

MEDIA RELEASE

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STUDY LED BY A*STAR'S GENOME INSTITUTE OF SINGAPORE FIND THE GENETIC CAUSES AS TO WHY CAUCASIANS ARE MORE LIKELY TO DEVELOP PSORIASIS THAN ETHNIC CHINESE

Findings open up possibilities for more targeted therapeutic cures for the disease

Singapore — A*STAR's Genome Institute of Singapore (GIS) led an international team of researchers from Singapore, China, USA and Europe to conduct the world's first large-scale, trans-ethnic, genome-wide analysis of DNA samples taken from Caucasian and Chinese populations for the study on the chronic skin disease, psoriasis¹. Findings from the study were published in the scientific journal *Nature Communications*.

The researchers discovered four new genes that render people highly susceptible to psoriasis. By cross-referencing the sequence of 44 genes that influences psoriasis, which included the four recently discovered genes, between 8682 Caucasians and 5134 ethnic Chinese, the international team led by Prof Jianjun Liu, Deputy Director for Research Programmes and Senior Group Leader of Human Genetics found that 10 out of the 44 genes linked to psoriasis susceptibility were found only in Caucasians and not in ethnic Chinese. This finding helps to explain why psoriasis is ten times more prevalent in Caucasians than in ethnic Chinese populations.

The causes of psoriasis are not yet fully understood, but a number of risk factors are recognised as root causes, which include genetic and environmental factors, such as smoking, stress, obesity and alcohol consumption. The study takes some of the guesswork out of identifying the root cause responsible for the prevalence of psoriasis in Caucasian compared to ethnic Chinese populations.

“The discovery indicates that the ethnic difference of psoriasis prevalence is largely due to genetic causes,” said Prof Liu. “With this knowledge, there is now a possibility to design therapeutic cures in an ethnic-specific fashion for psoriasis as

¹ Psoriasis is a long term skin problem that causes skin cells to grow too quickly that results in the formation of thick, white, silvery, or red patches on the skin. While normal skin grows gradually and flakes off every four weeks, skin affected with psoriasis moves rapidly to the surface within days rather than weeks and causes a build up of thick skin patches. Psoriasis occurs when the immune system overreacts to affected skin – causing skin to become inflamed and flaky. Even though psoriasis is not life threatening, those who have it carry a higher risk of developing diabetes, psoriatic arthritis, heart disease and considerable psychosocial disability.

there is currently no cure. The genetic differences in psoriasis susceptibility between ethnically varied populations call for more genetic studies within the Asian population.”

“There are different types of treatments for psoriasis, with each addressing a different root cause of the disease. The only way for a patient to know which treatment best works for his or her condition is to try each over time – this will lead to added costs and time. The benefit of such genetic studies in psoriasis for example, allows the development of future genetic tests that will go a long way to help doctors take the guesswork out of figuring the root cause of disease and shortlist treatments that are known to be the most effective for that patient’s condition,” said Prof Huck-Hui Ng, Executive Director, GIS.

Notes to Editor:

The research findings described in the media release can be found in the scientific journal *Nature Communications*, under the title, “Genome-wide meta-analysis identifies multiple novel associations and ethnic heterogeneity of psoriasis susceptibility” by Xianyong Yin^{1,2,3,4,28}, Hui Qi Low^{5,28}, Ling Wang⁵, Yonghong Li⁶, Eva Ellinghaus⁷, Jiali Han^{8,9,10}, Xavier Estivill¹¹, Liangdan Sun^{1,2,3,4}, Xianbo Zuo^{1,2,3,4}, Changbing Shen^{1,2,3,4}, Caihong Zhu^{1,2,3,4}, Anping Zhang^{1,2,3,4}, Fabio Sanchez¹², Leonid Padyukov¹³, Joseph J Catanese⁶, Gerald G Krueger¹⁴, Kristina Callis Duffin¹⁴, Sören Mucha⁷, Michael Weichenthal¹⁵, Stephan Weidinger¹⁵, Wolfgang Lieb¹⁶, Jia Nee Foo⁵, Yi Li⁵, Karseng Sim⁵, Herty Liany⁵, Ishak Irwan⁵, YikYing Teo¹⁷, Colin TS Theng¹⁸, Rashmi Gupta¹⁹, Anne Bowcock²⁰, Philip L. De Jager^{21,22}, Abrar A. Qureshi^{8,9,22}, Paul I.W. de Bakker^{23,24}, Mark Seielstad^{5,27,§}, Wilson Liao^{19,§}, Mona Ståhle^{12,§}, Andre Franke^{7,§}, Xuejun Zhang^{1,2,3,4,§} & Jianjun Liu^{2,3,4,5,25,26,§}

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About the A*STAR's Genome Institute of Singapore (GIS)

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 achieve extraordinary improvements in human health and public prosperity. Established in 2000 as a centre for genomic discovery, the GIS will pursue the integration of technology, genetics and biology towards academic, economic and societal impact.

The key research areas at the GIS include Human Genetics, Infectious Diseases, Cancer Therapeutics and Stratified Oncology, Stem Cell and Regenerative Biology, Cancer Stem Cell Biology, Computational and Systems Biology, and Translational Research.

The genomics infrastructure at the GIS is utilised to train new scientific talent, to function as a bridge for academic and industrial research, and to explore scientific questions of high impact.

For more information about GIS, please visit: www.gis.a-star.edu.sg

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