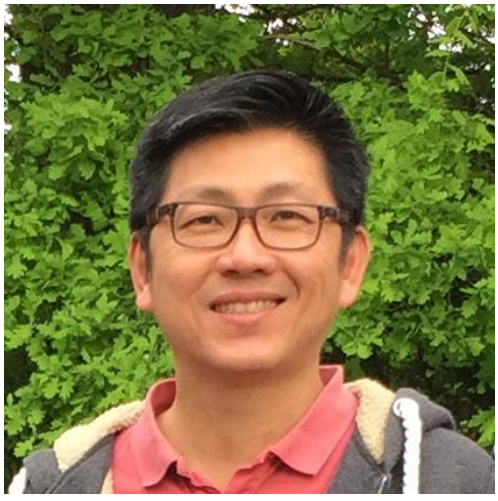
NUS National University of Singapore | Department of Biological Sciences, Faculty of Science

BIOLOGY COLLOQUIUM

Friday, 5 April 2019 | 4pm | DBS Conference Room 1

Hosted by Dr Amy Choong

Dissecting early signalling steps in plant immunity responses



About the Speaker

Justin Lee obtained his BSc (Hons) in NUS (1991). After a one-year stint at the IMCB, he moved to Germany, where he graduated summa cum laude from the Martin-Luther University of Halle-Wittenberg for his PhD (1997). He started postdoctoral training with Prof. Thorsten Nuernberger (working on harpin, the first known secreted substrate of the Type III secretion system of phytopathogenic bacteria) and subsequently with Prof. Dierk Scheel (where he began working on mitogen-activated protein kinases). Since 2006, he co-leads with Prof Scheel the Cellular Signalling research group in the Department of Stress & Developmental Biology at the IPB, Halle. (*since 2019, Department for Biochemistry of Plant Interactions, led by Prof. Tina Romeis). His research aims to elucidate the mechanisms of early signalling steps in plant immunity responses, mainly in model plants such as Arabidopsis thaliana. For more info, see: ResearcherID (B-6096-2012) or ORCID (0000-0001-8269-7494) profiles.*

By **Justin Lee**

Leibniz Institute of Plant Biochemistry (IPB), Halle, Germany

Plants do not have an adaptive immune system like in animal systems. However, comparable to animal innate immunity, individual plant cells have potentially the capacity to recognize pathogens (or microbes in general) and trigger cellular immune reactions. Typically, this occurs through plant receptor-mediated recognition of microbe-derived molecules (non-self recognition) and sometimes through a second wave of immunity activation via sensing of plant-derived signals generated during the infection process (self or more accurately, modified self recognition). My lab has been studying the early steps in the signal transduction pathway after pathogen recognition and I will illustrate with work performed in two research directions: (1) calcium signalling and (2) phosphorylation control through mitogen-activated protein kinases (MAPKs). Rapid changes in calcium levels is a ubiquitous cellular response to multiple environmental and developmental signals. I will show that the calcium response is closely linked to receptor functions. MAPK cascades consists of three kinases acting consecutively and are evolutionarily conserved in eukaryotic systems. However, plant genomes encode many more MAPK components, with plant MAPK signalling being more diversified and complex. Here, I will report our efforts to identify MAPK substrates and elucidate their role(s) in the plant immunity response.

Artwork by Ann Nee, DBS, NUS