Fluidigm CyTOF Technology Used to Evaluate Stem Cell Therapy as a Potential Treatment for COVID-19 Pneumonia

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SOUTH SAN FRANCISCO, Calif., April 02, 2020 (GLOBE NEWSWIRE) -- Fluidigm Corporation (Nasdaq:FLDM), an innovative biotechnology tools provider with a vision to improve life through comprehensive health insight, today announced that Fluidigm® CyTOF® technology was used in a clinical study producing preliminary evidence that mesenchymal stem cell (MSC) therapy improves outcomes in patients with COVID-19 pneumonia, providing key information about potential mechanisms of action of the treatment strategy.

Results of the study, conducted by researchers in China, have been published in *Aging and Disease*.[1]

“We used a 36-marker CyTOF panel to generate a broad immune profile of each patient’s peripheral blood before and after transplantation,” said Wenjing Wang, PhD, Associate Professor at Beijing Hepatology Research Institute, You’an Hospital. “Mass cytometry allowed us to look at all immune populations of interest in a single tube of peripheral blood mononuclear cells, enabling us to use less sample and to simplify our workflow and analysis.”

The study, which evaluated clinical outcomes as well as changes in inflammatory and immune function for 14 days in seven patients with COVID-19 pneumonia, indicated that intravenous transplantation of MSCs was a safe and effective treatment for patients with COVID-19 pneumonia, including for those in severe condition.

Pulmonary function and symptoms of these seven patients were significantly improved within two days of MSC transplantation. Three of the patients, including one classified as severe, recovered and were discharged 10 days after treatment.

CyTOF analysis found that MSC treatment of severe cases led to disappearance in three to six days of overactivated cytokine-secreting immune cells and increases in regulatory T and dendritic cells. Importantly, there was a dramatic increase in a population of CD14+CD11c+CD11b^{mid} regulatory dendritic cells, which may have helped to tamp down the cytokine storm associated with COVID-19 respiratory disease. Separate analysis of patient serum found significant reduction in levels of TNF-α, a potent inflammatory cytokine, while IL-10, an anti-inflammatory cytokine, increased in the MSC treatment group compared to the placebo control group.

“This level of new and valuable treatment research based on broad-based immune profiling is an important front in the COVID-19 fight,” said Chris Linthwaite, President and CEO of Fluidigm. “Fluidigm is actively engaged with many researchers in government and medical institutions who are addressing the COVID-19 pandemic from the perspectives of both immune profiling and virus detection and testing, and this study underscores the critical role that our technologies are playing in the global response to the outbreak.

“In addition to our instruments, our assays and analysis software are increasingly the focus of customers in the global research community exploring immune profiling of COVID-19 infected populations. Our Maxpar® Direct™ Immune Profiling Assay™ and Maxpar Pathsetter™ analysis software ar a solution for labs seeking an easily deployed, fixed panel that can incorporate novel exploratory markers as well as standard markers,” Linthwaite said.

“We are inspired by this opportunity to provide meaningful tools in efforts to develop innovative solutions to this rapidly evolving pandemic.”

About Fluidigm
Fluidigm (Nasdaq:FLDM) focuses on the most pressing needs in translational and clinical research, including cancer, immunology, and immunotherapy. Using proprietary CyTOF® and microfluidics technologies, we develop, manufacture, and market multi-omic solutions to drive meaningful insights in health and disease, identify biomarkers to inform decisions, and accelerate the development of more effective therapies. Our customers are leading academic, government, pharmaceutical, biotechnology, and plant and animal research laboratories worldwide. Together with them, we strive to increase the quality of life for all. For more information, visit fluidigm.com.

Forward-Looking Statements for Fluidigm
This press release contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, including, among others, statements regarding the implementation of Fluidigm microfluidics technology and products by third parties and the anticipated benefits of, and applications and demand for, such products. Forward-looking statements are subject to numerous risks and uncertainties that could cause actual results to differ materially from currently anticipated results, including but not limited to risks relating to the potential adverse effects of the coronavirus pandemic on our business and operating results during 2020; challenges inherent in developing, manufacturing, launching, marketing, and selling new products; risks relating to company research and development and distribution plans and capabilities; interruptions or delays in the supply of components or materials for, or manufacturing of, Fluidigm products; potential product performance and quality issues; intellectual property risks; and competition. Information on these and additional risks and uncertainties and other information affecting Fluidigm business and operating results is contained in Fluidigm’s Annual Report on Form 10-K for the year ended December 31, 2019, and in its other filings with the Securities and Exchange Commission. These forward-looking statements speak only as of the date hereof. Fluidigm disclaims any obligation to update these forward-looking statements except as may be required by law.

[1] Leng, Z., Zhu, R., Hou, W. et al. “Transplantation of ACE2 $^{-}$ mesenchymal stem cells improves the outcome of patients with COVID-19 pneumonia.” *Aging and Disease* 11 (2020): 216–228.

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