

NEWS RELEASE

Singapore, 16 December 2022

Large-scale population study to yield precise insights into the genetic basis for diseases prevalent in Asian populations

Minister for Health officially launches and participates in the SG100K longitudinal study

The **Lee Kong Chian School of Medicine (LKCMedicine) at Nanyang Technological University, Singapore (NTU Singapore)**, in collaboration with other healthcare institutions here, has embarked on a landmark comprehensive population health study of 100,000 Singaporeans over a few decades to identify the social, environmental, lifestyle, and genetic factors associated with diseases prevalent in Singapore, such as diabetes, hypertension, and cancer.

Called **SG100K**, the multi-institutional effort comes on the back of Singapore's rapidly ageing population, which is contributing to an increasing number of people living with long-term health conditions such as diabetes, heart disease and cancer, and to steadily rising healthcare costs.

With tremendous differences in health risks between Western and Asian populations, a study like SG100K could pave the way for the development of better tools through precision medicine to predict and prevent chronic diseases among Singaporeans and other Asian populations.

In support of this endeavour, **Singapore's Minister for Health Mr Ong Ye Kung** officially launched the SG100K study today, and enrolled as an SG100K participant.

Mr Lim Chuan Poh, Chairman of the Governing Board of NTU's LKCMedicine, said: "LKCMedicine is coordinating the national multi-institutional SG100K study that seeks to provide fresh insights into mechanisms influencing health. This is aligned with the School's Population and Global Health flagship programme where we conduct large-scale population-based studies to guide disease-centric research. These findings will be harnessed to better deliver preventive care and health promotion in line with the goals of Healthier SG."

Professor Joseph Sung, NTU's Senior Vice President (Health and Life Sciences) and Dean of LKCMedicine said: "As a medical school that drives transformative research, LKCMedicine aims to tackle health challenges of national and global

importance. In line with these efforts, the SG100K study will serve as a powerful resource in understanding why certain diseases are more common in different ethnic groups among the local population. Through this study and in collaboration with our partners and researchers, I am confident we will be able to build a more cost-effective healthcare system for Singapore.”

SG100K will draw on data from 50,000 participants across all ethnic groups enrolled in four existing cohort studies¹ by **NTU LKCMedicine**, the **Saw Swee Hock School of Public Health**, the **Singapore Eye Research Institute** and **Singapore National Eye Centre**, and the **National Heart Centre Singapore**. The remaining participants will be recruited progressively over the next two years.

Please see the [Annex](#) for quotes from the partner institutions.

NTU LKCMedicine’s Professor John Chambers, Lead Investigator of SG100K, said: “Establishing SG100K will be an important milestone for population health and precision medicine research in Singapore. SG100K will enable researchers from our partners organisations to better understand the primary risk factors for chronic conditions of high importance to Asian populations. This will lead to insights to better predict and prevent chronic disease, and to maintain quality of life among ageing Singaporeans.”

Over the course of the study, SG100K participants will be monitored for their long-term health outcomes through a combination of approaches, including electronic medical records, disease registries and invitations for further follow-up.

Ensuring that all ethnic groups are well-represented in SG100K will enable population-based research in groups that have historically been under-represented, but that experience important differences in health outcomes. For instance, there is a high risk for diabetes and cardiovascular disease seen in Singapore’s minority ethnic groups.

Information that will be collected for the study include the measurement of waist-hip circumference, blood pressure, physical fitness, lung function, body composition, skeletal health, cardiovascular health, cognitive performance, as well as glucose and cholesterol levels.

Key biological samples such as blood, urine, and skin tapes² will also be collected. SG100K will work with **Precision Health Research, Singapore (PRECISE)**, the national entity established to co-ordinate Singapore’s National Precision Medicine

¹ The four existing cohort studies are: the Health for Life in Singapore population health study by NTU LKCMedicine; the Singapore Population Health Study by the Saw Swee Hock School of Public Health; the Singapore Epidemiology of Eye Diseases (SEED) by the Singapore Eye Research Institute and the Singapore National Eye Centre; and SingHEART, a key cardiovascular research programme at the National Heart Centre Singapore.

² In skin tape tests, a strip of adhesive tape is pressed onto the skin and subsequently removed to collect biomaterial from the skin surface.

strategy, to analyse blood samples to assess genomic and other relevant molecular variation in the population.

Prof Chambers, who is also the Chief Scientific Officer at PRECISE, said: “We will link these baseline research and genomic information to data on health outcomes over the long term, including through medical records. This will generate a precision medicine bioresource that enables advanced research to better understand the behavioural, environmental, genomic and other molecular factors that shape health and health outcomes in Singapore and other Asian populations.”

All Singaporeans or Permanent Residents of all ethnicities, aged 30 to 84 years old, including people with pre-existing conditions are welcome to be part of the study. Participants will be offered a detailed health report, which they can use for discussion with their doctors at no charge.

For more information on signing up as a participant and details of the health screening, please visit www.ntu.edu.sg/helios.

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Notes to Editor:

The SG100K study is supported by the National Research Foundation Singapore under its Open Fund-Large Collaborative Grant and administered by the Singapore Ministry of Health’s National Medical Research Council.

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ANNEX

Quotes from Partner Institutions:

Assistant Professor Sim Xueling from the National University of Singapore, Saw Swee Hock School of Public Health, said: “Understanding why diseases develop in some people, but not others, is a critical step to development of new approaches to

prevent, delay, diagnose and treat diseases. As a contributing partner, together, we are committed to improve health and build more effective healthcare.”

Professor Cheng Ching-Yu, Head, Ocular Epidemiology Research Group, Singapore Eye Research Institute and Lead, SEED said: “In the last decade, the Singapore Epidemiology of Eye Diseases (SEED) study has been established as a landmark cohort of multi-ethnic and longitudinal population-based eye diseases study. Now in addition to eye diseases, we are glad that our study can further contribute to our understanding on chronic diseases and the improvement of healthcare in Singapore via SG100K and PRECISE programmes.”

Associate Professor Yeo Khung Keong, Deputy Chief Executive Officer (Data Science and Innovation) and Senior Consultant, National Heart Centre Singapore, said: “NHCS is glad to be part of this national program. It is important that we understand how genetics and lifestyle interact over time to cause illness, especially heart disease. Working together with our partners, our research will be more impactful and we can help more Singaporeans.”

Professor Patrick Tan, Executive Director of PRECISE and A*STAR (Genome Institute of Singapore), said: “PRECISE is adding further value to the SG100K study through generation of whole-genome sequence data and other molecular profiles, for study participants. To generate and achieve high-quality genomic data, PRECISE will be working closely with Illumina, a leader in genomics technology, to sequence and analyse 100,000 Singaporean whole genomes to create Asia’s leading reference genome database.

“The dataset jointly created will be one of the most deeply phenotyped and well-characterised repositories of Asian population cohort data world-wide. This unique resource will allow researchers to identify key biomarkers and factors that may change throughout an individual’s life that represents transition from health to disease and enable us to better understand which people should receive which treatment.”

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