



Angiogenesis and Vascular Disease

May 8–12, 2017 | Eldorado Hotel & Spa | Santa Fe, New Mexico | USA

Scientific Organizers:

M. Luisa Iruela-Arispe, University of California, Los Angeles, USA

Timothy T. Hla, Weill Medical College of Cornell University, USA

Courtney Griffin, Oklahoma Medical Research Foundation, USA

Joint with the meeting on *Mitochondria, Metabolism and Heart*

Angiogenesis is critical to both the growth and repair of tissues as well as for the progression of several pathologies. Progress in our molecular understanding of vascular growth has facilitated the development of therapies that have been successfully applied in diseases such as retinopathy and cancer. Notwithstanding these advancements, much remains to be harnessed from the basic molecular mechanisms that control vascular growth. This conference will bring together leaders of research from basic science, translational science, biotechnology and pharmaceutical areas, to discuss progress in clinical and translational research areas. The goal of the conference is to highlight new discoveries, technological advances and therapeutic possibilities. Both established and up-and-coming investigators will have ample opportunities to interact informally and share views with junior investigators and trainees in a collegial and relaxed atmosphere. By promoting cross-disciplinary interactions, the meeting will enhance vascular biology research and applications to clinical medicine.


Session Topics:

- Metabolism and Disease (Joint)
- Metabolite Signaling in Angiogenesis and Vascular Disease
- Transcriptional Control of Endothelial Fate
- Epigenetic Regulation of Vascular Growth
- Hypoxia Sensing Mechanism and Mitophagy (Joint)
- Vascular Stability and Cell-Cell Interactions
- Organ Specific Vasculature
- Lymphangiogenesis

Scholarship Application & Discounted Abstract Deadline: January 11, 2017

Abstract Deadline: February 8, 2017

Discounted Registration Deadline: March 8, 2017



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

Upper image courtesy of: Christopher V. Carman and Roberta Martinelli, Harvard Medical School, Boston, Mass.

Meeting Hashtag: #KSangiogen

www.keystonesymposia.org/17Z3

KEYSTONE SYMPOSIA™
on Molecular and Cellular Biology
Accelerating Life Science Discovery

www.keystonesymposia.org/meetings | 1.800.253.0685 | 1.970.262.1230

a 501(c)(3) nonprofit educational organization

KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

Angiogenesis and Vascular Disease (Z3)

Scientific Organizers: Luisa Iruela-Arispe, Timothy T. Hla and Courtney Griffin

Sponsored by Janssen R&D: Pharmaceutical Companies of Johnson & Johnson and Journal of Molecular Cell Biology (JMCB)

Mitochondria, Metabolism and Heart (Z4)

Scientific Organizers: Junichi Sadoshima, Toren Finkel and Åsa B. Gustafsson

May 8-12, 2017 • Eldorado Hotel & Spa • Santa Fe, New Mexico, USA

Supported by Bayer HealthCare Pharmaceuticals

Abstract & Scholarship Deadline: January 11, 2017 / Abstract Deadline: February 8, 2017 / Discounted Registration Deadline: March 8, 2017

MONDAY, MAY 8

Arrival and Registration

TUESDAY, MAY 9

Welcome and Keynote Session (Joint)

***Luisa Iruela-Arispe**, University of California, Los Angeles, USA

***Junichi Sadoshima**, Rutgers New Jersey Medical School, USA

Kari K. Alitalo, University of Helsinki, Finland
Therapeutic Potential of Vascular Growth Factors

David C. Chan, California Institute of Technology, USA
Mitochondria Dynamics

Metabolism and Disease (Joint)

Robert E. Gerszten, Beth Israel Deaconess Medical Center, USA
Metabolic Profiles and the Risk of Cardiometabolic Diseases

***Andrew G. Dillin**, University of California, Berkeley, USA
Mitochondria Mitokines and Aging

Peter F. Carmeliet, University of Leuven, VIB, Belgium
Angiogenesis Revisited: Role and (Therapeutic) Implications of Endothelial Metabolism

Arpita Chowdhury, Universitätsmedizin Göttingen, Germany
Short Talk: Oxidative Stress and Altered Mitochondrial Signaling in Barth Syndrome Models

Nicholas Sibinga, Albert Einstein College of Medicine, USA
Short Talk: Control of Mitochondrial Function by Atypical Cadherins

Workshop 1: Current Strategies for Funding Angiogenesis and Vascular Disease Research (Z3)

***Luisa Iruela-Arispe**, University of California, Los Angeles, USA

Yunling Gao, NHLBI, National Institutes of Health, USA
Angiogenesis Research: The Extramural Portfolio Supported by the National Heart, Lung, and Blood Institute, 2008-2015

Morris J. Birnbaum, Pfizer Inc., USA

Philip Tagari, Amgen, Inc., USA
Amgen – Funding External Innovation

Courtney Griffin, Oklahoma Medical Research Foundation, USA
Updates on the American Heart Association Research Funding Portfolio

Christer Betsholtz, Uppsala University, Sweden

Workshop 1: How to Evaluate Metabolism in the Heart: From the Langendorff Perfusion to Metabolome Analyses (Z4)

***Toren Finkel**, University of Pittsburgh, UPMC, USA

Larissa Pfisterer, Frankfurt University, Germany
Regulation of Endothelial Cell Metabolism by Long Noncoding RNA Inflow2

Jessica M. Pflieger, Temple University, USA
Bioenergetics as a Tool for Assessing Cardiomyocyte Response to β -Adrenergic Stimulation and Insulin Resistance

Paul T. Schumacker, Northwestern University, USA
Mitochondrial Complexes I and III Regulate Cardiomyocyte Proliferation in Adult Mouse Hearts

Junco Shibayama Warren, University of Utah, USA
The Histone Methyltransferase Smyd1 Regulates Mitochondrial Energetics in Cardiomyocytes

Yuan Zhang, University of Iowa, USA
Ketogenic Diet Rescues Cardiac Hypertrophy and Heart Failure Induced by Loss of the Mitochondrial Pyruvate Carrier 1

Dan Shao, University of Washington, USA
Glucose Promotes Cell Growth by Suppressing Branched-Chain Amino Acid Degradation

Metabolite Signaling in Angiogenesis and Vascular Disease (Z3)

***William C. Sessa**, Yale University School of Medicine, USA

Morris J. Birnbaum, Pfizer Inc., USA
Control of Hepatic Lipid Metabolism

Christer Betsholtz, Uppsala University, Sweden
Pericytes as Regulators of Vascular Stability

J. David Symons, University of Utah, USA
Short Talk: Endothelial Cell Autophagy Maintains Shear-Stress-Induced Nitric Oxide Generation via Glycolysis-Dependent Purinergic Signaling to eNOS

Andreas M. Beyer, Medical College of Wisconsin, USA
Short Talk: Autophagy is a Novel Regulatory Mechanism in the Human Microcirculation

Mitochondria Quality Control (Z4)

Gerald W. Dorn, II, Washington University School of Medicine, USA
The Cardiomyopathy of Defective Mitochondrial Fusion

***Junichi Sadoshima**, Rutgers New Jersey Medical School, USA
Mitophagy in the Heart

R. Luke Wiseman, The Scripps Research Institute, USA
Stress-Responsive Regulation of Mitochondria Inner Membrane Proteostasis

Ana Victoria Lechuga Vieco, Spanish National Center for Cardiovascular Research, Spain
Short Talk: Conflict between Mitochondrial DNA Variants

Poster Session 1

WEDNESDAY, MAY 10

KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

Angiogenesis and Vascular Disease (Z3)

Scientific Organizers: Luisa Iruela-Arispe, Timothy T. Hla and Courtney Griffin

Sponsored by Janssen R&D: Pharmaceutical Companies of Johnson & Johnson and Journal of Molecular Cell Biology (JMCB)

Mitochondria, Metabolism and Heart (Z4)

Scientific Organizers: Junichi Sadoshima, Toren Finkel and Åsa B. Gustafsson

May 8-12, 2017 • Eldorado Hotel & Spa • Santa Fe, New Mexico, USA

Supported by Bayer HealthCare Pharmaceuticals

Abstract & Scholarship Deadline: January 11, 2017 / Abstract Deadline: February 8, 2017 / Discounted Registration Deadline: March 8, 2017

Transcriptional Control of Endothelial Fate (Z3)

***Courtney Griffin**, Oklahoma Medical Research Foundation, USA

William T. Pu, Children's Hospital, Harvard Medical School, USA
Transcriptional and Epigenetic Regulation of Endothelial Gene Expression

Michael Potente, Max Planck Institute for Heart and Lung Research, Germany
EMBO Young Investigator Lecture: Metabolism, Metabolites and Endothelial Plasticity

Brian L. Black, University of California, San Francisco, USA
Identification of Injury- and Regeneration-Responsive Cardiac Endothelium Enhancer Elements

William C. Sessa, Yale University School of Medicine, USA
New Insights into Endothelial Lipid Metabolism

Manu Beerens, Brigham and Women's Hospital, Harvard Medical School, USA
Short Talk: Prdm16 Modifies the Canonical Notch Output to Establish Proper Arterial Development

Akiko Mammoto, Medical College of Wisconsin, USA
Short Talk: YAP1 in Angiogenesis and Lung Regeneration

Autophagy and Metabolism (Z4)

Heidi M. McBride, McGill University, Canada
Emerging Functions of Mitochondrial-Derived Vesicles in Health and Disease.

***Ana Maria Cuervo**, Albert Einstein College of Medicine, USA
Control of Metabolism by Chaperone-Mediated Autophagy

Daniel P. Kelly, University of Pennsylvania, USA
Mitochondrial Remodeling in the Developing and Diseased Heart

E. Dale Abel, University of Iowa, Carver College of Medicine, USA
Myocardial Autophagy and Metabolic Regulation

Helena C. Kenny, University of Iowa, USA
Short Talk: Inducible Deletion of OPA1 Causes Heart Failure in Part by mTOR - Mediated Suppression of Autophagy

Iain Scott, University of Pittsburgh, USA
Short Talk: Acetylation of Mitochondrial Proteins by Gcn5l1 Promotes Enhanced Fatty Acid Oxidation in the Heart

Epigenetic Regulation of Vascular Growth (Z3)

***Brian L. Black**, University of California, San Francisco, USA

Stefanie Dimmeler, University of Frankfurt, Germany
Function of Long Noncoding RNAs in the Regulation of the Vasculature

Philip Tagari, Amgen, Inc., USA

Pharmacological and Genetic Inhibition of Hypoxia-Inducible Factor Prolyl Hydroxylases

Courtney Griffin, Oklahoma Medical Research Foundation, USA
Chromatin Remodeling and Vascular Development

Federico Bussolino, University of Torino, Italy
Short Talk: Transcription Factor EB Regulates VEGFR2 Function

Cell Signaling and Metabolism (Z4)

Pinchas Cohen, University of Southern California, USA
Mitochondrial-Derived Peptides and their Role in Vascular Disease

Xiang-Dong Fu, University of California, San Diego, USA
A Novel Strategy to Inhibit Angiogenesis in Cancer

Arieh Moussaieff, Hebrew University of Jerusalem, Israel
The Metabolic Switch of Cells Exiting Pluripotency

***Lorrie A. Kirshenbaum**, University of Manitoba, Canada
Short Talk: Alternative Spliced Form of Bnip3 Preferentially Interacts with Mitofusion2 and Endoplasmic Reticulum for Cell Survival

Poster Session 2

THURSDAY, MAY 11

Hypoxia Sensing Mechanism and Mitophagy (Joint)

***Stefanie Dimmeler**, University of Frankfurt, Germany

Åsa B. Gustafsson, University of California, San Diego, USA
Parkin-Dependent Degradation of Mitochondria by a Rab5 Endosomal Pathway

***Kenneth Walsh**, University of Virginia School of Medicine, USA
Clonal Hematopoiesis and Cardio-metabolic Disease: New Mechanisms, New Therapeutic Opportunities

Marlene Rabinovitch, Stanford University, USA
A BMP-Notch Axis Coordinates Mitochondrial Function, Chromatin Remodeling and Gene Regulation to Regenerate Endothelium in Response to Injury

M. Celeste Simon, University of Pennsylvania, USA
Balancing Cell Growth with Homeostasis in the Tumor Microenvironment

Ivan Menendez-Montes, Fundacion CNIC, Spain
Short Talk: Cardiac HIF/VHL Signaling Regulates Glycolytic and Oxidative Metabolic Programs and Is Essential for Myocardial Maturation during Heart Development

Erin Reineke, Houston Methodist Research Institute, USA
Short Talk: Coordination of Cellular Function by Steroid-Receptor Coactivator 2 in Stress-Induced Cardiac Angiogenesis

KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

Angiogenesis and Vascular Disease (Z3)

Scientific Organizers: Luisa Iruela-Arispe, Timothy T. Hla and Courtney Griffin

Sponsored by Janssen R&D: Pharmaceutical Companies of Johnson & Johnson and Journal of Molecular Cell Biology (JMCB)

Mitochondria, Metabolism and Heart (Z4)

Scientific Organizers: Junichi Sadoshima, Toren Finkel and Åsa B. Gustafsson

May 8-12, 2017 • Eldorado Hotel & Spa • Santa Fe, New Mexico, USA

Supported by Bayer HealthCare Pharmaceuticals

Abstract & Scholarship Deadline: January 11, 2017 / Abstract Deadline: February 8, 2017 / Discounted Registration Deadline: March 8, 2017

Workshop 2: Intracellular Signaling and Vascular Function (Z3)

***George E. Davis**, University of Missouri School of Medicine, USA

Christopher D. Kontos, Duke University Medical Center, USA
Caskin2: A Novel Regulator of Endothelial Cell Quiescence

Qing Robert Miao, Medical College of Wisconsin, USA
Ras Signaling Is Required for Preventing Cerebrovascular Malformation

Sarah J. Parker, Cedars Sinai Medical Center, USA
Proteomics Reveals Context-Dependent Shifts in Mitochondrial Protein Expression and Novel Non-Canonical TGF β Signaling Activation in the Aorta of Marfan Syndrome Mice

Vivek Venkataramani, University Medical Center Göttingen, Germany
CD31 Expression Determines Redox Status and Chemoresistance in Human Angiosarcomas

Ruowen Ge, National University of Singapore, Singapore
Extracellular Antiangiogenic Proteins Target Mitochondria through a Novel Route of Protein Trafficking via Endocytosis and Direct Endosome-Mitochondrion Fusion

Vascular Stability and Cell-Cell Interactions (Z3)

***Ralf H. Adams**, Max Planck Institute for Molecular Biomedicine, Germany

Harry (Hal) C. Dietz, Johns Hopkins University School of Medicine, Blade Therapeutics, USA
TGF β in Inherited Vasculopathies: A Matter of Aneurysmic Proportions

George E. Davis, University of Missouri School of Medicine, USA
Molecular Determinants Governing EC-Pericyte Tube Co-Assembly and Stability

Luisa Iruela-Arispe, University of California, Los Angeles, USA
Vascular Stability and Cell-Cell Interactions during Endothelial Regeneration

Arie Horowitz, Thomas Jefferson University, USA
Short Talk: Dynamic Equilibrium of Endothelial Cell Junctions Is Required for Vascular Morphogenesis

Metabolic Regulation of Cell Signaling (Z4)

***Guido Kroemer**, Cordeliers Research Center, France
Metabolic Regulation of Autophagy

Michael N. Sack, NHLBI, National Institutes of Health, USA
Nutrient Sensing, Mitochondria and the Inflammasome

Stephen Y. Chan, University of Pittsburgh School of Medicine, USA
The Emerging Nexus between Matrix Stiffness and Cellular Metabolism in the Diseased Pulmonary Vasculature: New Targets for Treating Pulmonary Hypertension

Jianhua Xiong, NHLBI, National Institutes of Health, USA
Short Talk: Fatty Acid Oxidation Regulates Endothelial Cell Fate

Poster Session 3

FRIDAY, MAY 12

Organ Specific Vasculature (Z3)

***Kathleen M. Caron**, University of North Carolina at Chapel Hill, USA

Ralf H. Adams, Max Planck Institute for Molecular Biomedicine, Germany

Organ-Specific and Functional Specialization of Blood Vessels

Susan Quaggin, Northwestern University, USA
Unique Molecular and Functional Requirements of the Renal Vasculature

Anne C. Eichmann, Yale University School of Medicine, USA
Cross-Talk between Vessels and Nerves

Paul S. Frenette, Albert Einstein College of Medicine, USA
Bone Marrow Vascular Niche

Lisandra Vila Ellis, MD Anderson Cancer Center, USA
Short Talk: Investigating Alveolar Angiogenesis in the Developing Mouse Lung

Ching-Ling Ellen Lien, Saban Research Institute, Children's Hospital, USA

Short Talk: Coordinated Development of Coronary Vessels, Cortical Cardiomyocytes and Cardiac Lymphatics Supports Heart Morphogenesis and Regeneration

Regulation of mPTP Opening (Z4)

Toren Finkel, University of Pittsburgh, UPMC, USA
Mouse Models of the Mitochondrial Calcium Uniporter Complex

Elizabeth A. Jonas, Yale University, USA
The Mitochondrial Permeability Transition Pore: Molecular Structure and Function in Health and Disease

John W. Elrod, Temple School of Medicine, USA
Mitochondrial Calcium Exchange in Heart Disease

***Jeffery D. Molkentin**, Cincinnati Children's Hospital Medical Center, USA

Mitochondrial Calcium Regulated by MCU Underlies Skeletal Muscle Adaptation

Amit U. Joshi, Stanford University SOM, USA
Short Talk: Mitochondrial Dynamics in Neurodegeneration in Patient-Derived Cells and in Animal Models

Vivian Werloger Rodrigues de Moraes, The Scripps Research Institute, USA

Short Talk: PERK Activation Regulates Mitochondrial Quality Control during Endoplasmic Reticulum Stress

Workshop 2: How to Evaluate Mitophagy and Mitochondrial Function in the Cardiovascular System (Z4)

***Åsa B. Gustafsson**, University of California, San Diego, USA

KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

Angiogenesis and Vascular Disease (Z3)

Scientific Organizers: Luisa Iruela-Arispe, Timothy T. Hla and Courtney Griffin

Sponsored by Janssen R&D: Pharmaceutical Companies of Johnson & Johnson and Journal of Molecular Cell Biology (JMCB)

Mitochondria, Metabolism and Heart (Z4)

Scientific Organizers: Junichi Sadoshima, Toren Finkel and Åsa B. Gustafsson

May 8-12, 2017 • Eldorado Hotel & Spa • Santa Fe, New Mexico, USA

Supported by Bayer HealthCare Pharmaceuticals

Abstract & Scholarship Deadline: January 11, 2017 / Abstract Deadline: February 8, 2017 / Discounted Registration Deadline: March 8, 2017

KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

Angiogenesis and Vascular Disease (Z3)

Scientific Organizers: Luisa Iruela-Arispe, Timothy T. Hla and Courtney Griffin

Sponsored by Janssen R&D: Pharmaceutical Companies of Johnson & Johnson and Journal of Molecular Cell Biology (JMCB)

Mitochondria, Metabolism and Heart (Z4)

Scientific Organizers: Junichi Sadoshima, Toren Finkel and Åsa B. Gustafsson

May 8-12, 2017 • Eldorado Hotel & Spa • Santa Fe, New Mexico, USA

Supported by Bayer HealthCare Pharmaceuticals

Abstract & Scholarship Deadline: January 11, 2017 / Abstract Deadline: February 8, 2017 / Discounted Registration Deadline: March 8, 2017

Brian Glancy, NHLBI and NIAMS, National Institutes of Health, USA
The Mitochondrial Reticulum of the Heart

Departure

Knut Lauritzen, Oslo University Hospital, Norway
Impaired Dynamics and Function of Mitochondria Caused by mtDNA Damage Leads to Heart Failure

Xiyuan Lu, University of California, Davis, USA
Mitochondrial Subpopulations and Heterogeneity in Adult Cardiac Myocytes Revealed by Confocal Imaging

Liming Pei, Children's Hospital of Philadelphia/University of Pennsylvania, USA
A Heart-Derived Hormone that Regulates Body Growth

Venkatesh Sundararajan, Rutgers New Jersey Medical School, USA
Mitochondrial Lon Protease Protects the Heart in vivo Against Ischemia-Reperfusion Injury by Reducing Oxidative Damage

Nuo Sun, NHLBI, National Institutes of Health, USA
Measuring Cardiac Mitophagy and the Role of USP30 in Heart Failure

Lymphangiogenesis (Z3)

***Anne C. Eichmann**, Yale University School of Medicine, USA

Tsutomu Kume, Northwestern University, USA
Regulation of Postnatal Lymphatic Vessel Development by Foxc1 and Foxc2

Tatiana V. Petrova, CHUV, University of Lausanne, Switzerland
Mechanisms of Lymphatic Vessel Specialization

Kathleen M. Caron, University of North Carolina at Chapel Hill, USA
Lymphatics in Myocardial Injury and Repair

Metabolism and Heart Failure (Z4)

***Richard N. Kitsis**, Albert Einstein College of Medicine, USA
Chaperone-Mediated Autophagy in the Regulation of Mitochondrial Function and Heart Failure

Rong Tian, University of Washington, USA
The Signaling Role of Branched Chain Amino Acids

Stephen L. Archer, Queen's University, Canada
Role of Acquired Abnormalities in Mitochondrial Dynamics and the Mitochondrial Calcium Uniporter (MCU) in Pulmonary Hypertension

Katsuhito Fujii, University of Tokyo, Japan
Short Talk: Cardiac Macrophage Is Required to Avoid Heart Failure and Cardiac Sudden Death after Pressure Overload

Meeting Wrap-Up: Outcomes and Future Directions (Organizers)
(Z3)

Meeting Wrap-Up: Outcomes and Future Directions (Organizers)
(Z4)

SATURDAY, MAY 13