

**NATIONAL RESEARCH FOUNDATION**  
PRIME MINISTER'S OFFICE  
SINGAPORE

**REMARKS BY MR HENG SWEE KEAT,**  
**DEPUTY PRIME MINISTER AND CHAIRMAN OF THE NATIONAL RESEARCH**  
**FOUNDATION AT THE PRESIDENT'S SCIENCE AND TECHNOLOGY AWARDS**  
**CEREMONY, 27 SEPTEMBER 2024**

President Tharman Shanmugaratnam,

Recipients of the 2024 President's Science and Technology Awards and Young Scientist Awards,

Ladies and gentlemen,

1. Good evening

2 Since 2009, the President's Science and Technology Awards have been held annually. Presided over by our Head of State, they recognise outstanding scientific and technological talent for their contributions to Singapore and the world. Equally as important, they also encourage and motivate rising and future generations of scientists and technologists to aspire for excellence.

3 We usually hold this ceremony at the Istana.

4 As many of you know, the Istana is currently undergoing major restoration. So, for the first time, we are holding the ceremony on a university campus. My team at the National Research Foundation and I look forward to celebrating our scientific community at a newly refreshed Istana again in a few years.

5 The world is facing multiple challenges - demographic, economic, environmental, among others. I believe that by harnessing scientific advances, we can face these challenges, and build a better, healthier and more sustainable world. And advances in technology are themselves accelerating the pace of scientific research and discovery.

6 Take artificial intelligence, for example. Around the world including here in Singapore, researchers in academia and industry are using AI to automate certain research processes and accelerating discoveries.

7 “AI for Science” is now top-of-mind for many institutions globally. Indeed, these are interesting and exciting times to be a scientist!

8 Singapore has long recognised the potential of science and technology to transform our economy and environment and improve the lives and livelihoods of our people.

9 In 1991, we launched our first National Technology Plan to build up our R&D capabilities and ecosystem. This later evolved into the National Science and Technology Plans, and more recently, the Research, Innovation and Enterprise or RIE plans.

10 The Government has committed S\$28 billion in funding for RIE2025, for the period 2021-2025. We have completed a mid-term review and are now working on the next RIE2030. It is our belief that we must invest in research and innovation consistently, and to take a long-term view.

11 Today, our universities, hospitals and A\*STAR research institutes have established strong global credentials for their research excellence. We have also built strong and fruitful international collaborations.

12 Since 2007, the National Research Foundation has developed the Campus for Research Excellence and Technological Enterprise, or CREATE, to foster collaborations between our universities and overseas partners.

13 Earlier this year, NRF launched a new CREATE Thematic Programme in Decarbonisation to bring in collaborators from around the world to work on solutions that advance the global green transition.

14 Concurrently, we have been working with companies from Singapore, Asia and around the world to leverage science and technology for impact, through innovation. We now have more than 20 corporate laboratories in Singapore where industry leaders partner our universities and research institutes.

15 Just yesterday, the World Intellectual Property Organisation released its 2024 Global Innovation Index capturing the world's most innovative economies. Singapore is ranked fourth globally and first in Asia.

16 Talent is the most critical enabler in any endeavour, but even more so in harnessing science, technology and innovation. Developing talent, therefore, has been fundamental to building our peaks of excellence in research.

17 We invest in deepening our local talent pool through schemes like the A\*STAR Scholarships and Industrial Postgraduate Programme. We tap the best global scientific talent to anchor in Singapore and develop partnerships with the best institutions around the world to deep dive into areas of mutual interest.

18 By harnessing talents in this way, we aspire to be a Global-Asia node of technology, innovation and enterprise, connecting talent from Asia and the world, to tackle shared challenges.

19 Nurturing talent starts by building a sense of curiosity in our young for the world around them. Renowned physicist Richard Feynman once said that the motivation for science sometimes lies in "the pleasure of finding things out". What piques our interest early in life could well be the catalysts for our pursuits for life.

20 In Singapore, we invest in nurturing this sense of curiosity and inquisitiveness, and an interest in the sciences, from an early age. Most of our schools have an Applied Learning Programme that encourages students to apply scientific concepts that they have learnt in class to address real-world challenges.

21 A few weeks ago, I also launched STEAMUnity – an initiative by the Singapore Science Centre and the Singapore University of Technology and Design.

22 This brings together students from different institutions and disciplines to work in teams on creative and interesting new ideas to solve challenges in their community, like ageing and climate change.

23 Our high school students and undergraduates also take part in research programmes with our universities. Many of these students go on to apply for A\*STAR research scholarships and to undertake PhD programmes in our universities or abroad.

24 To encourage this sense of curiosity, our research ecosystem has also evolved signposts and pathways for those interested in pursuing meaningful STEM careers, as well as to provide them with development opportunities.

25 This year, we recognise four young and rising scientists with Young Scientist Awards. Given out by the Singapore National Academy of Sciences, these honour promising scientists under the age of 40 who have shown great potential in their chosen fields.

- a. **Dr Jonathan Göke** is a computational biologist specialising in RNA research.
  - i. His use of machine learning to improve the techniques for reading RNA molecules will help biologists around the world better decode the machinery of life, paving the way for new insights into diseases and human biology.
- b. **Dr Daniel Ting** from the Singapore National Eye Centre has been at the forefront of bringing AI into ophthalmology and healthcare.
  - i. His work has enabled the development of algorithms for quicker diagnosis, as well as solutions for better eye health in Singapore and globally.
  - ii. Dr Ting was part of the team that developed SELENA+, a deep learning algorithm that helps detect major eye-blinding diseases such as diabetic retinopathy, glaucoma and age-related macular degeneration.

- c. **Dr Li Qianxiao** from the National University of Singapore has done innovative work on the mathematical foundations of deep learning.
  - i. His research has unlocked methods to make AI models, including large-language and vision models, both more robust and energy-efficient.
- d. Finally, **Dr Lu Jiong**, also from NUS, works at the forefront of advancing next-generation materials and catalytic technologies that can help foster greater sustainability.
  - i. His research carries the potential to support the fine chemicals and pharmaceutical industries to pivot towards a greener future.

26 I earlier mentioned the importance of building curiosity. Indeed, a better understanding of basic scientific phenomenon can help open new ways of looking at long-standing hurdles and challenges. This year's **recipient of the President's Science Award, Professor Liu Bin**, exemplifies this.

- e. Borne of a scientist's curiosity and desire to better understand the world, Professor Liu's research overturned decades of prevailing wisdom on carbazole emission and phosphorescence.
  - i. In doing so, she unlocked new opportunities to design precise functional organic compounds, enabling unique applications in biomedical research, electronic devices and security.
- f. Starting with a sense of wonder and curiosity for the world around her, Professor Liu is today the co-inventor of 30 patents and know-hows on energy and biomedical applications.

27 In bringing the best minds together to advance science and technology in an impactful way, we must also foster collaboration and build teams of diverse and complementary expertise.

28 Take, for instance, the **team receiving this year's President's Technology Award**. Led by Professor Malini Olivo of the A\*STAR Skin Research Labs, the group comprises Dr Gurpreet Singh, Dr Renzhe Bi and Adjunct Associate Professor Augustine Tee.

g. By working together, Dr Olivo and her team have integrated biophotonics, machine learning and clinical data to create a novel respiratory monitoring solution, Respiree that strengthens cardio-respiratory disease management.

i. By pooling their expertise and experience, the team was able to develop new technology, demonstrate its efficacy, trial it among patients, and translate it into clinical applications.

ii. Today, Respiree has been approved in the US, Europe, Australia and Singapore, and is being trialled in more than 20 healthcare systems around the world.

29 The story of Dr Olivo and the Respiree team underscores the importance of interdisciplinarity and collaboration to realise the full impact of science and technology.

30 The **2 recipients of this year's President's Science and Technology Medal – Singapore's top scientific honour** – are long-standing champions of such interdisciplinarity and collaboration.

h. **Professor Richard Parker, Chairman of the Singapore Aerospace Programme at A\*STAR**, has contributed greatly to fostering public-private partnerships in Singapore's research ecosystem. Since his days with the Rolls-Royce Group, Richard has brought together corporate and academic expertise to build and anchor mutually beneficial R&D capabilities here in Singapore.

i. Alongside NRF and NTU, Richard spearheaded the Rolls-Royce@NTU Corporate Lab, the first corporate laboratory in a Singapore university.

i. This pioneering effort bridged corporate and academic research expertise, and reinforced Singapore's value proposition as a partner to innovative global companies.

- ii. As I mentioned earlier, many other companies have since followed suit with similar collaborations with our universities.
- j. Richard also worked with A\*STAR to establish the Advanced Remanufacturing and Technology Centre, or ARTC, in 2012.
  - i. Focused initially on aerospace, the ARTC now has over 95 industrial partners spanning several different sectors.
  - ii. Today, Richard continues to lend his expertise to grow our research ecosystem and deepen our talent pool in various domains including low-carbon energies.

31 **Professor Ho Teck Hua, President of the Nanyang Technological University**, has strengthened interdisciplinary research capabilities and the talent pipeline in not one but two of our universities. Tapping on more than 2 decades of overseas experience, Teck Hua has helped transform NUS and NTU into both incubators and magnets of talent – building homegrown timber and simultaneously drawing the best and brightest from around the world.

- k. Himself a behavioural scientist with wide-ranging interest in other domains, Teck Hua also encouraged cross-disciplinary learning and research by setting up interdisciplinary colleges in both NUS and NTU.
  - i. And he brings this same commitment to interdisciplinarity to AI Singapore, where his teams work with local and overseas partners to deploy AI solutions in areas such as finance, healthcare and sustainability.
- l. In addition, Teck Hua has also spearheaded platforms to translate research insights in our universities into commercial solutions tackling real-world challenges.
  - i. These include the Graduate Research Innovation Programme or GRIP, and a tripartite partnership between Temasek, NTU and NUS to develop a deep-tech incubator for promising start-ups.
  - ii. I should add that Teck Hua has also brought his valuable insights and experience to the Future Economy Advisory Panel, supporting the ongoing transformation of our economy in the years ahead.

32 Let me once again extend my heartiest congratulations to all award recipients this year for your exceptional accomplishments.

m. The awards tonight are a recognition of your achievements thus far, and I trust that they also motivate you to aspire to even greater peaks ahead.

n. For our young and budding scientists, here in Singapore and elsewhere around the world, I hope this year's recipients also spur you to pursue your passions in science, technology and innovation.

33 Their stories were sparked by their sense of wonder and curiosity. Each of their scientific journeys is by itself interesting, but each also demonstrate the value of grit, persistence and collaboration.

34 To all our award winners, tonight's awards not only recognise your potential and achievements, but also serve to inspire others. I trust that you will continue to work with one another, across disciplines and borders, to advance science and technology, and to make an even greater impact in the years ahead.

35 My Heartiest Congratulations! Thank you, President, for your presence and for inspiring us all.

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