

FLUIDIGM

Foundational 10,000 Immunomes Project Uses Mass Cytometry to Establish a Reference Standard for the Human Immune System

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Providing the largest source of standardized, multi-omic immune data from healthy human subjects to accelerate translational research

SOUTH SAN FRANCISCO, Calif., Oct. 25, 2018 (GLOBE NEWSWIRE) -- Fluidigm Corporation (NASDAQ:FLDM), a leader in mass cytometry and microfluidics technology, today announced the publication of the [10,000 Immunomes Project](#) (10KIP), a seminal human immune reference standard containing mass cytometry immune cell profiles, by investigators at the University of California, San Francisco (UCSF), and the Northrop Grumman Information Systems Health IT.

Released in [Cell Reports](#), the 10KIP reference includes standardized measurements of the immune system from 10,344 healthy human subjects varying by age, sex, ethnicity and state of pregnancy. It represents the careful curation and harmonization of data from 42,000 samples collected across 83 different studies, all openly accessible at ImmPort ([immport.org](#)), a resource center supported by the National Institute of Allergy and Infectious Diseases (NIAID). Providing results from 10 different data types, the 10KIP reference includes standardized measurements of immune cell profiles, cytokines, gene expression, human leukocyte antigen (HLA) typing and more.

Mass cytometry, a proven method to deeply profile immune cell phenotypes and functions using Fluidigm CyTOF® technology, provided highly informative immune cell datasets within the 10KIP. Referenced by hundreds of peer-reviewed publications around the world, mass cytometry transcends the inherent technical limitations of flow cytometry to enable interrogation of over 40 parameters at a time, including both cell surface and intracellular protein markers.

"We are thrilled that so many investigators are making many types of extremely detailed measurements of the human immune system, including through CyTOF technology, and sharing their de-identified cellular and molecular data through ImmPort. The 10KIP represents the collective work of hundreds of investigators and thousands of study participants and shows the power of open data sharing, where we can now enable new investigators to combine datasets and ask questions the original investigators might never have thought of," said Atul Butte, Principal Investigator for ImmPort and Distinguished Professor at UCSF.

In the *Cell Reports* article, detailed analysis of mass cytometry-defined immune cell profiles within the 10KIP uncovered a number of interesting findings. Specific immune cells types including CD4+, CD8+ and gamma-delta T cell subsets were shown to be highly diverse in the healthy human population, while others were shown to be relatively consistent. Additionally, four immune cell types were identified that differ by race, while 20 varied with age, and seven varied by sex. Upon further investigation, a number of known functional correlations between immune cell phenotypes and cytokine expression were confirmed, and other new associations were identified. Each of these observations aids in building a more comprehensive understanding of the immune system.

"The development of large-scale multi-omic reference standards for the human immune system is essential to advancing our understanding of human disease and ultimately improving patient outcomes," said Chris Linthwaite, President and CEO of Fluidigm. "The contribution of mass cytometry to the initial findings from this study is truly impressive. We look forward to the new insights in the immune cell repertoire that will come from the application and expansion of this valuable community resource."

About Fluidigm Corporation

Fluidigm (NASDAQ:FLDM) develops, manufactures, and markets life science analytical and preparatory systems for markets such as mass cytometry, high-throughput genomics, and single-cell genomics. We sell to leading academic institutions, clinical research laboratories, and pharmaceutical, biotechnology, and agricultural biotechnology companies worldwide. Our systems are based on proprietary microfluidics and multiparameter mass cytometry technology and are designed to significantly simplify experimental workflow, increase throughput, and reduce costs while providing excellent data quality. Fluidigm products are provided for Research Use Only. Not for use in diagnostic procedures.

We use our website ([www.fluidigm.com](#)), corporate Twitter account ([@fluidigm](#)), Facebook page (<https://www.facebook.com/fluidigm>), and LinkedIn page (<https://www.linkedin.com/company/fluidigm-corporation>) as channels of distribution of information about our products, our planned financial and other announcements, our attendance at upcoming investor and industry conferences, and other matters. Such information may be deemed material information, and we may use these channels to comply with our disclosure obligations under Regulation FD. Therefore, investors should monitor our website and our social media accounts in addition to following our press releases, SEC filings, public conference calls, and webcasts.

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Forward-Looking Statements

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 potential impact of Fluidigm products on translational research. 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 challenges inherent in developing, manufacturing, launching, marketing, and selling new products; the uncertain regulatory environment; potential product performance and quality issues; intellectual property risks; competition; and interruptions or delays in the supply of components or materials for, or manufacturing of, Fluidigm products. Information on these and additional risks and uncertainties and other information affecting Fluidigm business and operating results are contained in Fluidigm's Annual Report on Form 10-K for the year ended December 31, 2017, and in its other filings

with the Securities and Exchange Commission, including Fluidigm's Quarterly Report on Form 10-Q for the quarter ended June 30, 2018. 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.

Contacts:

Media:

Michaeline Bunting
Senior Director, Marketing
650 737 4190
michaeline.bunting@fluidigm.com

Investors:

Agnes Lee
Vice President, Investor Relations
650 416 7423
agnes.lee@fluidigm.com



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