Gritstone Announces Positive Preclinical Data in Non-Human Primate Challenge Study with Second-Generation COVID-19 Vaccine Against SARS-CoV-2

November 10, 2021

Self-amplifying mRNA (SAM) vaccination protected against SARS-CoV-2 challenge as both a 2-dose regimen and as a single boost following ChAd prime in rhesus macaques

Potential for equivalent or more potent immune responses at lower doses with SAM compared to first-generation mRNA vaccines; strong T cell responses observed

Initial Phase 1 data from Gritstone-sponsored CORAL study expected early in the first Quarter 2022

EMERYVILLE, Calif., Nov. 10, 2021 (GLOBE NEWSWIRE) -- Gritstone bio, Inc. (Nasdaq: GRTS), a clinical-stage biotechnology company developing next generation cancer and infectious disease immunotherapies, today published positive preclinical data in non-human primate models from the CORAL next-generation COVID-19 vaccine program against SARS-CoV-2, the coronavirus that causes COVID-19 disease. In a non-human primate challenge study, immunization with a self-amplifying mRNA (SAM) vaccine protected rhesus macaques against SARS-CoV-2 infection as either a homologous prime-boost regimen (2 doses) or as a single boost following an optimized chimpanzee adenoviral (ChAd) vector prime. The manuscript describing these data is available on a preprint server on bioRxiv at https://www.biorxiv.org/content/10.1101/2021.11.08.467773v1 and is concurrently undergoing scientific peer-review for potential publication.

“Advancing new vaccine strategies, like our SAM platform, may help avoid further propagation and mutation of SARS-CoV-2 and potentially address delays in global vaccination. These data, combined with clinical data we are currently generating, continue to validate the concept of broad and potent T cell and neutralizing antibody responses following SAM as a 2-dose regimen, or as a boost following an initial ChAd dose,” said Andrew Allen, M.D., Ph.D., co-founder, president and chief executive officer of Gritstone. “During situations like a pandemic, a potent SAM homologous vaccine platform can offer simplicity in manufacturing and rollout, and our AI antigen prediction platform, EDGE, is likely to enable accelerated design of vaccines that contain both antibody and key T cell antigens from novel pathogens. A heterologous ChAd prime and SAM boost regimen, the so-called “mix-and-match" approach, may provide a potent option to those with a weakened immune system, particularly cancer patients receiving B cell-directed therapies that weaken antibody responses to mRNA vaccines. We look forward to sharing preliminary data from our first CORAL trial early in the first quarter of 2022.”

Karin Jooss, Ph.D., executive vice president and head of R&D, added “These data further support the dose sparing potential of Gritstone’s SAM vaccines likely due to the vector’s ability to replicate post vaccination. In this study, vaccination with SAM drove equivalent or more potent immune responses at lower doses compared to those reported in other studies by first-generation mRNA vaccines. The self-amplification capability may extend the duration and magnitude of antigen expression, potentially enabling lower vaccine doses or need for frequent repeat administrations. Self-amplification may also activate different innate immune pathways versus simple mRNA, driving stronger and broader immune responses. Overall, we are very pleased with the performance of our novel SAM platform and these data validate the approach which can be used against a wide variety of important human pathogens.”

In the study, a SAM vaccine encoding a prefusion stabilized SARS-CoV-2 spike glycoprotein demonstrated potent cellular and humoral immune responses at low doses in mice and rhesus macaques. The homologous prime-boost vaccination regimen of SAM at 3, 10 and 30 µg induced potent neutralizing antibody titers in rhesus macaques at all dose levels, with the 10µg dose generating geometric mean titers (GMT) 48-fold greater than the GMT of a panel of SARS-CoV-2 convalescent human sera, and comparable to that observed with a ChAd and SAM heterologous prime-boost regimen. Spike-specific T cell responses were observed in all dose groups. SAM vaccination provided protective efficacy against SARS-CoV-2 challenge as both a homologous prime-boost and as a boost following ChAd prime, demonstrating reduction of viral replication in both the upper and lower airways. Protection was most effective with a SAM prime-boost vaccination regimen at 10 and 30 µg and with a ChAd/SAM heterologous prime-boost regimen.

The Gritstone CORAL program is a second-generation SARS-CoV-2 vaccine platform delivering a stabilized spike protein and highly conserved T cell antigens derived from other viral genes of SARS-CoV-2 within either a self-amplifying mRNA lipid nanoparticle or a ChAd. An ongoing Gritstone-sponsored Phase 1 trial is evaluating SAM as a boost and immunogenicity enhancer of AstraZeneca's first-generation COVID-19 vaccine AZD1222 (Vaxzevria) in healthy adults ≥ 60 years in the UK. Preliminary data from this trial are expected in early 1Q22. A two-dose SAM regimen is also being evaluated in the ongoing clinical trial sponsored by the National Institute of Health (NIH) Division of Microbiology and Infectious Disease (DMID) (NCT04776317, GO-009, GO-012), and in the Coalition for Epidemic Preparedness Innovations (CEPI)-funded, Gritstone-sponsored clinical trial in South Africa expected to begin by year end 2021.

About the CORAL Program

Gritstone’s CORAL program is a second-generation SARS-CoV-2 vaccine platform delivering spike and additional SARS-CoV-2 T cell epitopes, offering the potential for more durable protection and broader immunity against SARS-CoV-2 variants. Delivery vectors can comprise a chimpanzee adenovirus, self-amplifying mRNA or both. The program is supported by several key relationships: Bill & Melinda Gates Foundation, National Institute of Allergy and Infectious Disease (NIAID), and the Coalition for Epidemic Preparedness Innovations (CEPI). Gritstone is sponsoring and conducting its own Phase 1 studies in select populations. A phase 1 clinical trial is also being sponsored by NIAID examining the reactogenicity and immunogenicity of CORAL in healthy volunteers, both young and elderly. Together with the planned CEPI-funded study, these clinical trials will test four different vaccine candidates and establish optimal dosing and antigenic content for the CORAL program in young subjects, the elderly, the previously vaccinated, and the immunocompromised (who typically respond poorly to current mRNA vaccines).

About Gritstone

Gritstone bio, Inc. (Nasdaq: GRTS), a clinical-stage biotechnology company, is developing the next generation of immunotherapies against multiple cancer types and infectious diseases. Gritstone develops its products by leveraging two key pillars—first, a proprietary machine learning-based platform, Gritstone EDGE™, which is designed to predict antigens that are presented on the surface of cells, such as tumor or virally-infected cells, that can be seen by the immune system; and, second, the ability to develop and manufacture potent immunotherapies utilizing these antigens to potentially drive the patient's immune system to specifically attack and destroy disease-causing cells. The company's lead oncology programs include an individualized neoantigen-based immunotherapy, GRANITE, and an "off-the-shelf" shared neoantigen-based immunotherapy, SLATE, which are being evaluated in clinical studies. Within its infectious disease pipeline, Gritstone is advancing CORAL, a COVID-19 program to develop a second-generation vaccine, with support from departments within the National Institutes of Health (NIH), the Bill & Melinda Gates Foundation, the Coalition for Epidemic Preparedness Innovations (CEPI) and through a license agreement with La Jolla Institute for Immunology (LJI). Additionally, the company has a global collaboration for the development of a therapeutic HIV vaccine with Gilead Sciences. For more information, please visit gritstone.com.

Gritstone Forward-Looking Statements

This press release contains forward-looking statements, including, but not limited to, statements related to Gritstone bio, Inc.'s ("Gritstone", "we" or "our") preclinical and clinical product candidates, including GRANITE, SLATE, CORAL, and HIV programs; the advancements in our ongoing clinical trials; the timing of data announcements related to ongoing clinical trials and the initiation of future clinical trials. Such forward-looking statements involve substantial risks and uncertainties that could cause Gritstone's research and clinical development programs, future results, performance or achievements to differ significantly from those expressed or implied by the forward-looking statements. Such risks and uncertainties include, among others, the uncertainties inherent in the drug development process, including Gritstone's programs' early stage of development, the process of designing and conducting preclinical and clinical trials, the regulatory approval processes, the timing of regulatory filings, the challenges associated with manufacturing drug products, Gritstone's ability to successfully establish, protect and defend its intellectual property and other matters that could affect the sufficiency of existing cash to fund operations. Forward-looking statements generally contain words such as "believes," "expects," "may," "will," "should," "seeks," "approximately," "intends," "plans," "estimates," "anticipates," and other expressions that are predictions of or indicate future events and trends and that do not relate to historical matters. Gritstone undertakes no obligation to update or revise any forward-looking statements. For a further description of the risks and uncertainties that could cause actual results to differ from those expressed in these forward-looking statements, as well as risks relating to the business of the company in general, see Gritstone's most recent Quarterly Report on Form 10-Q filed on November 3, 2021 and any current and periodic reports filed with the Securities and Exchange Commission.

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