

Molecular & Cellular Biology of the Soybean

August 22-23, 2022



Soy2022 Virtual

Monday, August 22, 2022

8:00-8:10 am Welcome/ Instructions

Functional and Translational Genomics

8:10-8:15 am Welcome

8:15-8:35 am Wild soybeans meet systems biology---Understanding complex trait variations for crop improvement, Bao-Hua Song, University of North Carolina – Charlotte

8:35-8:55 am Roots to seeds: gene discovery and precision breeding by genome editing, Yuefeng Guan, Fujian A&F University

8:55-9:15 am Combining fast neutron and CRISPR/Cas9 mutagenesis to facilitate gene discovery in soybean, Bing Stacey, University of Missouri

9:15-9:30 am Developing activation tagging resources for soybean gene discovery, C. Nathan Hancock, University of South Carolina- Aiken

9:35-9:55 am A giant NLR gene confers broad-spectrum resistance to Phytophthora sojae in soybean, Weidong Wang, Purdue University

9:55-10:15 am Investigating the functions of a soybean rust effector protease that suppresses host immunity, Steven Whitham, Iowa State University

10:15-10:25 am Break

Abiotic Stress

10:25-10:30 am Welcome

10:30-10:50 am Possible epigenetic controls of salt responses in soybean, Hon Ming Lam, Chinese University of Hong Kong

10:50-11:10 am Studying IDC in soybean: turning the model right side up, Michelle Graham, USDA-ARS, Iowa

11:10-11:30 am Impacts of tropospheric ozone on soybean roots, Ripley Tisdale, USDA-ARS, Raleigh

11:30-11:50 am Manipulating growth temperatures under field conditions to understand and alter crop responses to global warming, Carl Bernacchi, University of Illinois

11:50-12:10 pm Defining the genetic architecture of soybean drought tolerance and enabling pre-breeding for enhanced germplasm, Jason Gillman, USDA-ARS, Missouri

12:10-1:00 pm Break for Lunch

Symbiotic Interactions

1:00-1:05 pm Welcome

1:05-1:25 pm Linking signal perception at the plasma membrane to intracellular events during soybean nodule formation-roles of heterotrimeric G-proteins, Sona Pandey, Danforth Center

1:25-1:45 pm The roles of rhizobial exopolysaccharides in legume symbiosis: Contrasts in indeterminate- and determinate-nodule-forming hosts, Kathryn (Kay) Jones, Florida State University

1:45-2:05 pm Bacteriophages add a new dimension to Bradyrhizobium diversity and ecology, Jeffrey Fuhrmann, University of Delaware

2:05-2:25 pm Use of high resolution functional genomic tools to investigate the soybean-Bradyrhizobium nitrogen fixing symbiosis, Gary Stacey, University of Missouri

2:25-2:45 pm Evaluation of a novel drought-tolerant N-fixing inoculant on soybean yield and its effect on the rhizosphere microbiome, Woo-Suk Chang, University of Texas, Arlington

3:00-5:00 pm Poster Zoom

Tuesday, August 23, 2022

8:00-8:10 am Welcome/ Instructions

Pests and Diseases

8:15-8:35 am Helping plants deal with soybean aphids: A critical but underestimated role of stems, Vamsi Nalam, Colorado State University

8:35-8:55 am Synergistic transcriptomic effects of pyramiding Rag1 and Rag2 aphid resistance genes, Martha Natukunda, Augustana University

8:55-9:15 am Impacts of Plant Elicitor Peptides and Bacillus subtilis on nematode infection on soybean, Fiona Goggin, University of Arkansas

9:15-9:35 am A Bacillus thuringiensis Cry protein controls soybean cyst nematode in transgenic soybean plants, Julia Daum, BASF

9:35-9:55 am A Phakopsora pachyrhizi effector suppresses PTI and interacts with a soybean Endo-1,3- β -glucosidase to promote virulence, Francismar Corrêa Marcelino-Guimaraes, Embrapa Soja (Brazil)

9:55-10:05 am Break

Composition/Nutrition

10:05-10:10 am Welcome

10:10-10:30 am Graph-based pan genome analyses in soybean, Zhixi Tian, Chinese Academy of Sciences

10:30-10:50 am Improving soybean seed composition using induced mutations, Khalid Meksem, Southern Illinois University

10:50-11:10 am Altering carbon partitioning over development to improve soybean composition, Thiya Mukherjee, Donald Danforth Plant Science Center

11:10-11:30 am Dry beans for flour ingredient applications, Karen Cichy, USDA-ARS, MI

11:30-11:50 am Structural genome variation and protein:oil ratio, Matthew Hudson, University of Illinois

11:50-1:00 pm Break for Lunch

Breeding

- 1:00-1:05 pm Welcome
- 1:05-1:25 pm Experiences with using novel genetic diversity in soybean breeding, Brian Diers, University of Illinois
- 1:25-1:45pm Breeding by design, Kristin Bilyeu, USDA-ARS
- 1:45-2:05 pm Soybean longitudinal biomass accumulation and applications to selection for yield and resilience, Katy Martin Rainey, Purdue University
- 2:05-2:25 pm Genomics-enabled soybean improvement, Mark Miller, University of Georgia
- 2:25-2:35 pm Break

Biotech and Gene Editing

- 2:35-2:40 pm Welcome
- 2:40-3:00 pm A soybean single-cell resolution transcriptome atlas to reveal gene function in a cell-type-specific manner, Marc Libault, University of Nebraska, Lincoln
- 3:00-3:40 pm Using malic enzyme to short circuit carbon partitioning in soybeans, Stewart Morley, Danforth Center
- 3:20-3:40 pm Decoding protein rebalancing in soybean with genome editing, Ritesh Kumar, University of Minnesota
- 3:40-4:00 pm Determining regulatory elements for canopy-specific gene expression in soy, Laurie B Leonelli, University of Illinois
- 4:00-4:20 pm Incorporating crop quality into crop growth models, Justin McGrath, USDA-ARS, Illinois
- 4:20-4:45 pm Closing Remarks, Poster Winners, Career Achievement Winners