



Vir Biotechnology Publishes New Research Characterizing Antibody Response to SARS-CoV-2 in the Journal Cell

September 24, 2020

– Largest-to-date analysis of serum samples from nearly 650 SARS-CoV-2-infected patients –

– High-resolution serology advances understanding of variations in natural antibody response to SARS-CoV-2 and paves the way for future development of vaccines/therapies –

– Manuscript highlights need for the rational design of vaccines and therapies that address the gaps in natural antibody response –

SAN FRANCISCO, Sept. 24, 2020 (GLOBE NEWSWIRE) -- Vir Biotechnology, Inc. (Nasdaq: VIR) today announced the online publication of new research characterizing differences in antibody responses to SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus-2). This analysis, which is the largest to date, describes both the binding properties and kinetics of neutralizing antibodies, providing key insights that could be important to the development of new vaccines and therapies to address COVID-19. The results were published "online first" in the peer-reviewed journal [Cell](#) and will appear in the November 12, 2020, print edition of the journal.

Results of this study, based on blood samples from nearly 650 SARS-CoV-2 infected individuals in Switzerland, Italy and the United States, demonstrate that the magnitude of antibodies produced by an infected individual is proportional to disease severity (with hospitalized patients possessing higher antibody titers compared to non-hospitalized patients), and that those antibodies have a half-life of less than two months. Scientists also report that the receptor binding domain (RBD) of the virus is the main target of naturally occurring neutralizing antibodies, accounting for 90% of the neutralizing activity in serum.

"This study provides new information about the diverse individual antibody response to SARS-CoV-2 infection. The results establish a blueprint that could help guide future serology studies and inform vaccine and therapeutic design strategies," said Davide Corti, senior vice president of antibody research at Vir and study author. "Further, the rapid waning of the natural antibody response and the fact that approximately 60% of infected individuals do not produce antibodies that can block infection underscores the potential need for additional therapeutic approaches."

The manuscript also describes the structural characteristics of the interactions of six different neutralizing antibodies targeting the SARS-CoV-2 RBD, including S309. As described in the July 9, 2020 print edition of [Nature](#), S309 was isolated from a patient who recovered from severe acute respiratory syndrome (SARS) in 2003, and has been shown to be effective against SARS-CoV-2 infection in cells and in animal models. The findings published in [Cell](#) demonstrate that S309 has a high affinity for binding to a different part of the RBD compared to the other five monoclonal antibodies examined, and one that Vir believes may be less likely to mutate. S309 also promotes effector function, enhancing its ability to kill infected cells in addition to its potent neutralizing effect.

"Our high-resolution look at the binding characteristics of the six antibodies highlights nuanced differences that correlate with specific functional activity," said David Veesler, Ph.D., Associate Professor of Biochemistry at the University of Washington School of Medicine and study author. "This unique approach to analyzing antibody responses in infected individuals could be key to ensuring optimal characteristics in the design of future COVID-19 vaccines and therapeutics."

Vir, in collaboration with GlaxoSmithKline plc (LSE/NYSE: GSK), is advancing COVID-19 monoclonal antibodies based on the S309 antibody, including VIR-7831 (also known as GSK4182136) and VIR-7832. In August, the companies initiated a Phase 2/3 study, called COMET-ICE (COVID-19 Monoclonal antibody Efficacy Trial - Intent to Care Early), which is evaluating VIR-7831 for the early treatment of COVID-19 in patients at high risk of hospitalization.

The research published in [Cell](#) was conducted by Vir's subsidiary Humabs BioMed SA in collaboration with the Institute for Research in Biomedicine (IRB), which is affiliated with the Università della Svizzera italiana in Bellinzona, Switzerland; the Ente Ospedaliero Cantonale (EOC) in Ticino, Switzerland; the Clinica Luganese Moncucco in Lugano, Switzerland; the Università della Svizzera italiana (USI); the Luigi Sacco University Hospital in Milan; and the University of Washington in Seattle.

Key contributors include Dr. Veesler; Paolo Ferrari, M.D., chief medical officer for EOC; Federica Sallusto, professor at ETH Zurich and director of the Center of Medical Immunology at the IRB affiliated with the Università della Svizzera italiana; Christian Garzoni, M.D., specialist in general internal medicine and infectious diseases for Clinica Luganese Moncucco; and Agostino Riva, M.D., attending physician at the Luigi Sacco University Hospital.

"We wish to thank our many collaborators and partners who dedicated substantial resources and attention to ensuring the collection, screening and preparation of thousands of samples in just a few weeks," said Herbert "Skip" Virgin, M.D., Ph.D., chief scientific officer of Vir. "Their efforts were important to advancing our understanding of how to combat this global health crisis. We are grateful for their collective focus and collaboration on this research, which represents a key step in the fight against COVID-19."

About VIR-7831 / GSK4182136

VIR-7831 (GSK4182136) is a monoclonal antibody that has shown the ability to neutralize SARS-CoV-2 live virus in vitro. The antibody binds to an epitope on SARS-CoV-2 that is shared with SARS-CoV-1 (also known as SARS), indicating that the epitope is highly conserved, which may make it more difficult for escape mutants to develop. VIR-7831/GSK4182136 has been engineered to enhance lung bioavailability and have an extended half-life.

About VIR-7832

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About the Vir and GSK Collaboration

In April 2020, Vir and GSK entered into a collaboration to research and develop solutions for coronaviruses, including SARS-CoV-2, the virus that causes COVID-19. The collaboration uses Vir's proprietary monoclonal antibody platform technology to accelerate existing and identify new anti-viral antibodies that could be used as therapeutic or preventive options to help address the current COVID-19 pandemic and future outbreaks. The companies will leverage GSK's expertise in functional genomics and combine their capabilities in CRISPR screening and artificial intelligence to identify anti-coronavirus compounds that target cellular host genes. They will also apply their combined expertise to research SARS-CoV-2 and other coronavirus vaccines.

About Vir Biotechnology

Vir Biotechnology is a clinical-stage immunology company focused on combining immunologic insights with cutting-edge technologies to treat and prevent serious infectious diseases. Vir has assembled four technology platforms that are designed to stimulate and enhance the immune system by exploiting critical observations of natural immune processes. Its current development pipeline consists of product candidates targeting hepatitis B virus, influenza A, SARS-CoV-2, human immunodeficiency virus and tuberculosis. For more information, please visit www.vir.bio.

Vir Forward-Looking Statements

This press release contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Words such as "may," "will," "could," "expect," "plan," "anticipate," "believe," "estimate," "goal," "intend," "potential," "candidate," "continuing," "developing" and similar expressions (as well as other words or expressions referencing future events, conditions or circumstances) are intended to identify forward-looking statements. These forward-looking statements are based on Vir's expectations and assumptions as of the date of this press release. Each of these forward-looking statements involves risks and uncertainties. Actual results may differ materially from these forward-looking statements. Forward-looking statements contained in this press release include statements regarding the timing of commencement of clinical trials of the company's antibodies to treat and prevent COVID-19, the ability of the company's antibodies to neutralize the SARS-CoV-2 virus, the company's efforts to identify additional antibodies, the ability of S309 to cover the entire family of related coronaviruses or S309's ability to recruit the rest of the immune system to kill off already infected cells, as well as statements about the highly conserved nature of the epitope recognized by VIR-7831 and VIR-7832 making it more difficult for escape mutants to develop. Many factors may cause differences between current expectations and actual results including unexpected safety or efficacy data observed during preclinical or clinical studies, challenges in neutralizing SARS-CoV-2, difficulty in collaborating with other companies or government agencies, and challenges in accessing manufacturing capacity. Other factors that may cause actual results to differ from those expressed or implied in the forward-looking statements in this press release are discussed in Vir's filings with the U.S. Securities and Exchange Commission, including the section titled "Risk Factors" contained therein. Except as required by law, Vir assumes no obligation to update any forward-looking statements contained herein to reflect any change in expectations, even as new information becomes available.

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