

Great minds who further R&D in S'pore

The President's Science and Technology Awards are the highest honours given to research scientists and engineers in Singapore for their contributions. **Jose Hong** highlights this year's winners, who were presented their prizes on Tuesday by President Halimah Yacob.



Helping doctors to test heart conditions

Professor Stuart Cook may not be a household name, but the heart-testing device he helped to create in Singapore is used by 10,000 patients a year all over the world.

It tests for 17 heart conditions, including irregular heartbeats and cardiomyopathy, and costs \$300.

For this, the Tanoto Foundation Professor of Cardiovascular Medicine at the National Heart Centre Singapore and Duke-NUS received the President's Technology Award.

He came to the Republic in 2012 and heads a cross-disciplinary research team that seeks to identify new genes and pathways for heart disease.

With this award Prof Cook, 49, hopes to encourage more cardiologists to work as both a clinician and a scientist.

"This is a really nice recognition of what the Heart Centre has done over the past five years or so," said the Briton.

"And although I've driven this from the perspective of my genetic expertise, it's a team effort," he added.



Raising S'pore's biomedical profile

Professor Judith Swain, who received the President's Science and Technology Medal, has played a key role in Singapore's scientific development.

For more than 15 years, the visiting professor at the National University of Singapore Yong Loo Lin School of Medicine, has held key positions in research institutes, universities and hospitals.

Prof Swain, 69, is the founding executive director of the Singapore Institute for Clinical Sciences (SICS), and has served on governing boards and advisory committees of bodies such as the Ministry of Education, public healthcare system and medical schools.

At SICS, she developed three signature programmes that boosted Singapore's economic development and international scientific reputation.

One of them is Growing Up in Singapore Towards Healthy Outcomes, a nationwide study which began in 2009 on pregnancies and early childhood development that, with its findings on gestational diabetes and its impact on children, shifted public health policy.

The American has also helped shape training programmes for scholars from the Agency for Science, Technology and Research.



Boosting ties between academia and industry

Professor Lam Khin Yong has pushed for scientific research that impacts society, and has played a key role in shaping Singapore's pool of scientific talent.

His career spans more than three decades, and he has led multiple mergers and organisations such as the Institute of High Performance Computing.

The vice-president of research at Nanyang Technological University (NTU), who received the President's Science and Technology Medal, believes strongly in collaborations between academia and industry.

He also played a key role in fostering an interdisciplinary mindset among researchers to address real-world challenges.

"At NTU alone, we have some 520 researchers... being trained across multiple disciplines," said Prof Lam, 62.

"Our industry partners have played an important role in strengthening Singapore's innovation capabilities by contributing their cutting-edge know-how, equipment and industry-relevant research problems."

Over the last five years, his push for deeper industry engagement has led to research partnerships between NTU and companies such as Internet giant Alibaba.



Putting a green shine on chemical production

Professor Loh Teck Peng, who won the President's Science Award, helped to cement Singapore's position as a leader in the field of chemistry by pushing the frontiers of green chemistry.

Prof Loh, from the Nanyang Technological University's School of Physical and Mathematical Sciences, created dozens of innovative methods of producing organic compounds over the past 20 years.

"Organic chemistry is the study of carbon-based compounds. Many of the products that we use in our daily life are organic compounds. Some examples are shampoo, nylon, medicines, agrochemicals and display screens," said the 56-year-old permanent resident from Malaysia.

"The ability to design and construct new chemical entities is the backbone of many technologies."

Prof Loh said many companies did not focus on making processes environmentally friendly. So, in the 1990s, when he returned to Singapore from the United States, he decided to step in.

"I hope the day will come when important compounds... are produced in a clean and safe manner. No waste produced, no air and water pollution, and no fire or explosions," he said.



Working as a team to fight Parkinson's

This year's team winners of the President's Science Award are lauded for their work with Parkinson's disease.

Led by Professor Tan Eng King (above), 53, the deputy medical director of academic affairs at the National Neuroscience Institute (NNI), they helped to identify clinical biomarkers for the disease, as well as develop new ways to manage Parkinson's.

Recognising the challenges that patients face, the team developed an integrated research plan to improve the clinical management of Parkinson's.

Their research has led to new treatment guidelines, the formulation of improved healthcare policies and the redefinition of the standard of care globally.

They have also identified Asian-specific genetic markers that can protect against or increase the risk of the disease.

The other team members are Associate Professor Lim Kah Leong, 53, head of the National University of Singapore Yong Loo Lin School of Medicine's department of physiology; Professor Ng Huck Hui, 47, executive director of A*Star's Genome Institute of Singapore; and Associate Professor Louis Tan, 52, NNI deputy director of research.



Recognising achievements of young scientists

Three researchers received the Young Scientist Award, which recognises the accomplishments of those aged 35 and younger who are actively engaged in research and development in Singapore.

They must also have potential to become world-class researchers in their fields of expertise.

The three winners received their individual awards at the same ceremony as the President's Science and Technology Awards.

Dr Xue Shifeng, 31, from the A*Star Institute of Molecular and Cell Biology, received an award for her research on gene regulation in developmental biology.

Nanyang Technological University's Dr Liu Zheng, 35, was recognised for his research on the creation of two dimensional materials – films that are only one atom thick. An example of such a material is graphene.

Dr Anjan Soumyanarayanan, 34, from A*Star's Institute of Materials Research and Engineering, who had incorporated quantum materials to develop advanced nanoelectronics, was also lauded.

They each received a trophy, a certificate of commendation, and \$10,000.

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