PRESS RELEASE

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Scientists make groundbreaking discovery of genes that increase the likelihood of causing a form of inflammatory bowel disease

Researchers at the Genome Institute of Singapore (GIS), Associate Director for Infectious Diseases Dr Martin Hibberd and Assoc Prof Mark Seielstad; and the Karolinska Institutet (KI) in Stockholm, Sweden, Assoc Prof Leif Törkvist, Assoc Professor Mauro D’Amato and Prof Sven Pettersson, have collaborated with research teams from the USA, the Netherlands, and Italy to identify genes increasing the likelihood of developing ulcerative colitis (UC), a form of Inflammatory Bowel Diseases (IBD).

The study, which was published in the prestigious science journal Nature Genetics on 14 March 2010, identified as many as 30 human genes which contribute to ulcerative colitis susceptibility.

Chronic inflammatory diseases (CIDs) comprise a class of disorders characterized by severe immune dysregulation and inflammation of otherwise healthy tissue. CIDs have a significant socio-economic impact, and affect up to 10% of the population in industrialized societies, including Singapore. It is known that many CIDs have a considerable genetic predisposition, including IBD. Crohn’s disease (CD) and UC, the two major forms of IBD, manifest as chronic inflammation of the gastrointestinal tract, and recent data indicate that the gut microbiota may contribute to the perpetuation of the inflammatory process in genetically susceptible individuals.
Scanning the entire human genome for genes predisposing to CIDs is very costly and technologically demanding, and requires considerable well defined clinical material and data. In recent years, the GIS, a biomedical research institute of the Agency for Science, Technology and Research (A*STAR), and KI have successfully collaborated and identified biomarkers for multiple CIDs including rheumatoid arthritis, psoriasis, and, now, ulcerative colitis.

Dr Mark Seielstad of the GIS hailed the new study as “A significant leap in our understanding of the genetic underpinnings of this important human disease of rapidly increasing incidence here in Singapore. Each of these novel genes represents a potential new target for therapeutic drug development, greatly increasing our chances of controlling this illness in future generations.”

Dr Martin L. Hibberd added, "This study identifies specific ways in which an alteration in the microbe-human interaction can lead to this disease, and in fact is already setting off new research to look at how microbes are involved in initiating the disease. This will hopefully lead to more effective ways to treat this and perhaps related diseases in the future."

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**Notes to the Editor:**

**Research publication:**

The research findings described in the press release can be found in the 14 March 2010 online issue of *Nature Genetics* under the title “Genome-wide association identifies multiple ulcerative colitis susceptibility loci”.
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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 Karolinska Institutet
http://ki.se
Karolinska Institutet is one of the leading medical universities in Europe. Through research and education Karolinska Institutet contributes to improving human health. Each year, the Nobel Assembly at Karolinska Institutet awards the Nobel Prize in Physiology or Medicine. For more information, please visit ki.se.

About the Agency for Science, Technology and Research (A*STAR)
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