

## SEMINAR ANNOUNCEMENT

We would like to invite you to attend this seminar hosted by A/Prof. Frederic Bard:

Date: 3 September 2019, Tuesday

Time: 11:00AM – 12:00PM

Venue: Level 3, IMCB Seminar Room 3-46, Proteos, Biopolis

---

**Speaker:** Dr Anson Tan, Department of Biochemistry and Molecular Biology, The University of Melbourne, Australia

**Title:** Membrane transport pathways that regulate  $\beta$ -amyloid precursor protein (APP) processing and  $\beta$ -amyloid ( $A\beta$ ) production in Alzheimer's disease

### Abstract

Dysregulation of membrane trafficking has been increasingly implicated with neurological disorders and diseases. Several Alzheimer's disease susceptibility genes that regulate membrane trafficking have been identified in Genome-wide association studies. Membrane trafficking plays a key role in regulating APP processing pathways. APP is processed along the amyloidogenic pathway by  $\beta$ -secretase (BACE1) to generate  $A\beta$  or along the non-amyloidogenic pathway, which represents the major pathway, by  $\beta$ -secretase to preclude  $A\beta$  biogenesis. Perturbations in the intracellular sorting of APP and BACE1 enhances  $A\beta$  production. Much of the current research focuses on endocytic trafficking. However, the secretory pathway is also crucial for regulating APP processing as newly-synthesized APP and secretases have to traffic through the Golgi. We utilized a range of techniques including the RUSH system to interrogate the trafficking itinerary of APP and BACE1 from the Golgi in HeLa cells. Moreover, we were able to bridge our findings from HeLa cells to neurons through the employment of the shRNA lentivirus to deplete key transport machinery in primary mouse neurons. We uncovered significant findings in primary neurons and shown that segregation of APP and BACE1 into distinct pathways from the Golgi limits amyloidogenic processing of APP.

### Biography

Anson obtained a Bachelor of Science from the University of Melbourne. He then completed his Honours in the field of membrane trafficking with Professor Paul Gleeson at Bio21 Molecular Science and Biotechnology Institute in the University of Melbourne where he was awarded the Frances Elizabeth Thomson Honours Scholarship. Upon receiving a Melbourne International Research Scholarship, he continued a Ph.D with Paul Gleeson. His work focused on understanding the regulation of membrane trafficking at the Golgi in the context of Alzheimer's disease. His work led to three publications, including two first authors, as well as two review articles, and presentation at conferences in Australia and the US. He is currently working as a research fellow with Paul Gleeson investigating mechanisms of segregation of membrane cargo

at the Golgi into distinct transport pathways. His research interest also includes the application of iPS cells to study neurodegeneration and membrane trafficking.

---

***ALL ARE WELCOME*** (No registration required)

*We appreciate if you could disseminate this email to your staff.*

*For upcoming seminars in IMCB, please visit our website at <https://www.a-star.edu.sg/imcb>*

*Thank you.*

Note: This message may contain confidential information. If this Email/Fax has been sent to you by mistake, please notify the sender and delete it immediately. Thank you.