

Heat Biologics Announces Positive Preclinical COVID-19 Results in Collaborative Study with UM Researchers

A collaborative initiative to develop a COVID-19 vaccine has demonstrated positive results in a preclinical study, according to researchers at Heat Biologics Inc. and the University of Miami Miller School of Medicine.

“Our latest laboratory study showed that this vaccine stimulates T-cell immune responses in the airways and lungs,” said Natasa Strbo, M.D., D.Sc., assistant professor of microbiology and immunology, who is leading the Miller School research team. “This is crucial in protecting against COVID-19, since these T-cells in the respiratory system are the first to encounter the virus.”



Dr. Natasa Strbo

Heat Biologics' proprietary platform is designed to reprogram live T-cells to continually secrete antigens that activate a robust, long-term immune system response against SARS-CoV-2, the scientific name for the COVID-19 coronavirus. By prophylactically "training" the immune system, the vaccine should be especially effective in individuals most prone to severe infection, such as the elderly, individuals with chronic health conditions, or patients who are immunosuppressed, added Dr. Strbo.

She was the lead author of the study, "Induction of SARS-CoV-2 Protein S-specific CD8+ T Cells in the Lungs of gp96-Ig-S Vaccinated Mice." The study found that the heat shock protein glycoprotein 96 (gp96) stimulates a robust cellular immune response against a SARS-CoV-2 protein S (spike) to the immune system in transgenic mice. It provides encouraging

translational data that the vaccine is likely to work in humans as well, Dr. Strbo said.

“This publication demonstrates the potential utility and versatility of our vaccine platform to address SARS-CoV-2, relevant mutations and other pathogens of interest,” said Jeff Wolf, chief executive officer of Heat Biologics, a clinical-stage biopharmaceutical company in Durham, North Carolina.

Heat Biologics’ vaccine platform is based on the work of the late Eckhard Podack, M.D., Ph.D., former chair of the Miller School’s Department of Microbiology and Immunology. In the early 2000s, Dr. Podack studied the gp96 as a potential treatment for non-small cell lung cancer, and co-founded Heat Biologics in 2008. Since then, the gp96 protein has undergone rigorous testing in National Institutes of Health and Department of Defense-funded laboratory trials as a vaccine against HIV, malaria and other infectious diseases, and has been tested on more than 300 patients in Heat-funded oncology trials.

Under the terms of the research collaboration, UM is collaborating with Heat Biologics in developing the gp96 approach to vaccine development. “This avoids potential issues associated with attenuated live viral vaccines,” said Dr. Strbo, who has studied the gp96 platform as a vaccine against HIV, malaria, zika and other infectious diseases. “The gp96-based vaccines have demonstrated effectiveness in the induction of mucosal immunity in laboratory models, supporting the use of the vaccine platform against COVID-19.”