Infectious Diseases Labs

A*STAR IDL

# Dr Andy Tay

Assistant Professor,
Presidential Young Professor,
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**Thursday 16th Oct 2025**
2:00 PM to 3:00 PM (SGT)

**Venue:** Codon A & B, Matrix Level 5

## Biomaterials to engineer human immune cells and tissues

While significant advances have been made in the field of human immunology, we still lack tools and models to study immune cells within human tissues, and to engineer these primary immune cells. This is crucial because immune cells are known to exhibit variable phenotypes and functions in different tissue microenvironments. Immuno-engineering is an interdisciplinary field using approaches in immunology, bioengineering and material sciences to manipulate immunity for diagnostic and therapeutic purposes. Here, I will describe three tools and models my lab has developed to enable the study of human tissue immunology. I will first discuss an in vitro human immune organoid model that preserves high cell diversity, retains donor memory and can be educated to recognise naïve antigens. I will next describe a porous microneedle to extract tissue immune cells before ending with a nanotechnology for genetic engineering of diverse primary human immune cells.

**Dr 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 Terasaki Young Innovator Award and Micro and Nano Engineering Young Investigator Award. He is listed as a Forbes 30 Under 30 (US/Canada, Science), World Economic Forum Young Scientist and Singapore Young Scientist Award.

**Hosted by: Dr Stefan Oehlers**

**Seminar is open to all. No registration required.**

Questions? Contact us at **seminars@idlabs.a-star.edu.sg**

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