

Graduate School Event

Thesis Defense: Fast growth responses in plants: Phospho proteomic and growth regulation

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Host: Michael Sixt

Root growth inhibition (RG) by auxin and other cues (e.g. eATP, RALF peptide) involves rapid, non-transcriptional pathways. Specific steps leading to growth inhibition are unclear. Notably, the RG inhibition is associated with increases in cytosolic Ca2+, plasma membrane depolarization and apoplast alkalization. However, the causal relationship between them is unclear. To untangle these processes, we utilized multiplexed reporter imaging to observe pairwise the real-time dynamics of these three processes. Furthermore, we tested causal relationships. We employed microfluidics for rapid medium exchange and leveraged new optogenetically regulated channels. Our comprehensive approach uncovered a network with tight feedback loops. Results indicate that cytosolic Ca2+ serves as the universal initial signal, triggering both plasma membrane depolarization and subsequent apoplast alkalization following auxin perception. his conclusion provides a basis for the fundamental regulatory mechanism governing growth but also opens questions about the molecular mechanisms behind it.

Monday, August 3, 2026 10:00am - 11:00am
Office Bldg West / Ground floor / Heinzel Seminar Room (I21.EG.101) and Zoom

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