Quanterix' Simoa Technology Powers New Insights into COVID-19 Immune Response and Reveals Indicators of Disease Severity

July 20, 2020

Findings from newly published research demonstrate promise of ultra-sensitive biomarker technology to identify and define high-risk populations through quantification of interferon (IFN) type I

BILLERICA, Mass.--(BUSINESS WIRE)--Jul. 20, 2020-- Quanterix Corporation (NASDAQ: QTRX), a company digitizing biomarker analysis to advance the science of precision health, today announced that researchers across the globe are deploying its Simoa® technology to profile innate immune response in COVID-19 patients, with the aim of identifying indicators associated with poor outcomes and opening new avenues for targeted therapies. New studies published in *Science* and the *Journal of Allergy and Clinical Immunology* suggest that a reduction of interferon (IFN) type I in the blood may provide a means for detecting patients at the greatest risk for dysregulation of the inflammatory response and detection of a cytokine storm earlier in the disease cascade. The journals also provide a rationale for new early intervention and treatment strategies.

"Through our collaborations with Powering Precision Health (PPH)'s global network and leading experts on the frontlines of the pandemic response, we've learned that our ultra-sensitive Simoa assays act like 'a radar system' for important inflammatory molecules and can be used to predict disease progression and cytokine storms that traditional systems cannot detect," said Kevin Hrusovsky, Chairman and Chief Executive Officer, Quanterix and Founder, Powering Precision Health. "These studies represent important advances in detecting life-threatening immune reactions before they occur. Such early detection presents an opportunity to proactively intervene and treat COVID-19 patients with targeted immune modulation therapies, which could save countless lives. We are excited to see these advances being made using Simoa in the fight against COVID-19."

An estimated one-in-five patients will develop a severe or critical form of COVID-19. Experts believe this can be traced to an overproduction of immune molecules, known as a cytokine storm, and attribute many of the crisis's fatalities to this rampant immune reaction. Emerging research suggests that assessment of interferon response, including blood levels of the cytokine IFN-α – which is considered to be one of the earliest indicators of dysregulation of the anti-viral immune response – IL-6 and several other inflammatory biomarkers are among the most promising prognostic markers for severe disease expression.

To further evaluate this theory, two research teams – one from the Institut Pasteur, supported by the Fonds IMMUNOV and the Institut National de la Santé et de la Recherche Médicale (Inserm), and another on behalf of the International Center for Research in Infectious Diseases (CIRI) in Lyon, France – deployed Quanterix' highly sensitive Simoa technology to quantify and profile telltale markers, including inflammatory cytokines, in COVID-19 patients with a range of disease severity. Findings in both studies suggest a correlation between disease severity and low interferon production, suggesting that quantification of IFN production could be a promising strategy for identifying high-risk individuals and informing therapeutic response.

As detailed in *Science,* the Institut Pasteur, Institut Imagine, Inserm, Université de Paris and Assistance publique – Hôpitaux de Paris (AP-HP) conducted an integrated immune analysis that included in-depth phenotypical profiling of immune cells, whole-blood transcriptomic and cytokine quantification on a cohort of fifty COVID-19 patients with a range of disease severity. Patients were tested eight to twelve days following their first symptoms and in the absence of anti-inflammatory therapy. Findings illustrate a profoundly impaired interferon (IFN) type I response characterized by a low interferon production and activity, with consequent downregulation of interferon-stimulated genes. Moreover, the team found this to be associated with persistent blood virus load and characterized by increased interleukin (IL)-6 production and innate immune chemokines.

"Like SARS and MERS before it, COVID-19 has proven capable of restricting the body's natural response to a viral invasion. This can lead to a dysregulation of interferon and compromise the chain of immune response mechanisms that follow," said Darragh Duffy, scientist and member of the Immunobiology of dendritic cells Unit, Institut Pasteur, Inserm. "Because IFN-α concentrations in blood are quite low, it can be difficult to detect, much less quantify. Simoa's high fidelity was instrumental in this effort and enabled us to uncover important correlations among our cohort that could have considerable implications for healthcare workers and their patients."

Although preliminary, the research demonstrates the potential utility of a test for type-I IFN deficiency in the blood to help stratify COVID-19 patients and support earlier intervention for those most likely to experience an acute reaction. Furthermore, findings from both studies offer new insights into the innate immune response and COVID-19 associated deficiencies that could inform ongoing therapeutic development and treatment decisions in clinical settings.

For more details about the scientific study led by the Institut Pasteur, Institut Imagine, Inserm, Université de Paris and AP-HP, read the press release: https://www.pasteur.fr/fr/espace-presse/documents-presse/deficit-interferons-type-1-sang-signature-detecter-patients-risque-forme-severe-covid-19-piste.

For more details about the research projects of the Institut Pasteur on COVID-19, visit: https://www.pasteur.fr/en/all-sars-cov-2-covid-19-institut-pasteur

For more details on these studies and other Simoa-powered publications, visit: https://www.quanterix.com/resources/publications-posters.

Further details on Quanterix' infectious disease offerings and educational resources, can be accessed here: https://www.quanterix.com/therapeutic-areas/infectious-disease.

For more information on CLIA-certified Accelerator Lab services, visit: https://www.quanterix.com/simoa-accelerator-laboratory.

Details on the company's homebrew services for developing customer Simoa assays are available here: https://www.quanterix.com/products-technology/homebrew.

COVID-19 investigators with questions about Simoa or who are in need of testing support are encouraged to contact our team at: https://www.quanterix.com/contact.

About Quanterix
Quanterix is a company that's digitizing biomarker analysis with the goal of advancing the science of precision health. The company's digital health solution, Simoa, has the potential to change the way in which healthcare is provided today by giving researchers the ability to closely examine the continuum from health to disease. Quanterix' technology is designed to enable much earlier disease detection, better prognoses and enhanced treatment methods to improve the quality of life and longevity of the population for generations to come. The technology is currently being used for research applications in several therapeutic areas, including oncology, neurology, cardiology, inflammation and infectious disease. The company was established in 2007 and is located in Billerica, Massachusetts. For additional information, please visit https://www.quanterix.com.

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," "expect," "plan," "anticipate," "estimate," "intend" and similar expressions (as well as other words or expressions referencing future events, conditions or circumstances) are intended to identify forward-looking statements. Forward-looking statements in this news release are based on Quanterix' expectations and assumptions as of the date of this press release. Each of these forward-looking statements involves risks and uncertainties. Factors that may cause Quanterix' actual results to differ from those expressed or implied in the forward-looking statements in this press release are discussed in Quanterix' filings with the U.S. Securities and Exchange Commission, including the "Risk Factors" sections contained therein. Except as required by law, Quanterix 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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Media Contacts:
PAN Communications
Staci Didner, (407) 734-7325
quanterix@pancomm.com

Investor Relations Contact:
Stephen Hrusovsky
(774) 278-0496
shrusovsky@quanterix.com

Source: Quanterix Corporation