessor reasonably determines that it is not economically feasible to pay its share thereof, Lessor shall have the option to terminate this Lease upon 90 days prior to written notice to Lessee unless Lessee notifies Lessor, in writing, within 10 days after receipt of Lessor's termination notice that Lessee will pay for such Capital Expenditure.

d. Any reference to Hazardous Substance remediation as a Capital Expenditure is hereby deleted from Section 2.3. Under no circumstances shall Lessee be responsible for the cost of Hazardous Substance contamination unless such contamination results from the negligent actions or omissions of a Lessee Party (as defined in Section 61 below).

**55. Prior Occupancy**: Section 2.5 of the AIR Lease shall be deleted and of no force and effect.

**56. Vehicle Parking**: The words "attached hereto and" are eliminated from the first sentence of Section 2.6 of the AIR Lease There will be no charge for Lessee's parking during the Term. Section 2.6(b) of the AIR Lease is hereby deleted. Tenant shall be entitled to thirteen (13) of the unreserved parking spaces for the Building located in the exterior portion of the parking area of the Building.

**57. Common Area Changes**: In the event that Lessor makes any of the Common Area changes set forth in Section 2.10 of the AIR Lease, Lessor and Lessee agree that there shall be no change to the square footage of the Premises as a result thereof, no increase in the Base Rent arising from such Common Area changes, or other additional rent due from Lessee, except for any change in Lessee's Share resulting from a physical change in the size of the Premises or Building, and Lessor shall use reasonable efforts to avoid any interference with Lessee's business operations or access to the Premises caused by such changes and the construction thereof. Sections 2.10(c) and 2.10(d) of the AIR Lease shall be deleted and of no force and effect.

**58. Early Possession**: Section 3.2 of the AIR Lease is amended to state the Early Possession period will be seven (7) days, commencing on the date of the execution of the AIR Lease by Lessor and terminating on the seventh ($7^{th}$) day thereafter.

**59. Capital Improvements**: The capital improvement and replacement expenses set forth in Section 4.2(a)(viii) of the AIR Lease shall be limited to those which are: (1) reasonably expected by Lessor to produce an actual reduction in operating charges or energy consumption or effect other economies in the operation or maintenance of the Building and the Common Areas; (2) required after the date of this Lease under any governmental law or regulation not in effect as of the Commencement Date or (3) as determined by Lessor, required as a result of reasonable wear and tear, age of the equipment or capital component or need for repair of the equipment or capital component, in each case amortized over the useful life of such improvement (calculated on a straight-line basis in accordance with GAAP attributable to the portion of the remaining term) (collectively, "***Permitted Capital Expenditures***"). The last sentence of Section 4.2(a)(viii) of the AIR Lease is eliminated and is of no force or effect.

**60. Operating Expenses**:

a. Notwithstanding anything to the contrary in the AIR Lease, including, without limitation, Section 4.2 of the AIR Lease, Operating Expenses shall not include:

(i) Ground lease rental and depreciation; principal and interest payments of mortgages (and any fees or points associated with any mortgages) and other non-operating debts of Lessor;

(ii) Fines, costs or penalties incurred as a result and to the extent of a violation by Lessor of any Applicable Requirements;

(iii) Sums paid to subsidiaries or other affiliates of Lessor for services on or to the Building and/or Premises, but only to the extent that the costs of such services exceed the competitive cost for such services rendered by unrelated persons or entities of similar skill, competence and experience;

(iv) All costs associated with the operation of the business of the entity which constitutes "Lessor" (as distinguished from the costs of operating, maintaining, repairing and managing the Building) including, but not limited to, Lessor's or Lessor's managing agent's general corporate overhead and general administrative expenses;

(v) Advertising and promotional expenditures;

(vi) Any fines, penalties or interest resulting from the active negligence or willful misconduct of Lessor;

(vii) Any cost or expense related to removal, cleaning, abatement or remediation of Hazardous Substances existing as of the date of this Lease in or about the of the Building or migrating onto thereafter;

(viii) To the extent any employee of Lessor spends only a portion of his or her time working with respect to the Building (as opposed to full time work with respect to the Building), a prorated amount of such employee's wages, salaries and compensation based upon the portion of time spent by such employee with respect to the projects other than the Building;

(ix) Lessor's charitable and political contributions;

(x) Costs of services for which Lessee or any tenant of the Building is obligated to separately reimburse Lessor pursuant to this Lease or its respective lease with its Lessor;

(xi) The cost of complying with any Applicable Requirements in effect (and as interpreted and enforced) on the date of this Lease (unless compliance is required as a result of Lessee's use of the Premises), provided that if any portion of the Common Areas of the Building that was in compliance with all Applicable Requirements on the date of this Lease becomes out of compliance, the cost of bringing such portion of the Building into compliance shall be included in Operating Expenses unless otherwise excluded pursuant to the terms hereof; and

(xii) Except with respect to insurance deductibles , (but subject to any express limitations set forth in this Lease), the cost of repairs or replacements incurred by reason of fire or other casualty or condemnation paid or reimbursed by insurance proceeds or condemnation awards.

b. Notwithstanding Section 10.1 of the AIR Lease, Real Property Taxes shall not include:

(i) Inheritance or estate taxes imposed upon or assessed against the interest of any person in the Building;

(ii) Taxes computed upon the basis of the net income of any owners of any interest in the Building; or

(iii) Any penalties, interest or fees attributable to Lessor's negligent failure to pay any Real Property Taxes when due and payable.

c. Section 4.2(b) of the AIR Lease shall be deleted and of no force and effect.

**61. <u>Hazardous Substances</u>**: The Lessor, to its actual knowledge warrants that the Premises are free of Hazardous Substances. Notwithstanding anything to the contrary contained in the AIR Lease, Lessee shall not indemnify Lessor, be responsible for any remediation (or the costs thereof) or be liable in any way for any loss of rents and/or damages, liabilities, judgments, claims, expenses, penalties, and attorneys' and consultants' fees arising out of or involving any Hazardous Substance brought onto the Premises by or for any party other than any Lessee Party. For purposes of this Section 61, "***Lessee Party***" shall mean any principal (which shall include any shareholder, partner, member) of Lessee, or any director, officer, employee, agent, contractor, customer, client, or invitee of Lessee (or of any principal of Lessee) or any person on the Project with the consent of Lessee. During the term of this Lease or any extension thereof, Lessee shall be and remain in compliance in with all terms and conditions of all Environmental Laws and with all limitations, restrictions, conditions, standards, prohibitions, requirements, obligations, schedules and timetables contained in all Environmental Laws applicable to Lessee or the Premises. As used in this Lease, the term "Environmental Law" means any past, present or future federal, state or local statutory or common law, or any regulation, ordinance, code, plan, order, permit, grant, franchise, concession, restriction or agreement issued, entered, promulgated or approved thereunder, relating to (i) the environment, human health or safety, including, without limitation, emissions, discharges, releases or threatened releases of Hazardous Materials into the environment (including, without limitation, air, surface water, groundwater or land); or (ii) the manufacture, generation, refining, processing, distribution, use, sale, treatment, receipt, storage,. disposal, transport, arranging for transport, or handling of Hazardous Substances.

Section 6.2 (a) of the AIR Lease is amended to state that Lessor's consent may be withheld in the reasonable discretion of Lessor.

**62. Lessee's Compliance with Applicable Requirements**. The word "material" in the second line of Section 6.3 of the AIR Lease is deleted and of no force or effect.

**63. Laboratory Provisions**:

a. Notwithstanding anything to the contrary elsewhere in the AIR Lease, Lessee may, without Lessor's prior consent, handle, store, use or dispose of Hazardous Substances solely related to the use of the Premises as identified in Section 52 of this Addendum, whether or not the same constitutes a Reportable Use, including, Lessee's laboratory use; provided that Lessee shall always handle, store, use, and dispose of any such Hazardous Substances in a safe and lawful manner in strict accordance with Applicable Requirements including, without limitation, all Environmental laws, and the permits and approvals of the City of Foster City and any other applicable governmental agency, and never allow such Hazardous Substances to contaminate the Project, Premises, Building and appurtenant land or the environment. Prior to Lessee taking possession of the Premises, Lessee shall deliver to Lessor a list identifying each type of Hazardous Substance at the Premises (the "***Hazardous Substances List***"). Lessee shall provide Lessor with the final list submitted to the City of Foster City. Prior to bringing any new or different Hazardous Substances on to the Premises. Lessee shall revise the Hazardous Substances List and deliver such list to Lessor. In addition, Lessee shall deliver an Updated Hazardous Substances List to Lessor annually, on each anniversary of the Commencement Date. Lessee Parties shall not use or bring on to the Premises any Hazardous Substances not identified on the Hazardous Substances List, as may be revised from time-to-time.

b. Upon Lessor's request, Lessee shall promptly deliver to Lessor any permits, approvals, materials safety data sheets and other information reasonably requested by Lessor regarding the Hazardous Substances used by Lessee in the Premises.

**64. Maintenance and Repair**:

a. Lessee shall only be required to repair and maintain those items listed in Section 7 as they relate to the interior non-structural portions of the Premises, reasonable wear and tear excepted. Any and all other repairs and maintenance in connection with the Premises or Building, including procurement and payment of service contracts, shall be the responsibility of Lessor.

b. Lessor shall maintain and repair the HVAC systems, electrical systems and any other building systems serving the Premises, the cost of which may be included as an Operating Expense.

**65. Alterations:** The dollar amount set forth in the fifth line of Section 7.3(b) of the AIR Lease shall be $15,000 (and not $2,000). Landlord shall not charge a fee in connection with Tenant's Work (as defined in Section 86). Any contractors which Lessor requires that Lessee use for any Alterations must be experienced in biotechnology construction and installation, subject to Lessee's reasonable approval. Both Lessor and Lessee hereby approve Rusciano Construction, Inc. as a general contractor for Tenant's Work. Lessee shall not be required to provide a bond or surety for any Alterations unless the cost of the work exceeds three (3) months' Base Rent. Notwithstanding Section 7.4(b) of the AIR Lease, Lessee shall remove any Alteration or Utility Installation prior to the termination of the Lease.

**66. Ownership; Removal; Surrender and Restoration**: In addition to the provisions of Section 7.4 of the AIR Lease, upon surrender, Lessee shall deliver the Premises in as good operating order, condition and repair as when Lessee took possession of the Premises, ordinary wear and tear excepted.

**67. Insurance**: The last sentence of Section 8.1 of the AIR Lease is deleted and of no force or effect. Section 8.2(a) of the AIR Lease is amended to require Lessee to provide no less than $3,000,000 (in United States currency) in insurance coverage required by Section 8.2(a). Section 8.3(b) of the AIR Lease is deleted and of no force or effect. Lessor acknowledges that Lessee's insurance carriers may be unable to deliver notices of any cancellation or modifications of any insurance policies thirty (30) days' in advance of a modification. Lessee will deliver notices of any cancellation or modifications to Lessor ten (10) days in advance of any cancellation or modification. Lessor acknowledges that Tenant's insurance limits may be denominated in British Pounds.

**68. Indemnity**: Lessee's indemnity under Section 8.7 of the AIR Lease shall include the use or occupancy of the Premises by any Lessee Party and any breach of the AIR Lease by Lessee, including, without limitation, a breach of the provisions of Section 6.2 of the AIR Lease. Lessee's waiver of Lessor liability under Section 8.8 of the Lease shall not apply to the extent any losses or injuries as set forth therein are caused by the gross negligence or willful misconduct of Lessor or its agents, or a breach by Lessor under this Lease.

**69. Damage or Destruction**:

a. Notwithstanding Section 9.2 of the AIR Lease, and except as otherwise provided in Section 9.3 of the AIR Lease, Lessee shall not be required to make the repair of any damage or destruction to the Building.

b. Lessee's right to rent abatement set forth in Section 9.6(a) shall not be limited to the proceeds received from the Rental Value insurance.

c. The first sentence of Section 9.5 of the AIR Lease is hereby deleted and replaced with the following: "If at any time during the last twelve (12) months of this Lease there is damage for which the cost to repair exceeds one months' Base Rent, whether or not an Insured Loss, either party may terminate this Lease effective sixty (60) days following the date of occurrence of such damage by giving a written termination notice to the other party within thirty (30) days after the date of occurrence of such damage."

d. If Lessor is obligated to repair or restore the Premises following Premises Partial Damage or Premises Total Destruction and does not Commence such repair or restoration within one hundred twenty (120) days after such obligation shall accrue, Lessee may exercise its right to terminate the Lease as set forth in Section 9.6(b). "Commence" shall mean either the unconditional authorization of the preparation of the required plans, or the beginning of the actual work on the Premises, whichever first occurs.

**70. Utilities**: Notwithstanding the provisions of Section 11.1 of the AIR Lease, Lessor shall not be required to replace any light bulbs and/or fluorescent tubes or ballasts in the Premises or provide any janitorial services for the Premises. The janitorial services for the Common Areas shall be provided by Lessor. Lessor represents and warrants that, as of the Commencement Date, (a) utility services, including natural gas, and electrical, are separately metered to the Premises, and (b) the Premises is served by two (2) 200-amp electrical panels.

**71. Excess Utility Consumption**: Section 11.4 of the AIR Lease is hereby deleted. Subject to Applicable Requirements, Lessee may use utility services in amounts reasonably necessary for the conduct of its business operations on a 24 hours a day, seven days a week basis.

**72. Utility Interruption**: Provided no Default shall then exist under this Lease (beyond any applicable notice and cure periods), if electrical power or HVAC is interrupted due solely to the gross negligence or willful misconduct of Lessor or its agents (a "***Utility Interruption***"), and Lessee is unable to carry on its business in a reasonably normal manner due to the failure of any of such utilities and services, and therefore vacates all or the affected portion of the Premises and/or ceases business operations in the Premises for a period in excess of three (3) consecutive days, the Base Rent and additional rental payable under this Lease shall be abated retroactively from the first day of the Utility Interruption (in proportion to the area of the Premises vacated by Lessee by reason of such failure, if less than all of the Premises is affected) and for as long as such inability to carry on Lessee's business continues, until such time as the service is restored or Lessee reoccupies the Premises or affected portion thereof, whichever is earlier. In the event of any curtailment, diminution, or failure with respect to utilities and services in the Building or the Premises, Lessor agrees to use due diligence to restore full service.

**73. Permitted Transfers**: Notwithstanding any contrary provision of Section 12 of the AIR Lease, the sale, assignment, or transfer of any interest in Lessee or this Lease or the Premises, or the sublet of all or any part of the Premises, or any part thereof to (i) a parent or subsidiary of Lessee, (ii) any entity which controls, is controlled by or under common control with Lessee, (iii) any entity which purchases all or substantially all of the assets or stock of Lessee, (iv) any entity into which Lessee is merged or consolidated, or (v) any entity which results from the merger or consolidation of entities which control, are controlled by or under common control with Lessee (all such entities described in (i), (ii), (iii), (iv) and (v) being sometimes hereinafter referred to as "***Affiliates***", and such transfer to an Affiliate, a "***Permitted Transfer***") shall not be deemed an assignment, sublease or transfer under this Lease and shall not require Lessor's consent, but Lessee shall notify Lessor in writing of such sublease or assignment to an Affiliate within thirty (30) days following the consummation thereof. Lessor shall have no right to any sums or other economic consideration resulting from, any Permitted Transfer. However, except as set forth in this Section 72, Lessee and any Affiliate shall comply with all of the provisions of Section 12 of the AIR Lease. Any Permitted Transfer by Lessee shall not relieve Lessee of any of its obligations and responsibilities under this Lease.

**74. Default**: Section 13.1(a) of the AIR Lease is amended as follows: (a) the abandonment of the Premises prior to termination of the Lease. Notwithstanding anything to the contrary in Section 13.1(d) of the AIR Lease, Lessee shall have twenty (20) days following the date of written notice from Lessor to deliver the documents required under Section 13.1(d) before any failure to deliver shall constitute a Default under the Lease.

**75. Remedies**: Notwithstanding anything to the contrary in the first paragraph of Section 13.2 of the AIR Lease, (a) Lessor may not perform the duties or obligations of Lessee under the Lease unless Lessee fails to perform any of its affirmative duties or obligations within twenty (20) days after the date of written notice to Lessee, unless a longer period of time is required to cure the same, in which case Lessee shall have such longer period of time not to exceed sixty (60) days to perform the same so long as Lessee has commenced to perform within such twenty (20) day period and diligently performs the same to completion.

**76. Late Charges**: Notwithstanding anything in Section 13.4 of the AIR Lease to the contrary, Lessor will not assess a late charge until Lessor has given written notice of such late payment only for the first late payment of Rent in any twelve (12) month period and after Lessee has not cured such late payment within three (3) days after receipt of such notice.

**77. Performance by Lessee on Behalf of Lessor**: Section 13.6(b) of the AIR Lease is amended in its entirety as follows: In the event Lessor does not cure said breach within thirty (30) days after receipt of said notice, or it having commenced said cure does not diligently pursue it to completion, Lessee may elect, but shall have no obligation, to cure said breach at Lessee's expense and seek reimbursement from Lessor for any such expense. Lessee shall document the cost of said cure and supply said documentation lo Lessor.

**78. Notices**: Section 23.1 is amended in its entirety as follows: Any notice, consent, authorization, or other communication to be given hereunder shall be in writing and shall be deemed duly given and received when delivered personally, when transmitted by facsimile or e-mail if receipt is verified, one (1) business day after being deposited for next-day delivery with a nationally recognized overnight delivery service, or three (3) business days after being mailed by first class mail, charges and postage prepaid, properly addressed to the party to receive such notice at the address set forth in this Lease.

Section 23.2 of the AIR Lease is deleted and of no force or effect.

**79. Access; Hours of Operation**: Subject to Applicable Requirements, Lessee shall have access to the Building and Premises 24 hours per day, 7 days per week. Landlord hereby acknowledges and agrees that Lessee may operate from the Premises on a 24 hours per day, 7 days per week basis. Notwithstanding anything to the contrary in the AIR Lease, including, without limitation, Section 11.3 of the AIR Lease, such continuous use by Lessee of the Premises shall not constitute a Default under the Lease.

**80. Landlord Access**: Notwithstanding anything to the contrary in the AIR Lease: (a) Lessor shall give not less than 24 hours' written notice to Lessee prior to entering the Premises (except in case of emergency), (b) Lessee shall have the right to require that an employee, officer or agent of Lessee is present at all times during any such entry (except in case of emergency), and (c) Lessor shall not allow entry by a representative of a biotechnical or pharmaceutical company, whether as a prospective tenant or otherwise, without Lessee's prior written consent, which consent shall not be unreasonably withheld or delayed.

**81.** **Confidential Records**: Lessor acknowledges that Lessee may keep certain medical, clinical, scientific research and other related records on the Premises which may contain personally identifiable health information, other confidential medical information, research data, other related confidential information and Lessee's intellectual property, and trade secrets ("***Confidential Records***"). Lessee may, upon notice to Lessor, elect to store such Confidential Records in a designated storage or records closet, office or room within the Premises (the "***Confidential Records Room***"), provided that the Confidential Records Room consist of no more than one such room, not exceeding a size customarily used for records retention by comparable tenants. Notwithstanding anything to the contrary in the AIR Lease, Lessor, its agents, affiliates, employees, contractors, property managers, lenders, potential subsequent Lessors, potential purchasers, or any other third party shall not have access to the Confidential Records Room (except in the case of emergency, in which case Lessor shall endeavor to provide prior notice, or if such notice is not possible, shall promptly notify Lessee of such entry as soon as is feasible) unless. (a) Lessor gives Lessee reasonable prior notice of its need to enter into the Confidential Records Room (and in no event less than 24 hours' prior written notice), and (b) an employee, officer or agent of Lessee is present at all times during any such entry into the Confidential Records Room. Lessee may, at its sole cost and expense, key or re-key the door to the Confidential Records Room. Neither Lessor nor any other party other than Lessee and its affiliates shall have any right to obtain or keep a key to the Confidential Records Room; provided, however, that upon the expiration or sooner termination of the Term, Lessee shall, at Lessor's election, return any and all such keys to Lessor, or re-key such door at Lessee's sole expense.

**82.** **Consents**: Lessor's charges in connection with any request for consent by Lessee pursuant to Section 36 of the AIR Lease shall not exceed $2,500 per request.

**83.** **Definition**: Section 39.1 of the AIR Lease is amended in its entirety as follows: "Option" shall mean the right of Lessee to extend the term of this Lease for one (1) two (2) year period.

**84.** **No Relocation**: Section 41(b) of the AIR Lease shall be deleted and of no force and effect.

**85.** **ADA**: Lessor represents to Lessor's actual knowledge that the Premises complies with the provisions of the ADA in effect on the Effective Date of the Lease.

**86.** **Signage**: Lessee shall have the right to use fifty percent (50%) of the monument sign located on the Project and may add signage to the front door and rear door of the Premises, but not any door of the Building.

**87.** **Landlord Work**: In addition to the work specified in Section 51 of the First Addendum, Lessor shall a) install finish trim work throughout the Premises as required, and (b) install one (1) door and one (1) glass panel in the conference room of the Premises. Lessor shall complete all work required pursuant to this Section 85 and Section 51 of the First Addendum in compliance with all Applicable Requirements, including, without limitation, the ADA.

**88.** **Tenant Work**: Lessee may, upon taking possession of the Premises, perform the improvement work set forth in **Schedule 1** attached hereto ("**Tenant's Work**"). All of Tenant's Work shall be constructed and installed in compliance with all Applicable Requirements, including, without limitation, ADA, and the provisions of Section 7 of the AIR Lease; provided, however, that Lessor's consent shall not be required for Tenant's Work (such consent is deemed given upon Lessor's execution of the Lease), no completion bond shall be required, and Landlord shall not charge any oversight or other fee in connection with Tenant's Work.

**89.** **Options Exercisable by Lessee and any Assignee of a Permitted Transfer**: Notwithstanding anything to the contrary contained in the AIR Lease, any Option, contained in the AIR Lease may be exercised by the Lessee originally named in this Lease and any Affiliate.

**90.** **Option Period Market Rent**: As used in Section 52 of the First Addendum and this Section 88, the term "Market Rent" shall mean the base annual rental for the Premises primarily considering renewals for space comparable to the Premises in location, size, condition, quality and type at the commencement of the renewal term, taking into account any additional rental and all other payments and escalations payable hereunder and by tenants under leases of such comparable space, as well as broker's fees and any free Rent and other tenant inducements consistent with the renewal of a lease term as compared to a

new lease to a new tenant then being offered by Lessor. Lessor shall notify Lessee in writing ("***Renewal Rate Notice***") of its determination of the Market Rent for the renewal term within thirty (30) days after Lessor's receipt of Lessee's notice electing to exercise its renewal option. Lessor and Lessee shall endeavor to agree upon the Market Rent. If they are unable to so agree within thirty (30) days after Lessee's receipt of the Renewal Rate Notice, Lessor and Lessee shall mutually select an unaffiliated licensed real estate broker who is active in the leasing of office space in the general vicinity of the Premises (the "***Broker***"). In additional to the Renewal Rate Notice, which contains Lessor's determination of the Market Rent, Lessee shall submit Lessee's determination of the Market Rent to the Broker, at such time or times and in such manner as Lessor and Lessee shall agree (or as directed by the broker if Lessor and Lessee do not promptly agree). The Broker shall select either Lessor's or Lessee's determination as the Market Rent, and such determination shall be binding on Lessor and Lessee. If Lessee's determination is selected as the Market Rent, then Lessor shall bear all of the Broker's cost and fees. If Lessor's determination is selected as the Market Rent, then Lessee shall bear all of the Broker's cost and fees. lf the Broker recommends a Market Rent rate other than that specified by the Lessor and Lessee and both Lessor and Lessee agree to said rate, the responsibility for payment of the Broker's costs and fees shall be divided equally between Lessor and Lessee. In no event shall the Broker's costs and fees exceed $1,500.00 in total. Within fifteen (15) days of the final determination of the Market Rent, Lessee shall notify Lessor as to one of the following: (a) Lessee's decision to exercise its renewal option at said Market Rent; or (b) that Lessee waives and releases its renewal option. In no event will the Market Rent be less than the Base Rent for the last year of the Original Term plus an increase of three percent (3%).

**91.** **Arbitration Disputes**: Section 48 of the AIR Lease is deleted and is of no force or effect.

**92.** **Exit Survey**: The following is added as a new Section 48 to the AIR Lease:

**48. Exit Survey.** At least thirty (30) days prior to Lessee's surrender of possession of any part of the Premises, Lessee shall provide Lessor with a facility decommissioning and Hazardous Substances closure plan for the Premises ("***Exit Survey***") prepared by an independent third party California licensed and certified professional with appropriate expertise, which Exit Survey must be reasonably acceptable to Lessor. The Exit Survey shall comply with the American National Standards Institute's Laboratory Decommissioning guidelines (ANSI/AIHA Z9.I I -2008) or any successor standards published by ANSI or any successor organization (or, if ANSI and its successors no longer exist, a similar entity publishing similar standards). In addition, at least ten (10) days prior to Lessee's surrender of possession of any part of the Premises, Lessee shall (a) provide Lessor with all appropriate governmental releases obtained by Lessee in accordance with, and to the extent required by, Applicable Laws, including laws pertaining to the surrender of the Premises, (b) to the extent any laboratory equipment will remain in the Premises upon the expiration of the Term as requested by Lessor, place Laboratory Equipment Decontamination Forms on all decommissioned equipment to assure safe occupancy by future users, and (c) conduct a site inspection with Lessor. In addition, Lessee agrees to remain responsible after the surrender of the Premises for the remediation of any recognized environmental conditions set forth in the Exit Survey caused or resulting from any act or omission to act of any Lessee Party and comply with any recommendations set forth in the Exit Survey for the condition to which such recommendations relate. Lessee's obligations under this Section 48 shall survive the expiration or earlier termination of the Lease.

**93.** **CASP**: The following is added to. Section 49 of the AIR Lease: The Project, Building and the Premises have not had an inspection performed by a Certified Access Specialist (CASP), to determine whether the Project, Building or Premises meet all applicable construction-related accessibility standards.

**[Remainder of page intentionally left blank]**

IN WITNESS WHEREOF, Lessor and Lessee have executed this Addendum concurrently with the AIR Lease of even date herewith.

**Lessor:**

**RAKESH KUMAR AND PREMILA KUMAR CO-TRUSTEES OF THE RAKESH KUMAR AND PREMILA KUMAR REVOCABLE FAMILY TRUST**

By: */s/ Rakesh Kumar*
Name: Rakesh Kumar
Title: Trustee

**Lessee:**

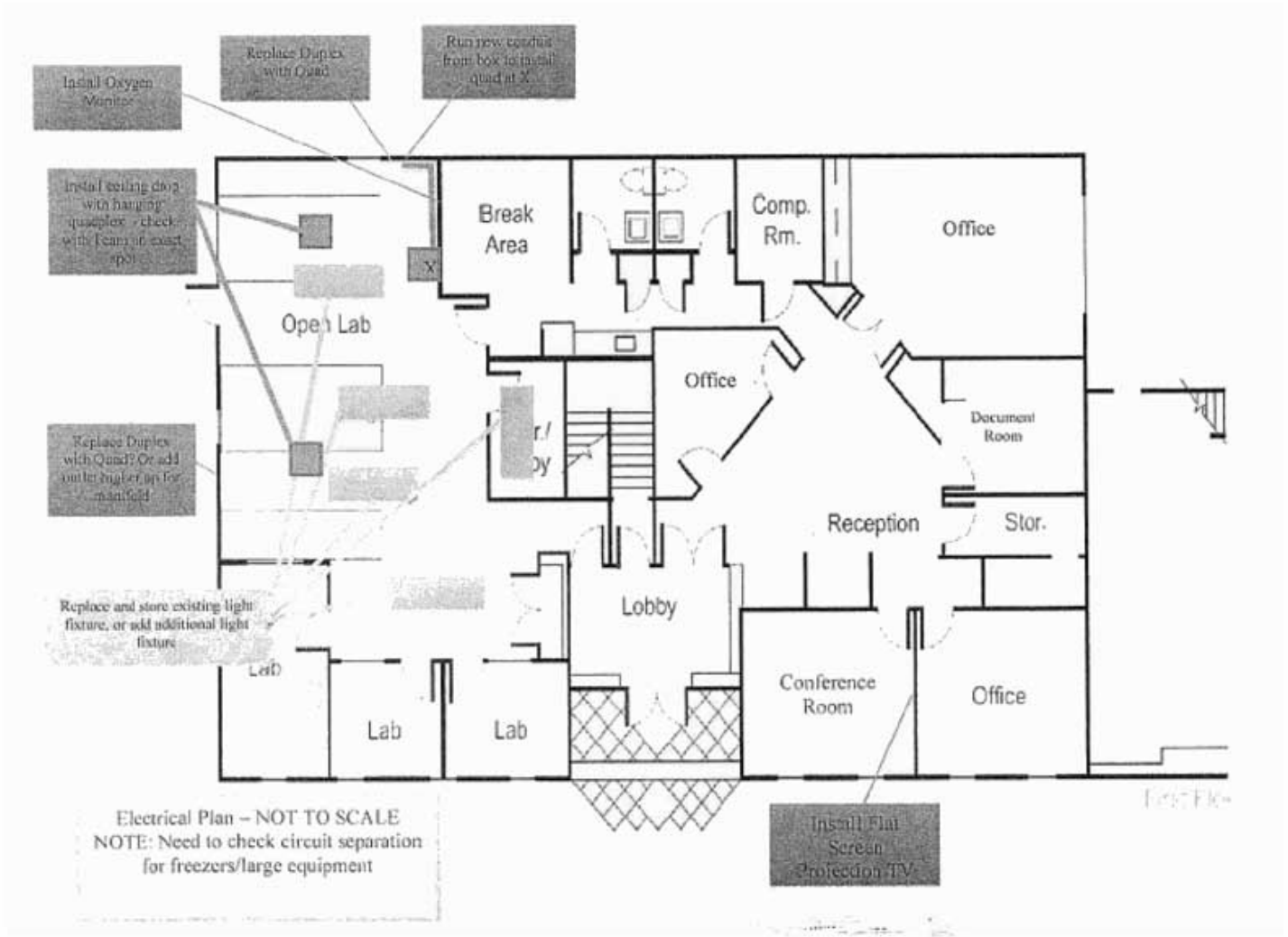
**ORCHARD THERAPEUTICS NORTH AMERICA, A CALIFORNIA CORPORATION**

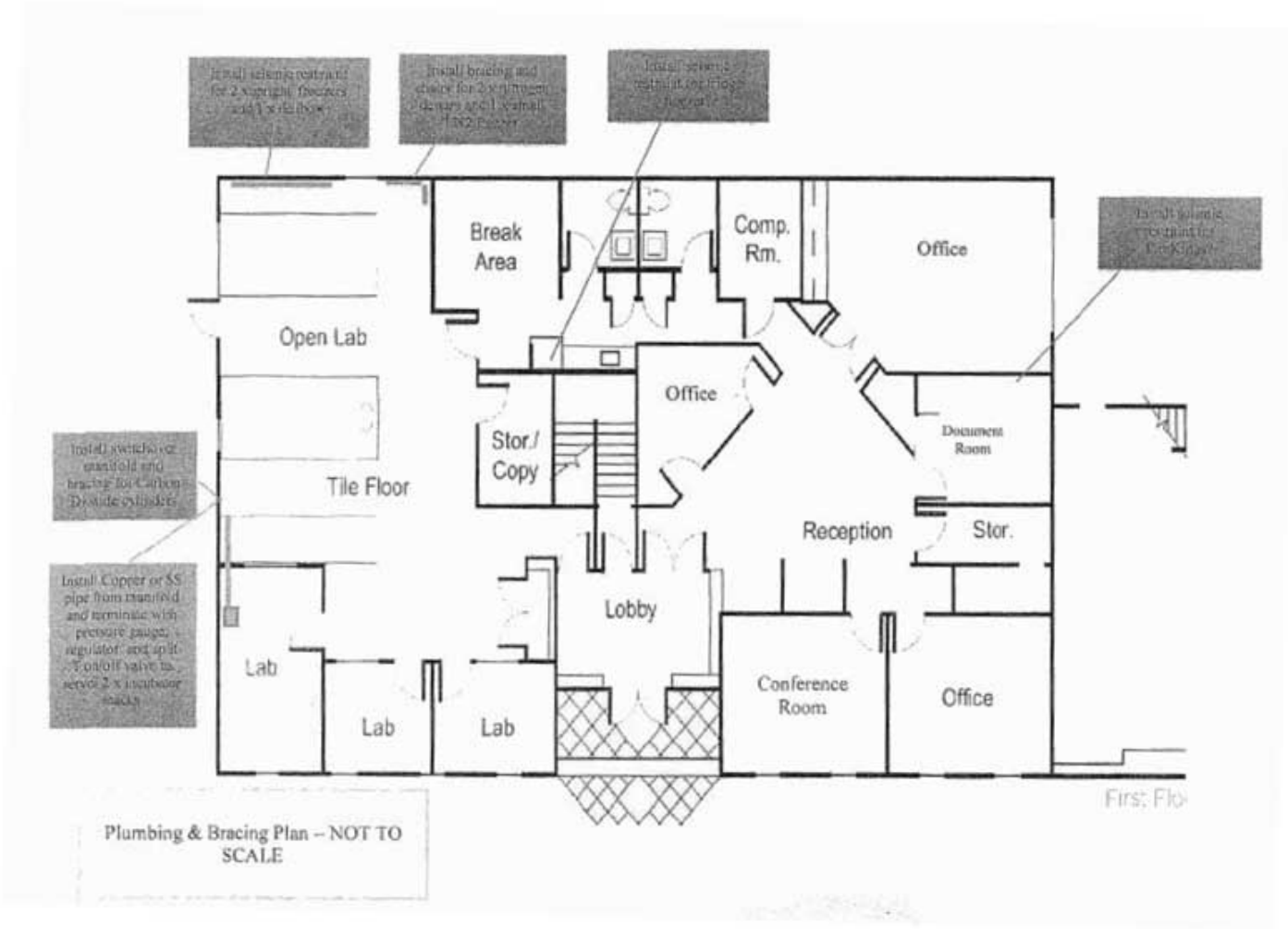
By: */s/ Stewart Craig*
Name: Stewart Craig
Title: President

**Schedule 1**

**TENANT'S WORK**

[Follows this Page]


Install Oxygen Monitor
Replace Duplex with Quad
Run new conduit from box to install quad at X
Install ceiling drop with hanging quadplex - check with Team on exact spot
Replace Duplex with Quad? Or add outlet higher up for manifold
Replace and store existing light fixture, or add additional light fixture
Break Area
Comp. Rm.
Office
Open Lab
Office
Document Room
Reception
Stor.
Lobby
Conference Room
Office
Lab
Lab
Lab
X
Electrical Plan – NOT TO SCALE
NOTE: Need to check circuit separation for freezers/large equipment
Install Flat Screen Projection TV


Break Area
Comp. Rm.
Office
Open Lab
Office
Stor./ Copy
Document Room
Tile Floor
Reception
Stor.
Lobby
Lab
Lab
Lab
Conference Room
Office
Plumbing & Bracing Plan – NOT TO SCALE

**Newmark**
**Cornish & Carey**

**Disclosure Requirement (Lease)**

| | | | |
|---|---|---|---|
| **Date**: | September 16, 2016 | | |
| **Lessor**: | Rakesh Kumar and Primila Kumar Revocable Family Trust | Subject Property: | 1118 Chess Drive Foster City, CA 94404 |
| **Lessee**: | Orchard Therapeutics | Brokers: | Jesse Cardenas<br>Jay Leslie |

Various laws, regulations and policies require us to disclose the following information:

**1. Alquist-Priolo Notification: Algulst-Priolo Special Earthquake Studies Zone Act:**

The Property described above is or may be situated in a "Special Study Zone" as designated under the Alquist-Priolo Special Studies Zone Act, Sections 2621-2630, inclusive, of the California Public Resources Code; and, as such, the construction or development on the Property of any structure for human occupancy may be subject to the findings of a geologic report prepared by a geologist registered in the State of California, unless such report is waived by the city or county under the terms of that act. No representations on the subject are made by Lessor or by Cornish & Carey Commercial dba Newmark Cornish & Carey (NCC), or its agents or employees, and the Lessee should make his/her/its own inquiry or investigation.

**2. Notification re: National Flood insurance Program:**

The Property is or may be located in a Special Flood Hazard Area on United States Department of Housing and Urban Development (H.U.D.) "Special Flood Zone Area Maps". Federal law requires that as a condition of obtaining federally related financing on most properties located in "flood zones", banks, savings and loan associations, and some insurance lenders require flood insurance be carried where the property, real or personal, is security for a loan. This requirement is mandated by the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. Cities or counties may have adopted building or zoning restrictions, or other measures which could affect the value of the property. Lessee should contact the city or county in which the property is located to determine any such restrictions. The extent of coverage available in this area and the cost of this coverage may vary, and for further information, Lessee should consult a lender or insurance carrier.

**3. Hazardous Wastes of Substances and Underground Storage Tanks:**

Comprehensive federal and state laws and regulations have been enacted in the past several years in an effort to control the use, storage, handling, clean-up, removal and disposal of hazardous wastes or substances. Some of these laws and regulations (such as, for example, the Comprehensive Environmental Response Compensation and Liability Act [CERCLA]) provide for broad liability on the part of owners, tenants or other users of the property for clean-up costs and damages regardless of fault. Other laws and regulations set standards for the handling of asbestos, and establish requirements for the use, modification, abandonment, and closure of underground storage tanks.

It is not practical or possible to list all such laws and regulations in this Notice. Therefore, Lessors and Lessees are urged to consult legal counsel to determine their respective rights and liabilities with respect to the issues described in this Notice, as well as all other aspects of the proposed transaction, If hazardous wastes or substances have been, or are going to be used, stored, handled or disposed of on the Property, or if the Property has or may have underground storage tanks, it is essential that legal and technical advice be obtained to determine, among other things, the nature of permits and approvals which have been obtained or may be required; the estimated costs and expenses associated with the use, storage, handling, clean-up, disposal or removal of hazardous wastes or substances: and the nature and extent of contractual provisions necessary or desirable in this transaction. Broker recommends expert assistance and site investigation to determine past uses of the property, which may provide valuable information as to the likelihood of hazardous wastes or substances. or underground storage tanks. being on the Property.

**Disclosure Requirement (Lease)**

Lessor agrees to disclose to Broker and to Lessee any and all information which he/she/it has regarding present and future zoning and environmental matters affecting the Property and regarding the condition of the Property, including, but not limited to structural, mechanical and soils conditions, the presence and location of asbestos, PCB transformers, other toxic, hazardous or contaminated substances, and underground storage tanks, in, on, or about the Property.

Broker has conducted no investigation regarding the subject matter hereof, except as may be contained in separate written document signed by Broker. Broker makes no representations concerning the existence or nonexistence of hazardous wastes or substances, or underground storage tanks, in, on, or about the Property. Lessee should contact a professional, such as a civil engineer, industrial hygienist or other persons with experience in these matters, to advise on these matters.

The term “hazardous wastes or substances” is used herein in its very broadest sense and includes, but is not limited to, petroleum based products, paints and solvents, lead, cyanide, DDT, printing inks, acids, pesticides, ammonium compounds, asbestos, PCBs and other chemical products. Hazardous wastes or substances and underground storage tanks may be present on all types of real property. This Notice is intended to apply to any transaction involving any type of real property, whether improved or unimproved.

**4. The Americans With Disabilities Act:**

Please be advised that an owner or tenant of real property may be subject to the Americans With Disabilities Act (the ADA). The Act requires owners and tenants of “public accommodations” to remove barriers to access by disabled persons and provide auxiliary aids and services for hearing, vision or speech impaired persons. You are advised to consult your attorney with respect to the application of this Act to the Property. Newmark Cornish & Carey cannot give you legal advice on this Act or its requirements.

**5. Broker Disclosure:**

The parties hereby expressly acknowledges that Broker has made no independent determination or investigation regarding, but not limited to, the following: present or future use of the Property; environmental matters affecting the Property; the condition of the Property, including, but not limited to structural, mechanical and soils conditions, as well as issues surrounding hazardous wastes or substances as set out above; violations of the Occupational Safety and Health Act or any other federal, state, county or municipal laws, ordinances, or statutes; measurements of land and/or buildings. Lessee agrees to make its own investigation and determination regarding such items.

**6. Broker Representation (Dual Agency**

Lessor and Lessee acknowledge that Broker is the agent of both Lessor and Lessee. Lessor and Lessee hereby consent to such dual representation and waive any possible conflict of interest arising out of such dual agency. A dual agency is obligated to disclose to both parties all material facts or confidential information that could affect Lessor’s or Lessee’s decision to enter into the transaction. Broker, however, will not disclose to Lessee the price that Lessor is willing to accept, nor to Lessor the price that Lessee is willing to pay, without the express permission of the other party.

Receipt of a copy of this Notice and Agreement is hereby acknowledged.

**Newmark**
**Cornish & Carey**

**Disclosure Requirement (Lease)**

Acknowledged and Agreed:

Lessor: RAKESH KUMAR AND PRIMILA KUMAR REVOCABLE FAMILY TRUST

By: /s/ Rakesh Kumar Date: 9/21/2016
Rakesh Kumar

By: /s/ Primila Kumar Date: 9/21/2016
Primila Kumar

Lessee: ORCHARD THERAPEUTICS

By: /s/ Stewart Craig Date: 20 SEP16
Stewart Craig, CMO

Broker: CORNISH & CAREY COMMERCIAL
DBA NEWMARK CORNISH & CAREY
901 Mariners Island Boulevard, Suite 125
San Mateo, CA 94404

By: /s/ Jesse Cardenas Date: 9-22-16
Jesse Cardenas, CA RE License #01316611

By: _____ Date: _____
Jay Leslie, CA RE License #01244555

CONSULT YOUR ADVISORS: NO REPRESENTATION OR RECOMMENDATION IS MADE BY CORNISH & CAREY COMMERCIAL DBA NEWMARK CORNISH & CAREY OR ITS AGENTS OR EMPLOYEES AS TO THE LEGAL EFFECT. INTERPRETATION, OR ECONOMIC CONSEQUENCES OF THE NATIONAL FLOOD INSURANCE PROGRAM AND RELATED LEGISLATION, NOR OF OTHER LEGISLATION REFERRED TO HEREIN. THESE ARE QUESTIONS THAT YOU SHOULD ADDRESS WITH YOUR CONSULTANTS AND ADVISORS.

AIRCRE

THIRD **ADDENDUM** TO STANDARD MULTI-TENANT OFFICE LEASE – NET DATED SEPTEMBER 16, 2016

**Date:** July 1, 2019

**By and Between**

**Lessor:** Rakesh Kumar and Premila Kumar Revocable Family Trust

**Lessee:** Sutrovax, Inc.

**Property Address:** 1118 Chess Drive, Foster City, California, 94404
**(street address, city, state, zip)**

**Paragraphs:** 94–97

**In the event of any conflict between the provisions of this Addendum and the printed provisions of the Lease, this Addendum shall control.**

**94. Rent Schedule:**

July 1, 2019 – June 30, 2020 - $22,136.40 NNN Per Month
July 1, 2020 – June 30, 2021 - $22,800.49 NNN Per Month
July 1, 2021 – October 31, 2021 - $23,484.51 NNN Per Month

**95. 2019 Common Area Maintenance Estimates:**

The Common Area Maintenance ("CAM") charges for 2019 are estimated to be an additional Ten Dollars and 20/100 ($10.20) per square foot per year. CAM charges are due in monthly installments and reconciled once per annum. The CAM estimates for the Premises for 2019 are Three Thousand Eight Hundred One Dollars and 20/100 ($3,801.20).

**96.**

Lessor acknowledges and agrees that as of the Effective Date of the Assignment, Assignor is in compliance with all terms and conditions of the Lease Agreement dated September 16, 2016.

**97.**

Lessor and Assignee all acknowledge and agree that as of the Effective Date of this agreement that the Premises and all mechanical systems within are in good working order.

Lessor:

*/s/ Rakesh Kumar*
Rakesh Kumar, Co-Trustee of the
Rakesh Kumar and Premila Kumar
Revocable Family Trust

Lessor:

*/s/ Premila Kumar*
Premila Kumar, Co-Trustee of the
Rakesh Kumar and Premila Kumar
Revocable Family Trust

Lessee:
SutroVax, Inc. a Delaware Corporation

By: */s/ Grant E. Pickering*
Name Printed: Grant E. Pickering
Title: President & CEO

By: _____
Name Printed: _____
Title: _____