NCRIS Virtual Seminar Series

Spatio-molecular mapping of the apical polarity network in mammalian epithelial cells.

Date: 9th Nov 2020 (Monday)
Time: 12noon-1pm (SGT)

Venue: *via* **Zoom**
For details, please contact:
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Abstract:
The polarity complexes Par, Scribble and Crumbs are central to the establishment of epithelial apico-basal polarity. Apical (Par and Crumbs) and basolateral (Scribble) polarity complexes overlap at the apical-lateral border, which in mammals is defined by tight junctions and adherens junctions. We have recently mapped the sub-junctional organization and molecular environment of the Par and Crumbs complexes by electron microscopy imaging and quantitative proximity proteomics using the peroxidase APEX2. This permitted us to localise cell polarity and junctional proteins with high spatial precision and to produce a spatially resolved proteome of the apical-lateral border. Intriguingly, we find that the Crumbs complex defines and is required for the formation of a hitherto unidentified polarity domain apical of the tight junctions, which we call the the "vertebrate marginal zone" (VMZ). Protein-protein interaction mapping identified a VMZ-associated protein network that links the Crumbs complex to regulators of the cortical actin cytoskeleton and novel HIPPO pathway proteins. The possible implications of our findings as well as future research directions will be discussed.



Speaker:

Dr. Alexander Ludwig, PhD

Assistant Professor
School of Biological Sciences and NTU Institute of Structural Biology,
Nanyang Technological University, Singapore

Dr. Alexander Ludwig has a long-standing background in cell biology, biochemistry and imaging by light and electron microscopy. He was a postdoctoral fellow at the MRC-LMB in Cambridge and joined SBS/NTU as a Senior Research Fellow in 2013. Since January 2019 he leads his own research group at SBS. His lab is interested in understanding how membrane compartmentalization drives epithelial cell polarization and morphogenesis.

Host:

David Virshup
Professor & Director
Programme in Cancer & Stem Cell Biology
Duke-NUS Medical School
Singapore

No registration is required.
All are welcome.