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](http://www.keystonesymposia.org/1851) for more details.
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
  Pii1 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
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

Abstract & Scholarship Deadline: June 25, 2018 / Abstract Deadline: July 10, 2018 / Discounted Registration Deadline: August 7, 2018

**KEystone SYMPOSia**
on Molecular and Cellular Biology

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**WEDNESDAY, OCTOBER 10**

### 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
*Barbara B. Kahn*, Beth Israel Deaconess Medical Center, Harvard Medical School, USA

**Short Talk: MicroRNA-30 Regulates Pro-Inflammatory Adipose Tissue Macrophage-Polarization through Notch Signaling and Provides a Therapeutic Target for Metabolic Disease**

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

*Philipp E. Scherer*, University of Texas Southwestern Medical Center, USA
*Bhagirath Chaurasia*, University of Utah, USA
*Mitzi Nagarkatti*, University of South Carolina, USA

**Targeting a Double-Bond in Ceramides to Treat Insulin Resistance and Steatohepatitis**

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### 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
*Lori Sussel*, University of Colorado Anschutz Medical Campus, USA
*Yuval Dor*, Hebrew University-Hadassah Medical School, Israel
*Jinsook Son*, Columbia University, USA

**Short Talk: Analysis of Beta Cell Dedifferentiation using Single-Cell RNA-Seq of Human Type 2 Diabetics**

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**Systemic Regulation of Adipocytes in Diabetes**

*Zoltan P. Arany*, University of Pennsylvania, USA
*Philipp E. Scherer*, University of Texas Southwestern Medical Center, USA
*Aimin Xu*, University of Hong Kong, China

**Neuroimmune Interactions in the Browning of White Adipose Tissue**

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David E. James, University of Sydney, Australia
New Insights into Insulin Resistance

Mark I. McCarthy, University of Oxford, UK
The Genetic and Epigenomic Architecture of Type 2 Diabetes

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

FRIDAY, OCTOBER 12

Departure