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## Singapore Centre Opens Door For Asian Biological Discoveries

### Centre Dedicated to Diagnosis and Treatment Derived from Single-Cell Exploration Singapore Single-Cell Research Centre Opens Door For Asian Biological Discoveries

SINGAPORE; SOUTH SAN FRANCISCO, Calif. – April 12, 2013 – Government officials, academic, and industry leaders gathered to celebrate the official opening of the Single-Cell Omics Centre (SCOC) in Singapore today. It is the first research centre in Asia exclusively dedicated to accelerating the understanding of how individual cells work, and how diagnosis and treatment might be enhanced through insight derived from single cells. This centre will be an important resource for both academic and industry researchers in Singapore and the region, who are keen to access integrated analytics for single-cell genomic applications.

Single-cell genomics is one of the hottest emerging areas of study in life sciences research. It is poised to help solve some of the most fundamental biological mysteries of our time and could lead to new ways to diagnose, treat and prevent diseases such as cancer (breast, prostate, leukemia, etc.), diabetes, memory loss, heart disease and more. For example, scientists now know that the loss of sight (macular degeneration), the biology of aging, and the spreading of infectious diseases all involve important single-cell phenomena that need to be studied.

The Single-Cell Omics Centre is a collaboration between the Genome Institute of Singapore (GIS), an institute under the umbrella of the Agency for Science, Technology and Research (A\*STAR), and Fluidigm Corporation, an industry leader in single-cell genomics. Fluidigm became the first biochip company to set up shop in Singapore in 2005.

In attendance at today's grand opening were A\*STAR Chairman Lim Chuan Poh, Biomedical Research Council Executive Director Benjamin Seet, Biomedical Research Council Director of Industry Development Jonathan Kua, Genome Institute of Singapore Executive Director Ng Huck Hui, EDBI Executive Vice President, Corporate Finance & Planning, Eugene Khoo, Economic Development Board Head of Medical Technology Lim Tse Yong, Fluidigm Co-founder, President and Chief Executive Officer Gajus Worthington, Fluidigm Executive Vice President, Research & Development Robert Jones, and Fluidigm Executive Vice President, Worldwide Manufacturing, and Managing Director of Fluidigm Singapore Grace Yow.

"The opening of the Single-Cell Omics Centre today is a perfect example of an academic-industry partnership. By encouraging multi-disciplinary collaborations, this centre will play a key role in developing Singapore's R&D capabilities and scientific know-how. It is also envisioned that this will lead to new, potentially life-saving applications in the regional biomedical sector," said Mr. Lim Chuan Poh, Chairman A\*STAR.

"Fluidigm is an industry leader in single cell genomics and we are proud to have played a critical role in supporting its growth as its first Asian investor," said Ms. Chu Swee Yeok, Chief Executive Officer and President, EDBI. "The company established the biochip facility in Singapore in 2005 and with EDBI's support, undertook a full range of manufacturing and R&D activities, leveraging on Singapore's strengths for its global and Asian needs. The Single-Cell Omics Center is an extension of Fluidigm's growing activities in Singapore and more significantly, an initiative that will help strengthen its leadership in this important field."

The SCOC is a dedicated 25 square-meter laboratory in GIS facilities in Biopolis, Singapore. It features advanced next generation genomic equipment and sequencing technologies. This includes the Fluidigm C1™ Single-Cell Auto Prep System, which automatically isolates individual cells from small tissue quantities or larger cell populations. This installation of a C1 system was one of the first in the world. The centre will also house the Fluidigm BioMark™ HD System that performs single-cell gene expression analytics and validation. Both instruments are manufactured at Fluidigm's factory in Singapore.

The SCOC expects to attract top researchers from Asia to conduct single-cell experimentation for foundational research. Scientists from various fields of biology can band together at the SCOC to learn how stem cells might be re-programmed for therapeutic treatments in the future, or to discover how various diseases work so they can develop new drugs or treatments to cure the sickly, or how to personalize medical care so it can meet the need of each patient.

Initially the SCOC is focusing on single-cell analysis of cancer, looking at lung and colon cancers in solid and circulating tumour cell (CTC) forms. CTCs are cells that have shed from the tumour and are circulating in the bloodstream, seeding growth of additional tumours in other organs in the body. Currently samples from solid tumours are studied in aggregate,

grouping all the cells together in a mish-mashed genomic stew. The SCOC expects to develop a method where the cells of solid tumours can be easily converted into cells floating in a liquid solution. Then the C1 Single-Cell Auto Prep System will be used to individually isolate and prepare each cell for complete study and sequencing. This will allow researchers to understand -- for the first time -- what is happening in each cancer cell and also be able to study a thousand different cells individually from a tumour. The centre will compare cells taken directly from the solid tumour and those circulating cells from the same tumour to analyse them for commonalities or differences. If it turns out that CTCs closely correlate with cells from the solid tumour, it could eliminate the need for surgery to get samples from the tumour and allow the disease to be monitored by capturing CTCs from blood -- a liquid biopsy.

One of the SCOC's anticipated follow-on projects will involve the development of methods to compare cells treated with a drug against cells that have not been exposed to the drug in order to measure how differently the cells react. These measurements can then be used to find more effective treatments of disease.

These projects require analysis of a large numbers of cells and the work of the SCOC is expected to enable researchers to process hundreds of cells per day in a cost-effective, efficient manner. These breakthroughs could speed up scientific discovery in biology around the globe.

"Single-cell genomics research is both scientifically interesting and provides researchers with a high likelihood for extraordinary scientific discovery. Individual cells, even from the same tissue, do not function identically, and in order to understand and harness that biology, you have to study them individually. With the opening of this Single-Cell Omics Centre in Singapore, we expect the combination of rich application diversity, groundbreaking science and the endorsement from key opinion leaders throughout Asia to make this centre one of the growth engines of single-cell innovation in the world," said Mr. Gajus Worthington, Fluidigm President and Chief Executive Officer.

GIS Executive Director Prof Ng Huck Hui said, "GIS has identified Single-Cell Genomics as one of our new research frontiers. We are set up to build a repertoire of new research capabilities for single-cell analyses. Our initial collaboration with Fluidigm has borne fruit with the publication of a landmark paper by Dr. Paul Robson. This larger and very important collaboration will see an even greater synergy between the technologies from GIS and Fluidigm."

"Since the late 1830's we have known the cell is the foundational unit of life but have been challenged to comprehensively study biology at this level. The technology has now arrived to do this and the local research and medical communities are abuzz with the possibilities," said Dr. Paul Robson, GIS Principal Investigator. "The Single-Cell Omics Centre aims to facilitate community access to these microfluidic technologies and thus enable unparalleled insight into underlying biological mechanisms operative in health and disease," he concluded.

## About Fluidigm

Fluidigm (NASDAQ:FLDM) develops, manufactures and markets microfluidic systems for growth markets in the life science and agricultural biotechnology, or Ag-Bio, industries. Fluidigm's proprietary microfluidic systems consist of instruments and consumables, including integrated fluidic circuits (IFCs), assays and other reagents. These systems are designed to significantly simplify experimental workflow, increase throughput and reduce costs, while providing the excellent data quality demanded by customers. Fluidigm actively markets four microfluidic systems, including 13 different IFCs, to leading academic institutions, clinical laboratories, and pharmaceutical, biotechnology and Ag-Bio companies. Fluidigm products are marketed for Research Use Only. Not for use in diagnostic procedures. For more information, please visit:

[www.fluidigm.com](http://www.fluidigm.com).

## ABOUT THE GENOME INSTITUTE OF SINGAPORE

The Genome Institute of Singapore (GIS) is an institute of the Agency for Science, Technology and Research (A\*STAR). It has a global vision that seeks to use genomic sciences to improve public health and public prosperity. Established in 2001 as a centre for genomic discovery, the GIS will pursue the integration of technology, genetics and biology towards the goal of individualized medicine. The key research areas at the GIS include computational & systems biology, stem cell and developmental biology, cancer stem cell biology, cancer therapeutics and stratified oncology, human genetics, infectious diseases, genomic technologies and translational technologies. The genomics infrastructure at the GIS is utilized to train new scientific talent, to function as a bridge for academic and industrial research, and to explore scientific questions of high impact. Please visit: <http://www.gis.a-star.edu.sg>

## ABOUT THE AGENCY FOR SCIENCE, TECHNOLOGY AND RESEARCH (A\*STAR)

The Agency for Science, Technology and Research (A\*STAR) is Singapore's lead public sector agency that fosters world-class scientific research and talent to drive economic growth and transform Singapore into a vibrant knowledge-based and innovation driven economy. In line with its mission-oriented mandate, A\*STAR spearheads research and development in

fields that are essential to growing Singapore's manufacturing sector and catalysing new growth industries. A\*STAR supports these economic clusters by providing intellectual, human and industrial capital to its partners in industry. A\*STAR oversees 20 biomedical sciences and physical sciences and engineering research entities, located in Biopolis and Fusionopolis as well as their vicinity. These two R&D hubs house a bustling and diverse community of local and international research scientists and engineers from A\*STAR's research entities as well as a growing number of corporate laboratories. Please visit: <http://www.a-star.edu.sg>

## **ABOUT EDBI**

EDBI is a leading strategic investment firm headquartered in Singapore, with a worldwide presence investing to drive growth opportunities within the knowledge and innovation-intensive sectors of Biomedical Sciences (through its subsidiary Bio\*One Capital), Clean Technologies, Internet & Digital Media, as well as key industries in Singapore. As a value adding investor, EDBI creates sustainable and synergistic partnerships with its portfolio companies, leveraging on its extensive networks and experience to facilitate the companies' growth in Asia and the world, through their operations in Singapore. Please visit: <http://www.edbi.com>

## **USE OF FORWARD-LOOKING STATEMENTS**

This press release contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995 including statements relating to the field of single-cell genomics research, potential developments in the emerging market, and expectations regarding current and future projects at the SCOC . Forward-looking statements are subject to numerous risks and uncertainties that could cause actual results to differ materially from currently anticipated results, including risks relating to research and development activities and the development of emerging markets. Information on these and additional risks affecting Fluidigm's business and operating results are contained in its filings with the Securities and Exchange Commission, including its most recently filed Annual Report on Form 10-K for the year ended December 31, 2012. These forward-looking statements speak only as of the date hereof and Fluidigm disclaims any obligation to update these statements.

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