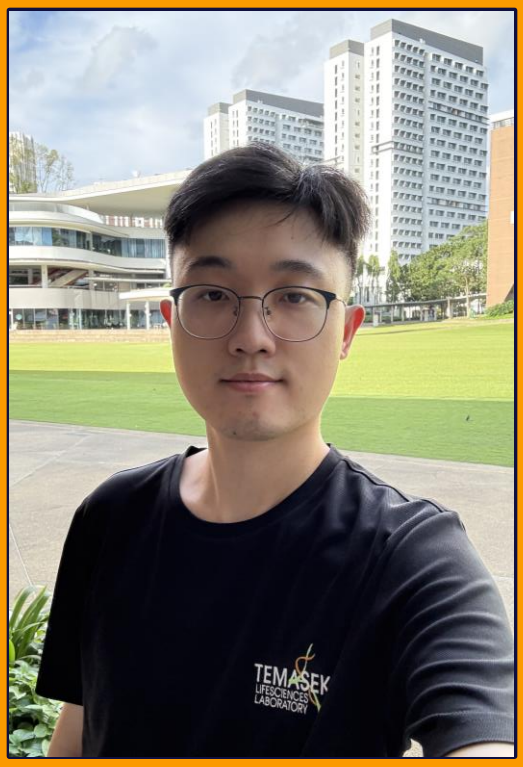
PhD DEFENSE

TEMASEK LIFESCIENCES LABORATORY



Mr. Hou Xinjun

Dr Cai Yu Group

6 Jan 2025

11:00am

The Auditorium

**Scan for address*

All Are Welcome!

Investigating the Mechanism of Cytoplasmic Incompatibility Induced by Type III *cifs* in *Wolbachia w*AlbB

Mosquito-borne diseases cause millions of infections and thousands of deaths every year, making it urgent to mitigate disease transmission. *Wolbachia* as an obligate intracellular bacteria can induce cytoplasmic incompatibility (CI) in its host, providing a novel approach control the mosquito population. CI factors (*cifs*) encoded by *Wolbachia* are responsible for CI induction. To describe the molecular mechanism of CI, the Toxin-antidote (TA) model and the Host Modification (HM) model have been proposed, which are still not well understood. In this thesis, I established one Singapore local *w*AlbB-carrying *Aedes aegypti* strain with satisfying traits for the ongoing Project *Wolbachia* - Singapore. I also studied the underlying molecular mechanism of *w*AlbB-induced CI, and my results indicated that unknown modifications induced by type III *cifs* of *w*AlbB at early spermatogenesis recapitulated CI, which fits the HM model. Taken together, this study provided *Wolbachia-Aedes* strain and investigated CI mechanisms contributing to mosquito population control.