Announcing Keystone Symposia’s 2015 conference on:

Integrating Metabolism and Tumor Biology

joint with the meeting on: PI 3-Kinase Signaling Pathways in Disease

January 13–18, 2015
Fairmont Hotel Vancouver
Vancouver, British Columbia, Canada

Scientific Organizers:
Ralph J. DeBerardinis, Robert T. Abraham and Eyal Gottlieb

Metabolic reprogramming is a hallmark of cancer. Work in recent years has demonstrated extensive interconnectivity between oncogenic signaling pathways and intermediate metabolism. Emerging principles regarding the influence of the tumor microenvironment on cellular metabolism will be discussed in detail, as will new progress toward exploiting metabolic reprogramming to image and treat cancer. The meeting is partnered with a meeting on "PI 3-Kinase Signaling Pathways in Disease," providing a fertile environment for exchange of ideas between these two highly connected fields.

Session Topics:
Oncogenic Control of Metabolism (Joint)
• Metabolic Perturbations that Drive Malignancy
• Mitochondrial Metabolism and Cancer
• Model Organisms as Tools to Understand Metabolism, Growth and Cancer
• Targeting Cancer Cell Metabolism
• Metabolite Control of Gene Expression and Protein Function
• Metabolic Consequences of Cell Stress

Joint with:
• Influence of the Metabolic Environment on Cancer Development and Tumor Growth
• Workshop 1: Career Development in Cancer Metabolism
• Workshop 2: Novel Targets and Pathways
• Workshop 3: Strategies for Discovery of Metabolism: Targeted Drugs
• Workshop: Autophagy (Joint)
**KEystone Symposias on Molecular and Cellular Biology**

**Integrating Metabolism and Tumor Biology (J1)**

**Scientific Organizers:** Ralph J. DeBerardinis, Robert T. Abraham and Eyal Gottlieb

**Sponsored by:** Astellas Pharma Inc., Bayer HealthCare Pharmaceuticals, Cell Signaling Technology, Inc., ImmunoGen, Inc., Pfizer Inc. and Takeda Pharmaceutical Company

**PI 3-Kinase Signaling Pathways in Disease (J2)**

**Scientific Organizers:** Lori Friedman, David A. Fruman and Phillip T. Hawkins

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**Sponsored by:** AstraZeneca, Genentech, Inc., Incyte Corporation, Infinity Pharmaceuticals, Inc. and Mersana Therapeutics

**Abstract & Scholarship Deadline:** September 24, 2014 / **Abstract Deadline:** October 16, 2014 / **Discounted Registration Deadline:** November 13, 2014

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**TUESDAY, JANUARY 13**

Arrival and Registration

**WEDNESDAY, JANUARY 14**

Keynote Address (Joint)

**Lewis C. Cantley**, Weill Cornell Medicine, USA
Phosphoinositide Kinases and Cancer Metabolism

Oncogenic Control of Metabolism (Joint)

*Ralph J. DeBerardinis*, University of Texas Southwestern Medical Center, USA
Emilio Hirsch, Fondazione per la Ricerca Biomedica – ONLUS, Italy
PI3K Class II gamma is a Rab5 Effector Selectively Controlling Endosomal Akt2 Activation Downstream Insulin Signaling

John Blenis, Weill Cornell Medical College, USA
mTOR Control of Glutamine Metabolism

David M. Sabatini, Whitehead Institute for Biomedical Research, USA
mTOR and the Cell Biology of Nutrient Sensing

Wei-Xing Zong, Rutgers University, USA
Short Talk: Myc Induces Expression of Glutamine Synthetase through Thymine DNA Glycosylase-Mediated Promoter Demethylation

Metabolic Perturbations that Drive Malignancy (J1)

*Eyal Gottlieb*, Technion - Israel Institute of Technology, Israel
Matthew G. Vander Heiden, Massachusetts Institute of Technology, USA
Role of Glycolytic Regulation in Tumor Biology

Julie-Aurore Losman, Dana-Farber Cancer Institute, USA
2-Hydroxyglutarate Induces a Reversible State of Malignant Transformation

Binhua (Peter) P. Zhou, University of Kentucky College of Medicine, USA
Metabolic Facilitators of the Epithelial-Mesenchymal Transition

PI3K Effectors (J2)

*Roger L. Williams*, Medical Research Council, UK
Alex Toker, Beth Israel Deaconess Medical Center, USA
PI 3-Kinase and Akt at the Interface of Signaling and Metabolism

Yoshinori Fukui, Medical Institute of Bioregulation, Kyushu University, Japan
Critical Roles of DOCK Family Proteins in Migration and Activation of Leukocytes

Aaron J. Marshall, University of Manitoba, Canada
Short Talk: Phosphatidylinoisitol 3,4 Biphosphate and its Binding Protein Lamellipodin Are Required for Directional Migration of Malignant B Cells

Sonja Vermeren, University of Edinburgh, UK
PI3K Regulates Integrin-Dependent Processes in the Neutrophil by Signaling through ARAP3

Ming O. Li, Memorial Sloan Kettering Cancer Center, USA
Short Talk: Sestrins Function as Guanine Nucleotide Dissociation Inhibitors for Rag GTPases to Control mTORC1 Signaling

**Poster Session 1**

**THURSDAY, JANUARY 15**

Mitochondrial Metabolism and Cancer (J1)

*Marcia C. Haigis*, Harvard Medical School, USA
Ralph J. DeBerardinis, University of Texas Southwestern Medical Center, USA
Conventional and Unconventional Roles of Mitochondrial Enzymes in Tumor Cell Metabolism

Paul Hwang, NHLBI, National Institutes of Health, USA
Role of TP53 in Regulating Mitochondrial Metabolism

John C. Schell, University of Utah, USA
Short Talk: The Mitochondrial Pyruvate Carrier Enforces the Warburg Effect and Is Important for Cancer-Initiating Cell Maintenance

Pierre Sonveaux, University of Louvain, Belgium
Short Talk: A Mitochondrial Switch Promotes Tumor Metastasis

Navdeep S. Chandel, Northwestern University, USA
Mitochondrial Metabolism Regulates Cell Proliferation and Epigenetics

Andre Catic, Baylor College of Medicine, USA
Short Talk: Nuclear Proteolysis as a Metabolic Regulator

Roger Geiger, Institute for Research in Biomedicine, Switzerland
Short Talk: Influence of L-Arginine on Mitochondrial Networks and the Lifespan of Activated T Cells

PI3K/Akt/mTOR in Immune Function, Inflammation (J2)

*Bart Vanhaesebroeck*, University College London, Cancer Institute, UK
Phillip T. Hawkins, Babraham Institute, UK
PI3K Signaling in Neutrophils

Klaus Okkenhaug, University of Cambridge, UK
PI3Kdelta in Immunity, Infection and Cancer

Judith A. Varner, University of California, San Diego, USA
Short Talk: Targeting PI3Kgamma Activates Anti-Tumor Immune Responses and Promotes Cancer Survival

David A. Fruman, University of California, Irvine, USA
Insights Concerning the Selective Action of Rapamycin in Lymphocytes

Robert C. Rickert, Pfizer Inc., USA
The PI3K Pathway in B Cell Metabolism

Yina H. Huang, Dartmouth College, USA
Short Talk: Calmodulin and PI(3,4,5)P3 Cooperatively Bind to the Itk Pleckstrin Homology Domain to Promote Efficient Calcium Signaling and IL-17A Production in T Cells

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Workshop 1: Novel Targets and Pathways (J1)

*Costas A. Lyssiotis*, University of Michigan, USA

Serkan Kir, Dana-Farber Cancer Institute, USA

Tumor-Derived PTH-Related Protein Triggers Adipose Tissue Browning and Cancer Cachexia

Saverio Tardito, Beatson Institute for Cancer Research, Scotland

De novo Purine Biosynthesis Dictates Glutamine Dependency of Glioblastoma Cells

Jiyeon Kim, University of Texas Southwestern Medical Center, USA

Unconventional Pathways of Nitrogen Metabolism in Lung Cancer

Jonathan L. Coloff, University of Illinois at Chicago, USA

Regulation of Glutamine Metabolism in Epithelial Cell Proliferation and Quiescence

Atsuo T. Sasaki, University of Cincinnati, USA

SSK1, a Novel GTP-Dependent Kinase, Detects GTP Levels and Regulates Tumorigenesis

Etienne Audet-Walsh, McGill University, Canada

The Estrogen-Related Receptor Gamma Is a Key Determinant of Androgens-Mediated Energy Reprogramming of Prostate Cancer Cells

Zhimin Lu, University of Texas MD Anderson Cancer Center, USA

Phosphoglycerate Kinase 1 Coordinates Glycolysis and TCA Cycle in Tumorogenesis

Model Organisms as Tools to Understand Metabolism, Growth and Cancer (J1)

*David M. Sabatini*, Whitehead Institute for Biomedical Research, USA

Benjamin Tu, University of Texas Southwestern Medical Center, USA

What is TORC1 doing to Cellular Metabolism?

Alex Gould, MRC National Institute for Medical Research, UK

Protecting Neural Stem Cells from Starvation and Hypoxia in Drosophila

Gabriela David, Baylor College of Medicine, USA

Short Talk: Wacky Is a Novel Regulator of mTOR Signaling

Leonard I. Zon, HHMI/Boston Children’s Hospital, USA

The Role of Nucleotide Deficiency in the Transcriptional Regulation of Neural Crest Differentiation and Melanoma

PI3K in Cancer (J2)

Lori Friedman, Genentech, Inc., USA

Sensitivity and Resistance to PI3K Pathway Inhibitors

Vuk Stambolic, University Health Network, Canada

Nuclear PTEN Function in Tumor Suppression

*Jean J. Zhao*, Dana-Farber Cancer Institute, USA

Targeting PI3K Isoforms in Cancer: Mechanistic and Therapeutic Insights from Genetic Mouse Models

Inma M. Berenjeno, University College London, Cancer Institute, UK

Short Talk: Induction of Chromosomal Instability by Oncogenic PIK3CA and its Possible Implications

Miguel Murillo, Institute of Cancer Research, UK

Short Talk: Disruption of the Interaction of RAS with PI3K p110alpha Induces Regression of EGFR-Driven Lung Tumors

Poster Session 2

FRIDAY, JANUARY 16

Targeting Cancer Cell Metabolism (J1)

*Michael Pollak*, Jewish General Hospital, Canada

Robert J. Gillies, H. Lee Moffitt Cancer Center and Research Institute, USA

Buffer Therapy

Deepak Nagrath, University of Michigan, USA

Short Talk: Deconstructing Glutamine’s Role in Regulating Aggressiveness, Drug Sensitivity in Ovarian Cancer Cells

Katharine Yen, Auron Therapeutics, USA

Targeting Mutant IDH in Cancer

Reuben J. Shaw, The Salk Institute for Biological Studies, USA

The LKB1 - AMPK Tumor Suppressor Pathway: Metabolic Reprogramming and Therapeutic Targeting

Russell G. Jones, Van Andel Research Institute, USA

Short Talk: The Oncogenic MicroRNA miR-17-92 Regulates Tumor Metabolism through Suppression of LKB1-AMPK Signaling

Gina DeNicola, Moffitt Cancer Center, USA

Short Talk: NRF2 Regulates Serine Biosynthesis in Non-Small Cell Lung Cancer

Dohoon Kim, University of Massachusetts Medical School, USA

Short Talk: SHMT2 Drives Glioma Cell Survival in the Tumor Microenvironment

Russell G. Jones, Van Andel Research Institute, USA

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Inma M. Berenjeno, University College London, Cancer Institute, UK

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PI3K/Akt/mTOR Clinical Translational - Oncology (J2)

*Lori Friedman*, Genentech, Inc., USA

José Baselga, Memorial Sloan-Kettering Cancer Center, USA

PI3K and mTOR Inhibitors in Breast Cancer

Jerry Y. Hsu, Genentech, Inc., USA

Clinical Development of PI3K Inhibitors at Genentech: Is There Clinical Proof of Concept with this Class of Agents in Solid Tumors?

Jeffrey L. Kutz, Infinity Pharmaceuticals, Inc., USA

Short Talk: Duvelisib Inhibits Malignant B-Cell Proliferation and Disrupts Signaling from the Tumor Microenvironment through Mechanisms that are Dependent on PI3K-delta and PI3K-gamma

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Poster Session 3

Workshop 2: Strategies for Discovery of Therapeutic Targets and Metabolism-Targeted Drugs (J1)

*Arkaitz Carracedo, Center for Cooperative Research in Biosciences, Spain
Michael E. Pacold, New York University Medical Center, USA
Jing Chen, Winship Cancer Institute, Emory University, USA
Robert U. Svensson, The Salk Institute for Biological Studies, USA
Hector C. Keun, Imperial College London, UK
Ayelet Erez, Weizmann Institute of Science, Israel
Chiara Gorrini, Campbell Family Institute for Breast Cancer Research, Canada

Workshop 1: PI3K Structure and Enzymology (J2)

*Jonathan M. Backer, Albert Einstein College of Medicine, USA
Takehiko Sasaki, Tokyo Medical and Dental University, Japan
John E. Burke, University of Victoria, Canada

Arthur L. Shaffer III, NCI, National Institutes of Health, USA
Timothy Richard Wilson, Genentech, Inc., USA
Michel Maira, Basilea Pharamceutica Int., Switzerland

Metabolism-Targeted Drugs (J1)

Natasha S. Clayton, University of Cambridge, UK
Christi Gaubitz, University of Geneva, Switzerland
Goran Stjepanovic, University of California, Berkeley, USA
Oscar Vadas, University of Geneva, Switzerland

Metabolite Control of Gene Expression and Protein Function (J1)

*Matthew D. Hirschey, Duke University, USA
Craig B. Thompson, Memorial Sloan Kettering Cancer Center, USA
Christine A. Parachoniak, Massachusetts General Hospital Cancer Center, USA
Robert J. Winkler, New York University Medical Center, USA
Marcia C. Haigis, Harvard Medical School, USA

PI3K/Akt/mTOR Clinical Translational - Inflammation (J2)

*David A. Fruman, University of California, Irvine, USA
Stephen Shuttleworth, Karus Therapeutics, UK
Augustin Amour, GlaxoSmithKline, UK
Alison Mary Condliffe, University of Sheffield, UK

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SUNDAY, JANUARY 18

Departure
Meeting Wrap-Up: Outcomes and Future Directions (Organizers) (J1)