Phosphoinositide Biology: New Therapeutic Targets beyond Class I PI3K

February 11–15, 2018 | Sagebrush Inn & Suites | Taos, New Mexico | USA

Scientific Organizers:
Emilio Hirsch, Fondazione per la Ricerca Biomedica – ONLUS, Italy
Tamas Balla, NICHD, National Institutes of Health, USA
Cristina Donini, Medicines for Malaria Venture, Switzerland

Phosphoinositides have been recognized since the 1980s as important regulatory lipids supporting signal transduction from G protein-coupled receptors and receptor tyrosine kinases. The discovery of PI 3-kinases and their roles in carcinogenesis and immune regulation has created a fertile ground for translational expansion of the phosphoinositide field with a focus on cancer and inflammation. Most of these advances focused on Class I PI3Ks and PIP3-mediated signaling. However, research on other PI kinases and phosphoinositides has expanded substantially over the years. Class II and -III PI 3-kinases and less characterized 3-phosphorylated phosphoinositides are now rapidly emerging as key controllers of development, trafficking, nutrition-sensing and autophagy. Furthermore, phosphoinositides different from the 3-phosphorylated species are gaining momentum in many aspects of cell physiology and pathology. Exciting new developments include PI 4-kinases controlling vesicular trafficking and non-vesicular lipid transfer between membrane contacts, and new details are emerging on the role of inositol lipid phosphatases in trafficking, endocytosis and ciliary function. The recently recognized roles of PI 4-kinases as obligate host factors for certain RNA viruses, and their importance in parasitic organisms such as Plasmodium falciparum or Legionella pneumophila, have raised significant interest from pharmaceutical companies that now focus on inositol lipids other than the products of PI 3-kinases. By expanding our knowledge of phosphoinositides beyond class I PI3K products, this Keystone Symposia meeting represents a unique opportunity to bolster the growing interest in these under-explored avenues with a strong potential for translational impact.

Session Topics:
- Phosphoinositide Gradients and Lipid Transport at Membrane Contact Sites
- PI 4-Kinases as Possible Drug Targets
- Inositide Phosphatases in Cancer and Development
- Workshop: New and Emerging Paradigms and Possible Drug Targets
- Structural Insights into Pharmacological Targeting of Lipid Kinases
- Phosphoinositides Directing Trafficking for Degradation
- Monoinositide Phosphatases
- Beyond Class I PI 3-Kinases
- PIP Kinases as Emerging Drug Targets

Scholarship Application & Discounted Abstract Deadline: October 10, 2017
Abstract Deadline: November 8, 2017
Discounted Registration Deadline: December 12, 2017

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: #KSphospho
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SUNDAY, FEBRUARY 11

Arrival and Registration

MONDAY, FEBRUARY 12

Welcome and Keynote Address

Pietro V. De Camilli, Yale University School of Medicine, USA
Phosphoinositide signaling in the control of membrane dynamics and interactions

Phosphoinositide Gradients and Lipid Transport at Membrane Contact Sites

Bruno Antonny, Institut de Pharmacologie Moleculaire et Cellulaire, France
Cholesterol Transport Driven by PI4P Gradients from the ER to Golgi

Tamas Balla, NICHD, National Institutes of Health, USA
The Role of PI4KA in Controlling Membrane Lipid Dynamics

Jen Liou, UT Southwestern Medical Center, USA
The Role of ER-PM Junctions in Phosphoinositide Homeostasis and Ca2+ Signaling

Short Talk(s) Chosen from Abstracts

PI 4-Kinases as Possible Drug Targets

Nihal Altan-Bonnet, NHLBI, National Institutes of Health, USA
Lipid Blueprints for Viral Replication and Transmission

Kasturi Haldar, University of Notre Dame, USA
Targeting a Mechanism of Artemisinin Resistance in Plasmodium falciparum Malaria

Cristina Donini, Medicines for Malaria Venture, Switzerland
MMV048, a Plasmodium PI4K Inhibitor as Potential Malarial Treatment

Short Talk Chosen from Abstracts

Poster Session 1

TUESDAY, FEBRUARY 13

Inositide Phosphatases in Cancer and Development

Speaker to be Announced

Jeremy F. Reiter, University of California, San Francisco, USA
Cilia Have a Distinct Composition of Phosphoinositides and Other Lipids Critical for Signaling

Christina Anne Mitchell, Monash University, Australia
Identification of Novel Roles for Inositol Polyphosphate 5-Phosphatases

Antonella De Matteis, Telethon Institute of Genetics and Medicine, Italy
The Phosphoinositides and the Golgi Complex

Short Talk(s) Chosen from Abstracts

Workshop: New and Emerging Paradigms and Possible Drug Targets

Short Talks Chosen from Abstracts

Structural Insights into Pharmacological Targeting of Lipid Kinases

John E. Burke, University of Victoria, Canada
Structural Basis of Regulation and Inhibition of Phosphatidylinositol 4-Kinase III Beta (PI4KIIIB)

Ujjini H. Manjunatha, Novartis Institute for Tropical Diseases, USA
Cryptosporidium Lipid Kinase Is a Promising Molecular Target To Treat Cryptosporidiosis

Roger L. Williams, Medical Research Council, UK
Structural Mechanisms of Regulation of the PI3K Superfamily

Short Talk Chosen from Abstracts

Poster Session 2

WEDNESDAY, FEBRUARY 14

Phosphoinositides Directing Trafficking for Degradation

Lois S. Weisman, University of Michigan, USA
Multiple Mechanisms Dynamically Regulate the Signaling Lipid PI(3,5)P2

Haoxing Xu, University of Michigan, USA
Lipid Regulation of Lysosomal Ion Channels

Mariella Vicinanza, Cambridge Institute for Medical Research, UK
PI(5)P Regulates Autophagy

Leon O. Murphy, Third Rock Ventures, USA
VPS34 and Autolysosomal Regulation

Short Talk(s) Chosen from Abstracts

Monoinositide Phosphatases

Volker Haucke, Leibniz Institut für Molekulare Pharmakologie, Germany
Phosphoinositide Conversion Directs Vesicular Trafficking

Jocelyn Laporte, Institute of Genetics and Molecular and Cellular Biology, France
Myotubularin Phosphoinositides Phosphatases Implication and Targeting in Neuromuscular Diseases

Amy Kiger, University of California, San Diego, USA
Coordination of Class II PI3-Kinase and Mtm PI3-Phosphatase Functions

Short Talk Chosen from Abstracts

Poster Session 3

THURSDAY, FEBRUARY 15

Keynote Address

Pier Paolo Pandolfi, Beth Israel Deaconess Medical Center, Harvard Medical School, USA
Novel Modes of PI3K Signaling Regulation and Deregulation in Disease Pathogenesis

Beyond Class I PI 3-Kinases

Emilio Hirsch, Fondazione per la Ricerca Biomedica – ONLUS, Italy
Class II PI3K Signaling in Cancer

James Dowling, Hospital for Sick Children, Canada
3-Phosphoinositide Metabolism in Muscle Development, Muscle Disease and as a Therapeutic Target

Jonathan M. Backer, Albert Einstein College of Medicine, USA
PI3K Signaling in Tumor Cell Invasion

Short Talk(s) Chosen from Abstracts

PIP Kinases as Emerging Drug Targets

Lewis C. Cantley, Weill Cornell Medicine, USA
Type 2 Phosphatidylinositol-5-Phosphate 4-Kinases in Cancer

Richard A. Anderson, University of Wisconsin Medical School, USA
Agonist-Stimulated Phosphatidylinositol 3,4,5-Trisphosphate Generation by Scaffolded Phosphoinositide Kinases

Atsuo T. Sasaki, University of Cincinnati, USA
PI5P4Kbeta is an Intracellular GTP Sensor for Metabolism and Tumorigenesis

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

FRIDAY, FEBRUARY 16

Departure