Vaxcyte Announces Publication of Preclinical Proof-of-Concept Data Supporting Potential of VAX-A1, a Novel Conjugate Vaccine Designed to Prevent Group A Strep Infections

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FOSTER CITY, Calif., Jan. 06, 2021 (GLOBE NEWSWIRE) -- Vaxcyte, Inc., 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, today announced the publication of preclinical data for VAX-A1, the Company's novel Group A *Streptococcus* (Group A Strep) conjugate vaccine candidate, in the journal *Infectious Microbes & Diseases*.

Group A Strep is one of the leading causes of bacterial infections worldwide, including strep throat and certain severe invasive infections such as sepsis, necrotizing fasciitis and toxic shock syndrome. Strep throat is particularly common in school-age children and a significant source of antibiotic prescriptions globally. The Group A Strep pathogen is also a leading cause of mortality in emerging countries by eliciting immune-mediated diseases such as rheumatic fever and rheumatic heart disease. The World Health Organization (WHO) has recognized the significant public health need caused by Group A Strep and has articulated a strategic goal to develop a safe and globally effective Group A Strep vaccine for prevention of acute infections, secondary immune-mediated sequelae and disease-associated mortality and to reduce reliance on antibiotics to help mitigate the growing concern of antibiotic resistance.

In the study, a novel protein and polysaccharide conjugate of the Group A Strep polysaccharide was constructed for inclusion in a universal subunit vaccine against infections by the pathogen. The study demonstrated that active immunization of mice with the vaccine protected against a Group A Strep challenge in systemic infection and localized skin infection models. Moreover, the antibodies induced by the vaccine bound to a wide array of genetically distinct circulating strains of Group A Strep, without evidence of cross-reactivity to human heart or brain tissue antigens.

The study referenced in the paper, "Site-Specific Conjugation of Cell Wall Polyrhamnose to Protein SpyAD Envisioning a Safe Universal Group A Streptococcal Vaccine," was carried out in collaboration with researchers at the Division of Host-Microbe Systems and Therapeutics, Department of Pediatrics, University of California School of Medicine and the Skaggs School of Pharmacy and Pharmaceutical Sciences at UC San Diego. The paper can be accessed here.

"In these preclinical models, the vaccine showed broad and significant protection against systemic and soft tissue infection after challenge with no evidence of cross-reactivity with human tissue, which supports the path for further development," said Jeff Fairman, Ph.D., Vice President, Research and Co-founder of Vaxcyte. "Furthermore, by using conserved antigens, we believe that the vaccine could address the full range of pathogenic serotypes of Group A Strep."

Victor Nizet, M.D., a professor of pediatrics and pharmaceutical sciences at UC San Diego who led the preclinical vaccine testing, noted, "Successful immunization against Group A Strep to prevent strep throat, invasive infections and rheumatic heart disease would not only save lives, but also reduce the need for antibiotic prescriptions, which fuel the continual evolution of resistance to these important medications."

Highlights of Findings from the Preclinical Study:

- The study examined the efficacy of a novel polysaccharide protein conjugate for a vaccine covering all serotypes of Group A Strep.
- The vaccine elicited antibodies that were protective in systemic and soft tissue mouse models of infection.
- Broad-based cross-reactivity with multiple M-protein serotypes of Group A Strep was observed in the serum of vaccinated animals.
- No cross-reactivity was detected with human heart or brain proteins.

About Group A Streptococcus
Streptococcus pyogenes (*S. pyogenes* or Group A Strep) is a preeminent human pathogen causing 700 million cases of disease annually, the majority of which are pharyngitis, commonly known as strep throat. Pharyngitis is highly prevalent in school-age children and a significant source of antibiotic prescriptions, contributing to the growing problem of antibiotic resistance globally. In the United States, an estimated 17.1% of outpatient antibiotic prescriptions dispensed to children aged 3 to 9 years are for treatment of suspected Group A Strep infections. Studies indicate that antibiotic resistance to Group A Strep has significantly increased in this past decade. For example, from 2010 to 2017, the percentage of Group A Strep infections that are resistant to erythromycin has nearly tripled from 8% to 23%, resulting in the elevation of the bacteria by the U.S. Centers for Disease Control (CDC) to the antibiotic resistant category of a "concerning threat." 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 (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.

About VAX-A1
VAX-A1 is a conjugate vaccine candidate designed to confer broad protective immune responses against all subtypes of Group A Strep and be

boostable to offer long-lasting protection from infection. A central component of the vaccine is polyrhamnose, a conserved polysaccharide in the bacterial cell wall, genetically engineered by UC San Diego technology to eliminate an immune epitope implicated in the autoimmune cross-reaction of rheumatic heart disease. Vaxcyte exclusively licensed the rights to this patented antigen and is developing the Group A Strep vaccine utilizing its proprietary conjugation technology. In the research program, the polyrhamnose was conjugated to conserved Group A Strep-specific immunogenic protein carrier using the Company's 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. The vaccine is a combination of this novel conjugate with three additional highly conserved virulence factors, designed to cover all Group A Strep strains.

In July 2019, Vaxcyte received a cost-reimbursement research award from Combating Antibiotic Resistant Bacteria Biopharmaceutical Accelerator (CARB-X), a global non-profit partnership dedicated to supporting the development of antibiotics, vaccines, diagnostics and other products that address antibiotic-resistant bacteria. The CARB-X award provides funding of up to $2.7 million to support the development of an innovative vaccine to prevent infections caused by Group A Strep bacteria in developing countries and in the developed world. If the project meets certain milestones, Vaxcyte could be eligible to receive additional funding from CARB-X to support further development of the vaccine.

About Vaxcyte

Vaxcyte is 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. The Company's cell-free protein synthesis platform, comprising the XpressCF™ platform, exclusively licensed from Sutro Biopharma, Inc., together with Vaxcyte's proprietary know-how, enables the design and production of protein carriers and antigens, the critical building blocks of vaccines, in ways that the Company believes conventional vaccine technologies currently cannot. Vaxcyte's lead vaccine candidate, VAX-24, is a preclinical, 24-valent broad-spectrum pneumococcal conjugate vaccine (PCV) being developed for the prevention of invasive pneumococcal disease (IPD). Vaxcyte's pipeline also includes VAX-XP, a PCV with an expanded breadth of coverage of at least 30 strains, including newly emerging strains responsible for IPD and antibiotic resistance; VAX-A1, a prophylactic vaccine candidate designed to prevent Group A Strep infections; and VAX-PG, a therapeutic vaccine candidate designed to slow or stop the progression of periodontal disease by targeting the keystone pathogen responsible for this chronic, oral inflammatory disease. For more information, visit www.vaxcyte.com.

Forward-Looking Statements

This press release contains forward-looking statements within the meaning of The Private Securities Litigation Reform Act of 1995. These statements include, but are not limited to, statements related to the process and timing of anticipated future development of Vaxcyte's vaccine candidates, whether preclinical results support further development of its VAX-A1 and the potential success of the VAX-A1 program. The words "believe," "could," "expect," "may," "potential," "should," "would" and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. These forward-looking statements are based on Vaxcyte's current expectations and actual results and timing of events could differ materially from those anticipated in such forward-looking statements as a result of risks and uncertainties, including, without limitation, risks related to Vaxcyte's product development programs, including development timelines, success and timing of chemistry, manufacturing and controls and related manufacturing activities, potential delays or inability to obtain and maintain required regulatory approvals for its vaccine candidates, and the risks and uncertainties inherent with preclinical and clinical development processes; the success, cost and timing of all development activities and clinical trials; and sufficiency of cash and other funding to support Vaxcyte's development programs and other operating expenses. These and other risks are described more fully in Vaxcyte's filings with the Securities and Exchange Commission (SEC), including its Quarterly Report on Form 10-Q filed with the SEC on November 12, 2020 or in other documents Vaxcyte subsequently files with or furnishes to the SEC. Vaxcyte undertakes no duty or obligation to update any forward-looking statements contained in this release as a result of new information, future events or changes in its expectations. Readers should not rely upon the information in this press release as current or accurate after its publication date.

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