

Plant Signaling: Molecular Pathways and Network Integration

January 21–24, 2018 | Granlibakken Tahoe | Tahoe City, California | USA

Scientific Organizers:

Ken Shirasu, RIKEN, Japan


Uta Paszkowski, University of Cambridge, UK

Christian S. Hardtke, University of Lausanne, Switzerland

Phenotypic plasticity is the quintessential characteristic of plant development and adaptation under fluctuating environments. This characteristic is the result of numerous signal sources (extra-, intra- and intercellular) being sensed, integrated and interpreted by a plethora of signaling components which are interacting in a highly coordinated manner. Recent advances in molecular biology, chemistry (i.e., chemical genetics and development of novel probes) and computational approaches (i.e., mathematical modeling and network reconstruction) have greatly facilitated the discovery of novel signaling pathways as well as providing detailed molecular mechanisms for key components of the existing signaling pathway. However, many have yet to be discovered. The conference features leaders in the plant signaling field and encapsulates the most recent advances in this field, from single molecule chemistry to large-scale network analysis, with an emphasis on research areas such as growth and development, environmental responses and biological interactions in both model and non-model plant species. Therefore, this meeting will bring together a diverse community of scientists to interact, collaborate and share novel ideas, leading to the translation of this knowledge into new applications. Ultimately, unraveling the complexity of plant signaling networks will be an important step forward in securing global food production.

Session Topics:

- Signaling Network as a System
- Signaling in Development
- Propagation and Coordination (Long Distance Signaling)
- Environmental Signaling
- Signaling in Biotic Interaction
- Hormone Sensing/Integration



Note: Scholarships are available for graduate students and postdoctoral fellows and are awarded based on the abstract submitted. Submitting an abstract is an excellent opportunity to gain exposure for your work. Abstracts submitted by the abstract deadline will also be considered for short talks on the program.

Meeting Hashtag: #KSplant
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Abstract & Scholarship Deadline: September 25, 2017 / Abstract Deadline: October 23, 2017 / Discounted Registration Deadline: November 21, 2017

SUNDAY, JANUARY 21

Arrival and Registration

MONDAY, JANUARY 22

Welcome and Keynote Address

***Ken Shirasu**, RIKEN, Japan

Charlie M. Boone, University of Toronto, Canada
The Genetic Landscape of a Cell

Signaling Network as a System

***Christian S. Hardtke**, University of Lausanne, Switzerland

Sabeeha Merchant, University of California, Los Angeles, USA
Synchronized Cell 'Omics

Rosangela (Ross) Sozzani, North Carolina State University, USA
Gene Regulatory Networks Controlling Root Stem Cells

Christian Fleck, Wageningen University, Netherlands
Modeling of Light Signaling Pathways

Arthur Korte, University Würzburg, Germany
Short Talk: Natural Variation of Gene Regulatory Networks in Arabidopsis thaliana

Ben Scheres, Wageningen University Research, Netherlands
Short Talk: Integration of Shape-Mediated and Genetic Control of Plant Cell Division

Zhenbiao Yang, University of California, Riverside, USA
Short Talk: An Exocytosis-Coordinated Signaling Network Controls Pollen Tube Tip Growth and Growth Guidance: Insights from Mathematical Modeling

Signaling in Development

***Siobhan M. Brady**, University of California, Davis, USA

Christian S. Hardtke, University of Lausanne, Switzerland
Spatio-temporal Timing of Root Protophloem Differentiation

Dolf Weijers, Wageningen University, Netherlands
Origin and Evolution of the Nuclear Auxin Response System

Tetsuya Higashiyama, Nagoya University, Japan
Signaling in Precise Pollen Tube Guidance

Frank L.H. Menke, Sainsbury Laboratory, UK
Short Talk: MAP Kinases MPK3 and MPK6 Control Formative Divisions by Regulating Cell Division Plane Rotations

Niko Geldner, University of Lausanne, Switzerland
Short Talk: SCHENGEN Mutants Define a Diffusion Barrier Surveillance Pathway in Plants

Poster Session 1

TUESDAY, JANUARY 23

Propagation and Coordination (Long-Distance Signaling)

***Giles E.D. Oldroyd**, University of Cambridge, UK

Edward E. Farmer, University of Lausanne, Switzerland
Vascular Signaling Routes for Wound-Stimulated Jasmonate Synthesis

Sheng Luan, University of California, Berkeley, USA

Regulation of Plant Nutrient Homeostasis by a Ca Signaling Network

Yoshikatsu Matsubayashi, Nagoya University, Japan
Root-to-Shoot and Shoot-to-Root Long-Distance Mobile Peptides Mediate Systemic Regulation of Nitrogen Acquisition

Zhen-Ming Pei, Duke University, USA
Genetic Dissection of Environmental Stress-Induced Ca²⁺ Signaling in Arabidopsis

Julian I. Schroeder, University of California, San Diego, USA
Short Talk: Abscisic Acid Triggers Degradation of Guanine Nucleotide Exchange Factor via Calcium-Dependent Protein Kinases

Fuminori Takahashi, RIKEN, Japan
Short Talk: A Small Peptide Mediates Dehydration Stress Responses in Long-Distance Signaling

Environmental Signaling

***Rosangela (Ross) Sozzani**, North Carolina State University, USA

Tzzy-Jen Chiou, Academia Sinica, Taiwan
MicroRNA-Mediated Surveillance of Phosphate Transport – Uptake, Translocation and Storage

Gabriel Krouk, Centre National de la Recherche Scientifique, France
A Systems View of Nitrogen Signaling Interactions

Siobhan M. Brady, University of California, Davis, USA
Transcriptional Regulation of Nitrogen Metabolism

Pamela C. Ronald, University of California, Davis, USA
Short Talk: A Microbially Derived Tyrosine Sulfated Peptide Mimics a Plant Peptide Hormone to Activate Immunity and Enhance Root Growth

Tania Y. Toruno, University of California, Davis, USA
Short Talk: Phosphorylated RIN4 Interacts with a Unique Set of Client Proteins in the Absence of NLR Perception to Disrupt Protein Trafficking

Poster Session 2

WEDNESDAY, JANUARY 24

Signaling in Biotic Interaction

***Edward E. Farmer**, University of Lausanne, Switzerland

Uta Paszkowski, University of Cambridge, UK
Rhizosphere Signaling in Arbuscular Mycorrhizal Symbiosis of Cereals

Giles E.D. Oldroyd, University of Cambridge, UK
Recognition of Symbiotic Microorganisms for Activation of Symbiosis Signaling.

Ken Shirasu, RIKEN, Japan
Signaling in Parasitic Plant-Host Interactions

Christine Faulkner, John Innes Centre, UK
Short Talk: The Mechanism and Roles of Chitin-Triggered Plasmodesmal Closure in Immunity

Hormone Sensing/Integration

***Uta Paszkowski**, University of Cambridge, UK

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David C. Nelson, University of California, Riverside, USA

Evolution of Strigolactone and Karrikin Signaling

Doris Wagner, University of Pennsylvania, USA

Signaling during Spatiotemporal Control of Flower Formation in the Context of Chromatin

Cris Argueso, Colorado State University, USA

Cytokinin-Induced Priming Against Biotic and Abiotic Stresses

Lucia Strader, Washington University in St. Louis, USA

Short Talk: Nucleo-Cytoplasmic Partitioning of ARF Proteins Controls Auxin Responses in Arabidopsis thaliana

Eva-Sophie Wallner, University of Heidelberg, Germany

Short Talk: Early Events in Phloem Formation - Exploring the Molecular Network of SMXL3/4/5

Meeting Wrap-Up: Outcomes and Future Directions (Organizers)

THURSDAY, JANUARY 25

Departure