



Vascular Biology and Human Diseases: From Molecular Pathways to Novel Therapeutics

February 25–March 1, 2018 | Eldorado Hotel & Spa | Santa Fe, New Mexico | USA

Scientific Organizers:

Elisabetta Dejana, Uppsala University, Sweden

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

Gavin O. Thurston, Regeneron Pharmaceuticals Inc., USA

*Joint with the meeting on **Uncomplicating Diabetes: Reducing the Burden of Diabetes-Related End-Organ Injury***

Recent years have seen rapid progress in our knowledge of how the vascular system is formed during embryo development and in adults expressing in proliferative diseases such as cancer. It has become unequivocally evident that endothelial cells express highly specific and distinct functions in arteries, veins and lymphatics. Moreover, endothelial cells are able to further modify their functional properties in order to meet the specific needs of the different organs. This conference will address the mechanisms that orchestrate organ-specific endothelial differentiation, making a connection between endothelial dysfunction and organ pathology. The major challenge will be to link our experimental knowledge to the understanding of human vascular diseases. The symposium will bring together teams of vascular biologists, neuroscientists, immunologists and clinicians from all over the world to share their recent discoveries and to direct future efforts to find novel and more precise therapies.

Session Topics:

- Vascular Growth Factors: Biological Relevance and Therapeutic Application
- Vascular Growth Factors: Receptors and Biological Role
- Endothelial Metabolism and Neurovascular Crosstalk (Joint)
- Regulation of Endothelial Cell Differentiation in Development and Tissue Regeneration
- Molecular Basis of Vascular Diversity
- Brain Vascular Pathology
- Inflammation, the Vasculature and Diabetic Complications (Joint)
- Hemodynamics and Endothelial Pathology

Scholarship Application & Discounted Abstract Deadline: November 13, 2017

Abstract Deadline: November 28, 2017

Discounted Registration Deadline: December 20, 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: #KSvascularbio
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KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

Vascular Biology and Human Diseases: From Molecular Pathways to Novel Therapeutics (J8)

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Uncomplicating Diabetes: Reducing the Burden of Diabetes-Related End-Organ Injury (J7)

Scientific Organizers: Mark E. Cooper, Thomas M. Coffman, Matthias G. von Herrath and Susan Quaggin

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SUNDAY, FEBRUARY 25

Arrival and Registration

MONDAY, FEBRUARY 26

Welcome and Keynote Address (J8)

***Elisabetta Dejana**, Uppsala University, Sweden

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

Welcome and Keynote Address (J7)

***Daniel J. Drucker**, Lunenfeld-Tanenbaum Research Institute, Canada

Steven E. Kahn, University of Washington, USA
Current Management of Type 2 Diabetes

Vascular Growth Factors: Biological Relevance and Therapeutic Application (J8)

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

Michael Simons, Yale University, USA
Cell Type Specificity of FGF/TGF Signaling

Lena Claesson-Welsh, Uppsala University, Sweden
Vascular Leakage in Cancer and Retinopathy

Shahin Rafii, Weill Cornell Medical College, USA
Ultradian Vascular Niche Signals in Organotypic Stem Cell Regeneration

Anna I. Dimberg, Uppsala University Hospital, Sweden
Short Talk: CD93 in Regulation of Tumor Angiogenesis

Roxana Ola, Yale University, USA
Short Talk: Smad4 Acts Downstream of BMP9/10-ALK1 in Mediating AVM Formation through Transcriptional Modulation of CK2/PTEN/PI3K Signaling Cascade

New Treatments in Diabetes (J7)

***Mark I. McCarthy**, University of Oxford, UK

Daniel J. Drucker, Lunenfeld-Tanenbaum Research Institute, Canada
GLP-1-Mediated Reduction in Complications of Diabetes

Volker Vallon, University of California, San Diego, USA
SGLT2 Inhibition – Insights from Experimental Studies

David Cherney, University of Toronto, Canada
SGLT2 Inhibition: Renal Effects in Man

***Simeon Taylor**, University of Maryland School of Medicine, USA
Short Talk: Canagliflozin Triggers the FGF23/1,25-dihydroxyvitamin/PTH Axis: A Potential Mechanism Mediating Adverse Effects on Bone Health

Anita C. Aperia, Karolinska Institute, Sweden
Short Talk: Vulnerability of SGLT-Expressing Cells to Hyperglycaemia

Vascular Growth Factors: Receptors and Biological Role (J8)

***Lena Claesson-Welsh**, Uppsala University, Sweden

Gou Young Koh, Institute of Basic Science, South Korea
Tie2-Activating Antibody "ABTAA" for Micro-vascular Diseases

Gavin O. Thurston, Regeneron Pharmaceuticals Inc., USA
Tumor Endothelial Cell Heterogeneity and Responses to Anti-Vascular Therapy

Luisa Iruela-Arispe, University of California, Los Angeles, USA
Critical Signaling Nodes in Vascular Homeostasis

Hong Chen, Harvard Medical School, USA
Short Talk: Epsin's Role in Diabetic Lymphangiogenesis

Lipids and Diabetic Complications (J7)

***Moshe Levi**, University of Colorado Health Sciences Center, USA

***Josephine Forbes**, University of Queensland, Australia

Katalin Susztak, University of Pennsylvania, USA
How to Turn GWAS Signals into Drugs for Kidney Disease?

Weier Qi, Joslin Diabetes Center, Harvard Medical School, Boston, USA

Human Proteomics to Therapeutics for Diabetic Nephropathy - The 50-Year Joslin Medalist Study

Eoin P. Brennan, Conway Institute, Ireland
Short Talk: Targeting Inflammation in Diabetic Kidney Disease Using Pro-Resolving Lipid Mediators

Poster Session 1

TUESDAY, FEBRUARY 27

Endothelial Metabolism and Neurovascular Cross-Talk (Joint)

***George L. King**, Joslin Diabetes Center, USA

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

Peter F. Carmeliet, University of Leuven, VIB, Belgium
Endothelial Cell Metabolism and Therapeutic Interventions

Susan Quaggin, Northwestern University, USA
VE-PTP Phosphatase Inhibition Protects the Kidney in Diabetes

Anne C. Eichmann, Yale University School of Medicine, USA
Neurovascular Cross-Talk and Possible Pathological Implications

David L. Silver, Duke-NUS Medical School, Singapore
Brain Lipid Transport

Kevin G. Peters, Aerpio Pharmaceuticals, USA
Short Talk: Targeting VE-PTP for Tie2 Activation and Vascular Stabilization in Diabetic Eye Disease

Jacqueline A. Taylor, German Cancer Research Center, Germany
Short Talk: Endothelial Notch1 Is a Potent Regulator of Adipose Tissue Metabolism and Function

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Regulation of Endothelial Cell Differentiation in Development and Tissue Regeneration (J8)

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

Didier Stainier, Max Planck Institute for Heart and Lung Research, Germany

Vascular Development in Zebrafish

Taija Mäkinen, Uppsala University, Sweden

Mechanisms of Lymphatic Vessel Formation from Progenitors of Different Origins

Hellmut G. Augustin, DKFZ & Heidelberg University, Germany

Epigenetic Regulation of Vascular Maturation

Katsuhiko Kato, Max Planck Institute for Molecular Biomedicine, Germany

Short Talk: Pulmonary Pericytes Regulate Lung Morphogenesis

Mitochondria and Diabetic Complications (J7)

***Kumar Sharma**, University of Texas Health San Antonio, USA

***Assaad Antoine Eid**, American University of Beirut, Lebanon

Richard J. Youle, NINDS, National Institutes of Health, USA

General Overview on Mito Maven

Chengxue Helena Qin, Baker IDI Heart and Diabetes Institute, Australia

Role of Endogenous Annexin-A1 in the Cardiovascular Response to Diabetes

Farhad Danesh, University of Texas MD Anderson Cancer Center, USA

Mitochondrial Reprogramming in Diabetic Nephropathy

Svati H. Shah, Duke University, USA

What Can We Learn from Metabolomics?

Poster Session 2

WEDNESDAY, FEBRUARY 28

Molecular Basis of Vascular Diversity (J8)

***Hellmut G. Augustin**, DKFZ & Heidelberg University, Germany

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

Organ-Specific and Functional Specialization of Blood Vessels

Costantino Iadecola, Weill Cornell Medicine, USA

The Diversity of the Brain Microcirculation in Health and Disease

Britta Engelhardt, Theodor Kocher Institute/Universität Bern, Switzerland

Specialized Brain Barriers Establish the Immune Privilege of the CNS

Stefan Liebner, Klinikum der Johann Wolfgang Goethe-Universität, Germany

Role of Astrocyte-derived Wnt Growth Factors for Endothelial Blood-brain Barrier Maintenance

Marco Castro, Uppsala University, Sweden

Short Talk: Endothelial Loss of CDC42 Elicits Cerebral Vascular Malformations and Increases MEKK3-Dependent KLF2/4 Expression

Joseph M. Rutkowski, Texas A&M College of Medicine, USA

Short Talk: Enhancing Renal Lymphatic Expansion Prevents Hypertension in Mice

Genomics and Epigenomics in Diabetic Complications (J7)

***Katalin Susztak**, University of Pennsylvania, USA

***Matthias G. von Herrath**, Novo Nordisk and La Jolla Institute for Allergy and Immunology, USA

Eske Willerslev, University of Copenhagen, Denmark

DNA Research on Indigenous Populations

Mark I. McCarthy, University of Oxford, UK

Using Human Genetics for Biological Insight and Translational Advantage

Ariela Benigni, Istituto di Ricerche Farmacologiche Mario Negri, Italy

Regeneration of Kidney Vasculature by Angiotensin II Antagonism: New Insights

Assam El-Osta, Monash University, Australia

Epigenetics of Diabetes and its Complications: Beyond Epiphenomenon?

Workshop: Blood-Brain Barrier Development and Maintenance in Health and Disease (J8)

***Petra Ulrica Magnusson**, Uppsala University, Sweden

***Dritan Agalliu**, Columbia University Medical Center, USA

Ruchi Bajpai, University of Southern California, USA

Cranial Pericytes Derived from Neural Crest Cells Reveal a Pericyte-Specific Functional Defect in Alzheimer's Disease

Ayal Ben-Zvi, Hebrew University of Jerusalem, Israel

Brain Barrier Pathology in Neuropsychiatric Lupus (NPSLE)

Lei Liu Conze, Uppsala University, Sweden

Dynamic Molecular Signatures of Cerebral Blood Vessel during Blood Brain Barrier Development

Selasi Dankwa, Center for Infectious Disease Research, USA

Identifying Host Kinases and Inhibitors that Regulate Barrier Properties in Human Brain Endothelial Cells

Louise Delsing, University of Skövde, Sweden

A Human iPSC-Derived Model to Investigate Blood-Brain Barrier Specification of Endothelial Cells

Evelyn M. Hoover, University of California, Irvine, USA

The Vascular Immune Response to Infection Differs in the Brain and the Periphery

Andrei V. Karginov, University of Illinois at Chicago, USA

Barrier-Enhancing Function of Src Kinase in Endothelial Cells

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Joppe Oldenburg, Uppsala University, Sweden
Identifying Novel Small Molecule Drugs for Cerebral Cavernous Malformation Treatment

Brain Vascular Pathology (J8)

***Costantino Iadecola**, Weill Cornell Medicine, USA

Christer Betsholtz, Uppsala University, Sweden
A Molecular Atlas of the Blood-Brain Barrier as Revealed by Single Cell RNA Sequencing and Quantitative Proteomics

Elisabetta Dejana, Uppsala University, Sweden
Transcriptional Regulation of the Blood-Brain Barrier in Health and Disease

Dritan Agalliu, Columbia University Medical Center, USA
Cell Biological Mechanisms of Blood-Brain Barrier Breakdown in Neurological Disease

Monica Manglani, NINDS, National Institutes of Health, USA
Short Talk: Peptide-Specific Engagement of Cerebrovascular Endothelial Cells Promotes Dysfunctional Calcium Signaling during Experimental Cerebral Malaria

Oxidative Stress and Diabetic Complications (J7)

***Farhad Danesh**, University of Texas MD Anderson Cancer Center, USA

***Charles E. Alpers**, University of Washington, USA

Patrick J. Pagano, University of Pittsburgh, USA
ROS in Vascular Phenotypic Switching and Disease, Target Nox!

Karin Agnes Maria Jandeleit-Dahm, Monash University, Australia
The Role of Reactive Oxygen Species in Diabetic Complications

Kumar Sharma, University of Texas Health San Antonio, USA
Mitochondrial ROS: Friend or Foe?

Jay C. Jha, Monash University, Australia
Short Talk: NADPH-Oxidase NOX5 Aggravates Renal Injury in Human Diabetic Nephropathy

Poster Session 3

THURSDAY, MARCH 1

Inflammation, the Vasculature and Diabetic Complications (Joint)

***Anil Karihaloo**, Novo Nordisk A/S, USA

***Michael Simons**, Yale University, USA

Andrew J. Murphy, Baker Heart Research Institute, Australia
Hematopoietic Progenitor Cells in Diabetic Complications

Mark E. Cooper, Monash University, Australia
An Unrecognized Role for the Adaptive Immune System in Vision-Threatening Neovascular Retinopathies

Thomas J. Schall, ChemoCentryx, Inc., USA
Targeting CCR2 for Treatment of Renal Diseases

Kyung (Kim) Lee, Icahn School of Medicine at Mount Sinai, USA
Short Talk: Leucine Rich alpha-2-Glycoprotein 1 (LRG1) Is Increased in Diabetic Kidneys and Is a Driver of Angiogenesis and Progression of Diabetic Glomerulopathy

Jill Badin, Indiana University School of Medicine, USA
Short Talk: Diabetes Exacerbates Coronary Atherosclerosis and Calcification in Ossabaw Miniature Swine with Metabolic Syndrome

Ingrid Fleming, Goethe University Frankfurt, Germany
Short Talk: Inhibition of Soluble Epoxide Hydrolase Prevents Diabetic Retinopathy

Reiner Alois Wimmer, IMBA - Institute of Molecular Biotechnology Austria, Austria
Short Talk: Human Blood Vessel Organoids: A New Model for Diabetic Vasculopathy

Hemodynamics and Endothelial Pathology (J8)

***Christer Betsholtz**, Uppsala University, Sweden

Martin Schwartz, Yale School of Medicine, USA
Endothelial Fluid Shear Stress Responses in Vascular Remodeling and Atherosclerosis

Naoki Mochizuki, National Cerebral and Cardiovascular Center Research Institute, Japan
The Responses of Endothelial Cells to the Flow

Tatiana V. Petrova, CHUV, University of Lausanne, Switzerland
Endothelial Cell Responses to Biomechanical Forces in Lymphatics

Vasoactive Hormones in Diabetic Complications (J7)

***Susan Quaggin**, Northwestern University, USA

Rama Natarajan, Beckman Research Institute of City of Hope, USA
Linking LncRNAs with Diabetic Complications and Angiotensin II Actions

Susan Gurley, Oregon Health and Science University, USA
Angiotensin II: Tissue-Selective Effects

Merlin Christopher Thomas, Monash University, Australia
Novel Interactions with the Receptor for Advanced Glycation End-products in Mediating Pro-inflammatory Signalling

Meeting Wrap-Up: Outcomes and Future Directions (Organizers) (J8)

Meeting Wrap-Up: Outcomes and Future Directions (J7)

***Steven E. Kahn**, University of Washington, USA

***Mark E. Cooper**, Monash University, Australia

***Matthias G. von Herrath**, Novo Nordisk and La Jolla Institute for Allergy and Immunology, USA

***Susan Quaggin**, Northwestern University, USA

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FRIDAY, MARCH 2

Departure