

# 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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# KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

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Supported by the Directors' Fund

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 Ca<sup>2+</sup> 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