PhD DEFENSE

TEMASEK LIFESCIENCES LABORATORY



Mr Chen Cheng-Yen
Dr Naweed Naqvi Group

22 Dec 2022, Thurs
11am

The Auditorium

**Scan for address*

All Are Welcome!

Molecular basis and function of beneficial fungus-plant interactions

The efficacy of rhizosphere fungi on plant growth and fitness has gained support from studies indicating their potential as sustainable biofertilizers. In a screen for such beneficial mycobionts, I isolated the fungal strain AR8, which exhibited mycorrhiza-like traits, including phosphate transfer and phytohormone modulation to stimulate robust growth in Arabidopsis, and the green leafy vegetables Choy Sum and Kailan. Detailed cell biology and metabolomics analyses revealed a link between AR8's endophytic lifestyle and beneficial effects. Increased level of primary metabolites in AR8 plants indicated the upregulation of energy production for plant growth. Interestingly, the observed induction of specificphenylpropanoids in Choy Sum was not only in response to AR8 colonization, but also responsible for the growth-promoting effects. Lastly, AR8 showed a significant increase in biomass and growth in Choy Sum and microgreens in field tests in urban farm settings. Taken together, we uncovered a novel beneficial fungus, AR8, and deciphered the molecular basis of mycobiont-based promotion of growth and yield in urban farmed crops.