



PRESS RELEASE

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NUS researchers find differential impacts of *Blastocystis* strains on gut health

Researchers at NUS Medicine have identified that an organism in the gut, *Blastocystis*, is able to promote or disrupt a healthy bacterial gut profile, depending on the strain.

Singapore, 13 February 2023 — The gut microbiota contains trillions of bacteria that can promote health or cause disease under different conditions. The collective DNA sequences that make up the bacteria flora, is called the microbiome.

A diverse microbiome is usually accepted as an indicator of a healthy state of the gut, as it has a greater capacity for regulating health and combating diseases, while a less diverse one can cause conditions like inflammation disorders, irritable bowel syndrome, stomach cramps, bloating, diarrhea, and constipation. However, the factors that contribute to a diverse or disrupted microbiome, are not well understood.

A team of researchers led by Associate Professor Kevin Tan from the Department of Microbiology and Immunology at the Yong Loo Lin School of Medicine, National University of Singapore (NUS Medicine) has identified an organism, *Blastocystis*, which is able to promote or disrupt a healthy bacterial gut profile, depending on the strain. *Blastocystis* is a common parasite that inhabits the gastrointestinal tracts of humans. The study is published in [Theranostics](#).

In the study, the researchers investigated two strains of *Blastocystis*, ST4 and ST7, and whether they prevent or worsen intestinal disease, through studying their impact on intestinal microbiota, metabolism, and host immune responses.

Blastocystis ST7 is a common gut microbe found in Singapore and the Southeast Asian region. The study showed that when primed with ST7, the strain decreased microbiome diversity and promoted gut inflammation in laboratory models.

However, when the models were primed with *Blastocystis* ST4, a strain more commonly found in Europe and the USA, the models developed a healthy gut microbiome and were protected from gut inflammation.

This study suggests that the same organism can have strikingly different effects, depending on its strain and geographical prevalence. Clinically, the identification of *Blastocystis* in

patients in Southeast Asia, as compared to those in Europe and USA, may have different implications for treatment.

“We are currently investigating if *Blastocystis* ST4 has therapeutic potential against immunological diseases, and are concurrently pursuing studies to define the ways the different strains affect the gut microbiome,” said Associate Professor Tan.

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About National University of Singapore (NUS)

The National University of Singapore (NUS) is Singapore’s flagship university, which offers a global approach to education, research and entrepreneurship, with a focus on Asian perspectives and expertise. We have 16 colleges, faculties and schools across three campuses in Singapore, with more than 40,000 students from 100 countries enriching our vibrant and diverse campus community. We have also established our NUS Overseas Colleges programme in more than 15 cities around the world.

Our multidisciplinary and real-world approach to education, research and entrepreneurship enables us to work closely with industry, governments and academia to address crucial and complex issues relevant to Asia and the world. Researchers in our faculties, research centres of excellence, corporate labs and more than 30 university-level research institutes focus on themes that include energy; environmental and urban sustainability; treatment and prevention of diseases; active ageing; advanced materials; risk management and resilience of financial systems; Asian studies; and Smart Nation capabilities such as artificial intelligence, data science, operations research and cybersecurity.

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About the NUS Yong Loo Lin School of Medicine (NUS Medicine)

The NUS Yong Loo Lin School of Medicine is Singapore’s first and largest medical school. Our enduring mission centres on nurturing highly competent, values-driven and inspired healthcare professionals to transform the practice of medicine and improve health around the world.

Through a dynamic and future-oriented five-year curriculum that is inter-disciplinary and inter-professional in nature, our students undergo a holistic learning experience that exposes them to multiple facets of healthcare and prepares them to become visionary leaders and compassionate doctors and nurses of tomorrow. Since the School’s founding in 1905, more than 12,000 graduates have passed through our doors.

In our pursuit of health for all, our strategic research programmes focus on innovative, cutting-edge biomedical research with collaborators around the world to deliver high impact solutions to benefit human lives.

The School is the oldest institution of higher learning in the National University of Singapore and a founding institutional member of the National University Health System. It is one of the leading medical schools in Asia and ranks among the best in the world (Times Higher Education World University Rankings 2023 by subject and the Quacquarelli Symonds (QS) World University Rankings by subject 2022).

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