SEMINAR

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Hosted by Assist. Prof Chae Eunyoung

Plant pattern recognition receptors - evolution and function

By **Thorsten Nuernberger**

University of Tuebingen, Center for Plant Molecular Biology, Germany

Plants use cell surface and intracellular immune receptors to recognize pathogens. Plasma membrane pattern recognition receptors (PRRs) sense microbe-derived molecules to confer pattern-triggered immunity (PTI), while intracellular nucleotide binding leucine-rich repeat receptors (NLRs) recognize microbial effectors and confer effector-triggered immunity (ETI). Both branches of the plant immune system converge in signal transduction upstream of nuclear events. I report here new molecular insights into the EDS1-PAD4-ADR1 node as a convergence point of immune signalling mediated by both surface-resident and intracellular immune receptors (Pruitt et al., Nature, 2021). In particular, I highlight the importance of phosphoribosyl-AMP/ADP in the activation of early events implicated in the activation of PTI.

PTI and ETI work in concert to mount robust resistance to microbial infection. This suggests that both evolve at similar speeds. NLRs are highly polymorphic and evolve at accelerated speed, but very little is known about sequence variation and functional diversification of PRR-encoding genes. Here, I report on the identification, geographical origin and functional diversification of a PRR in wild potatoes (Ascurra et al., Science 2023).

About the Speaker

I am a plant biochemist, currently holding the position of Full Professor of Plant Biochemistry and of Director of the Center of Plant Molecular Biology (ZMBP) within the University of Tübingen, Germany. I hold an Honorary Professorship at Nanjing Agricultural University Nanjing, China, a Visiting Professorship to the University of Johannesburg, South Africa and I am an elected Member of the European Molecular Biology Organization (EMBO). My current research interests are the identification and characterization of pathogen-associated molecular patterns and their cognate immune receptors and the use of these receptors for engineering resistance in crop plants.