**Research Theme:** Cell adhesion and Cancer

**Research Project Title:** Investigating the roles of kindlins in cancer epithelial-mesenchymal transition

**Principal Investigator/Supervisor:** Tan Suet Mien

**Co-supervisor/ Collaborator(s) (if any):** To be announced at a later date

### Project Description

#### a) Background

Cell polarization, cohesiveness and intermediate filament expression profiles undergo marked changes during epithelial to mesenchymal transition (EMT). Induction of EMT includes a repertoire of stromal derived signals, including inflammatory cytokines, ROS, TGF-beta and hypoxia. Many of these are known to activate EMT-linked transcription factors such as the Snail, Twist and Zeb family of proteins, which can regulate gene expression involved in cell-cell adhesion and cytoskeletal remodeling. Kindlins are FERM-containing cytoplasmic proteins known to regulate cell adhesion and migration by modulating the ligand-binding affinity of adhesion molecules integrins. The three kindlin paralogs (kindlin-1, -2, and -3) have different tissue distributions. Kindlins are known to regulate signalling pathways, including Wnt-signaling, Akt-mTOR-p70S6K, and Syk-Vav-1-Rac/Cdc42 pathways. Kindlins are important in cancer progression. However, more investigations are needed to clarify the roles of each kindlin in this process.

#### b) Proposed work

In brief, the project will examine the expression profiles of kindlins during cancer EMT using different cancer cell line models and relevant EMT-stimuli in *in vitro* studies. The roles of the kindlins in these cells undergoing EMT will also be determined by using gene-silencing and overexpression methods. These studies will be verified by performing *in vivo* animal studies. Potential candidate applying for this project should be familiar with standard molecular biology techniques and preferably have experience with cell culture.

### Supervisor contact:

If you have questions regarding this project, please email the Principal Investigator:

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### SBS contact and how to apply:

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Please apply at the following: http://admissions.ntu.edu.sg/graduate/R-Programs/R-WhenYouApply/Pages/R-ApplyOnline.aspx