



Join Keystone Symposia
for the 2016 conference on:

Nucleic Acid Sensing Pathways: Innate Immunity, Immunobiology and Therapeutics

May 8–12, 2016

Maritim Hotel & Conference Center | Dresden | Germany

Scientific Organizers:

Thomas Tuschl, Veit Hornung and Karl-Peter Hopfner

This meeting focuses on cytoplasmic DNA and RNA sensors and the function of their linear and circular oligonucleotide second messenger cGAMP and 2',5'-oligoadenylate produced upon activation. Substantial progress has been made in identification of the structures of these sensors, their nucleic acid ligands and second messenger molecules, as well as the underlying molecular pathways leading to transcriptional activation. Animal models inactivating various pathways of innate immunity have been developed. This progress has enabled targeted development of antagonists and agonists of cytokine and interferon production for therapeutic targeting of inflammatory diseases and vaccine adjuvant development, respectively. An international group of academic and industry scientists and clinicians with expertise in biochemistry and structural biology, nucleic acid chemistry, immunology, human genetics, virology, rheumatology and vaccine development will converge at this meeting to discuss the latest developments in this field.

Session Topics:

- Sensing of Microbial and Viral RNA and DNA by the Innate Immune System I & II
- Structural Biology of Innate Immune Sensing
- Virology and Innate Inflammatory Responses
- Inborn Genetic Defects in Nucleic Acid Sensing I & II
- Nucleic Acid Chemistry and Biology in Stress and Innate Immune Response
- Nucleic Acid Drug Developments and Strategies to Suppress Innate Immunity Responses



Submitting an abstract is a great way of participating in the conference through poster presentation and possible selection for a short talk.

Scholarship & Discounted Abstract Deadline: Jan 7, 2016

Abstract Deadline: Feb 9, 2016

Discounted Registration Deadline: Mar 8, 2016

For additional details, visit www.keystonesymposia.org/16E2.

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SUNDAY, MAY 8

Arrival and Registration

MONDAY, MAY 9

Welcome and Keynote Address

***Thomas Tuschl**, HHMI/Rockefeller University, USA

Zhijian James Chen, University of Texas Southwestern Medical Center, USA

The cGAS Pathway of Cytosolic DNA Sensing and Its Role in Health and Diseases

Sensing of Microbial and Viral RNA and DNA by the Innate Immune System

Kensuke Miyake, Institute of Medical Science, University of Tokyo, Japan

RNA-Sensing and Trafficking of TLR7 in Plasmacytoid Dendritic Cells

***Kate A. Fitzgerald**, University of Massachusetts Medical School, USA

Regulation of Inflammation by Long Non-Coding RNAs

Petro Starokadomskyy, University of Texas Southwestern Medical Center, USA

Short Talk: DNA Polymerase- α Regulates Type I Interferon Activation through Cytosolic RNA:DNA Synthesis

Kachiko Hayashi, Yale University, USA

Short Talk: Toll-Like Receptor 9 Trafficking and Signaling for Type I Interferons Requires PIKfyve Activity

Poster Session 1

Sensing of Microbial and Viral RNA and DNA by the Innate Immune System II

***Veit Hornung**, Ludwig-Maximilians-University Munich, Germany

Molecular Mechanisms of Nucleic Acid Pattern Recognition

Timothy W. Behrens, Genentech, Inc., USA

Nucleic Acid Sensing and Interferon Signatures

Russell E. Vance, University of California, Berkeley, USA

No Perfect PAMPs? Innate Immune Recognition of Nucleic Acids versus Proteins

Tan Nguyen, Walter and Eliza Hall Institute, Australia

Short Talk: Sidt2 Transports Extracellular dsRNA into the Cytoplasm for Innate Immune Recognition

TUESDAY, MAY 10

Structural Biology of Innate Immune Sensing

***Karl-Peter Hopfner**, Ludwig-Maximilians-University Munich, Germany

Integrated ATP Dependent Mechanism for RIG-I's Distinction between Self and Non-Self RNA

Sun Hur, Harvard Medical School, USA

Molecular Mechanism of RIG-I-Like Receptors

Alexei Korennykh, Princeton University, USA

Innate Immune Signaling via RNA Cleavage

Hao Wu, Harvard Medical School, Boston Children's Hospital, USA

Structural Elucidation of Inflammasome Activation and Regulation

Pingwei Li, Texas A&M University, USA

Short Talk: The Structural Basis of IRF-3 Recruitment, Activation, and Targeting in Innate Immunity

Philip J. Kranzusch, University of California, Berkeley, USA

Short Talk: Ancient cGAS-STING Pathways Reveal Evolution of Human Innate Immunity

Virology and Innate Inflammatory Responses

Jaе U. Jung, Keck School of Medicine of University of Southern California, USA

Host Nucleic Acid Sensing and Viral Evasion

Ian Thomas Lamborn, NIAID, National Institutes of Health, USA

Short Talk: Human MDA5 Protects Against Severe Respiratory Infections

***Nicolas Manel**, Institut Curie, France

Sensing Mechanisms of Viral Infection

Fanxiu Zhu, Florida State University, USA

Short Talk: KicGAS, KSHV Inhibitor of cGAS

Kareen Bartsch, Christian-Albrechts-University, Germany

Short Talk: RNaseH2 Deficiency Leads to Cytosolic Accumulation of Immunostimulatory DNA that is Removed by Autophagy

Poster Session 2

WEDNESDAY, MAY 11

Nucleic Acid Chemistry and Biology in Stress and Innate Immune Response

Thomas Tuschl, HHMI/Rockefeller University, USA

Intra- and Extracellular Diagnostic RNAseq Approaches and Their Use in Inflammatory Diseases

Dinshaw J. Patel, Memorial Sloan Kettering Cancer Center, USA

Structure and Function of Innate Immune Sensors and Adaptors

Charles E. Samuel, University of California, Santa Barbara, USA

Roles of A-to-I RNA Editing by Adenosine Deaminase ADAR1 in Innate Immunity RNA Sensing

***Andreas Pichlmair**, Max-Planck Institute of Biochemistry, Germany

Defects in mRNA Maturation and Localization

Swapnil Devarkar, Rutgers University, USA

Short Talk: Structural and Mechanistic Basis for Self Versus Non-self RNA Discrimination by the Innate Immune Receptor RIG-I

Poster Session 3

Nucleic Acid Drug Developments and Strategies to Suppress Innate Immunity Responses

Gunther Hartmann, Universitätsklinikum Bonn, Germany

Targeting RIG-I for the Immunotherapy of Cancer

Thomas W. Dubensky, Jr., Tempest Therapeutics, USA

Direct Activation of STING in the Tumor Microenvironment Leads to Potent and Systemic Tumor Regression and Immunity

***Regina Heidenreich**, CureVac GmbH, Germany

mRNA Vaccination for the Immunotherapy of Infectious Diseases and Cancer

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Manuel Ascano, Jr., Vanderbilt University, USA

Short Talk: Towards the Small Molecule Modulation of Cyclic GMP-AMP Synthase Activity

THURSDAY, MAY 12

Inborn Genetic Defects in Nucleic Acid Sensing I

Raphaela Theresia Goldbach-Mansky, NIAID, LCID, National Institutes of Health, USA

Activated STING in a Vascular and Pulmonary Syndrome (SAVI) and Treatment Strategies Reducing Interferon Signaling

Yanick Crow, Institut Imagine, France
Human Type I Interferonopathies

Min Ae Lee-Kirsch, Technische Universität Dresden, Germany
Human Genetic Alterations Contributing to Systemic Lupus Erythematosus

***Virginia Pascual**, Cornell University, USA
Novel Insights into the Role of Innate Immunity in Human SLE

Rayk Behrendt, Faculty of Medicine Carl Gustav Carus TU Dresden, Germany
Short Talk: SAMHD1-Deficiency causes Simultaneous Stimulation of the RLR and cGAS-STING Pathways

Inborn Genetic Defects in Nucleic Acid Sensing II

Gerald S. Shadel, Yale School of Medicine, USA
Mitochondrial DNA Stress in Innate Immune Signalling and Cancer

Daniel B. Stetson, University of Washington, USA
Nucleic Acid Detection in Autoimmunity

***Andrew Jackson**, University of Edinburgh, UK
RNase H2 mutations Lead to Defective Ribonucleotide Excision Repair and cGAS/STING-Dependent Innate Immune Activation

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

FRIDAY, MAY 13

Departure