

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."

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”.

Authors:

Dermot P B McGovern¹, Agnès Gardet², Leif Törkvist³, Philippe Goyette⁴, Jonah Essers⁵, Kent D Taylor⁶, Benjamin M Neale⁵, Rick T H Ong⁷, Caroline Lagacé⁴, Chun Li², Todd Green⁸, Christine R Stevens⁸, Claudine Beauchamp⁴, Phillip R Fleshner¹, Marie Carlson⁹, Mauro D'Amato¹⁰, Jonas Halfvarson¹¹, Martin L Hibberd¹², Mikael Lördal¹³, Leonid Padyukov¹⁴, Angelo Andriulli¹⁵, Elisabetta Colombo¹⁵, Anna Latiano¹⁵, Orazio Palmieri¹⁵, Edmond-Jean Bernard¹⁶, Colette Deslandres¹⁷, Daan W Hommes¹⁸, Dirk J de Jong¹⁹, Pieter C Stokkers²⁰, Rinse K Weersma²¹, The NIDDK IBD Genetics Consortium²², Yashoda Sharma²³, Mark S Silverberg²⁴, Judy H Cho^{23,25}, Jing Wu²⁶, Kathryn Roeder²⁷, Steven R Brant²⁷, L Phillip Schumm²⁸, Richard H Duerr²⁹, Marla C Dubinsky¹, Nicole L Glazer³⁰, Talin Haritunians⁶, Andy Ippoliti¹, Gil Y Melmed¹, David S Siscovick³⁰, Eric A Vasiliauskas¹, Stephan R Targan¹, Vito Annese¹⁵, Cisca Wijmenga³¹, Sven Pettersson^{32,33}, Jerome I Rotter⁶, Ramnik J Xavier^{2,8}, Mark J Daly^{5,8}, John D Rioux⁴ & Mark Seielstad^{7,34}.

1. Inflammatory Bowel and Immunobiology Research Institute, Cedars-Sinai Medical Center, Los Angeles, California, USA.
2. Center for Computational and Integrative Biology and Gastrointestinal Unit, Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts, USA.
3. Department for Clinical Science Intervention and Technology, Karolinska Institutet and IBD Clinical Research Group at Karolinska University Hospital, Stockholm, Sweden.
4. Université de Montréal and the Montreal Heart Institute, Research Center, Montréal, Québec, Canada.
5. Center for Human Genetic Research, Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts, USA.
6. Medical Genetics Institute, Cedars-Sinai Medical Center, Los Angeles, California, USA.
7. Human Genetics, Genome Institute of Singapore, Singapore.

8. The Broad Institute of MIT and Harvard, Cambridge, Massachusetts, USA.
9. Department of Medical Sciences, Gastroenterology Research Group, Uppsala University Hospital, Uppsala, Sweden.
10. Department of Biosciences and Nutrition, Karolinska Institutet, Stockholm, Sweden.
11. Division of Gastroenterology, Department of Internal Medicine, Örebro University Hospital, Örebro, Sweden.
12. Infectious Diseases, Genome Institute of Singapore, Singapore.
13. Department of Medicine, and IBD Clinical Research Group at Karolinska University Hospital, Stockholm, Sweden.
14. Rheumatology Unit, Department of Medicine, Karolinska Institutet at Karolinska University Hospital Solna, Stockholm, Sweden.
15. Gastroenterologia ed Endoscopia Digestiva, Ospedale 'Casa Sollievo della Sofferenza', Istituto di Ricovero e Cura a Carattere Scientifico, San Giovanni Rotondo, Italy.
16. Université de Montréal and Centre Hospitalier Universitaire de l'Université de Montréal, Montréal, Québec, Canada.
17. Department of Gastroenterology, Hôpital Sainte-Justine, Montréal, Québec, Canada.
18. Department of Gastroenterology and Hepatology, Leiden University Medical Center, Leiden, The Netherlands.
19. Department of Gastroenterology and Hepatology, Radboud University Nijmegen Medical Centre, Nijmegen, The Netherlands.
20. Department of Gastroenterology and Hepatology, Academic Medical Center, Amsterdam, The Netherlands.
21. Department of Gastroenterology and Hepatology, University Medical Center Groningen, University of Groningen, Groningen, The Netherlands.
22. National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK).
23. Section of Digestive Diseases, Department of Medicine, Yale University, New Haven, Connecticut, USA.
24. Mount Sinai Hospital Inflammatory Bowel Disease Group, University of Toronto, Toronto, Ontario, Canada.

25. Department of Genetics, Yale University, New Haven, Connecticut, USA.
26. Department of Statistics, Carnegie Mellon University, Pittsburgh, Pennsylvania, USA.
27. Johns Hopkins University School of Medicine, Department of Medicine, and Johns Hopkins University Bloomberg School of Public Health, Department of Epidemiology, Baltimore, Maryland, USA.
28. Department of Health Studies, University of Chicago, Chicago, Illinois, USA.
29. Division of Gastroenterology, Hepatology and Nutrition, Department of Medicine, University of Pittsburgh School of Medicine, and Department of Human Genetics, Graduate School of Public Health, University of Pittsburgh, Pittsburgh, Pennsylvania, USA.
30. Cardiovascular Health Research Unit, Departments of Epidemiology and General Medicine, University of Washington, Seattle, Washington, USA.
31. Department of Genetics, University Medical Center Groningen and Groningen University, Groningen, The Netherlands.
32. Department of Microbiology Tumor and Cell Biology, Karolinska Institutet, Stockholm, Sweden.
33. Laboratory of Inflammation Biology, Singapore General Hospital, Singapore.
34. Program in Molecular and Genetic Epidemiology, Harvard School of Public Health, Boston, Massachusetts, USA.

Correspondence and further enquiries on the study:

Singapore:

Associate Professor Mark Seielstad
Phone: +65-91465304
E-mail: seielstadm@gis.a-star.edu.sg
Address: Genome Institute of Singapore

60 Biopolis Street
#02-01 Genome
Singapore 138672
Website: www.gis.a-star.edu.sg
Tel: (65) 6808 8000 Fax: (65) 6808 8292

Karolinska Institutet
SE-171 77
Stockholm
Website: <http://ki.se>
Tel: (46) 852 480 000 Fax: (46) 831 110 1

Assistant Professor **Martin Hibberd**
Phone: +65-68088087
E-mail: hibberdml@gis.a-star.edu.sg
Address: Genome Institute of Singapore

Sweden:

Associate Professor **Leif Torkvist**
Phone: +46 (0)8
E-mail: leif.torkvist@ki.se
Address: CLINTECH, Huddinge

Associate Professor **Mauro D'Amato**
Phone: +46 (0)8 6089143
E-mail: mauro.damato@ki.se
Address: Department of Biosciences and Nutrition, Huddinge

Professor **Sven Pettersson**
Scientific Coordinator Singapore
Phone: +46 (0)8-524 866 86
E-mail: sven.pettersson@ki.se
Address: Department of Microbiology, Tumour and Cell Biology

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)

www.a-star.edu.sg

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Genome Institute
of Singapore

60 Biopolis Street
#02-01 Genome
Singapore 138672
Website: www.gis.a-star.edu.sg
Tel: (65) 6808 8000 Fax: (65) 6808 8292



Karolinska
Institutet

Karolinska Institutet
SE-171 77
Stockholm
Website: <http://ki.se>
Tel: (46) 852 480 000 Fax: (46) 831 110 1

For enquiries, please contact the following:

Genome Institute of Singapore

Winnie Serah Lim

Corporate Communications

Tel: (65) 6478 8013

(65) 9730 7884

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

Karolinska Institutet

Katarina Sternudd

Press Officer

Tel: (46) 8 524 838 95

(46) 70-2243895

E-mail: katarina.sternudd@ki.se