

**MEDIA RELEASE**

## **Singapore's top scientists, engineers, and rising researchers honoured at the PSTA 2026**

The President's Science and Technology Awards (PSTA) 2026 celebrated the scientists, engineers and research leaders who have made exceptional contributions to Singapore's science and technology ecosystem.

2 Organised by the National Research Foundation, Singapore (NRF), the awards comprise the President's Science and Technology Medal (PSTM), the President's Science Award (PSA), the President's Technology Award (PTA), and the Young Scientist Award (YSA). President Tharman Shanmugaratnam and NRF Chairman Mr Heng Swee Keat presented the awards to the following recipients:

PSTA presented by the President:

- PSTM: **Er. Lee Chuan Seng<sup>1</sup>**, Chairman, Committee of Government Scientific Advisors
- PSA: **Professor Wu Jishan**, Provost's Chair Professor, Department of Chemistry, Faculty of Science, National University of Singapore (NUS)
- PTA: **Mr Wu Jian**, Programme Director for Connectivity and Principal Metrologist; **Dr Yu Shengkai**, Senior Principal Scientist; and **Mr Tan Ren Kai**, Research Engineer, all from the Agency for Science, Technology and Research (A\*STAR) National Metrology Centre; and **Mr Thomas Ting Cheng Heong**, Director (Technology and Innovation) and Chief Digital Officer, Maritime and Port Authority of Singapore (MPA)

YSA presented by NRF Chairman:

- Biological and Biomedical Sciences: **Dr Liu Boxiang**, Presidential Young Professor, Department of Pharmacy and Pharmaceutical Sciences, Faculty of Science, NUS
- Physical, Information and Engineering Sciences: **Dr Hou Yi**, Presidential Young Professor, Department of Chemical and Biomolecular Engineering, College of Design and Engineering, NUS

3 **Professor Tan Chorh Chuan, Permanent Secretary (National Research and Development)**, said, "The calibre of the PSTA recipients reflects the strength and depth of Singapore's research ecosystem, from foundational science to real-world innovation. Their work has pioneered system-of-systems approaches to synergise major national projects, advanced the frontiers of key scientific fields, and developed innovative solutions that have enhanced Singapore's competitiveness. In recognising these outstanding leaders, we also

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<sup>1</sup> Er. is the professional title used by registered engineers in Singapore.

celebrate the work and achievements of our wider community of researchers, engineers, and innovators whose quiet passion for solving hard problems has produced innovations that benefit both society and industry. Their collective example inspires future generations of scientific leaders.”

### **PSTM: A career spent strengthening Singapore’s research and engineering ecosystem**

4 The PSTM is the apex award of the PSTA, recognising individuals who have shaped the science and technology ecosystem itself, rather than a single discovery or technology. This year’s recipient, **Er. Lee Chuan Seng**, is known for pioneering a “system of systems” approach to national planning, in which Singapore’s land, energy, water and infrastructure needs are planned together rather than separately, to achieve better system-level synergies.

5 He provided valuable thought leadership and guidance in several national-level feasibility studies, spanning multiple areas such as the following:

- i. Underground space as a strategic resource, including the Gali Batu Caverns feasibility study;
- ii. Large-scale solar power integration and battery energy storage systems that will help keep the power grid stable as more renewable energy comes online; and
- iii. Green Mark standards that shaped energy-efficient, environmentally sustainable building design into standard industry practice, alongside innovations such as upcycling of waste residues into construction materials, contributing to Singapore’s goal of becoming a Zero-Waste Nation.

6 Within the RIE ecosystem, Er. Lee has contributed significantly in various capacities. He has been the Chairman of the Committee of Government Scientific Advisors since October 2023, providing scientific advice on major R&D initiatives undertaken under RIE2025 and the plans for RIE2030. As Chairman of the Urban Solutions and Sustainability (USS) Technical Advisory Workgroup, he drove the development of the USS RIE2025 Masterplan. He continues to serve as Scientific Advisor to the Ministry of National Development and the National Environment Agency.

### **PSA: Frontier research that have advanced a field in fundamental ways**

7 The PSA recognises research of significant and lasting impact within a field. **Professor Wu Jishan** received the award for work in molecular carbon science that has overturned several long-held assumptions in chemistry. Almost everything electronic, from computers to displays to communication systems, depends on controlling how electrons behave, and for decades chemists worked mainly with closed-shell molecules, in which electrons sit in stable pairs. Molecules with unpaired electrons, known as open-shell molecules, were considered too unstable to be useful, until Professor Wu showed that they can in fact be designed, stabilised and controlled.

8 From that starting point, his team built stable molecules with tunable magnetic and quantum properties, opening new classes of materials for spintronics, photonics and molecular quantum technologies, including molecules that can hold a quantum state for an unusually long time, which is important for quantum sensing and computing applications. He has also reshaped aromaticity, a century-old concept in chemistry describing a particular kind

of molecular stability, by demonstrating it in these new molecules. He built the first fully connected three-dimensional aromatic cages; and created topological molecular carbons, molecules built into extraordinary shapes such as Möbius strips, with optical and handedness properties that ordinary molecules cannot achieve.

9 Together, these discoveries provide a unified way of controlling electron behaviour that has been widely taken up by researchers around the world. Professor Wu joined the National University of Singapore in 2007 and has built one of the world's leading research programmes in molecular carbon science, attracting outstanding students and researchers to Singapore, many of whom now hold academic and leadership positions internationally.

### **PTA: Innovation that became the national standard, and then a global one**

10 Where the PSA recognises discovery, the PTA recognises innovation that has been put to work. The 2026 PTA goes to a four-member team from A\*STAR National Metrology Centre (A\*STAR NMC) and the Maritime and Port Authority of Singapore (MPA) for transforming how marine fuel is measured, verified, and trusted in Singapore, the world's busiest bunkering port. Singapore handles more than a sixth of the world's bunker trade, an industry worth about US\$33 billion a year, with roughly 150,000 tonnes of fuel delivered every day. For decades, the quantity delivered was checked using an imprecise dipstick method that was a frequent source of disputes between buyers and sellers.

11 The team led the shift to mass flow metering, which weighs fuel as it flows through the pipe instead of estimating it from tank volume. They developed the measurement science and engineering solutions needed to ensure accurate and reliable measurements under the demanding conditions of ship-to-ship transfer at sea. This became the scientific foundation of Singapore Standard SS 648 and MPA's mandatory mass flow metering framework, the first such framework in the world. It has since cut fuel-related legal disputes by up to 70 per cent, and was later elevated internationally as ISO 22192, with ports including Rotterdam, Fujairah, and Ningbo adopting the framework.

12 As bunkering moved to digital record-keeping, the team also developed a device that verifies the integrity of digital delivery data, underpinning the updated SS 648 and the new SS 709. This enabled the Port of Singapore's mandatory adoption of digital bunkering in April 2025, the first implementation at this scale anywhere in the world and is expected to save the industry close to 40,000 man-days each year.

13 The team's success drew on complementary expertise: **Mr Wu Jian** led the measurement uncertainty evaluation framework and on-board verification method, **Mr Thomas Ting** drove the national digital bunkering initiative, **Dr Yu Shengkai** pioneered the data-integrity inspection methodology, and **Mr Tan Ren Kai** engineered the reference hardware, including the device used to validate the integrity of digital delivery records. The work also drew on a wide network of partners across government and industry, including MPA and the Singapore Standards Council.

### **YSA: The talent shaping the next chapter**

14 The YSA recognises researchers aged 40 and below who are actively engaged in R&D in Singapore and who show strong potential to become world-class leaders in their fields. It is the clearest signal in the PSTA of the strength of Singapore's talent pipeline: researchers whose most important work is still ahead of them.

### Making precision medicine work for Asian populations

15      **Dr Liu Boxiang** uses artificial intelligence and computational biology to identify genes associated with common diseases such as diabetes, autoimmune conditions and neurological disorders. Such work is especially difficult in Asian populations because much of the available reference data and tools are largely based on European populations. He developed the first atlas mapping genetic variations to alternative splicing within individual cell types in human blood from diverse Asian donors, as well as the first atlas to study how Alzheimer's disease shapes genetic regulation in the human brain. His work has been published in Nature Genetics, Nature Methods, Nature Communications, and Cell Genomics. He has since extended the approach to metabolic and neurological disorders, and developed open-source computational tools used by thousands of researchers worldwide. His laboratory aims to bring precision medicine, or treatment tailored to a person's genetic make-up, closer for patients in Singapore, across Asia and beyond.

### Pushing solar power past the limits of silicon

16      **Dr Hou Yi** works on the next generation of solar technology, layering perovskites – a class of materials that can be made into very thin, light films – on top of silicon so that the two together capture more sunlight than either can alone, a pairing known as a tandem solar cell. His team has set multiple world records for the efficiency of these cells and modules while tackling the two problems that have long held the technology back: staying stable over years of use, and being manufacturable at scale. As founder of Singfilm Solar, an NUS spin-off company, he is driving the commercialisation of this lightweight, high-efficiency solar technology for applications where it can have the greatest impact, including AI data centres, satellites and other space platforms, UAVs, and IoT devices.

17      Nominations for the PSTA 2027 will open on 21 September 2026. See [Annex A](#) for the Chinese Glossary. For more information on the award categories, please refer to [Annex B](#).

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### ***About the President's Science and Technology Awards (PSTA)***

The President's Science and Technology Awards (PSTA) are Singapore's top honours for research scientists and engineers. Organised by the National Research Foundation, Singapore (NRF), the awards are conferred annually to individuals and teams who push the frontiers of science and technology. The PSTA comprises the President's Science and Technology Medal, the President's Science Award and the President's Technology Award, and also celebrates the Young Scientist Award, administered by the Singapore National Academy of Science and supported by NRF. Learn more about the PSTA at [www.psta.gov.sg](http://www.psta.gov.sg).

### ***About the National Research Foundation (NRF)***

The National Research Foundation, Singapore (NRF), set up on 1 January 2006, is a department within the Prime Minister's Office. The NRF sets the national direction for research and development (R&D) by developing policies, plans and strategies for research, innovation and enterprise. It also funds strategic initiatives and builds up R&D capabilities by nurturing research talent. Learn more about the NRF at [www.nrf.gov.sg](http://www.nrf.gov.sg).

## ANNEX A: CHINESE GLOSSARY

| English                                                                                                                                  | Chinese                                    |
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| <b>PRESIDENT'S SCIENCE AND TECHNOLOGY AWARDS</b><br>总统科学与科技奖                                                                             |                                            |
| <b>PRESIDENT'S SCIENCE AND TECHNOLOGY MEDAL (PSTM)</b><br>总统科学与科技奖章                                                                      |                                            |
| Er. Lee Chuan Seng<br>Chairman<br>Committee of Government Scientific Advisors                                                            | [李全盛] 先生<br>新加坡政府科学顾问委员会主席                 |
| <b>PRESIDENT'S SCIENCE AWARD (PSA)</b><br>总统科学奖                                                                                          |                                            |
| Professor Wu Jishan<br>Provost's Chair Professor<br>Department of Chemistry<br>National University of Singapore                          | [吴继善] 教授<br>教务长讲席教授<br>化学系<br>新加坡国立大学      |
| <b>PRESIDENT'S TECHNOLOGY AWARD (PTA)</b><br>总统科技奖                                                                                       |                                            |
| Mr Wu Jian<br>Programme Director, Principal Metrologist<br>A*STAR National Metrology Centre                                              | [吴健] 先生<br>项目总监兼首席计量学家<br>新科研国家计量中心        |
| Dr Yu Shengkai<br>Senior Principal Scientist<br>A*STAR National Metrology Centre                                                         | [于胜凯] 博士<br>高级科学主管<br>新科研国家计量中心            |
| Mr Tan Ren Kai<br>Research Engineer<br>A*STAR National Metrology Centre                                                                  | [陈仁凯] 先生<br>研究工程师<br>新科研国家计量中心             |
| Mr Thomas Ting Cheng Heong<br>Chief Digital Officer and Director (Technology and Innovation)<br>Maritime and Port Authority of Singapore | [陈净翁] 先生<br>首席数码总监兼技术与创新司司长<br>新加坡海事及港务管理局 |
| <b>YOUNG SCIENTIST AWARD (YSA)</b><br>青年科学家奖                                                                                             |                                            |
| <b>SINGAPORE NATIONAL ACADEMY OF SCIENCE (SNAS)</b><br>新加坡国家科学院                                                                          |                                            |
| Dr Liu Boxiang<br>Presidential Young Professor                                                                                           | [刘博翔] 博士<br>杰出青年教授                         |

| English                                                                                                                              | Chinese                                   |
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| Department of Pharmacy and Pharmaceutical Sciences<br>National University of Singapore                                               | 药学与制药科学系<br>新加坡国立大学                       |
| Dr Hou Yi<br>Presidential Young Professor<br>Department of Chemical and Biomolecular Engineering<br>National University of Singapore | [侯毅]博士<br>杰出青年教授<br>化学与生物分子工程系<br>新加坡国立大学 |
| <b>NATIONAL RESEARCH FOUNDATION (NRF)</b><br>新加坡国立研究基金会                                                                              |                                           |
| Professor Tan Chorh Chuan<br>Permanent Secretary (National Research Development)                                                     | 陈祝全教授<br>常秘 (国家研究与发展)                     |

## ANNEX B: ABOUT THE PSTA AND THE AWARD CATEGORIES

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| <b>About the President's Science and Technology Awards (PSTA)</b> | <p>The PSTA are Singapore's top honours for research scientists and engineers. Given annually, they recognise individuals and teams who have made exceptional contributions in pushing the boundaries of the science and technology (S&amp;T) landscape in Singapore.</p> <p>There are three distinct awards: the President's Science and Technology Medal (PSTM), the President's Science Award (PSA), and the President's Technology Award (PTA). The PSTA also celebrates the Young Scientist Award (YSA), which is administered by the Singapore National Academy of Science (SNAS) and supported by the National Research Foundation, Singapore (NRF).</p> <p>As the highest national accolade in Singapore, the PSTA brand carries prestige and influence, and most importantly, inspires the next generation of STEM talent. PSTA winners create orbits of impact through their exceptional work, personal ingenuity, and continued search for excellence. They are role models for their peers and for aspiring researchers in the science and technology fields.</p> <p>PSTA nominations are open to anyone who has worked in the Singapore RIE ecosystem, regardless of nationality.</p> |
| <b>President's Science and Technology Medal (PSTM)</b>            | <p>Awarded to individuals who have made distinguished, sustained and exceptional contributions, and played a strategic role in advancing Singapore's development through the promotion and management of S&amp;T. The accomplishments and contributions would generally be acknowledged by the S&amp;T ecosystem as having a significant impact on the ecosystem's capabilities or international stature.</p> <p>Examples of achievements recognised by the PSTM include, but are not restricted to:</p> <ul style="list-style-type: none"> <li>• Being the driving force in pioneering the establishment of an important field of study in Singapore.</li> <li>• Being the leader who was instrumental in raising an S&amp;T institution to world-class status.</li> <li>• Contributing exceptionally to a major levelling-up of our S&amp;T ecosystem's capabilities or international stature.</li> </ul>                                                                                                                                                                                                                                                                                        |
| <b>President's Science Award (PSA)</b>                            | <p>Recognises accomplishments generally acknowledged by other S&amp;T practitioners as being significant and impactful to their field. They need not have led to practical applications or products.</p> <p>Achievements recognised by the PSA include, but are not restricted to, individual discoveries or a collective body of research work that has led to:</p> <ul style="list-style-type: none"> <li>• Spawning or enabling new avenues of study.</li> <li>• Revolutionising or significantly advancing the research methodology of a field.</li> <li>• Significantly advancing our understanding of a field, or the potential for such advancement.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |



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| <b>President's Technology Award (PTA)</b> | <p>Recognises accomplishments that have led to transformative changes in the use or potential of technology in Singapore or further afield. The relevant technology need not be fully adopted or deployed at the point of nomination, but its potential must be acknowledged, and it must have progressed beyond academic or theoretical potential and be in the process of translation or adoption by end-users.</p> <p>Achievements recognised by the PTA include, but are not restricted to, individual breakthroughs or a collective body of R&amp;D work that has led to:</p> <ul style="list-style-type: none"> <li>• Disrupting the industry's status quo with a new technology;</li> <li>• Advancing the state-of-the-art performance of an impactful technology;</li> <li>• Innovative application of existing technology in a new, impactful way;</li> <li>• Pioneering development of local technology capabilities.</li> </ul> |
| <b>Young Scientist Award (YSA)</b>        | <p>Awarded to researchers aged 40 years and below who are actively engaged in R&amp;D in Singapore, and who have shown great potential to be world-class researchers in their fields of expertise.</p> <p>There are two categories of awards: Biological and Biomedical Sciences; and Physical, Information and Engineering Sciences.</p> <p>The YSA is administered by the Singapore National Academy of Science (SNAS) and supported by the National Research Foundation, Singapore (NRF).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                           |