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## MEDIA RELEASE

### **Genomics Study to Help with Understanding Infection Control and Longevity** *Alexandra Health signs MOU with Genome Institute of Singapore*

**Singapore** – Alexandra Health Pte Ltd (Alexandra Health) and Genome Institute of Singapore (GIS) today signed a Memorandum of Understanding (MOU) for a long-term collaboration to conduct genomic research on various healthcare areas.

2                   The impact of genomics on healthcare is widely acknowledged. Most of the techniques to date are focused on the genomes of illness e.g. the detection of genetic disorders by DNA analysis, and targeted therapies to treat disorders such as chronic pain.

3                   The MOU between Alexandra Health and GIS aims to enhance understanding the impact of genes on infection and health, with a view to developing clinical applications. Two initial areas of collaboration have been identified: using genomics to study patterns in MRSA infections as well as in understanding the structure and contribution of longevity genes to healthy active lives.

#### MRSA-related studies

4                   *Staphylococcus (staph) aureus* is a bacteria commonly found on skin and in the nose. It can cause a wide range of illnesses – from pimples and boils to pneumonia, meningitis and sepsis. In the healthcare setting, the methicillin-resistant forms of *staph aureus* (MRSA) are a significant problem as patients with open wounds, weak immune systems and invasive medical devices such as intravenous plugs and nasogastric tubes are more susceptible to infection. MRSA infections are resistant to most forms of treatment except strong antibiotics and can be fatal.

5                   Under the collaboration, three MRSA-related studies have been planned to increase understanding of how MRSA spreads and identify ways to improve clinical processes and treatment methods. They are:

a) Pilot study to explore protective factors in nasal flora

This study aims to understand why some people have nasal carriage of *staph aureus* while others do not. It will involve subjects from nursing homes, who are at high risk for MRSA, and healthcare workers who are healthy. They will have their nasal flora swabbed three times over 12 months to identify trends in flora composition that offer protection from *staph aureus*. Previous studies have shown that certain strains of bacteria are a natural deterrent to *staph aureus*.

b) Study of nosocomial (hospital-acquired) organisms at Khoo Teck Puat Hospital (KTPH)

This study will explore the rate at which nosocomial species start to emerge in a new hospital environment.

c) Effect of antibiotics on MRSA penetration among inpatients

This study will examine the effects of antibiotic therapy on patients who have protective bacterial flora in the nose, as antibiotics kill such flora and allow the penetration of *staph aureus* or MRSA.

#### Study of the genomics of longevity

6 Singapore's ageing demographic makes the study of longevity and its influencing factors an attractive research area. Studies have shed light on the existence of ageing genes, which accelerate the ageing process, and longevity genes which prolong life. However, these studies are mainly limited to people of European descent. Some studies are also being conducted in Japan. Investigations may yield similarities and/or differences for different ethnicities and environments. In addition, there is an imperfect correlation between genetic data and actual achievement of healthy long lives, which indicate that environmental and lifestyle factors are important considerations. Other pools of evidence, such as culture and tradition as well as habits such as how people eat, interact with each other, avert stress and avoid disease, also need to be considered. As KTPH actively promotes personal responsibility for healthy, active lives through applied and translated knowledge, it is hoped that this collaboration will shed some light on the complex relationships between genes and healthy longevity.

7 "Infection control and promoting health are top priorities for KTPH. Our goal is to achieve the lowest MRSA infection rate in Singapore in 2 years, and one of the lowest infection rates worldwide in 4 years. We also want to help Singaporeans live healthier even as they live longer because chronic disease places a heavy burden on patients, caregivers and the healthcare system. By partnering with GIS, we combine our strengths in healthcare with their expertise in genomics, to find new gene-based ways of dealing with both infection control and health issues relating to the elderly," said Mr Liak Teng Lit, Chief Executive Officer, Alexandra Health.

8 “It is exciting that we are partnering with KTPH on making genomic medicine part of health care in Singapore. These new approaches raise the capabilities and visibility of KTPH in science and in futuristic medicine,” said Prof Edison Liu, Executive Director, Genome Institute of Singapore.

9 Dr Martin Hibberd, Associate Director of Infectious Diseases and Senior Group Leader at the GIS said, “We have a wide range of genomic technologies at the GIS, including extensive sequencing capacity. The human genetics team at the GIS maintains a complete array of genotyping technologies, applicable to support genotyping-based projects of nearly any scale – from a few single-nucleotide polymorphisms (SNPs) in a few samples to millions of SNPs in thousands of samples. Working together with the sequencing group, this allows the use of a wide variety of genomic tools to tackle the complexities of the human genome and apply this to disease, population structures and ageing studies. GIS has utilized these cutting edge genomic technology platforms to investigate infectious diseases from a very novel perspective. Looking at the pathogen, the host and the host response from genomic and transcriptomic approaches has enabled a rapid understanding of the host pathogen interaction during infectious diseases. We aim to decipher the specific effects of variation in the genomes of the host and the pathogen using global networks, both *in vivo* and *in vitro*; and also utilize this genomic information for novel molecular epidemiological studies.”

#### About Alexandra Health

10 Alexandra Health offers multi-disciplinary and holistic care for the patient’s total well-being. Established on 1 April 2008, Alexandra Health is a new healthcare cluster that currently comprises the 550-bed general and acute care Khoo Teck Puat Hospital as well as Jurong Medical Centre. This is part of exciting plans to develop Alexandra Health into an integrated healthcare system to serve the community in the north. Future plans for the cluster include a new community hospital and a medical centre. To find out more about Alexandra Health and Khoo Teck Puat Hospital, visit [www.ktph.com.sg](http://www.ktph.com.sg).

#### About Genome Institute of Singapore

11 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 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. To find out more about the Genome Institute of Singapore, visit [www.gis.a-star.edu.sg](http://www.gis.a-star.edu.sg).