**Research Theme:** Virology

**Research Project Title:** Signalling pathways that mediate respiratory syncytial virus morphogenesis

**Principal Investigator/Supervisor:** A/Prof Richard Sugrue

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

### Project Description

#### a) Background

The mature respiratory syncytial virus (RSV) particles form at the cell surface with a filamentous morphology and are referred to as virus filaments. The involvement of lipid-raft microdomains and F-actin in RSV morphogenesis has been demonstrated, and we have demonstrated an the F-actin dependent intercellular transmission involving hydroxymethylglutaryl coenzyme A reductase (HMGCR) activity. HMGCR is a key regulatory enzyme in cholesterol biosynthetic pathway and its enzyme activity can be specifically inhibited using statin-based drugs. Lovastatin treatment inhibited virus filament formation and virus transmission (, suggesting that this is a viable antiviral strategy, but this inhibitory effect was not directly due to impaired cholesterol biosynthesis. Our studies have suggested that the drug acts by inhibiting the F-actin remodeling that is essential for RSV morphogenesis. This project will establish the signaling networks involved in RSV assembly and elucidate the mechanism of action of anti-viral of lovastatin.


4. Jeffree, CJ; Brown, G; Aitken, J; Yeo Su-Yin, D; Tan BH and Sugrue RJ. (2007). Ultrastructural analysis of the interaction between F-actin and respiratory syncytial virus during virus assembly. Virology

#### b) Proposed work

Cell biology, biochemistry and basic virology methods will be employed
**Supervisor contact:**

If you have questions regarding this project, please email the Principal Investigator: RJSugrue@ntu.edu.sg

**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](http://admissions.ntu.edu.sg/graduate/R-Programs/R-WhenYouApply/Pages/R-ApplyOnline.aspx)