



Research Theme: Plant Biology / Bioinformatics
MSc Research Project Title: Heterogeneity of plant cell defense
Principal Investigator/Supervisor: Dr. Tang Bozeng
Co-supervisor/ Collaborator(s) (if any):
<p style="text-align: center;">Project Description</p> <p>a) Background: To active defense responses against infection, plant cells deploy immune receptors that detect and bind pathogen virulence proteins called effectors. This recognition triggers a cascade of cellular events—reactive oxygen species bursts, callose deposition, cell wall reinforcement, and large-scale transcriptional reprogramming. These coordinated responses lead to programmed cell death (PCD), which confines the pathogen to the first infected cell and prevents its spread to surrounding tissue. Yet how this signal is propagated from the infected cell to the adjacent cells remains largely unknown.</p> <div style="display: flex; align-items: center;"><div style="margin-left: 20px;"><p>b) Proposed work: In this project, we will apply advanced bioinformatics to analysis published single-cell transcriptomic data in order to reconstruct the transcriptional signature of individual plant cells during immune activation. By modelling these cells, we will built a trajectory and define dynamic gene-expression changes across the cells and pinpoint key molecules driving each stage of the response. This work will both advance single-cell methodologies in plant pathology and build a good foundation for in-depth studies of effector-triggered immunity.</p></div></div> <p>c) Preferred skills: Strong interests in plant pathology; A strong curiosity about science; Experience of bioinformatics is a plus, but not compulsory</p>
<p style="text-align: center;">Supervisor contact: If you have questions regarding this project, please email the Principal Investigator: bozeng.tang@ntu.edu.sg</p>
<p style="text-align: center;">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</p>



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