



## ON-SITE BIOLOGY COLLOQUIUM

Friday, 18 Oct 2024 | 4 pm | DBS Conference Room 1, Blk S3 Level 5

Hosted by Prof Prakash Kumar

Map to Block S3



# Nanotechnology to engineer immune cells and plants

By **Andy Tay Kah Ping**

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### **About the Speaker**

Andy Tay graduated in 2014 from NUS with a First-Class Honors in Biomedical Engineering. He later headed to the University of California, Los Angeles for his PhD studies and graduated in 2017 as the recipient of the Harry M Showman Commencement Award. Andy next received his postdoctoral training at Stanford University before heading to Imperial College London as an 1851 Royal Commission Brunel Research Fellow. He is currently a Presidential Young Professor in NUS.

Andy is a recipient of international awards including the Micro and Nano Engineering Young Investigator Award, Christopher Hewitt Outstanding Young Investigator Award and Terasaki Young Innovator Award. He is listed as a 2019 Forbes 30 Under 30 (US/Canada, Science), 2020 World Economic Forum Young Scientist and 2022/3 Top 2% Scientist in the World by Stanford University.

The ability to deliver cargo including proteins and nucleic acids holds great promise to engineer more powerful immune cells for therapies and plants that grow faster. However, it is not trivial to achieve high delivery efficiency with minimal biological perturbations.

Conventional methods such as viruses and electroporation to engineer immune cells suffer from the integration of viral transgenes, significant cell damage and low transfection efficiency. Likewise, methods such as using Agrobacteria and gene gun are limited to model plant species and can affect regeneration of engineered plant tissues.

In this talk, I will describe three technologies my lab has developed for high throughput gene editing in immune cells and in vivo delivery, and plant genetic engineering. This talk aims to inspire the audience on the use of nanotechnology for drug and gene delivery across a wide variety of species.