

Sequencing 100,000 Asian genomes for tailor-made healthcare

NTU to host project database; aim is to reduce bias of medicine towards Westerners

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Not too far in the future, you may be able to receive tailor-made medical treatment for your body, increasing your chances of survival and recovery from serious illnesses.

This is one of the aims of an initiative to sequence the genomes of 100,000 Asians over the next three to four years. The move will try to reduce the bias of modern medicine towards Western populations.

An earlier project in 2009 stimulated interest in Asian genetics when it surveyed specific genetic variations across 1,928 people in South-east and East Asia.

Now, Singapore's Nanyang Technological University (NTU) will host the database for the ambitious new project, which was announced by the non-profit multinational consortium, GenomeAsia 100K, in February.

NTU president Bertil Andersson noted that almost all current personal genomics efforts focus on Western populations. He said: "The new consortium will benefit the Asian population as it sheds light on the genetic fabric of Asians."

Asia has more than four billion people, making up more than half of the world's population.

The project aims to cover at least 40 countries across Asia, and all major ethnic groups on the continent.

Combined with data such as people's living environment and health status, the exercise will make it possible to better understand and treat diseases in Asians, said venture capital firm Emerge Ventures. The Singapore firm supports the consortium's meetings, and helps it find potential partners and philanthropic donors.

The consortium's scientific chairman, NTU's Professor Stephan Schuster, said: "There is a massive

bias in medical research; Europeans have been developing drugs for Europeans without asking how compatible these pharmaceuticals are for the rest of the world."

He explained the benefits of customising medical treatment to individual patients, an approach known as precision medicine.

For example, he said, the debilitating effect of chemotherapy on cancer patients makes it important to administer the right drug to minimise suffering and maximise the chances of recovery.

GenomeAsia 100K comes after a similar initiative – the 100,000 Genomes Project – was launched in 2012 by the British government-owned company Genomics England.

The partners of GenomeAsia 100K chose NTU to host their database because of Singapore's reputation for accountability, said Prof Schuster. He said: "Singapore has very high standards in finance and corporate law. We were given the trust and confidence from the other Asian countries." He stressed that the consortium will abide by the United States' Genetic Information Nondiscrimination Act of 2008, which prohibits the use of genetic data in health insurance and employment.

When data enters the database, it will be accessible only to the consortium members for an initial period of 18 to 36 months for analysis, after which it will be made available in anonymised form to the scientific community at large, he added.

To date, 50,000 DNA samples have been collected through blood or saliva samples from a network of clinics across Asia with the help of two of the consortium's founding members, genomics companies MacroGen in South Korea and MedGenome in India.

MacroGen's chairman, Professor

Jeong Sun Seo, said: "As the consortium is envisioned to be independent of any government's interest, there is greater scope for comprehensive coverage of the peoples of Asia."

Mr Mahesh Pratapneni, chief executive of Emerge Ventures and executive chairman of GenomeAsia 100K, added: "The consortium is expected to contribute towards better global healthcare outcomes by channelling the collective capabilities of the leading industry players in the region."

The consortium is in talks with potential academic and industry partners in Singapore, Malaysia and Thailand, and is looking for more partners and philanthropic sources to make up the US\$150 million (S\$200 million) total funding it says it needs.

Prof Schuster pointed out that any concerns about ethnicity issues are unfounded. He said: "Some people are apprehensive that if you unravel differences in ethnicity, you make some people a lesser man and others a better man.

"But it's not true. It gives people pride in their identity, and also it gives them their history."

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ACCOUNTABILITY

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NTU'S PROFESSOR STEPHAN SCHUSTER, on the partners of GenomeAsia 100K choosing NTU to host their database because of Singapore's reputation for accountability.