Atherosclerosis is a chronic, systemic disease process whereby fatty deposits, inflammation and fibrosis accumulate in arterial vessel walls. Organ systems, including heart, brain, kidneys, as well as extremities, can be damaged, leading to atherosclerosis-driven clinical outcomes. According to the American Heart Association, 15.5 million Americans have coronary heart disease, of which 7.6 million experienced myocardial infarction. These statistics are reflective of global incidence. Treatment of atherosclerosis often begins with robust cholesterol-lowering treatments, yet many patients continue to experience cardiovascular events. Recent attempts to provide cardiovascular protection to such patients have included anti-inflammatory and HDL-raising therapeutic approaches that have yielded little benefit. Building knowledge of atherosclerosis disease etiology, defining unique attributes of patient differences as simple as sex or genetic inheritance, and using technology to identify patients with early disease is foundational for the scientific community to develop urgently needed therapeutics. The current concept of acute coronary syndrome (“the vulnerable plaque”) and widely applied animal models are debated because clinical presentation, underlying pathology and pathogenetic mechanisms are subject to change due to improved medical treatment. The goals of this meeting are to: 1) Challenge current dogma of atherosclerosis etiology and explore intra-organ cross-talk that may underlie disease evolution; 2) Consider emerging risk factors and their origins as intervention targets; and 3) Explore cutting-edge technologies to discover new therapeutic targets and approaches for drug development. By bringing together scientists from preclinical to clinical settings and from industry to academic institutions, this conference will nurture discussions to translate breakthrough discoveries into therapeutics.

Session Topics:
• The Natural History of Atherosclerotic Disease
• Lipoprotein Risk Factors
• Diabetes, Obesity and Atherosclerosis
• The Inflammation Hypothesis
• The Milieu Exterieur
• Crosstalk Among Organs
• Models and Biomarkers for Atherosclerotic Disease
• Emerging Fields of Research
plus three workshops

Scholarship Application & Discounted Abstract Deadline: October 5, 2017
Abstract Deadline: November 7, 2017
Discounted Registration Deadline: December 7, 2017
**SUNDAY, FEBRUARY 4**
Arrival and Registration

**MONDAY, FEBRUARY 5**

**The Natural History of Atherosclerotic Disease**

- **Daniel J. Rader**, University of Pennsylvania, USA
- **Peter Libby**, Brigham and Women's Hospital, USA
- **Sekar Kathiresan**, Massachusetts General Hospital, USA
- **Gerard Pasterkamp**, University Medical Center Utrecht, Netherlands
- **Philippe Boucher**, University of Strasbourg, France
- **Sumeet A. Khetarpal**, University of Pennsylvania, USA

**Workshop 1**

- **Ira G. Schulman**, University of Virginia Health System, USA
- **Liam Brunham**, University of British Columbia, Canada
- **Ruchi Gupta**, MedImmune/AstraZeneca, USA
- **Anna Kerstin Emy Hultgardh**, Orebro University, Sweden
- **Ashok Kumar Kumawat**, Orebro University, Sweden
- **Mulugeta Melkie Zegeye**, Orebro University, Sweden

**Lipoprotein Risk Factors**

- **Laura F. Michael**, Eli Lilly and Company, USA
- **Kiran Musunuru**, University of Pennsylvania, USA
- **Anne Tybjærg-Hansen**, Copenhagen University Hospital, Denmark

**Poster Session 1**

**TUESDAY, FEBRUARY 6**

**Diabetes, Obesity and Atherosclerosis**

- **Siddhartha Jaiswal**, Stanford University, USA
- **J. Mark Brown**, Cleveland Clinic, USA
- **Laura F. Michael**, Eli Lilly and Company, USA
- **Robert C. Bauer**, Columbia University, USA
- **Paul M. Ridker**, Brigham and Women's Hospital, Harvard Medical School, USA

**The Inflammation Hypothesis**

- **Katey Rayner**, University of Ottawa, Canada
- **Ziad Mallat**, University of Cambridge, UK
- **Jan Nilsson**, Lund University, Sweden
- **Anna Mathew**, University of Pennsylvania, USA
- **Joerg Heeren**, University Medical Center Hamburg-Eppendorf, Germany

**Poster Session 2**

**WEDNESDAY, FEBRUARY 7**

**The Milieu Exterieur**

- **Gerard Pasterkamp**, University Medical Center Utrecht, Netherlands
- **Salim Yusuf**, McMaster University, Canada
- **Sudha B. Biddinger**, Boston Children's Hospital, Harvard Medical School, USA
- **Seppo Yla-Herttuala**, University of Eastern Finland, Finland
- **Robert E. Gerszten**, Beth Israel Deaconess Medical Center, USA

**Lipoprotein Levels**

- **Daniel J. Rader**, University of Pennsylvania, USA
  Functionalizing HDL Cholesterol


* Session Chair † Invited but not yet accepted
Program current as of June 1, 2018. Program subject to change. Meal formats are based on meeting venue.
For the most up-to-date details, visit [www.keystonesymposia.org/18B2](http://www.keystonesymposia.org/18B2).
**Executive Summary**

The Keystone Symposia on Molecular and Cellular Biology was held in Taos, New Mexico, USA, from February 4-8, 2018. The symposium focused on Atherosclerosis: Lessons Learned and Concepts Challenged (B2).

**Workshop 2**

"Dominique P.V. de Kleijn", University Medical Center Utrecht, Netherlands

Camilla Gustafesen, Aarhus University, Denmark

Heparan Sulfate Proteoglycans Present PCSK9 to the LDL Receptor

Fan E. Mo, National Cheng Kung University, Taiwan

CCN1 and Its Receptor Integrin alpha6beta1 Instigate a Vicious Circle to Accelerate Disturbed Flow-Induced Atherosclerosis

Andrew J. Morris, University of Kentucky, USA

Functional Validation of PPAP2B Gene Variants as Determinants of Coronary Artery Disease Risk

Edward R. O'Brien, University of Calgary, Canada

Natural Antibodies to HSP27 Are Novel Biomarkers for Cardiovascular Health: HSP27 Immunization Attenuates PCSK9 Transcription and Atherosgenesis

Ira G. Schultman, University of Virginia Health System, USA

Regulation of HDL Function and Inflammation by Liver X Receptors

Tapan Shah, Rutgers New Jersey Medical School, USA

Sex Specific Differences in Post-Transcriptional Gene Regulation of BMP2 in Cardiovascular Calcification

Vincent J. Venditto, University of Kentucky, USA

Anti-ApoA-I Antibody Profiles Predict Cardiovascular Disease Outcomes in Patients and in a Mouse Model of Atherosclerosis

Hong Yang, Meharry Medical College, USA

Upregulation of ABCA1 Transcription and Inhibition of ABCA1 Protein Degradation by VLDLR/apoER2 Pathway

**Crosstalk Among Organ**

*Jan Nilsson*, Lund University, Sweden

**Viktoria Gusarova**, Regeneron Pharmaceuticals, USA

ANGPTL3 Blockade as a Therapeutic Approach for Treatment of Dyslipidemia and Atherosclerosis

Lilach O. Lerman, Lund University, Sweden

New Concepts in Atherosclerotic Renovascular Disease: Current Status

Joachim Herz, University of Texas Southwestern Medical Center, USA

Multitasking Therapeutics: What Brain Development, Alzheimer’s Disease and Atherosclerosis Have in Common

Johann Lars Markus Björkegren, Icahn School of Medicine at Mount Sinai, USA

Cardiometabolic Risk Loci Share Downstream Cis- and Trans-Gene Regulation Across Tissues and Diseases

**Poster Session 3**

**THURSDAY, FEBRUARY 8**

**Keynote Address**

*Sekar Kathiresan*, Massachusetts General Hospital, USA

**Jesper Gromada**, Regeneron Pharmaceuticals, USA

PCSK9 and ANGPTL3 Inhibitors: A New Era of Lipid-Lowering Therapies

**Models and Biomarkers for Atherosclerotic Disease**

*Viktoria Gusarova*, Regeneron Pharmaceuticals, USA

Jacob Fog Bentzon, Centro Nacional de Investigaciones Cardiovasculares, Spain

Gene-Modified Minipigs: Applications in Atherosclerosis Imaging

Lesca Miriam Holdt, University Hospital, LMU Munich, Germany

Circular RNA in Atherosclerosis

Katey Rayner, University of Ottawa, Canada

New Inflammatory Drivers and Biomarkers of Atherosclerosis

Kelsey E. Jarrett, Baylor College of Medicine, USA

Short Talk: Somatic Genome Editing of Ldlr with AAV-CRISPR Is a Rapid Method for Atherosclerosis Investigation

**Workshop 3**

*Thomas Beyer*, Eli Lilly and Company, USA

Maria Ines Azambuja, Universidade Federal do Rio Grande do Sul, Brazil

The Information that We Need to Advance Knowledge on Atherosclerosis Exists and It Is Stored as Levels and Trends of Mortality over the Last Century: Influenza is the Key to Retrieve It

Dominique P.V. de Kleijn, University Medical Center Utrecht, Netherlands

Diagnosis of Atherosclerotic Coronary Heart Disease using Plasma Extracellular Vesicle Proteins

Trine Pagh Ludvigsen, Novo Nordisk A/S, Denmark

Effect of Statin Treatment Compared to Dietary Cessation on Aortic Plaque Size and Inflammation in a Diet-Induced Atherosclerotic Göttingen Minipig Model

Ananthi Rajamooorthy, St. Louis University School of Medicine, USA

Therapeutic Silencing of CIDE/Csp27 Is Atheroprotective in Ldlr/-/- Mice

Divya Sagar, MedImmune, USA

Soluble LOX-1: A Potential Biomarker for SLE and Cardiovascular Comorbidity

James Wingrove, CardioDx, USA

The Added Value of a Multi-Omics Approach for the Evaluation of Patients with Suspected Obstructive Coronary Artery Disease

Jifeng Zhang, University of Michigan, USA

Attenuated Atherosclerosis in Human Apolipoprotein A-II knockin Rabbits

**Emerging Fields of Research**

*Sekar Kathiresan*, Massachusetts General Hospital, USA

Marlys L. Koschinsky, Western University, Canada

Lipoprotein(a): Ready for Prime Time?

Hester den Ruijter, University Medical Center, Utrecht, Netherlands

Sex Differences in Cardiovascular Disease

Siddhartha Jaiswal, Stanford University, USA

Clonal Hematopoiesis in Aging and Atherosclerotic Cardiovascular Disease

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

* Session Chair † Invited but not yet accepted Program current as of June 1, 2018. Program subject to change. Meal formats are based on meeting venue. For the most up-to-date details, visit www.keystonesymposia.org/18B2.
FRIDAY, FEBRUARY 9

Departure