Research Theme: Cell Biology

PhD Research Project Title: Mechanisms of epithelial tissue morphogenesis

Scholarship category (Please indicate the source of funding for this project):

SBS Research Student Scholarship

Principal Investigator/Supervisor: Alexander Ludwig

Co-supervisor/ Collaborator(s) (if any): NA

Project Description

a) Background:

The formation of three-dimensional epithelial structures is of fundamental importance during animal development and is driven by a complex morphogenetic program that relies on the precise coordination of cell differentiation, apico-basal polarity development, cell-cell junction formation, and apical membrane trafficking. How these processes are orchestrated in time and space is not well understood.

b) Proposed work:

The goal of this PhD project is to dissect the spatio-temporal mechanisms of epithelial lumen formation in 3D cultures and zebrafish models. Various state-of-the-art super-resolution imaging approaches including 3D-SIM, STED, correlative light and electron microscopy, and volume EM will be used to resolve how epithelial cells form a three-dimensional polarized epithelium. This will be combined with CRISPR-based tagging of endogenous proteins and KO approaches, spatial proteomics, and protein biochemistry.

c) Preferred skills:

The PhD candidate should be highly motivated, driven, and hard-working and should have a degree in Cell Biology, Molecular Biology, and/or Biochemistry. Prior experience in working in a cell biology lab and experience in mammalian cell culture, protein biochemistry, and microscopy are mandatory.

Supervisor contact:

If you have questions regarding this project, please email the Principal Investigator: aludwig@ntu.edu.sg. See also our web homepage for more information: https://blogs.ntu.edu.sg/alabntusg/

SBS contact and how to apply:

Associate Chair-Biological Sciences (Graduate Studies) : AC-SBS-GS@ntu.edu.sg

Please apply at the following:

Application portal:

https://venus.wis.ntu.edu.sg/GOAL/OnlineApplicationModule/frmOnlineApplication.ASPX

NANYANG TECHNOLOGICAL UNIVERSITY
SINGAPORE

School of Biological Sciences
College of Science

Reg. No. 200604393R

60 Nanyang Drive, Singapore 637551