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NUS Medicine establishes Josephine Tan Professorship in Breast Cancer Genomics

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Associate Professor Mikael Hartman will be the inaugural holder, advancing personalised breast cancer screening and prevention research for Asian women

NUS National University of Singapore | Yong Loo Lin School of Medicine

Moving beyond age-based breast cancer screening towards more personalised approaches to early detection and prevention is the ambition behind the newly established Josephine Tan Professorship in Breast Cancer Genomics at the Yong Loo Lin School of Medicine, National University of Singapore (NUS Medicine).

Established on 23 October 2026 through a philanthropic gift from Mr Tony Tan in memory of his late wife, Mrs Josephine Tan, the Professorship aims to advance research into how genetic, clinical and imaging data can be combined to better predict a woman's individual risk of developing breast cancer, paving the way for more targeted screening, earlier intervention and preventive strategies.

Breast cancer is the most common cancer among women in Singapore, accounting for nearly 30% of female cancer diagnoses between 2019 and 2023, with approximately one in 12 women at risk of developing the disease by age 75. Globally, breast cancer remains a major health challenge, with an estimated 2.3 million new cases diagnosed in 2023. Despite advances in detection and treatment, this figure is projected to exceed 3.5 million annually by 2050, underscoring the growing need for more effective approaches to early detection and prevention.

Yet, the risk of breast cancer varies considerably between women, depending on factors such as age, family history, genetic predisposition and breast density. While age remains a key consideration in existing population screening programmes, advances in genetic research and medical imaging are making it increasingly possible to assess a woman's individual risk more precisely.

The Professorship aims to build on these developments to inform more personalised decisions on when women should begin screening, how frequently they should undergo examinations and whether additional monitoring or preventive measures may be appropriate.

Associate Professor Mikael Hartman, a breast surgeon, epidemiologist and clinician scientist specialising in breast cancer risk prediction and prevention, will be the inaugural holder of the Josephine Tan Professorship in Breast Cancer Genomics. Trained at Karolinska Institutet in Sweden, he has worked in Singapore since 2009, combining clinical practice with research spanning breast cancer epidemiology, genetics, imaging and precision medicine.

His work has focused particularly on improving the understanding of breast cancer risk among Asian women and translating scientific discoveries into more personalised approaches to screening and prevention. He has contributed to international studies on breast cancer genetics and led the development of the Breast Cancer Prevention Programme at the NUS Saw Swee Hock School of Public Health. In recognition of his contributions to breast cancer research, he

received the National Medical Research Council Clinician Scientist Award at Senior Investigator level in 2026.

“Our ambition is to prevent more breast cancers and detect those we cannot prevent earlier. By combining genetic information with breast imaging and clinical risk factors, we aim to identify which women would benefit from earlier or more frequent screening and preventive treatment, and which could safely be screened less often. I am honoured to be the inaugural holder of this Professorship and grateful to Mr Tan for supporting our efforts to make personalised screening and prevention a reality for women in Singapore and across Asia,” said Associate Professor Mikael Hartman, inaugural Josephine Tan Professor in Breast Cancer Genomics.

Building on existing breast cancer research

The Professorship builds on research led by Associate Professor Hartman, including the BREATHE (BREAst screening Tailored for HEr) study. Involving 4,592 women aged 35 to 59 in Singapore, BREATHE demonstrated the feasibility and acceptability of personalised breast cancer risk assessment in a multi-ethnic Asian population. The next step is to establish how these risk assessments can guide screening and prevention decisions, and to evaluate their benefits, potential harms and cost-effectiveness in clinical practice.

Combining genetic information with other risk factors

A key research focus will be on integrating genetic information with clinical factors to develop a more comprehensive assessment of individual breast cancer risk. This includes inherited pathogenic variants in genes such as BRCA1 and BRCA2, which can substantially increase breast cancer risk, as well as polygenic risk scores, which assess the combined influence of numerous common genetic variants. When considered alongside family history, breast density, clinical information and previous mammograms, these findings may provide a more detailed understanding of individual risk.

The Professorship will also explore how risk assessments could be updated over time as new health information becomes available, allowing screening and prevention strategies to be adjusted according to a woman's changing risk profile.

Exploring the role of artificial intelligence in breast imaging

The research will also examine how artificial intelligence (AI) can support two distinct tasks in breast imaging, detecting signs of existing cancer and estimating the risk of developing cancer in the future. Analysing current and previous mammograms may provide information that complements genetic and clinical risk factors. The clinical value of these approaches, and their integration into routine care, will require further evaluation.

Moving towards earlier intervention and prevention

Beyond improving screening and early detection, the Professorship aims to advance more proactive approaches to breast cancer prevention. Such approaches could include tailored surveillance programmes or preventive treatments for selected women, depending on their individual risk, available clinical evidence and personal preferences. The longer-term goal is to develop a more integrated approach in which risk assessment, screening, follow-up care and prevention are considered together, allowing clinical decisions to be better informed by each woman's circumstances.

Strengthening breast cancer research for Asian populations

Much of the evidence underpinning breast cancer risk prediction has historically come from populations of European ancestry. With its multi-ethnic population and strong clinical and research capabilities, Singapore is well positioned to address this gap. The Professorship will support research to better understand breast cancer risk among Asian women and develop more relevant approaches to personalised screening and prevention, with potential benefits for women across the region and beyond.

A lasting legacy for women's health

The Professorship honours the memory of Mrs Josephine Tan, whose life was marked by warmth, curiosity, resilience and an enduring spirit of adventure. Through this gift, her husband, Mr Tony Tan, hopes to create a lasting legacy that will support advances in breast cancer research and improve the lives of women for generations to come.

“Josephine approached life with warmth, courage and an enduring curiosity about the world. It is my hope that this Professorship, established in her memory, will inspire the same spirit of curiosity and determination in the pursuit of scientific discoveries. If it can contribute to preventing breast cancer and help more women lead longer, healthier lives, it

would be a meaningful and lasting tribute to Josephine," said Mr Tony Tan.

"The Josephine Tan Professorship in Breast Cancer Genomics represents an important step towards a future where breast cancer care is guided not simply by a woman's age, but by a deeper understanding of her individual risk. By bringing together advances in genomics, imaging and clinical research, we hope to move beyond detecting breast cancer earlier towards preventing it before it develops. We are deeply grateful to Mr Tony Tan for his generosity and for entrusting NUS Medicine with this meaningful legacy. It is our hope that the discoveries made possible by this Professorship will make a lasting difference to the lives of women in Singapore, across Asia and beyond," said Professor Chong Yap Seng, Dean of NUS Medicine.