

Dynavax and Medicago Announce Collaboration to Develop a Novel Adjuvanted COVID-19 Vaccine Candidate

- The collaboration is evaluating Medicago's Coronavirus Virus-Like Particle (CoVLP) with Dynavax's CpG 1018 adjuvant to support the rapid development of a COVID-19 vaccine candidate
- Medicago anticipates initiating a Phase 1 clinical trial evaluating the combination in mid-July 2020

EMERYVILLE, CA and QUEBEC CITY, CANADA - July 8, 2020 - [Dynavax Technologies Corporation](#) (Nasdaq: DVAX), a biopharmaceutical company focused on developing and commercializing novel vaccines, and [Medicago](#), a biopharmaceutical company creating vaccines and therapeutics by leveraging innovative plant-based technologies, today announced their collaboration to investigate an adjuvanted vaccine candidate to protect against COVID-19. The collaboration is evaluating the combination of Medicago's Coronavirus Virus-Like Particle (CoVLP) with Dynavax's advanced adjuvant, [CpG 1018™](#). Adding CpG 1018, the adjuvant contained in Dynavax's U.S. FDA-approved adult hepatitis B vaccine, is intended to enhance the immune response of Medicago's COVID-19 vaccine which may decrease the total amount of antigen needed per dose, providing more doses to help protect a greater number of people.

Preclinical results are encouraging and support advancing development to a Phase 1 clinical trial, which Medicago anticipates initiating in mid-July 2020. This first step of testing in humans will evaluate the safety and immunogenicity of three different dose levels of antigen combined with CpG 1018 and in parallel with an adjuvant from another company, administered on a one- and two-dose vaccination schedule, given 21 days apart.

Assuming successful clinical results and obtaining regulatory approvals, the companies are planning to be able to deliver initial vaccine doses in the first half of 2021. A broader collaboration between both companies will also be evaluated for other identified opportunities.

"We are pleased to collaborate with Dynavax in seeking a vaccine to help address this global public health threat. The positive outcomes from our preclinical testing are encouraging and reinforce the capabilities of our plant-based platform. Using Dynavax's adjuvant, we hope to maximize the number of doses we can produce with the objective to protect as many people as possible against COVID-19," said [Dr. Bruce Clark](#), President and CEO of Medicago.

"A collaborative approach across multiple technology platforms, with adjuvants playing an important role, is the path most likely to lead to an effective vaccine to prevent COVID-19," commented [Ryan Spencer](#), Chief Executive Officer of Dynavax. "The ability of CpG 1018 to enhance the immune response, as demonstrated in HEPLISAV-B, combined with the ability to scale-up manufacturing to produce large quantities quickly, makes it ideally suited in this environment where quantity, speed, and safety are all critical factors in addition to generating an effective immune response across all adult ages."

Medicago's innovative plant-based production platform will be used to manufacture the COVID-19 vaccine antigen. This platform uses plants as mini-factories which create proteins that assemble into the virus-like particles that are used in the CoVLP vaccine candidate. Combining Medicago's technology with Dynavax's CpG 1018 adjuvant, the companies expect to be able to deliver up to 100 million doses by the end of 2021. Medicago expects to complete a large-scale manufacturing facility in Quebec City, Canada,

by the end of 2023, which is expected to deliver up to 1 billion doses annually. Medicago's first product, a seasonal VLP flu vaccine is currently under review by Health Canada following the completion of a robust safety and efficacy clinical program involving over 25,000 subjects.

About Vaccine Adjuvants

An adjuvant is a pharmacological or immunological agent that modifies the effect of other agents. Adjuvants are added to a vaccine to boost the immune response to produce more antibodies and longer-lasting immunity, thus minimizing the dose of antigen needed. Adjuvants may also be used to enhance the efficacy of a vaccine by helping to modify the immune response by particular types of immune system cells.

About CpG 1018 Adjuvant

CpG 1018 is the adjuvant used in [HEPLISAV-B®](#) [Hepatitis B Vaccine (Recombinant), Adjuvanted], an adult hepatitis B vaccine approved by the U.S. Food and Drug Administration (FDA). Dynavax developed CpG 1018 to provide an increased vaccine immune response, which has been demonstrated in HEPLISAV-B. CpG 1018 provides a well-developed technology and a significant safety database, potentially accelerating the development and large-scale manufacturing of a COVID-19 vaccine. Upon completion of on-going scale up activities, the existing equipment capacity for CpG 1018 will be 600 million to 1.2 billion adjuvant doses annually, depending on final dose selected.

About Dynavax

Dynavax is a commercial stage biopharmaceutical company developing and commercializing novel vaccines. The Company launched its first commercial product, HEPLISAV-B® [Hepatitis B Vaccine (Recombinant), Adjuvanted], in February 2018, following U.S. FDA approval for prevention of infection caused by all known subtypes of hepatitis B virus in adults age 18 years and older. Dynavax is also further developing CpG 1018 as an advanced vaccine adjuvant through research collaborations and partnerships. Current collaborations are focused on adjuvanted vaccines for COVID-19 and pertussis. For more information, visit www.dynavax.com and follow the company on [LinkedIn](#).

About Medicago

Medicago is a biopharmaceutical company headquartered in Quebec City, Canada. Medicago's mission is to improve global health outcomes by leveraging innovative plant-based technologies for rapid responses to emerging global health challenges. Medicago is committed to advancing therapeutics against life-threatening diseases worldwide. For more information please visit www.medicago.com.

About the Novel Coronavirus SARS-CoV-2 (and COVID-19 Disease)

SARS-CoV-2 is a new coronavirus identified in late 2019 which belongs to a family of enveloped RNA viruses that include MERS and SARS, both of which caused serious human infections of the respiratory system. The virus causes a disease named COVID-19. Since this outbreak was first reported in late 2019, the virus has infected over 11.3 million people and has caused over 532,000 reported deaths (as of July 6, 2020). It has been declared a pandemic by the [World Health Organization](#) (WHO). Currently there is no vaccine available for COVID-19.

Dynavax Forward-Looking Statements

This press release contains "forward-looking" statements, including statements regarding the potential to develop a COVID-19 vaccine containing CpG 1018, and to do so on an accelerated basis. Actual results may differ materially from those set forth in this press release due to the risks and uncertainties inherent in vaccine research and development, including the timing of completing development, the timing and

results of clinical trials, whether CpG 1018 is proven to be beneficial when combined with Medicago's CoVLP, whether and when the vaccine will be approved for use, and whether sufficient quantities of CpG 1018 and of vaccine timely will be able to be manufactured, as well as other risks detailed in the "Risk Factors" section of our Annual Report on Form 10-K for the fiscal year ended December 31, 2019, as well as discussions of potential risks, uncertainties and other important factors in our other filings with the U.S. Securities and Exchange Commission. We undertake no obligation to revise or update information herein to reflect events or circumstances in the future, even if new information becomes available. Information on Dynavax's website at www.dynavax.com is not incorporated by reference in our current periodic reports with the SEC.

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