

Seminar Series

Thursday, November 12, 2020

12-1pm

Please RSVP to BMI@uky.edu

Zoom Meeting: <https://uky.zoom.us/j/88251619019>

Title: Challenges and Opportunities in Plant Science

Dr. Seung Yon (Sue) Rhee

Senior Staff Member of Plant Biology Department
at Carnegie Institution for Science, Stanford, CA

ABSTRACT: Plants make up the biggest biotic component of the biosphere and play essential roles in all ecosystems. Our survival and well-being depend on plants and this dependence will increase as the climate changes rapidly. To improve how we obtain food, energy, and materials from plants and steward the health of our environment for future generations, we need to understand how plants work at multiple scales from molecules to cells to ecosystems. A major challenge to achieving this goal is a limited understanding of functions of plant genes. The majority of genes in plant genomes are uncharacterized and many of them are found only in plant lineages. Traditional sequence-similarity based biochemical function inference cannot address this challenge. Another aspect of gene function that is critical but generally lacking is the spatial and temporal context under which gene products operate. These challenges have, in part, driven the spectacular advances and inventions in genomics, imaging, mass spectrometry and we are now capable of high-throughput, high-content, and high-resolution measurements of gene and protein function parameters. Along with these technologies and emerging datasets, we need advances in computational biology and bioinformatics tools, concepts, and methods. In this talk, I will describe these challenges and some of the efforts we are making in addressing them.



Seung Yon (Sue) Rhee is a Senior Staff Member of Plant Biology Department at Carnegie Institution for Science. Her group strives to uncover the molecular mechanisms underlying adaptive traits in the face of heat, drought, nutrient limitation, and pests. Dr. Rhee's group studies a variety of plants including models, orphan crops, medicinal and desert plants. More recently their work has involved studying a model nematode *C. elegans*, fungal pathogens, and piezophilic bacteria. Her group employs computational modeling and targeted laboratory testing to study mechanisms of adaptation, functions of novel genes, organization and function of metabolic networks, and chemical and neuronal code of plant-animal interactions. Her group is also interested in developing translational research programs involving biomass maximization under drought in bioenergy crops. Dr. Rhee received her B.A. in biology from Swarthmore College and a Ph.D. in biology from Stanford University. She has been an investigator at the Plant Biology Department of Carnegie Institution for Science since 1999.