



Pattern Recognition Signaling: From Innate Immunity to Inflammatory Disease

March 19–23, 2017 | Fairmont Banff Springs | Banff, Alberta | Canada

Scientific Organizers:

Thirumala-Devi Kanneganti, St. Jude Children's Research Hospital, USA

Vishva M. Dixit, Genentech, Inc., USA

Mohamed Lamkanfi, Ghent University, Belgium

Joint with the meeting on *Type I Interferon: Friend and Foe Alike*

Understanding of the signaling mechanisms by which pattern recognition receptors (PRRs) sense microbial infections and cellular stress engage innate immune responses is moving at an unprecedented rate. Developments in the past few years shed new light on how NOD-like receptors and inflammasomes are activated to promote cytokine production and cell death responses in the context of autoimmunity and microbial infection. Other findings clarified how extracellular and intracellular receptors of the Toll-like receptor, PYHIN/IFI, and helicase families respond to infections. In addition, intricate communication between PRRs and microbial commensals has emerged as a critical mechanism controlling immunity, and several fine-tuning mechanisms modulating PRR-induced immune responses have been discovered. Finally, a wealth of clinical information supporting the key roles of PRRs not only in host-microbe interactions, but also chronic autoinflammatory and autoimmune diseases in patients has emerged. This has spurred important translational medicine efforts to bring new therapies and diagnostics to the clinic. This conference unites an international group of academic and industry immunologists and microbiologists who study basic mechanisms of PRR signaling and their interaction with microbes in inflammatory disease models with clinicians and geneticists addressing the etiology of autoinflammatory and autoimmune diseases in patients. Gathering experts from these disparate research communities offers a unique opportunity to discuss new concepts of innate immune signaling and formulate novel approaches for modulating pathological mechanisms in human inflammatory diseases.

Session Topics:

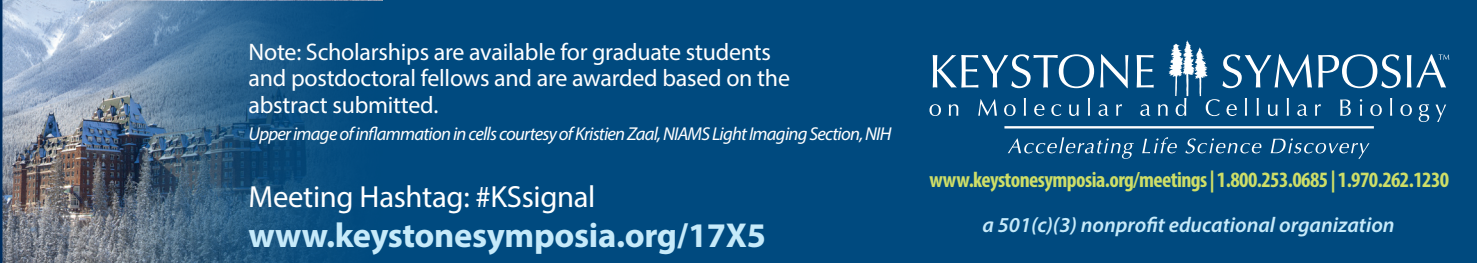
- Nucleic Acid Recognition Pathways Regulating Type I IFN Induction (Joint)
- Nucleic Acids in TLR and NLR Signaling
- Recent Insights in Inflammasome Signaling
- Interfering with Pathogenic TLR and NLR Signaling
- PRR Signaling in Bacterial and Viral Infection
- Inflammasome and NF- κ B Regulatory Mechanisms
- Interactions between Microbiota and the Innate Immune System
- Innate Immune Receptors and Metabolism

plus three workshops on PRRs in Inflammatory Diseases

Scholarship Application & Discounted Abstract Deadline: November 17, 2016

Abstract Deadline: December 20, 2016

Discounted Registration Deadline: January 19, 2017



Note: Scholarships are available for graduate students and postdoctoral fellows and are awarded based on the abstract submitted.

Upper image of inflammation in cells courtesy of Kristien Zaal, NIAMS Light Imaging Section, NIH

Meeting Hashtag: #KSsignal

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KEYSTONE SYMPOSIA

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Type I Interferon: Friend and Foe Alike (X6)

Scientific Organizers: Alan Sher, Virginia Pascual, Adolfo García-Sastre and Anne O'Garra

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SUNDAY, MARCH 19

Arrival and Registration

MONDAY, MARCH 20

Welcome and Keynote Session (Joint)

***Thirumala-Devi Kanneganti**, St. Jude Children's Research Hospital, USA

***Alan Sher**, NIAID, National Institutes of Health, USA

Anne O'Garra, Francis Crick Institute, UK

Type I IFN Regulation of Cytokine Networks and Consequences for Infection

Daniel Kastner, National Institutes of Health, USA
PRR Signaling and Inflammatory Disease

Nucleic Acid Recognition Pathways Regulating Type I IFN Induction (Joint)

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

Cytosolic Recognition of DNA through cGAS/STING Pathway

Sun Hur, Harvard Medical School, USA

Cytosolic Sensing of Viral RNA by the RIG-I-Like Receptors

Gregory M. Barton, University of California, Berkeley, USA
Endosomal Recognition of Self-Nucleic Acids

Vishva M. Dixit, Genentech, Inc., USA
Inflammasome Signaling

Workshop 1: PRRs in Inflammatory Diseases (X5)

***Fayyaz Sutterwala**, Cedars-Sinai Medical Center, USA

***Eicke Latz**, University of Bonn, Germany

Sreya Ghosh, University of Massachusetts Medical School, USA

The PYHIN Protein IFI205 Regulates Immune Signaling by Controlling Expression of the Inflammasome Adaptor ASC

Mena Abdel-Nour, University of Toronto, Canada

The eIF2 alpha Kinase HRI Senses Protein Aggregation and Facilitates Signaling of Innate Immune Receptors

José Santos, University of Basel, Switzerland

Novel GBP-Dependent Mechanisms of Inflammasome Activation

Matthew James George Eldridge, Imperial College London, UK

The Atypical Ubiquitin E2 Conjugase UBE2L3 is an Indirect Caspase-1 Target and controls IL-1 β Secretion by Inflammasomes

Nidhi Jain, Cedars-Sinai Medical Center, USA

NLRP12 Mutation Causes C57BL/6J Strain-Specific Defect in Neutrophil Recruitment

Nina Van Opdenbosch, VIB-University of Ghent, Belgium

Defective Caspase-1 Recruitment Licenses ASC Specks to Engage Non-Inflammatory Caspase-8-Driven Apoptosis in Macrophages and Intestinal Epithelial Cells

Charlotte Macleod, University of Cambridge, UK

Determining the Stoichiometry of the TLR-4 Adaptor Protein Mal/TIRAP using TIRF Microscopy

Scott W. Canna, Children's Hospital of Pittsburgh, University of Pittsburgh, USA

Chronic IL-18 of Diverse Origins Defines and Drives the Hyperinflammatory State Known as Macrophage Activation Syndrome

Workshop 1: Innate Signals for Type I IFN Induction (X6)

***Paul J. Hertzog**, Hudson Institute of Medical Research, Australia

***Dusan Bogunovic**, Icahn School of Medicine at Mount Sinai, USA

John Ty Crowl, University of Washington, USA

Loss of Sumoylation Triggers a Spontaneous Type I Interferon Response Independent of Cytosolic Nucleic Acid Sensing Pathways

Martin R. Jakobsen, Aarhus University Faculty of Health Science, Denmark

IFI16 Dictates DNA Sensing in Human Macrophages by Promoting Production and Function of cGAMP

Stefanie Luecke, Aarhus University, Denmark

Length-Dependent Sensing of Low-Abundance dsDNA by cGAS

Jennifer Lumb, Stanford University, USA

Unbiased Haploid Genetic Screen Uncovers a Novel RNA Binding Immune Regulator

Nathalie M. Grandvaux, Université de Montréal, Canada

Characterization of a Delayed Transcriptional Program Induced in Response to the Synergistic Action of IFN β +TNF α Reveals Novel STAT2 and IRF9-Dependent Pathways

Jennie B. Altman, Icahn School of Medicine at Mount Sinai, USA
Non-Canonical Type I IFN Signaling in ISG15 $^{-/-}$ and USP18 $^{-/-}$ Cells

Antje Blumenthal, University of Queensland, Australia

Spatiotemporal Regulation of TLR4 Signaling and Promotion of Type I IFN Responses by the RP105-PI3K p110 δ Innate Immune Signaling Axis

Philippe D. Pierre, Centre d'Immunologie Marseille-Luminy, CIML, France

Ppp1r15a/GADD34 Controls Heterogeneity of Type-I Interferon Production in Response to dsRNA

Nucleic Acids in TLR and NLR Signaling (X5)

***Mohamed Lamkanfi**, Ghent University, Belgium

Jonathan C. Kagan, Boston Children's Hospital, USA

Initiation and Regulation of Innate Immune Signal Transduction

Kate A. Fitzgerald, University of Massachusetts Medical School, USA
Novel Regulators of PRR-Driven Transcriptional Responses

Thirumala-Devi Kanneganti, St. Jude Children's Research Hospital, USA

Inflammasomes and Pathogen Sensing

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Osamu Takeuchi, Institute for Virus Research, Kyoto University, Japan

Short Talk: Spatiotemporal Regulation of Inflammatory mRNAs in Innate Immune Responses

Mendelian Interferonopathies and IFN-Deficiencies (X6)

***Virginia Pascual**, Cornell University, USA

Dusan Bogunovic, Icahn School of Medicine at Mount Sinai, USA
Loss of Type I Interferon Negative Regulation in Humans

Min Ae Lee-Kirsch, Technische Universität Dresden, Germany
Defective Intracellular Nucleic Acid Waste Management in Type 1 Interferon-Driven Autoinflammation and Autoimmunity

Raphaëla Theresia Goldbach-Mansky, NIAID, LCID, National Institutes of Health, USA
Novel Insights into the Pathogenesis and Treatment Approaches of the Type I-IFN-Mediated Autoinflammatory Diseases, CANDLER and SAVI

Joaquín M. Espinosa, University of Colorado Boulder, USA
Short Talk: Trisomy 21 Consistently Activates the Interferon Response: Understanding Down Syndrome as an Interferonopathy

Poster Session 1

TUESDAY, MARCH 21

Recent Insights in Inflammasome Signaling (X5)

***Vishva M. Dixit**, Genentech, Inc., USA

Fayyaz Sutterwala, Cedars-Sinai Medical Center, USA
Cardiolipin Promotes Mitochondrial Localization of NLRP3 and Caspase-1

Mohamed Lamkanfi, Ghent University, Belgium
Inflammasome Regulation in Auto-Inflammation

Kim Newton, Genentech, Inc., USA
Regulation of Inflammation and Cell Death by RIPK1

Feng Shao, National Institute of Biological Sciences, China
Pyroptosis in Anti-Bacterial Immunity: Sensing & Execution

Bharat Behl, University of Connecticut Health Center, USA
Short Talk: Molecular Determinants of Noncanonical Inflammasome Activation by LPS

Olaf Groß, Universitätsklinikum Freiburg, Germany
Short Talk: Caspase-1 Mutant Mouse Reveals a Central Role of Caspase-1 Protease Activity and GSDMD in Fate Decisions After Inflammasome Activation

Type I IFN Regulation of Viral Infection and Cancer (X6)

***Adolfo García-Sastre**, Mount Sinai School of Medicine, USA

Ana Fernandez-Sesma, Mount Sinai School of Medicine, USA
Modulation of Innate Immunity by Dengue Virus: Feeling the STING

Andreas Wack, Francis Crick Institute, UK
Unique and Overlapping Roles of Type I and Type III Interferons in Influenza Infection

John W. Schoggins, University of Texas Southwestern Medical Center, USA
Cell Intrinsic Modulation of Viral and Bacterial Infection by IFN-Stimulated Genes

Thomas J. Braciale, University of Virginia, USA
Innate Immune Control of Respiratory Virus Infection

Gaya Amarasinghe, Washington University School of Medicine, USA
Short Talk: Control of Type I IFN Signaling in Negative Sense RNA Viruses

Jason Waithman, Telethon Kids Institute, Australia
Short Talk: IFN α Subtypes Drive Distinct Anti-Cancer Activities

Meet the Editors

***Teodoro Pulvirenti**, Journal of Experimental Medicine, USA

Workshop 2: PRRs in Inflammatory Diseases (X5)

***Dmitry M. Shayakhmetov**, Emory University, USA

***Denise M. Monack**, Stanford University, USA

T. Sam Xiao, Case Western Reserve University, USA
Structures of GSDMD C-Terminal Domain Suggest Mechanisms of Autoinhibition

Igor E. Brodsky, University of Pennsylvania, USA
Role of Caspase-8 Enzymatic Activity in Control of TLR-Induced Macrophage Gene Expression

Damien Arnoult, Hopital Paul Brousse, France
The Golgi Apparatus Acts as a Platform for TBK1 Activation After Viral RNA Sensing

Randilea Nichols, University of California, Los Angeles, USA
NLRC4 Inflammasome Activation in Neutrophils is Sufficient to Cause Systemic Inflammatory Disease

Rosalie Heilig, University of Basel, Switzerland
The Role of Gasdermin D in IL-1 β Release

Cindy Chiang, University of Chicago, USA
The Human Papillomavirus E6 Oncoprotein Inhibits TRIM25- and RIG-I-Mediated Innate Immune Signaling

Andrea Ablasser, Ecole Polytechnique Fédérale de Lausanne, Switzerland
Innate Immune Sensing of Cytosolic Chromatin Fragments through cGAS Promotes Cellular Senescence

Workshop 2: Role of Type I IFNs in Control and Enhancement of Infection (X6)

***Thomas J. Braciale**, University of Virginia, USA

***Katrin D. Mayer-Barber**, NIAID, National Institutes of Health, USA

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Charles S. Dela Cruz, Yale University, USA
Chitinase-Like Protein Chi311 Modulates Type I Interferon Response through TLR9-AP3-IRF7 Axis during Streptococcus Pneumoniae Lung Infection

Ren Sun, University of California, Los Angeles, USA
Genome-Wide Identification of Anti-Interferon Functions in Influenza A Virus

Lindsey Cook, Washington University in St. Louis, USA
Differential Roles of Type I Interferons in Chikungunya Virus Infection

Bastian Opitz, Charité University Medicine Berlin, Germany
A Common Loss-of-Function Variant of STING Affects cGAS-Dependent Antibacterial Defense

Laura Sinigaglia, Institut Pasteur, France
Transfer of Yellow Fever Virus RNA from Infected Cells to Plasmacytoid Dendritic Cells Triggers Interferon Production

Nick Parekh, Penn State College of Medicine, USA
cGAS Mediates a Protective Local Response to Dermal Vaccinia Infection Independent of Control of Virus Replication

Susan Pereira Ribeiro, Case Western Reserve University, USA
Different Interferon Signatures Characterize Two Subclasses of Immune Non-responder Subjects

Interfering with Pathogenic TLR and NLR Signaling (X5)

***Gabriel Nuñez**, University of Michigan, USA

Dana Philpott, University of Toronto, Canada
Nod2 Signaling

Dmitry M. Shayakhmetov, Emory University, USA
Non-canonical Regulated Necrotic Death and Sensing Danger

Jenny P.Y. Ting, University of North Carolina at Chapel Hill, USA
Intracellular Innate Immune Receptors: Regulators of Inflammation, Cancer and Immunity

Vikram R. Rao, Pfizer, USA
Short Talk: IRAK4 Kinase Inhibitors: Emerging Biology and Therapeutic Implications

Type I IFN Regulation of Viral Infection (X6)

***Andreas Wack**, Francis Crick Institute, UK

Netanya Sandler Utay, University of Texas Medical Branch at Galveston, USA
Type I Interferons: Barrier or Pathway to HIV Disease?

Adolfo García-Sastre, Mount Sinai School of Medicine, USA
Regulation of Influenza Virus Sensing and Antiviral Responses by Host and Virus Factors

Andreas Pichlmair, Max-Planck Institute of Biochemistry, Germany
Interactions of Cellular Proteins with Viral Nucleic Acids

Ricardo Rajsbaum, University of Texas Medical Branch, USA
Short Talk: Friend and Foe in the Regulation of IFN Pathways: Pro-Viral and Anti-Viral Functions of the Host E3-Ubiquitin Ligase TRIM6

Poster Session 2

WEDNESDAY, MARCH 22

PRR Signaling in Bacterial and Viral Infection (X5)

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

Russell E. Vance, University of California, Berkeley, USA
Activation of Inflammasomes by Bacterial Pathogens

Amal Amer, Ohio State University, USA
Unconventional Functions of Inflammasomes

Denise M. Monack, Stanford University, USA
Inflammasomes and Bacterial Infections

Christian Holm, Aarhus University, Denmark
Short Talk: Nitro-Fatty Acids Can Suppress STING Signaling

Peng Li, National Institute of Biological Sciences, China
Short Talk: Ubiquitination and Degradation of GBPs by Shigella Ipha9.8 Effector to Suppress Host Defenses

Valesca Lindenberg, Institute of Medical Microbiology and Hospital Hygiene, Germany

Short Talk: Extensive Characterization of mGBPs Localization Chlamydia trachomatis Infection

Katelyn Susanne Burleigh, University of Washington, USA
Short Talk: Uncovering the Mechanism of E1A Antagonism of the cGAS-STING Pathway

Type I IFN Regulation of Bacterial Infection and Disease (X6)

***Alan Sher**, NIAID, National Institutes of Health, USA

Thomas J. Scriba, University of Cape Town, South Africa
IFN Signatures that Predict Human Tuberculosis

Katrin D. Mayer-Barber, NIAID, National Institutes of Health, USA
The Dichotomy between Interleukin 1 and Type I Interferon during Mycobacterium Tuberculosis Infection Exposes Distinct and Opposing Classes of Inflammation

Craig R. Roy, Yale University School of Medicine, USA
Modulation of Type I Interferon Production during Infection by Vacuolar Pathogens

Jacques F. Banchereau, The Jackson Laboratory for Genomic Medicine, USA
Human Dendritic Cell Subsets Differentially Respond to Vaccines

Terje Espevik, Norwegian University of Science and Technology, Norway
Short Talk: CD150 Positively Regulates TRAM Recruitment to E.coli Phagosomes and Type I IFN Secretion

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Beiyun Caitlin Liu, Tufts University, USA

Short Talk: Host-Intrinsic Interferon Signaling Licenses GBP-Mediated Attack on Cytosolic Bacteria

Inflammasome and NF- κ B Regulatory Mechanisms (X5)

***Thirumala-Devi Kanneganti**, St. Jude Children's Research Hospital, USA

Christian Stehlik, Northwestern University, USA
Inflammasome Inhibition

Eicke Latz, University of Bonn, Germany
Inflammasomes in Health and Disease

Luke A. J. O'Neill, Trinity Biomedical Sciences Institute, Ireland
Metabolic Reprogramming in Innate Immunity and Inflammation

Ali A. Zarrin, Genentech, Inc., USA
Short Talk: TPL2 Kinase Activates MEK-1/2 and/or MEK-3/6 to Regulate Inflammatory Pathways in Myeloid Cells

Role of Type I IFN in Complex Autoimmunity (X6)

***Virginia Pascual**, Cornell University, USA
Pathogenic Functions of Type I IFN in SLE

***Richard M. Siegel**, NIAMS, National Institutes of Health, USA
Interferon, Anti-Interferon Antibodies and NK Cells in Systemic Autoimmunity

Robert C. Axtell, Oklahoma Medical Research Foundation, USA
Immunological Heterogeneity in Neurological Autoimmunity: Lessons from Studying Type I Interferon Responses

Mari L. Shinohara, Duke University, USA
Short Talk: Type-I Interferons and the NLRP3 Inflammasome in CNS Autoimmunity

Poster Session 3

THURSDAY, MARCH 23

Interactions between Microbiota and the Innate Immune System (X5)

***Mihai G. Netea**, Radboud University, Netherlands

Daniel Graham, Massachusetts General Hospital, USA
Host Genetics and Microbe Interactions in Human Disease

Kathy D. McCoy, University of Calgary, Canada
Intestinal Commensal Microbiota and Education of the Innate Immune System

Gabriel Nuñez, University of Michigan, USA
Control of Pathogen Colonization by Host Immunity and the Microbiota in the Gut

Andrew T. Gewirtz, Georgia State University, USA
Microbial-Mediated Protection from Infectious Disease

Prosper N. Boyaka, Ohio State University, USA
Regulation of Mucosal Immunity by Toxins and Microbiota

Grace Yi Chen, University of Michigan, USA
Short Talk: NLRP6 Limits Colonization of Akkermansia to Protect Against the Development of Colitis and Colon Tumorigenesis

Felix Yarovinsky, University of Rochester Medical Center, USA
Short Talk: Loss of Paneth Cell Autophagy Leads to Catastrophic Susceptibility to Acute Gastrointestinal Inflammation

Mechanisms Underlying Divergent Functions of Type I IFNs (X6)

***Anne O'Garra**, Francis Crick Institute, UK
Jae U. Jung, Keck School of Medicine of University of Southern California, USA
TRIM-Mediated Control of Type I IFN Pathway

Marco Colonna, Washington University School of Medicine, USA
Targeting Type I IFN Activity through Plasmacytoid DC

Laurel L. Lenz, University of Colorado, USA
Role of Type I - Type II IFN

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

***Marco Colonna**, Washington University School of Medicine, USA

Kebin Liu, Medical College of Georgia, USA

Jak-STAT-Mediated Chronic Inflammation Impairs Cytotoxic T Lymphocyte Activation to Decrease Anti-PD-1 Immunotherapy Efficacy in Pancreatic Cancer

Jacquelyn Gorman, Seattle Children's Research Institute, USA
The IFIH1A946T Coding Variant Mediates an Interferon Program that Limits Viral Infection but Increases the Risk for Autoimmunity

Mark E. Kleinman, University of Kentucky, USA
Epigenetic Regulation of Type I IFN Response in Age-Related Macular Degeneration

Elisaveta Voynova, MedImmune, USA
Blockade of Critical Immune Regulators Results in Different Roads to Pathogenesis in Primary Sjögren's Syndrome

Mona Motwani, University of Massachusetts, USA
The cGAS-STING

Gary P. Sims, MedImmune Inc, USA
Novel Pathogenic Role for IgE in SLE, and Pharmacological Blockade of Type I IFN Receptor in Patients

John J. O'Shea, NIAMS, National Institutes of Health, USA
Targeting Type I IFN Signaling Pathways

Meeting Wrap-Up: Outcomes and Future Directions (Organizers) (X5)

Meeting Wrap-Up: Outcomes and Future Directions (X6)

***Alan Sher**, NIAID, National Institutes of Health, USA

FRIDAY, MARCH 24
Departure

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*Crosslink III
Macrophage
Effector Function*

**Gideon
Schreiber**,
Weizmann
Institute, Israel
*The Molecular
Basis for
Differential Activity
of Type I
Interferons*

Paul J. Hertzog,
Hudson Institute of
Medical Research,
Australia
*Short Talk:
Systems Biology
of Type I
Interferon
Responses*

Ronald L. Rabin,
US Food and Drug
Administration,
USA
*Short Talk: A
Potential
Modulatory Role
for IFN α 1
Dependent on its
Low Affinity for
IFNAR2*

Workshop 3: PRRs in Inflammatory Diseases (X5)

***Amal Amer**,
Ohio State
University, USA

***Dana Philpott**,
University of
Toronto, Canada

Eric P. Hanson,
National Institutes
of Health, USA
*A Novel NEMO
Isoform Mediates
Enhanced Antiviral
Activity and
Autoinflammatory
Disease via
Stabilization of
IKK ϵ*

Kiva V. Brennan,

*Pathway Restrains
Systemic
Autoimmunity*

Simone Caielli,
Baylor Institute for
Immunology
Research, USA
*Oxidized
Mitochondrial DNA is
a Powerful Activator
of Human pDCs and
Induces a*

*Lupus-Specific CD4 T
Cell Phenotype*

Stephen Rubino,
Brigham and
Women's Hospital,
USA

*Activated Microglia
Induce Type
1-interferon
Dependent
Neurodegeneration*

Navigating the Peer Review Process (X5)

***Tina M. McIntyre**,
National Institutes of
Health, USA

Innate Immune Receptors and Metabolism (X5)

***Prosper N. Boyaka**,
Ohio State University,
USA

Marcia A. Munoz,
Garvan Institute of
Medical Research,
Australia
*Short Talk: Defective
Protein Prenylation Is
a Diagnostic
Biomarker for
Mevalonate Kinase
Deficiency*

Je-Wook Yu, Yonsei
University College of
Medicine, South Korea
*Short Talk:
25-Hydroxycholesterol
Contributes to
Cerebral Inflammation
of X-Linked
Adrenoleukodystrophy*

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Trinity College
Dublin, Ireland
*Designing
Vaccines for the
Paediatric
Population;
Potential for
Cytosolic Nucleic
Acids as Vaccine
Adjuvants*
Nesrin Ozoren,
Bogazici
University, Turkey
*ASC Specks as
Vaccine
Technology*

Jingjin Ding,
National Institute
of Biological
Sciences, China
*LPS Binding to
Caspase-1/4/5
Triggers
Pyroptosis by
Releasing the
Pore-Forming
Activity of GSDMD*
**Orna
Rabinovich-Ernst,**
NIAID, National
Institutes of
Health, USA
*An Arrayed
Genome-Wide
RNAi Screen for
the Discovery of
Novel
Inflammasome
Regulators*

Thomas A. Kufer,
University of
Hohenheim,
Germany
*Roles of NLRP10
in Innate and
Adaptive Immunity*

**Workshop 3: Role
of Type I IFNs in
Autoimmunity and
Malignancy (X6)**

*(X-ALD) through
Activation of the
NLRP3 Inflammasome*

Vishwa Deep Dixit,
Yale University, USA
*Metabolic Control of
Inflammasomes*

Mihai G. Netea,
Radboud University,
Netherlands
*Metabolic Basis for
Trained Innate
Immunity*

**Tailoring Type I IFN
Interventions to
Achieve Cure (X6)**

***Jacques F.
Banchereau,** The
Jackson Laboratory
for Genomic
Medicine, USA

**Geraldine P.
Grouard-Vogel,**
Neovacs, France
*Overexpression of
IFN α and Derived
Diseases: Innovative
Approach with a
Therapeutic Vaccine
IFN α Kinoid*