

GDCB SEMINAR

Tuesday, September 20, 2022 — 1:10 p.m. *

1414 Molecular Biology Building

'Gene regulatory networks and reactive oxygen species signals that control hormone regulated root development'

Abstract: Hormones play central roles in controlling plant development and responses to environmental changes. We are examining the gene regulatory networks downstream of ethylene and auxin signaling that control root development in the model organism *Arabidopsis thaliana*. To identify these networks, we are using time course transcriptomics, which provide rich temporal information about transcriptional changes, followed by mathematical modeling to identify groups of genes with similar kinetic responses to elevated hormone levels that have conserved function and are enriched in targets for specific transcription factors. We have monitored changes in transcription abundance in mutants with defects in genes encoding hormone receptors and transcription factors that have altered hormone regulated development to identify a set of candidate genes linked to root development. Using a yeast synthetic biology system, we are resolving these gene regulatory networks by determining which transcription factors bind to and regulate downstream genes. Within these transcriptional response networks are genes that encode enzymes that modulate reactive oxygen species levels, and which function as regulators of root development. These experiments are designed to reveal the molecular machinery and biochemical events by which hormones control root development.



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Wake Forest University

Charles M. Allen Professor of
Biology and Director of the
Center for Molecular Signaling

Host: Dior Kelley, assistant professor in the Department of Genetics, Development and Cell Biology

** Please note new time (1:10 p.m.) for GDCB Seminars.*

IOWA STATE UNIVERSITY

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