



Clover Announces Positive Preclinical Data for Second-Generation Protein-Based COVID-19 Vaccine Candidate Demonstrating Broad Neutralization Against Variants of Concern

May 18, 2021

- *The publication is available as a pre-print on bioRxiv*
- *Preclinical data demonstrates that a modified B.1.351 S-Trimer vaccine candidate induces broad neutralization against both the original SARS-CoV-2 strain and variants of concern (VoC) including the South African variant*
- *A single booster dose in animals previously vaccinated with two doses of Clover's first-generation COVID-19 vaccine (SCB-2019) increased neutralizing titers against the South African variant*
- *Clover plans to select a second-generation COVID-19 vaccine candidate and initiate clinical trials in the second half of 2021*
- *SPECTRA, a global Phase 2/3 efficacy study evaluating Clover's first-generation COVID-19 vaccine candidate SCB-2019 (CpG 1018/Alum), continues to enroll as planned with interim data anticipated in the middle of 2021*

CHENGDU, China, May 18, 2021 —[Clover Biopharmaceuticals](#) (Clover), a global clinical-stage biotechnology company committed to developing novel vaccines and biologic therapeutic candidates to address the world's most life-threatening diseases and public health threats, today announced positive preclinical data from its second-generation, protein-based COVID-19 vaccine candidate, a modified B.1.351 Spike (S)-Trimer (B.1.351 S-Trimer). B.1.351 S-Trimer demonstrated broad neutralization against the original SARS-CoV-2 strain and variants of concern, specifically the South African variant (B.1.351), Brazil variant (P.1), and UK variant (B.1.1.7). The complete manuscript "[Broad neutralization against SARS-CoV-2 variants induced by a modified B.1.351 protein-based COVID-19 vaccine candidate](#)" is available for pre-print on bioRxiv and will be submitted for peer-review publication in a scientific journal.

"The recent emergence and spread of variant SARS-CoV-2 strains harboring mutations, which may enable immune escape, necessitates the rapid evaluation of second-generation COVID-19 vaccines. Clover is at the forefront of vaccine R&D utilizing our proprietary Trimer-Tag™ technology and is the first company to disclose preclinical data demonstrating that a modified protein-based COVID-19 vaccine candidate can potentially induce broad neutralization against the original SARS-CoV-2 strain and variants of concern," said **Joshua Liang, Chief Executive Officer of Clover Biopharmaceuticals**. "The continued global rollout of highly-effective first-generation COVID-19 vaccines is paramount to controlling the current pandemic and supports the rapid development of our first-generation COVID-19 vaccine candidate SCB-2019 which is currently undergoing evaluation in a pivotal Phase 2/3 clinical trial. As the SARS-CoV-2 virus mutates and additional data emerges, we are prepared to innovate and develop next-generation COVID-19 vaccines."

Mice that were vaccinated with two doses of B.1.351 S-Trimer at day 0 (Prime) and day 21 (Boost) demonstrated strong humoral immune responses that can broadly neutralize the original, B.1.351, P.1, and B.1.1.7 strains of SARS-CoV-2. Immunization with two doses of first-generation vaccine candidate SCB-2019 and the addition of a third booster dose on day 35 of either SCB-2019 or B.1.351 S-Trimer was able to increase cross-reactive neutralizing antibodies against B.1.351, demonstrating the potential importance of booster doses. These data also reinforced previously-observed strong Th1-biased cell-mediated immune responses for our S-Trimers, which in this study also showed cross-reactivity to the original strain and variants of concern.

Based on the B.1.351 S-Trimer data, Clover intends to continue evaluation and advance a second-generation COVID-19 vaccine candidate into clinical trials in the second half of 2021.

Clover's currently ongoing SPECTRA trial, evaluating SCB-2019 (CpG 1018/Alum) in a global Phase 2/3 efficacy study is enrolling as planned and an interim analysis is expected in the middle of 2021.

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About SCB-2019 (CpG 1018/Alum)

SCB-2019 was developed by our proprietary Trimer-Tag™ technology platform and is a stabilized trimeric antigen of the S-protein (S-Trimer) based on the original strain of SARS-CoV-2 virus. Clover's COVID-19 vaccine candidate is our antigen, SCB-2019, in combination with adjuvants, CpG 1018 from Dynavax and aluminum hydroxide (alum).

In a Phase 1 clinical trial, SCB-2019 (CpG 1018/Alum) demonstrated strong immune responses, indicating protective immunity with a favorable safety profile. Based on these results, SCB-2019 (CpG 1018/Alum) is undergoing evaluation in SPECTRA, our global, pivotal Phase 2/3 clinical trial for vaccine efficacy, safety, and immunogenicity. SPECTRA commenced in March 2021 and is expected to enroll over 22,000 adult and elderly participants across Latin America, Asia, Europe, and Africa. An interim analysis of the primary endpoint is expected in the middle of 2021. SCB-2019 (CpG 1018/Alum) could potentially become one of the first protein-based COVID-19 vaccines to be commercialized globally.

About Trimer-Tag™ Technology

The Trimer-Tag™ technology platform can trimerize any protein of interest and target a broad spectrum of naturally trimerization-dependent disease and biologic targets. These include dozens of enveloped RNA viruses (e.g. coronaviruses, rabies, respiratory syncytial virus (RSV), influenza, human immunodeficiency virus (HIV), and Ebola) and the tumor necrosis factor (TNF) superfamily (TNFSF), which have diverse biological functions and are

linked to serious diseases, such as certain cancers and autoimmune disorders.

Globally, Trimer-Tag™ is the only trimerization technology platform for designing and producing recombinant, secreted, covalently-linked, trimeric fusion proteins (trimer-tagged proteins) exploiting a human-derived trimerization tag. The trimer-tagged proteins produced by our Trimer-Tag™ technology platform have high potency against trimerization dependent disease targets and favorable safety profiles.

About Clover Biopharmaceuticals

Clover Biopharmaceuticals is a global clinical-stage biotechnology company committed to developing novel vaccines and biologic therapeutic candidates to address the world's most life-threatening diseases and public health threats. Our proprietary Trimer-Tag™ technology platform is a development platform for the creation of novel vaccines and biologic therapies. We have leveraged our Trimer-Tag™ technology platform to become a leading COVID-19 vaccine developer and potentially one of the first companies to commercialize a protein-based COVID-19 vaccine globally. For more information, please visit our website: www.cloverbiopharma.com and follow the company on [LinkedIn](#).

Clover Forward-looking Statements

This press release contains certain forward-looking statements and information relating to us and our subsidiaries that are based on the beliefs of our management as well as assumptions made by and information currently available to our management. When used in this [document], the words “aim,” “anticipate,” “believe,” “could,” “estimate,” “expect,” “going forward,” “intend,” “may,” “might,” “ought to,” “plan,” “potential,” “predict,” “project,” “seek,” “should,” “will,” “would” and the negative of these words and other similar expressions, as they relate to us or our management, are intended to identify forward-looking statements.

Forward-looking statements are based on our current expectations and assumptions regarding our business, the economy and other future conditions. We give no assurance that these expectations and assumptions will prove to have been correct. Because forward-looking statements relate to the future, they are subject to inherent uncertainties, risks and changes in circumstances that are difficult to predict. Our results may differ materially from those contemplated by the forward-looking statements. They are neither statements of historical fact nor guarantees or assurances of future performance. We caution you therefore against placing undue reliance on any of these forward-looking statements. Any forward-looking statement made by us in this document speaks only as of the date on which it is made. Factors or events that could cause our actual results to differ may emerge from time to time, and it is not possible for us to predict all of them. Subject to the requirements of applicable laws, rules and regulations, we undertake no obligation to update any forward-looking statement, whether as a result of new information, future events or otherwise. All forward-looking statements contained in this document are qualified by reference to this cautionary statement.

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