The prevalence of diabetes mellitus is increasing worldwide and is a major threat to global public health that requires urgent action. Over the last few decades, significant advances have been made in terms of identifying novel susceptibility genes and signaling pathways that play pivotal roles in the pathogenesis of diabetes and its related metabolic disorders. However, a major gap in understanding the current global epidemic of diabetes is the lack of knowledge regarding how molecular interactions between the environment and susceptibility genes are regulated within an altered metabolic milieu. This conference will address these unresolved gaps in the etiopathogenesis of diabetes and focus on the latest advances that are linked to the molecular drivers of diabetes mellitus. Topics include: systemic regulation of adipocytes in diabetes; microvesicles, noncoding RNA and intercellular communications; physiological drivers in hunger and energy homeostasis; epigenetics and metabolic control in diabetes; novel signaling players related to insulin resistance; adaptation of beta cells to chronic metabolic stress; environmental triggers in diabetes and metabolic diseases; and molecular targets for nutrient sensing and signaling. The organizers anticipate that this meeting will bring about a major shift in addressing the causes of diabetes mellitus, as the topics emphasized in this meeting have not yet been widely explored. Through the novel diabetes research presented, this meeting should provide evidence-based insight to favorably impact people with diabetes worldwide.

Plenary Session Topics:
- Epigenetics and Metabolic Control in Diabetes
- Environmental Triggers in Diabetes and Metabolic Diseases
- Physiological Drivers in Hunger and Energy Homeostasis
- Microvesicles, Noncoding RNA and Intercellular Communications
- Novel Signaling Players Linking to Insulin Resistance
- Adaptation of Beta Cells to Chronic Metabolic Stress
- Molecular Targets for Nutrient Sensing and Signaling
- Workshop 2: Novel Therapeutic Targets for Diabetes Mellitus
- Systemic Regulation of Adipocytes in Diabetes

Scholarship/Discounted Abstract Deadline: June 25, 2018; Abstract Deadline: July 10, 2018; Discounted Registration Deadline: August 7, 2018
Visit www.keystonesymposia.org/1851 for more details.
Drivers of Type 2 Diabetes: From Genes to Environment (S1)
October 7-11, 2018 • Grand Hilton Seoul • Seoul, South Korea
Scientific Organizers: Kyong Soo Park, Young-Bum Kim and Zoltan P. Arany
Supported by Directors’ Fund

SUNDAY, OCTOBER 7
Arrival and Registration

MONDAY, OCTOBER 8

Epigenetics and Metabolic Control in Diabetes
* Markus Stoffel, ETH Zürich, Switzerland
* Kyong Soo Park, Seoul National University College of Medicine, South Korea
  Diabetes in Asia

Juleen R. Zierath, Karolinska Institutet, Sweden
Skeletal Muscle Mediators and Exercise-Induced Adaptations
Governing Insulin Sensitivity: Turning Back Time on Diabetes Pathogenesis

Yoshihiro Ogawa, Kyushu University, Japan
Role of DNA Methylation in Early Life and its Impact in Later Life

Charlotte A. Ling, Lund University, Sweden
Epigenetic Mechanisms Linking Environmental Factors and Type 2 Diabetes

Hyunki Kim, Korea Advanced Institute of Science and Technology, South Korea
Short Talk: PRMT1-Dependent Histone Arginine Methylation Regulates Mature β Cell Identity

Heshan Peiris, Stanford University School of Medicine, USA
Short Talk: Conditional Genetics and Human Islet Studies to Discover Diabetes Risk Gene Function

Workshop 1
* Gary J. Schwartz, Albert Einstein College of Medicine, USA
* Allison W. Xu, University of California, San Francisco, USA

Yun-Hee Lee, Seoul National University, South Korea
Micro-Environmental Regulation of in vivo Beige Adipogenesis by Gap Junctional Interactions between Adipocyte Progenitors and Macrophages

Meilian Liu, University of New Mexico Health Sciences Center, USA
Adipose mTORC1 Suppresses Prostaglandin Signaling and Beige Adipogenesis via the CRTC2-COX-2 Pathway

Hyun Cheol Roh, Beth Israel Deaconess Medical Center, USA
Warming Induces Significant Reprogramming of Beige, But Not Brown, Adipocyte Cellular Identity

Haiyan Zhou, Central South University, China
DsbA-L Deficiency in CD4+ T Cells Promote Diet-Induced Thermogenesis through Inhibiting IFN-γ Production

Jee Hyung Sohn, Seoul National University, South Korea
Pllin1 Deficiency Promotes Inflammatory Responses in Lean Adipose Tissue through Lipid Dysregulation

Samuel Klein, Washington University School of Medicine, USA
Does Roux-en-Y Gastric Bypass Surgery have Weight Loss Independent Therapeutic Effects on Multi-Organ Insulin Sensitivity and β-cell Function in People with Type 2 Diabetes?

Environmental Triggers in Diabetes and Metabolic Diseases
* Juleen R. Zierath, Karolinska Institutet, Sweden
* Chen-Yu Zhang, Nanjing University, China
Chirag J. Patel, Harvard Medical School, USA
Challenges and Opportunities in Mapping the Exposome of Type 2 Diabetes

Kristin L. Eckel-Mahan, University of Texas Health Science Center, USA
Mechanisms Underlying Diet-Induced Circadian Reprogramming

David D. Moore, Baylor College of Medicine, USA
Regulation of Liver Energy Balance by Nutrient-Sensing Nuclear Receptors

Raffaele Gerlini, Helmholtz Zentrum München, Germany
Short Talk: Paternal Overweight Determines Transgenerational Glucose Intolerance via Polycomb

Poster Session 1

TUESDAY, OCTOBER 9

Physiological Drivers in Hunger and Energy Homeostasis
* Young-Bum Kim, Harvard Medical School, USA
* Catherine Postic, INSERM, Institut Cochin, France

Gary J. Schwartz, Albert Einstein College of Medicine, USA
Gut-Brain Communication in the Integrated Control of Energy and Glucose Homeostasis

Min-Seon Kim, University of Ulsan College of Medicine, South Korea
Hypothalamic Inflammation in Diet-Induced Obesity

Allison W. Xu, University of California, San Francisco, USA
Gene-Diet Interaction in the Regulation of Energy Balance and Macronutrient Preference

Vincent Prevot, INSERM, University of Lille, France
Role of Hypothalamic Tanyctyes in Metabolic Homeostasis

Henriette R. Frikke-Schmidt, University of Michigan, USA
Short Talk: Exploring GFRAL Neuroanatomy and Function

Qiwei Zhai, Shanghai Institute of Nutrition and Health, SIBS, CAS, China
Short Talk: Short-Term Tamoxifen Treatment Has Long-Term Effects on Metabolism in High-Fat Diet Mice Involved with Nmnat2 in POMC Neurons

Poster Session 2

Microvesicles, Noncoding RNA and Intercellular Communications
* Kohjiro Ueki, Research Institute, National Center for Global Health and Medicine, Japan

Chen-Yu Zhang, Nanjing University, China
Pancreatic Islet-Released miR-29 Family Members Travel to Liver and Contribute to Hepatic Insulin Resistance

Markus Stoffel, ETH Zürich, Switzerland
MicroRNA Networks in Metabolic Tissues

* Session Chair † Invited but not yet accepted  Program current as of November 10, 2018. Program subject to change. Meal formats are based on meeting venue. For the most up-to-date details, visit www.keystonesymposia.org/19S1.
**Soazig Le Lay**, INSERM, University of Angers, France  
*Extracellular Vesicles Derived from Adipocytes and Obesity-Associated Metabolic Dysfunctions*

**Praekash Nagarkatti**, University of South Carolina, USA  
*Short Talk: MicroRNA-30 Regulates Pro-Inflammatory Adipose Tissue Macrophage-Polarization through Notch Signaling and Provides a Therapeutic Target for Metabolic Disease*

**Adaptation of Beta Cells to Chronic Metabolic Stress**

**Moon-Kyu Lee**, Sungkyunkwan University School of Medicine, South Korea  
*Susumu Seino*, Kobe University Graduate School of Medicine, Japan  
*Beta-cell Glutamate: A Critical Amplifying Signal in Insulin Secretion*

**Lori Sussel**, University of Colorado Anschutz Medical Campus, USA  
*Pancreatic Beta-Cell Identity and Function in Diabetes*

**Yuval Dor**, Hebrew University-Hadassah Medical School, Israel  
*The Effect of Glucose on Beta Cell Regeneration*

**Jinsook Son**, Columbia University, USA  
*Short Talk: Analysis of Beta Cell Dedifferentiation using Single-Cell RNA-Seq of Human Type 2 Diabetics*

**Novel Signaling Players Linking to Insulin Resistance**

**E. Dale Abel**, University of Iowa, Carver College of Medicine, USA  
*In-Kyu Lee*, Kyungpook National University Hospital, South Korea  
*Novel Class of Signaling Lipids with Beneficial Metabolic Effects*

**Kohjiro Ueki**, Research Institute, National Center for Global Health and Medicine, Japan  
*Role of Hepatic Activin B in the Control of Glucose Homeostasis*

**Andrew C. Adams**, Eli Lilly and Company, USA  
*FGF21 Signaling in Insulin Action*

**Young-Bum Kim**, Harvard Medical School, USA  
*ApolipoproteinJ (ApoJ) Is a Novel Regulator of Insulin Resistance*

**Raziel Rojas-Rodriguez**, University of Massachusetts Medical School, USA  
*Short Talk: A Placenta-Adipose Tissue Signaling Mechanism Supports Maternal Metabolism and Protects Against Gestational Diabetes*

**Ara Koh**, Gothenburg University, Sweden  
*Short Talk: Mechanistic Studies of the Impact of Microbially Produced Histidine-Derived Metabolites on Insulin Signaling*

**Workshop 2: Novel Therapeutic Targets for Diabetes Mellitus**

**Philipp E. Scherer**, University of Texas Southwestern Medical Center, USA  
*Bhagirath Chaurasia*, University of Utah, USA  
*Targeting a Double-Bond in Ceramides to Treat Insulin Resistance and Steatohepatitis*

**Mitzi Nagarkatti**, University of South Carolina, USA  
*Cannabinoid Receptor 1 Blockade Attenuates Metabolic Inflammation and High-Fat Diet-Induced Obesity through Regulation of Gut Microbial Dysbiosis*

**Young Jae Lee**, CKD Research Institute, South Korea  
*CKD-508: A New Potent Therapy for Dyslipidemia*

**Melissa L. Borg**, Karolinska Institutet, Sweden  
*CRHR2 Agonist Improves Skeletal Muscle Insulin Sensitivity and Muscle Function in Diet-Induced Obese Mice*

**KyeongJin Kim**, Columbia University, USA  
*Kctd17, a Novel Regulator in Obesity-Induced Insulin Resistance and Fatty Liver*

**Saswata Talukdar**, Merck, USA  
*Evolving Mechanisms and Continued Challenges of the FGF21 Pathway as a Therapeutic Agent*

**In-Kyu Lee**, Kyungpook National University Hospital, South Korea  
*PDK4 Mediates Skeletal Muscle Insulin Resistance by Increasing MAM Formation*

**Systemic Regulation of Adipocytes in Diabetes**

**Zoltan P. Arany**, University of Pennsylvania, USA  
*Philipp E. Scherer*, University of Texas Southwestern Medical Center, USA  
*The Adipocyte in Systemic Energy Regulation*

**Aimin Xu**, University of Hong Kong, China  
*Neuroimmune Interactions in the Browning of White Adipose Tissue*
Meeting Wrap-Up: Outcomes and Future Directions (Organizers)

FRIDAY, OCTOBER 12

Departure