Keystone Symposia is pleased to present

Plant Immunity: Pathways and Translation

Scientific Organizers: Sophien Kamoun and Ken Shirasu

April 7–12, 2013 | Big Sky Resort | Big Sky, Montana, USA

Plants are repeatedly attacked by a variety of pathogens and pests and have evolved a multitude of mechanisms to fight off their parasites. The field of plant immunity has significantly matured in recent years. All major classes of molecular players both from plants (surface and intracellular immune receptors) and microbes (microbial pattern molecules and effectors) have been revealed. This conference will highlight the latest developments in understanding plant immune pathways, how these pathways are perturbed by pathogens, and how plants and their parasites coevolve. The selected speakers will address the following questions:

> How do plant immune receptors sense pathogen molecules and effectors?
> What molecular mechanisms mediate immunity both at the surface and inside the plant cell?
> How do microbial effectors alter plant immunity?
> How do pathogens affect plant evolution in natural ecosystems?

In addition, the conference will address how basic knowledge on plant immunity can be translated into applications of relevance to agriculture. It will be unique in bringing together cutting-edge basic scientists with more applied colleagues. Such high-level dialogue should foster the emergence of novel ideas for combating plant diseases. Our goal is also to raise the profile of translational plant pathology research in an era of looming food crisis. Two workshops on the topics of "systems approaches to plant immunity" and "emerging pathogens and pests" will complement the plenary sessions.

Plenary Session Topics:

> Surface Receptor-Mediated Immunity – Recognition
> Surface Receptor-Mediated Immunity – Signaling
> Intracellular Immunity – Recognition
> Intracellular Immunity – Signaling
> Suppression of Immunity
> Evolutionary Plant-Microbe Interactions
> Translating Plant Immunity
> Emerging Topics in Plant Immunity

Abstract & Scholarship Deadline: December 6, 2012
Late-Breaking Abstract Deadline: January 10, 2013
Early Registration Deadline: February 7, 2013

Note: Scholarships are available to students and postdoctoral fellows and require a brief application and submission of an abstract. Short talk speakers will also be selected from abstracts. Early registration saves US$150 on later fee. Information shown is subject to possible change.
SUNDAY, APRIL 7
Arrival and Registration

MONDAY, APRIL 8
Welcome and Keynote Address
*Ken Shirasu, RIKEN, Japan
Paul M. Schulze-Lefert, Max Planck Institute for Plant Breeding Research, Germany
Structure, Functions and Evolution of the Bacterial Root Microbiota
Surface Receptor-Mediated Immunity – Recognition
*Renier A.L. van der Hoorn, Max Planck Institute for Plant Breeding Research, Germany
Georg Felix, University of Tübingen, Germany
Recognition of PAMPs and Other Danger Signals by Surface Receptors
Pamela C. Ronald, University of California, Davis, USA
Recognition of Ax21 by Rice Receptor Xa21
Naoto Shibuya, Meiji University, Japan
Ligand Recognition, Autophosphorylation and Signaling by Plant Chitin Receptors
Giulia De Lorenzo, University of Rome, Sapienza, Italy
Short Talk: Responses to OGs in Arabidopsis Are Regulated by an Interaction Network Mediated by WAK1

Workshop 1: Systems Approaches to Plant Immunity
Fumiaki Katagiri, University of Minnesota, USA
Systems Understanding of Plant Immunity
Tjaša Stare, National Institute of Biology, Slovenia
Dynamics of Plant Defense Response to Virus Infection
Reinhard C. Laubenbacher, Virginia Bioinformatics Institute, USA
PlantSimLab: A Simulation Laboratory for Plant Biology
Nuria S. Coll, Centre for Research in Agricultural Genomics (CRAG), Spain
Dynamic Metacaspase-Containing Protein Complexes Regulating HR Cell Death
Macarena Marín, University of Munich, Germany
Intrinsic Disorder in Plant Immunity and Effector Proteins
Joji Grace Villamor, Max Planck Institute for Plant Breeding Research, Germany
Profiling of ATP-Binding Proteins in Arabidopsis with AcATP
Myron Bruce, Montana State University, USA
Transcriptome Analysis of Six Wheat Leaf Rust Races

Surface Receptor-Mediated Immunity – Signaling
*Silke Robatzek, Sainsbury Laboratory, UK
Cyril Zipfel, University of Zurich, Switzerland
Regulation of Early Receptor Kinase-Mediated Immune Signaling

Birgit Kemmerling, University of Tübingen, Germany
Impact of BAK1 Complex Formation on Plant Immunity and Cell Death Control
Hirofumi Yoshioka, Nagoya University, Japan
Protein Phosphorylation Confers ROS Burst via NADPH Oxidase

Poster Session 1

TUESDAY, APRIL 9
Intracellular Immunity – Recognition
*Jian-Min Zhou, Chinese Academy of Sciences, China
Maud Bernoux, CSIRO Plant Industry, Australia
Plant Immune Receptors: What Are the First Steps that Trigger Defense Signaling?
Gitta L. Coaker, University of California, Davis, USA
Unraveling Plant Immune Perception and Signaling
Vera Bonardi, University of North Carolina, USA
Canonical and Non-Canonical Functions of NLR Immune Receptors in Arabidopsis
Chan-Ho Park, Ohio State University, USA
Short Talk: The Fungal Effector AvrPiz-t Suppresses Host Innate Immunity by Targeting the RING Finger E3 Ligases APIP6 and APIP10 in Rice
Michael Christiaan Greeff, University of Copenhagen, Denmark
Short Talk: Identifying Immune Regulators via Dominant Negative Resistance Proteins

PlantSimLab Software Demonstration
*Reinhard C. Laubenbacher, Virginia Bioinformatics Institute, USA
*Franziska Hinkelmann, Ohio State University, USA

Intracellular Immunity – Signaling
*Wenbo Ma, University of California, Riverside, USA
Peter Moffett, University of Sherbrooke, Canada
NB-LRR-Mediated Anti-Viral Responses
Xin Li, University of British Columbia, Canada
Regulation of Plant NB-LRR Immune Receptor Turnover through Ubiquitination and N-Terminal Acetylation
Jonathan D.G. Jones, Sainsbury Laboratory, UK
Disease Resistance Mediated by NB-LRR Gene Pairs

Poster Session 2

WEDNESDAY, APRIL 10
Suppression of Immunity
*Gitta L. Coaker, University of California, Davis, USA
Jian-Min Zhou, Chinese Academy of Sciences, China
BIK1, a Multi-Task Immune Kinase in Plants
Bart P.H.J. Thomma, Wageningen University, Netherlands
Suppression of Chitin-Triggered Immunity by Fungal LysM Effectors
Sophien Kamoun, Sainsbury Laboratory, UK
Suppression of Immunity by Oomycete Effectors

* Session Chair † Invited but not yet accepted     Program current as of June 11, 2019. Program subject to change. Meal formats are based on meeting venue. For the most up-to-date details, visit www.keystonesymposia.org/13D5.
John M. McDowell, Virginia Polytechnic Institute, USA
The Arabidopsis Pathogen Hyaloperonospora arabidopsidis Manipulates the Jasmonic Acid Signaling Pathway
Anna Zvereva, University of Basel, Switzerland
Short Talk: The Cauliflower mosaic Virus Protein P6 Is a Putative Viral Effector Suppressing Plant Innate Immunity

Workshop 2: Emerging Systems
*Isgouhi Kaloshian, University of California, Riverside, USA
The GroEL of the Aphid Endosymbiont Buchnera is a Molecular Pattern Recognized by Plant Immunity
David E. Cook, Wageningen University, Netherlands
Copy Number Variation of Multiple Genes at Rhg1 Control Soybean Resistance to Soybean Cyst Nematode
Jorunn I.B. Bos, James Hutton Institute, UK
Towards Understanding the Role of Aphid Effectors in Promoting Susceptibility
Claire Drurey, John Innes Centre, UK
Aphids Induce Both PAMP-Triggered Immunity and Effector-Triggered Susceptibility
Lionel Navarro, Institut de Biologie de l'Ecole Normale Supérieure, France
A Bacterial Effector Directly Suppresses ARGONAUTE1 Activity to Cause Disease
Thomas W.H. Liebrand, Wageningen University, Netherlands
The Receptor-Like Kinase Cfi Interacts with Receptor-Like Proteins in Plant Immunity Against Fungal Infection

Evolutionary Plant-Microbe Interactions
*Peter Moffett, University of Sherbrooke, Canada
Detlef Weigel, Max Planck Institute for Developmental Biology, Germany
The Plant Immune System at the Nexus of Trade-Offs Affecting Fitness and Gene Flow
Wenbo Ma, University of California, Riverside, USA
Co-Evolutionary Arms Race between Type III Effector HopZ1 and Plant Defense System
Antonio Molina, Universidad Politecnica Madrid, Centro de Biotecnología y Genómica Plantas, Spain
Short Talk: SignWALLing: Signals Derived from the Plant Cell Wall Regulate Arabidopsis Innate Immunity

Poster Session 3

THURSDAY, APRIL 11
Translating Plant Immunity
*Bart P.H.J. Thomma, Wageningen University, Netherlands
Brian J. Staskawicz, University of California, Berkeley, USA
High-Throughput Genomic Sequencing of Xanthomonas Field Strains Identifies Core Effectors to Target for Durable Resistance to Bacterial Blight of Cassava and Bacterial Spot of Tomato
Matthew J. Moscou, Sainsbury Laboratory, UK
Harnessing the Loci Underlying Host Species Specificity to Engineer Durable Resistance to Wheat Stripe Rust

Ken Shirasu, RIKEN, Japan
Hunting the Witch: Genome Analysis of the Parasitic Witchweed Striga
Vivianne G.A.A. Vleeshouwers, Wageningen University, Netherlands
Exploiting Effectors in Resistance Breeding
Jenny Neukermans, VIB, Ghent University, Belgium
Short Talk: Aracins, New Tools for Crop Protection

Emerging Topics in Plant Immunity
*Xin Li, University of British Columbia, Canada
Victoria Blight: When Defense Becomes Defenseless
Renier A.L. van der Hoorn, Max Planck Institute for Plant Breeding Research, Germany
Apoplastic Enzymes and Defense
Silke Robatzek, Sainsbury Laboratory, UK
Endocytosis Regulates Immune Receptors and Signaling
Sophien Kamoun, Sainsbury Laboratory, UK
Closing Remarks

FRIDAY, APRIL 12
Departure