Department of Biochemistry and Molecular Biology

2017 Seminar Series

Wednesday 23rd of August
12-1pm
Bio21 Institute Auditorium
30 Flemington Road, Parkville

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RUSHing to study intracellular trafficking in live cells

I defended my PhD last September at the Institut Curie (Paris, France) after 4 years in the lab of Franck Perez. I studied the involvement of microtubules in the intracellular trafficking. By using the **R**etention **U**sing **S**elective **H**ooks (RUSH) system to synchronize the trafficking of cargos, we showed that microtubules were not strictly essential to cargos secretion.

We characterized two populations of Golgi elements in cells without microtubules. Both support trafficking after long-term microtubules depletion or after relocation of Golgi proteins in the endoplasmic reticulum. Our results demonstrate that functional maturation of Golgi elements is needed to ensure post-Golgi trafficking and that microtubules driven post-Golgi transport is not strictly required.

I also conducted researches on the exocytosis at the plasma membrane. Using an antibody coating to immobilize secreted cargos on the coverslips, we observed a directed secretion towards the focal adhesion. In this project, we highlighted a close relationship between forces exerted by the cell on its substrate and the trafficking direction by using pattern and Traction-Force Microscopy.

After my PhD, I joined the team of Paul Gleeson. We are investigating the intracellular trafficking of BACE1 and APP to characterize their trafficking routes, information that could be exploited for future development of novel therapeutics for Alzheimer's disease. By using the RUSH, we are able to track the newly synthesised BACE1 and APP in HeLa cells. We observed that APP and BACE1 exhibit different dynamics and kinetics. We now aim to determine the precise itinerary of newly synthetized APP and BACE1 in the primary neurons.

ALL WELCOME. Please join us for a light lunch after the seminar!
Further information: Matthew Dixon (matthew.dixon@unimelb.edu.au)