Twist Bioscience Announces Potent SARS-CoV-2 Neutralizing Data from COVID-19 Therapeutic Antibody Program

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-- Data compiled in collaboration with Saint Louis University and independently verified by Colorado State University --

SOUTH SAN FRANCISCO, Calif.--(BUSINESS WIRE)--Sep. 2, 2020-- Twist Bioscience Corporation (Nasdaq: TWST) today announced data demonstrating the potent neutralizing effects of multiple potential therapeutic antibodies, both Immunoglobulin G (IgG) antibodies and substantially smaller single domain VHH “nanobodies,” against SARS-CoV-2, the virus that causes COVID-19. These neutralizing effects were found to be comparable to or better than those seen with antibody candidates derived from patients who had recovered from COVID-19. The data were collected from studies conducted by Saint Louis University and independently verified by scientists at Colorado State University.

“These data are encouraging and provide powerful validation of our ability to generate well characterized and potent antibodies from our proprietary libraries. Importantly, the neutralizing effects seen in these in vitro studies suggest that infections in humans could be blocked,” said Emily M. Leproust, Ph.D., CEO and cofounder of Twist. “We are now evaluating the best path forward for these neutralizing antibodies to support the fight against COVID-19.”

The in vitro studies involved testing more than 200 well characterized monoclonal antibody and VHH nanobody candidates against live virus and pseudovirus cells. Each antibody was chosen for its high and unbiased binding affinity to either the receptor binding domain of the S1 protein of SARS-CoV-2 or the extracellular domain of ACE2 in human cells. The candidates were identified by Twist Biopharma, a division of Twist Bioscience, in just six weeks by screening its proprietary synthetic antibody discovery libraries each containing more than 10 billion antibody sequences, and within months produced robust neutralization data in live virus cells. The full data sets can be seen on the Twist website here and will be submitted to a peer-reviewed journal for publication.

“All antibodies moving through clinical development for the treatment of COVID-19 are full IgG antibodies and already show promise in early studies,” said James D. Brien, Ph.D., of Saint Louis University, School of Medicine. “The single domain (VHH) nanobodies included in these neutralization assays may represent a different therapeutic path to treat the disease. Given their very small size in comparison to IgG antibodies, they may be able to access epitopes on the virus that are unavailable to full IgGs.”

“Neutralizing antibodies have the potential to provide protective effects in treating patient with SARS-CoV-2 infection,” commented Richard Bowen, D.V.M., Ph.D., of Colorado State University. “The results from both the IgG and VHH antibodies generated by Twist Biopharma warrant advancement of several of these compounds into animal studies and potentially into human clinical trials.”

About Twist Biopharma Antibodies

About 75 percent of the antibodies in the blood are IgGs. IgGs are made up of two heavy protein chains and two light protein chains that must pair together and cooperate to specifically recognize a target, in this case the Spike Protein on SARS-CoV-2. This specific targeting affords our immune systems “memory,” allowing it to selectively and precisely eliminate pathogenic threats.

Target recognition by VHH single domains, on the other hand, requires just a single domain found on heavy chain only antibody. With VHH-based antibodies able to exhibit pharmaceutically relevant properties comparable to IgGs, they are a promising therapeutic with several advantages over their bulkier, more complex, counterparts. The small size of VHH antibodies means they can squeeze into spaces and bind or block to parts of molecules that would otherwise be inaccessible to human IgG antibodies. They are also more thermally- and chemically-stable making VHH-based therapeutics good candidates to address respiratory infections, administered by inhaler directly to the respiratory tract where the infection is concentrated. In addition, the small size simplifies manufacturing of VHH antibodies.

In addition to SARS-CoV-2, Twist Biopharma discovers and develops IgG and VHH antibodies to numerous different targets for partners and internal development.

About Twist Bioscience Corporation

Twist Bioscience is a leading and rapidly growing synthetic biology and genomics company that has developed a disruptive DNA synthesis platform to industrialize the engineering of biology. The core of the platform is a proprietary technology that pioneers a new method of manufacturing synthetic DNA by “writing” DNA on a silicon chip. Twist is leveraging its unique technology to manufacture a broad range of synthetic DNA-based products, including synthetic genes, tools for next-generation sequencing (NGS) preparation, and antibody libraries for drug discovery and development. Twist is also pursuing longer-term opportunities in digital data storage in DNA and biologics drug discovery. Twist makes products for use across many industries including healthcare, industrial chemicals, agriculture and academic research.

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This press release contains forward-looking statements. All statements other than statements of historical facts contained herein, including but not

limited to the effectiveness of the monoclonal antibody and VHH nanobody candidates identified by Twist Biopharma as therapeutics for COVID-19, are forward-looking statements reflecting the current beliefs and expectations of management made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. Such forward-looking statements involve known and unknown risks, uncertainties, and other important factors that may cause Twist's actual results, performance, or achievements to be materially different from any future results, performance, or achievements expressed or implied by the forward-looking statements. Such risks and uncertainties include, among others, the risks and uncertainties of the duration, extent and impact of the COVID-19 pandemic, including any reductions in demand for our products (or deferred or canceled orders) globally or in certain regions; the ability to attract new customers and retain and grow sales from existing customers; risks and uncertainties of rapidly changing technologies and extensive competition in synthetic biology could make the products Twist is developing obsolete or non-competitive; uncertainties of the retention of a significant customer; supply chain and other disruptions caused by the COVID-19 pandemic or otherwise; risks of third party claims alleging infringement of patents and proprietary rights or seeking to invalidate Twist's patents or proprietary rights; and the risk that Twist's proprietary rights may be insufficient to protect its technologies. 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 Twist's business in general, see Twist's risk factors set forth in Twist's Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission (SEC) on August 12, 2020 and subsequent filings with the SEC. In addition, many of the foregoing risks and uncertainties are, and could be, exacerbated by the COVID-19 pandemic and any worsening of global or regional business and economic environment as a result. We cannot at this time predict the extent of the impact of the COVID-19 pandemic and any resulting business or economic impact, but it could have a material adverse effect on our business, financial condition, results of operations and cash flows. Any forward-looking statements contained in this press release speak only as of the date hereof, and Twist Bioscience specifically disclaims any obligation to update any forward-looking statement, whether as a result of new information, future events or otherwise.

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