Department of Biochemistry and Molecular Biology

PhD Oration

Friday 23rd of March
3:30-4:30pm
Bio21 Institute Auditorium
30 Flemington Road, Parkville

Anson Tan
Gleeson Laboratory,
Department of Biochemistry and Molecular Biology. University of Melbourne.

The post-Golgi sorting and trafficking of the β-amyloid precursor protein (APP) and β-Secretase (BACE1) in Alzheimer's disease

Membrane trafficking, including the secretory (anterograde/forward) and endocytic trafficking pathways, is part and parcel of every eukaryotic cell. Each of these pathways is governed by a distinct set of transport machineries such as small G proteins, cargo adaptor proteins, and accessory proteins. Dysregulation of membrane trafficking has been increasingly associated with neurological disorders and diseases. In particular, Alzheimer's disease (AD) has been associated with defects in the endocytic sorting of two key proteins, APP and BACE1. The sequential processing of APP by the rate-limiting enzyme BACE1 and gamma-secretase leads to Amyloid-beta (Aβ) production. Aβ is thought to be the causative agent of AD. Currently, the post-Golgi (anterograde/forward) sorting and trafficking of APP and BACE1 is not well-defined, yet is crucial information for understanding the regulation of Aβ production in the secretory pathway. I utilized key techniques such as the immunofluorescence microscopy, flow cytometry, and the retention using selective hooks (RUSH) system to interrogate the trafficking itinerary of newly synthesized APP and BACE1 from the Golgi. In addition, I also employed the shRNA lentivirus to knockdown key transport machinery in primary neurons to define the regulation of post-Golgi sorting of APP and BACE1.

ALL WELCOME. Please join us for Pizza to celebrate this PhD Oration!
Further information: Matthew Dixon (matthew.dixon@unimelb.edu.au)