SAB Biotherapeutics Announces First Publication of Promising Nonclinical Data for SAB-183 Against Pneumonic Plague in the Journal Antibodies

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In study conducted for U.S. Army Medical Research Institute, SAB-183 demonstrated strong immune protection and response against Yersinia pestis infection, which causes plague

Findings demonstrate utility of Transchromosomic (Tc) bovine generated fully-human immunoglobulin (or polyclonal) antibodies as a strategy to provide broad protection against infections caused by drug-resistant, highly mutating pathogens

First data demonstrating multi-epitope binding broadly neutralizing activity against bacterial infections, builds on prior data demonstrating efficacy against viral infections

SIOUX FALLS, S.D., May 12, 2023 (GLOBE NEWSWIRE) -- SAB Biotherapeutics (Nasdaq: SABS), (SAB), a clinical-stage biopharmaceutical company with a novel immunotherapy platform that produces specifically targeted, high-potency, fully-human immunoglobulin (hIgG) antibodies, also known as fully-human polyclonal antibodies, without the need for human donors, today announced the publication of nonclinical data in the medical journal *Antibodies.* The data are from a study conducted in collaboration with the United States Army Medical Research Institute of Infectious Diseases (USAMRID) highlighting that fully-human immunoglobulins derived from Tc bovines can protect mice from *Yersinia pestis*, a Tier 1 select bacterial biothreat agent that can rapidly cause fatal infections and is associated with pneumonic plague as well as bubonic plague.

The article, "Polyclonal antibodies derived from transchromosomic bovines vaccinated with the recombinant F1-V vaccine increase bacterial opsonization in vitro and protect mice from pneumonic plague," was published online in the 10th anniversary special issue of *Antibodies.* SAB-183, the Tc bovine derived fully-human immunoglobulin, demonstrated increased opsonization and phagocytosis of *Y. pestis in vitro* and elicited a strong immune response with significant protection to mice exposed to *Y. pestis in vivo*.

Y. pestis is a major biothreat due to its capacity for aerosol dissemination and its highly contagious nature in the pneumonic form. Furthermore, as the study notes, drug-resistant isolates of *Y. pestis* are on the rise and constitute a significant concern for the public health and biodefense communities. In lieu of any approved vaccine for this pathogen, effective antibody therapies and other countermeasures are needed to ensure preparedness.

This study confirmed that rapid production of antibodies from Tc bovines provides broad protection against plague and other bacterial or viral infections and can be used to produce treatments to counter the challenges of antibiotic resistance and rapid mutation of pathogens. In contrast to monoclonal antibodies, polyclonal antibodies derived from Tc bovines afford greater epitope coverage, which may mitigate loss of efficacy against a mutating pathogen and emergence of escape mutants.

"These promising nonclinical data generated in partnership with USAMRID offer evidence that SAB-183 may provide broad coverage against plague and other mutating infections," said Tom Luke, MD, Head of Research for SAB Biotherapeutics. "In the event of an outbreak or biological incident, there's a need for novel antibody therapies that are effective against potentially treatment-resistant pathogens that can be produced in large quantities."

Study researchers characterized and evaluated anti-plague fully human immunoglobulin generated in Tc bovines using functional macrophage assays (to establish opsonization) *in vitro* and *in vivo* mouse models of pneumonic plague. The study authors concluded that fully-human immunoglobulin, which has shown preclinical and clinical efficacy against other pathogens, including SARS-CoV-2, influenza, and C. difficile, could potentially be used to develop a polyclonal plague countermeasure using F1, LcrV and/or their antigens in combination.

This publication marks the first study data that have been announced for SAB-183.

About SAB Biotherapeutics, Inc.

SAB Biotherapeutics, Inc. (SAB) is a clinical-stage biopharmaceutical company focused on the development of powerful and proprietary immunotherapeutic polyclonal human antibodies to treat and prevent infectious diseases and immune and autoimmune disorders. Our development programs include infectious diseases resulting from outbreaks and pandemics, as well as immunological, gastroenterological, and respiratory diseases that have significant mortality and health impacts on immune compromised patients. SAB has applied advanced genetic engineering and antibody science to develop Transchromosomic (Tc) Bovine™. Our versatile DiversitAb™ platform is applicable to a wide range of serious unmet needs in human diseases. I

produces natural, specifically targeted, high-potency, fully-human polyclonal immunotherapies without the need for human donors. SAB currently has multiple drug development programs underway and collaborations with the US government and global pharmaceutical companies. For more information on SAB, visit: https://www.SAb.bio/ and follow SAB on Twitter and LinkedIn.

Forward-Looking Statements

Certain statements made herein that are not historical facts are forward-looking statements for purposes of the safe harbor provisions under The Private Securities Litigation Reform Act of 1995. Forward-looking statements generally are accompanied by words such as "believe," "may," "will," "estimate," "continue," "anticipate," "intend," "expect," "should," "would," "plan," "predict," "potential," "seem," "seek," "future," "outlook" and similar expressions that predict or indicate future events or trends or that are not statements of historical matters. These forward-looking statements include, but are not limited to, statements regarding future events, the development and efficacy of our influenza program, C. diff. program, type 1 diabetes program, and other discovery programs, the results, including timing, of the development of SAB-176, SAB-185, SAB-142 and SAB-195, including SAB-176 Fast Track designation and Breakthrough Therapy designation, and the outcome of potential future government and other third-party collaborations or funded programs.

These statements are based on the current expectations of SAB and are not predictions of actual performance, and are not intended to serve as, and must not be relied on, by any investor as a guarantee, prediction, definitive statement, or an assurance, of fact or probability. These statements are only current predictions or expectations, and are subject to known and unknown risks, uncertainties and other factors which may be beyond our control. Actual events and circumstances are difficult or impossible to predict, and these risks and uncertainties may cause our or our industry's results, performance, or achievements to be materially different from those anticipated by these forward-looking statements. A further description of risks and uncertainties can be found in the sections captioned "Risk Factors" in our most recent annual report on Form 10-K, subsequent quarterly reports on Form 10-Q, and other filings with or submissions to, the U.S. Securities and Exchange Commission, which are available at https://www.sec.gov/. Except as otherwise required by law, SAB disclaims any intention or obligation to update or revise any forward-looking statements, which speak only as of the date they were made, whether as a result of new information, future events, or circumstances or otherwise.

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