

Madison, WI, USA, May 28, 2009

Genome Institute of Singapore and Roche NimbleGen: Tracking the Evolutionary Path of the novel H1N1 Influenza A

The recent outbreak of the flu virus, the new strain of Influenza A (nH1N1), has rapidly spread around the world. Many experts are concerned for the evolutionary track of this new strain and whether it will mutate or re-assort with other influenza strains to potentially produce a more deadly strain, as the world experienced with the 1918 strain. To identify these mutations and re-assortments, a team at the Genome Institute of Singapore has developed a novel “generic” Polymerase Chain Reaction (PCR) approach that can amplify the full genome of any influenza A virus; followed by NimbleGen microarray-based hybridization sequencing, that allows a rapid turn around for entire genomes (as many as 36 a day with one chip reader device) in about 24 hours.

This new method can use the same RNA material that is left over from traditional PCR based diagnostics and can recognize any novel strain of Influenza in the first pass. This will enable a faster development of diagnostics for any possible new variant; it also can rapidly determine if the strain of DNA changed to become even more dangerous e.g. in terms of drug resistance.

Working in close collaboration with scientists from Roche NimbleGen, and utilizing the flexibility that the NimbleGen platform offers, the first arrays were designed, manufactured, and shipped to Singapore just 4 days after the project was started. The custom-developed high-density microarray contains probes which can reveal the complete sequence of the flu virus from patient samples (nasal swabs/nasal pharyngeal wash). This will enable detection of any single base mutations in the regions of the genome, which is important for drug susceptibility. Where virus re-assortment has occurred, it will be able to identify which strain of Influenza A it has recombined with, as well as the genomic location of the re-assortment to better understand and track the evolutionary path and variants of the virus.

Dr. Christopher Wong, Chief Scientific Officer for Biomarker Development at the GIS said, “This new approach takes advantage of our novel PCR technology, developed for detecting a wide range of pathogens. This should greatly simplify the process of sequencing novel viruses.”

Dr. Gerd Maass, CEO of Roche NimbleGen, stated: “With the development of this new system, the entire project team hopes to better and more quickly track this new flu variant and keep the world informed of how the virus is evolving.”

GIS Executive Director Prof Edison Liu added, "The significance of this tracking process can be better appreciated in that it provides vital information that can be used to prevent or combat a pandemic.”

A similar approach using NimbleGen arrays was used successfully during the SARS outbreak in 2003 to understand the infectious source and to globally monitor the SARS virus¹.

Roche NimbleGen is a leading innovator, manufacturer, and supplier of a proprietary suite of DNA microarrays, consumables, instruments and services. Roche NimbleGen produces high-density arrays of long oligonucleotide probes that provide greater information content and higher data quality necessary for studying the full diversity of genomic and epigenomic variation. The enhanced performance is made possible by Roche NimbleGen’s proprietary Maskless Array Synthesis (MAS) technology, which uses digital light processing and rapid, high-yield photochemistry to synthesize long oligonucleotide, high-density DNA microarrays with extreme flexibility. For more information about Roche NimbleGen, please visit the company’s website at www.nimblegen.com

About Roche

Headquartered in Basel, Switzerland, Roche is a leader in research-focused healthcare with combined strengths in pharmaceuticals and diagnostics. Roche is the world’s largest biotech company with truly differentiated medicines in oncology, virology, inflammation, metabolism and CNS. Roche is also the world leader in in-vitro diagnostics, tissue-based cancer diagnostics and a pioneer in diabetes management. Roche’s personalized healthcare strategy aims at providing medicines and diagnostic tools that enable tangible improvements in the health, quality of life and survival of patients.

In 2008, Roche had over 80,000 employees worldwide and invested almost 9 billion Swiss francs in R&D. The Group posted sales of 45.6 billion Swiss francs. Genentech, United States, is a wholly owned member of the Roche Group. Roche has a majority stake in Chugai Pharmaceutical, Japan. For more information: www.roche.com.

About the Genome Institute of Singapore (www.gis.a-star.edu.sg)

The Genome Institute of Singapore (GIS) is a member of the Agency for Science, Technology and Research (A*STAR). It is a national initiative with 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 Systems Biology, Stem Cell & Developmental Biology, Cancer Biology & Pharmacology, Human Genetics, Infectious Diseases, Genomic Technologies, and Computational & Mathematical Biology. 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.

About the Agency for Science, Technology and Research (A*STAR)
(www.a-star.edu.sg)

A*STAR is Singapore's lead agency for fostering world-class scientific research and talent for a vibrant knowledge-based Singapore. A*STAR actively nurtures public sector research and development in Biomedical Sciences, Physical Sciences and Engineering, with a particular focus on fields essential to Singapore's manufacturing industry and new growth industries. It oversees 22 research institutes, consortia and centres, and supports extramural research with the universities, hospital research centres and other local and international partners. At the heart of this knowledge intensive work is human capital. Top local and international scientific talent drive knowledge creation at A*STAR research institutes. The Agency also sends scholars for undergraduate, graduate and post-doctoral training in the best universities, a reflection of the high priority A*STAR places on nurturing the next generation of scientific talent.

NIMBLEGEN is a trademark of Roche.

For further information please contact:

Roche Diagnostics

Dr. Burkhard Ziebolz

Phone: +49 8856 604830

burkhard.ziebolz@roche.com

Roche NimbleGen

Kary Staples

Phone: +1 608 218 7623

Email: kary.staples@roche.com

Genome Institute of Singapore

Winnie Serah Lim

Tel: (65) 6478 8013

(65) 9730 7884

Email: limcp2@gis.a-star.edu.sg