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# NTU Singapore launches microbiome research center to find new ways for treating obesity and chronic diseases



BY **BIOENGINEER** — September 14, 2022 in **Cancer**

**Nanyang Technological University, Singapore (NTU Singapore)** today launched the **Centre for Microbiome Medicine** – a research facility that aims to improve human health and find new ways to treat diseases by leveraging the microbiome, which are naturally present microorganisms that play a vital role in our wellbeing.



Credit: NTU Singapore

**Nanyang Technological University, Singapore (NTU Singapore)** today launched the **Centre for Microbiome Medicine** – a research facility that aims to improve human health and find new ways to treat diseases by leveraging the microbiome, which are naturally present microorganisms that play a vital role in our wellbeing.

The research centre at NTU Singapore's **Lee Kong Chian School of Medicine (LKCMedicine)** will work with partners including the National Healthcare Group, Imperial College London, and the Singapore-based precision gut microbiome company AMILI to unravel the mechanisms behind microbiome and diseases.

Thousands of different species of microbes including bacteria and fungi live in and on the human body. In healthy individuals, the microbes exist peacefully. However, in unhealthy individuals, the imbalance of the microbes causes the body to be more susceptible to disorders such as obesity, metabolic diseases, cancers, lung, and skin diseases.

The new research centre is led by Programme Director, **Associate Professor Sunny Wong** from LKCMedicine, and the facility will focus its research in the areas of Nutrition and Metabolism, Airway and Environment, Cancers, as well as infections and other neurological and skin diseases.

Using human sample collections, advanced DNA sequencing, and laboratory experiments, researchers will look at how microbiome causes a range of diseases like obesity, diabetes, fatty liver, and chronic lung diseases like bronchiectasis.

With a deepened understanding of how microbiome is related to these diseases, researchers hope to translate their discoveries into improved diagnostics and new treatments for patients.

The research centre was launched today by its Guest-of-Honour **Former Minister of Foreign Affairs Mr George Yeo**, and **NTU President Professor Subra Suresh**.

**NTU President Professor Subra Suresh**, said, "The Centre for Microbiome Medicine promises to offer innovative ways to monitor and modulate the microbiome to improve human health. The research from this Centre may also lead to potential new ways to promote healthy living and ageing. This dovetails nicely with the **NTU 2025 strategic plan** that aims to address Singapore's national priorities and some of humanity's grand challenges through strong interdisciplinary collaborations."

Besides working closely with local healthcare institutions and international partners, the Centre will also foster collaborations among scientists from many disciplines at NTU including those from the **Singapore Centre for Environmental Life Sciences Engineering (SCELSE)**, **College of Science (COS)** and **College of Engineering (COE)**, to develop innovative solutions for microbiome related diseases.

### **S\$2.5 million gift to advance microbiome studies**

In support of microbiome research, the new centre also received a **S\$2.5 million gift** from Ms Petrina Leong, Ms Sandy Leong, and Mr Jimmy Leong through the Madam Wang Lee Wah Memorial Fund.

The Leongs are children of the late Madam Wang Lee Wah, who passed away in 2020 after a long illness.

**Donor Mr Jimmy Leong**, said, “We would like to commemorate the second anniversary of our mother’s passing with a meaningful gesture. We feel that microbiome research is an area that has the potential to bring wide-reaching and positive improvement for overall health and we are excited to be part of this meaningful journey with LKCmedicine.”

### **Focusing on obesity**

8.9 per cent of the adult population in Singapore is obese.[1] The rate of obesity in the country is also at its highest level since 2010. [2]

With obesity on the rise in Singapore and globally, and the associated increased health risks including diabetes, fatty liver, cardiovascular diseases, and even some cancers, tackling obesity through the microbiome may be a new way forward.

While the disease is commonly associated with unhealthy diets and low physical activity, the gut microbiome is an important interface. Studies have suggested that microbes in the gut can affect our eating habits and our ability to lose or gain weight.

One focus area of the Centre is to study how ‘good’ and ‘bad’ bugs in the microbiome can be harnessed to combat the rise in obesity and its associated diseases. Through identifying beneficial microbes and its effects on obesity, researchers at the Centre aim to alleviate obesity and its related conditions. Discovery of new treatments, diagnostic tools, and prevention strategies are on the horizon.

Studies have also shown that obesity is linked to cancer.[3] The Centre is currently working on understanding the role of the microbes in obesity-related cancers such as colon and other digestive cancers.

**Assoc Prof Wong** said, “Studies have established that gut microbes can be detrimental for metabolic health, causing obesity. As the microbiome can be readily modified by diet, exercise, and drugs, it represents an untapped opportunity for therapeutic manipulation to treat diseases like obesity and more. Our research centre aims to investigate the mechanisms by which such microbes work to help tackle some of Asia’s pressing health challenges.”

**Professor Joseph Sung, Dean of NTU LKCmedicine and NTU’s Senior Vice President (Health & Life Sciences)** said, “NTU’s initiative to advance research into microbiome is important as microbes play a vital role in our health and influences a range of disorders from obesity to chronic obstructive airway diseases and fatty liver disease. I believe that microbiome medicine is going to dramatically change our future therapy for metabolic diseases and obesity, lung disease and even therapy for cancer.”

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[1] Obesity affects 8.9% of adult population.

[2] Obesity rate rises to highest level since 2010; MOH urges public to exercise and adopt healthier diet

[3] Being overweight or having obesity increases your risk of getting cancer.