

2023 WSU Plant Sciences Retreat

Saturday, March 4th, Zoom Meeting 942 0802 8131

1:00 pm Welcome and opening remarks: **Prof. Michael Neff, MPS Program Director**

1:15-2:30 **Session I:** Chair, Sean McGuire

Dr. Cecilia Rodriguez-Furlan: RAB7 regulates endomembrane traffic impacting plant stress responses.

Synopsis: Plant cellular stress responses involve activating two degradative pathways endocytosis and autophagy. RAB7 proteins act as on/off switches for both pathways impacting whole-plant stress response. My lab investigates the processes behind RAB7's modulation of stress.

Kathleen Hickey: Impact of Heat and Drought on Peroxisomes and Autophagy in Wheat

Synopsis: Peroxisomes abundance changes in response to many environmental stresses and damaged peroxisomes are degraded through a specific type of autophagy, pexophagy. We use peroxisome abundance and autophagic flux as markers of drought and heat resiliency in wheat.

Dr. Yang Hu: AI4EVER: A Generic Platform for Deep Learning System Development

Synopsis: AI4EVER is a graphical user interface that enables prediction-assisted image labeling, training/re-training models, and applying trained models to classify images. It is adaptable for training environments, final export models to different formats, and generates command line transcript to implement with Linux/Mac OS.

Jacob Lewis: Characterization at the Intersection of the Lignin and Flavonoid Pathway in Grasses

Synopsis: Flavonoids are potent antioxidants, which play a role in defense against pathogens and insects, attracting pollinators, protection against UV-radiation and reactive oxygen species. The flavonoid pathway diverts biomass from the lignin pathway making it ideal for engineering for ease of access to biofuel via cellulose. I work on engineering this pathway towards biofuel access.

Alyssa Parish: The Role of Microtubule Nucleation Angle in Plant Cytokinesis

Synopsis: During cytokinesis plants form a unique microtubule structure known as the phragmoplast. Microtubules traffic vesicles for building partition between daughter cells. I study proteins that regulate geometry of microtubule nucleation in the phragmoplast.

2:30-3:00 **Coffee Break**

3:00-4:30 **Session II:** Chair, Brandon Johnson

Miguel Rosas: BUZZ: an essential gene for post-initiation root hair growth and a mediator of root architecture in *Brachypodium distachyon*

Synopsis: Root hairs are specialized epidermal cells that expand the effective root surface to increase the uptake of water and nutrients. I study a novel protein, termed BUZZ, in the grass *Brachypodium distachyon*, as a key regulator of tip growth and nitrate-responsive root architecture.

Qingyan Meng: Dirigent protein gateway to isoflavene and pterocarpan plant defenses

Synopsis: Dirigent protein biochemical activities give rise to distinct complex classes of plant phenolics. We solved the crystal structures of proteins with dirigent-like domains, PsPTS2, PsPTS1 and GePTS1. Finding a mechanism that binds and stabilizes plant phenol-derived mono- and bis-quinone methide intermediates during different C–C and C–O bond formation processes.

Introduction of keynote speaker: Michael Neff, MPS Program Director

Dr. Bryan Thines: Connecting Plant Science to Society: An Interdisciplinary Adventure

Synopsis: Regardless of career aspirations, interdisciplinary training is essential for all trajectories in science after graduate school. Experiences in the Molecular Plant Sciences program at WSU offered me an array of opportunities to deeply engage across disciplinary boundaries. I will reflect on my time as a WSU graduate student, and also share the numerous ways that my training created options and opened doors upon graduation. I also will share my latest experiences in innovative pedagogy and doing research at a liberal arts college while exploring targeted protein degradation in plant responses to environmental stress.

5:00-9:00 **Buffet dinner and poster viewing CUE 5th Floor.**

The WSU Plant Sciences Retreat is organized by the Molecular Plant Sciences Graduate Program with support from the Graduate School, the Agricultural Research Center, CAHNRS and the College of Sciences.