# Landmark Nature Publication Demonstrates the Power of the Fluidigm Hyperion Imaging System to Identify Novel Cellular Signatures That Correlate with Distinct Clinical Outcomes

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**Retrospective Clinical Study Uses Highly Multiplexed Imaging Mass Cytometry to Reveal Previously Unknown Features of the Tumor Microenvironment and Novel Breast Cancer Subgroups**

SOUTH SAN FRANCISCO, Calif., Jan. 20, 2020 (GLOBE NEWSWIRE) -- Fluidigm Corporation (NASDAQ:FLDM), the global leader in high-multiplex single-scan tissue imaging, today announced that a new landmark study demonstrates the potential for Imaging Mass Cytometry™ (IMC™) on the Hyperion™ Imaging System to transform tissue pathology by identifying cellular signatures within tissue microenvironments that correlate with clinical outcomes.

The innovative study suggests highly multiplexed spatial information at single-cell resolution has the potential to improve patient-specific treatment selection in the future. Researchers at the University of Zurich, University of Cambridge and University of Basel conducted the 352-patient study, results of which have been published today in Nature1.

The Hyperion Imaging System is revolutionizing translational and clinical research by providing unprecedented visualization of complex cellular phenotypes and their relationships in the context of cancer, immuno-oncology and immune-mediated diseases. Using the dual capability to perform both mass cytometry and IMC, researchers can deeply profile a wide range of samples from blood to tissues, all on the same system.

“Single-cell analyses have shown that there is extensive variation between and within patients with cancer, but data from these analyses are not included in the current histopathology-based approaches to identifying cancer subtypes that form the basis for many clinical decisions,” said Bernd Bodenmiller, PhD, Director of the Department of Quantitative Biomedicine at the University of Zurich. “The results of our study demonstrate that highly multiplexed IMC provides a superior approach to identify single-cell signatures that correlate with clinical outcomes compared with current histology-based approaches. Our findings suggest that highly multiplexed multicellular spatial information is medically relevant and has the potential to improve precision medicine in the future.”

The published study used the Fluidigm® Hyperion Imaging System to simultaneously quantify 35 biomarkers, generating 720 high-dimensional pathology images of tumor tissue from 352 patients with breast cancer for whom long-term survival data were available. Spatially resolved single-cell analysis identified the phenotypes and spatial organization of single cells within the tumor and in the surrounding microenvironment. This enabled deep characterization of breast cancer architecture at single-cell resolution.

Key findings from the study include:

The Fluidigm Hyperion Imaging System enables single-cell resolution of protein expression profiles and spatial location within a complex tissue, such as breast cancer.
Analysis of single-cell protein expression and spatial data identified 14 main clusters containing common cellular subtypes and also identified 18 single-cell pathology (SCP) groups that differed from the traditional pathology-based subtypes and had distinct clinical outcomes between patients and between other SCP subgroups in the same pathology classification and other SCP subgroups with similar cellular composition but distinct architecture.
“This landmark study is the first to demonstrate the potential clinical value of highly multiplexed Imaging Mass Cytometry to identify breast cancer subtypes that correlate with clinical outcomes,” said Chris Linthwaite, President and CEO of Fluidigm. “By shedding new light with single-cell spatial images and data about the features of the tumor microenvironment, we believe this study will further increase adoption of IMC in translational and clinical research to deliver better predictive and personalized approaches to cancer care in the future.”

About Imaging Mass Cytometry
Imaging Mass Cytometry is setting a new standard in tissue imaging, significantly simplifying high-multiplex panel design and eliminating the impact of tissue autofluorescence by using highly pure metal tags for which signals are separated by mass instead of by wavelength. Incorporating an easy-to-use immunohistochemistry workflow that simultaneously detects many proteins in a single scan, IMC is ideal for uncovering new insights in health and disease and empowering the development of better diagnostics and more effective therapies.

About Fluidigm
Fluidigm (NASDAQ:FLDM) is an industry-leading biotechnology tools provider with a vision to improve life through comprehensive health insight. We focus 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.

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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 market growth and demand, and the anticipated benefits to customers of, and applications for, Fluidigm 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 challenges inherent in developing, manufacturing, launching, marketing, and selling new products; potential product performance and quality issues; intellectual property risks; competition; uncertainties in contractual relationships; and reductions in research and development spending or changes in budget priorities by customers. 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, 2018, 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.

Reference
1 Jackson, H.W., Fischer, J.R., Zanotelli, V.R. et al. "The single-cell pathology landscape of breast cancer." Nature. 20 January 2020, DOI: 10.1038/s41586-019-1876-x.

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