

# KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

## Diabetes: Glucose Control and Beyond (J5)

Scientific Organizers: Alan D. Attie and Deborah M. Muoio

Sponsored by Novo Nordisk A/S

## Islet Biology: From Gene to Cell to Micro-Organ (J6)

Scientific Organizers: Patrick MacDonald, Wen-hong Li, Anna Gloyn and Anette-Gabriele Ziegler

January 27-31, 2020 • Santa Fe Community Convention Center • Santa Fe, NM, USA

Sponsored by Novo Nordisk A/S

Abstract & Scholarship Deadline: October 2, 2019 / Abstract Deadline: October 30, 2019 / Discounted Registration Deadline: December 3, 2019

### MONDAY, JANUARY 27

#### Arrival and Registration

### TUESDAY, JANUARY 28

#### Welcome and Keynote Address (Joint)

**Morris J. Birnbaum**, Pfizer Inc., USA  
*The Development of Therapeutics for T2DM and Related Diseases*

#### All About Insulin: Signaling, Secretion, and Action (Joint)

**Michael P. Czech**, University of Massachusetts Medical School, USA  
*Molecular Mechanisms of Insulin Resistance*

**Maureen Anne Gannon**, Vanderbilt University Medical Center, USA  
*Promoting  $\beta$ -cell Survival and Preserving Functional  $\beta$ -cell Mass by Targeting PGE2 Receptors*

**Morris F. White**, Boston Children's Hospital, Harvard Medical School, USA  
*The Systemic Integration of Hepatic Insulin Resistance*

#### Short Talks Chosen from Abstracts

#### Poster Session 1

#### Workshop 1 (J5)

#### Short Talks Chosen from Abstracts

#### Workshop 1 (J6)

#### Short Talks Chosen from Abstracts

#### Novel Approaches for Monitoring Carbon Traffic Control (J5)

**Joshua D. Rabinowitz**, Princeton University, USA  
*Isotope Tracing for Deciphering the Metabolic Network*

**David H. Wasserman**, Vanderbilt University School of Medicine, USA  
*Extramyocellular Barriers to Insulin-stimulated Muscle Metabolism*

#### Short Talks Chosen from Abstracts

#### Islet Plasticity (J6)

**George K. Gittes**, Children's Hospital of Pittsburgh of UPMC, USA  
*Beta Cell Neogenesis and Protection*

**Julie B. Sneddon**, University California, San Francisco, USA  
*Elucidating Human Endocrine Cell Fate Selection*

**Seung K. Kim**, Stanford University, USA  
*Alternative Systems to Study Pancreatic Islet Development and Function*

#### Short Talks Chosen from Abstracts

### WEDNESDAY, JANUARY 29

#### Ketones and Ketogenesis; Super-Fuel or Nuclear Signal? (J5)

**Richard Veech**, NIAAA, National Institutes of Health, USA  
*The Effects of Ketone Body Metabolism on the Great Controlling Nucleotide Couples and their Application to Common Diseases*

**Peter A. Crawford**, University of Minnesota, USA  
*Tracing the Role of Intrahepatic Ketone Turnover in Fatty Liver Disease*

**Daniel P. Kelly**, University of Pennsylvania, USA  
*Ketones and Heart Failure*

**Eric M. Verdin**, Buck Institute for Research on Aging, USA  
*Ketones as a Nuclear Signal*

#### Short Talks Chosen from Abstracts

#### Visualizing Islet Function in vitro, in situ, and in vivo (J6)

**Sebastian Barg**, Uppsala University, Sweden  
*Exocytosis of Insulin and Glucagon Granules in Type-2 Diabetes*

**Joana Almaca**, University of Miami, USA  
*Control of Islet Hormone Secretion by Vascular Pericytes*

**Robin A. Kimmel**, University Innsbruck, Austria  
*In Vivo Imaging of Pancreatic Islet Morphogenesis in Zebrafish*

**Stephan Speier**, Helmholtz Zentrum München, Germany  
*Functional Islet Imaging in vivo and in situ*

#### Short Talks Chosen from Abstracts

#### Supercomplexities of Mitochondrial Dynamics and Bioenergetics (J5)

**Jared Rutter**, University of Utah, USA  
*Novel Proteins Involved in Super-Complex Formation*

**Orian S. Shirihai**, University of California, Los Angeles, USA  
*Mitochondrial Heterogeneity in the Adipocyte*

**Deborah M. Muoio**, Duke University Medical Center, USA  
*Understanding and Preventing Lipid-Induced Mitochondrial Stress*

#### Short Talks Chosen from Abstracts

#### Molecular and Functional Analysis of Islet Cell Heterogeneity (J6)

**Wen-hong Li**, University of Texas Southwestern Medical Center, USA  
*Functional Heterogeneity of Islet beta Cells*

**Richard KP Benninger**, University of Colorado, USA  
*Imaging Islet Heterogeneity and Connectivity*

**Anna Martinez Casals**, Science for Life Laboratories, Sweden  
*Single Cell Protein Variability in Pancreas by CODEX Highly-Multiplexed Imaging*

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### Short Talks Chosen from Abstracts

#### Poster Session 2

#### THURSDAY, JANUARY 30

##### Molecules Mediating Tissue Crosstalk (J5)

**Joseph A. Baur**, University of Pennsylvania, USA  
*Mitochondrial NAD Transport*

**Mark A. Febbraio**, Monash Institute of Pharmaceutical Sciences, Australia  
*Extracellular Vesicles Mediating Cross-Talk during Exercise*

**Judith A. Simcox**, University of Wisconsin, Madison, USA  
*Role of Acylcarnitines as Peripheral Metabolic Signals*

**Barbara B. Kahn**, Beth Israel Deaconess Medical Center, Harvard Medical School, USA  
*Lipokines as Nutrient Sensors and Signals*

##### Short Talks Chosen from Abstracts

##### Stem Cells and Micro-Organs (J6)

**Jennifer E. Bruin**, Carleton University, Canada  
*Environmental Toxins and Embryonic Pancreas Development*

**Burcak Yesildag**, InSphero AG, Switzerland  
*Biomimetic Microtissues: Novel Methods for Studying Islet Biology in Health and Disease*

**Anne Grapin-Botton**, University of Copenhagen, Denmark  
*Three Dimensional Models of Pancreas Organogenesis to Understand Diabetes*

**Mark D. Ungrin**, University of Calgary, Canada  
*Generation and Characterization of Human Pseudoislets*

##### Short Talks Chosen from Abstracts

##### Gut Control of Metabolism (J5)

###### Speaker to be Announced

**Mark A. Herman**, Duke University Medical Center, USA  
*Molecular Aspects of Fructose-Induced Metabolic Dysregulation*

**Eric Yen**, University of Wisconsin-Madison, USA  
*Intestinal Lipid Processing and Pancreatic Islet Functions: A Gut Reaction?*

##### Short Talks Chosen from Abstracts

##### Inflammation, Killing, and Islet Dysfunction (J6)

**Anette-Gabriele Ziegler**, Helmholtz Zentrum München, Germany  
*Islet Autoimmunity*

**Irina Maria Stefana**, University of Oxford, UK  
*Hyperphosphorylated Tau is Expressed in Human Pancreatic Islets and Accumulates in the  $\beta$ -cell Cytoplasm During Ageing*

**Rebecca Hull**, University of Washington, USA  
*Islet Inflammation in CFRD*

##### Short Talks Chosen from Abstracts

#### Poster Session 3

#### FRIDAY, JANUARY 31

##### Keynote Address (Joint)

**Maïke Sander**, University of California, San Diego, USA  
*Metabolic Influences on Pancreatic Beta Cells*

##### Genetics/Genomics of T2D (Joint)

**Anna Louise Gloyn**, University of Oxford, UK  
*Unravelling Mechanisms for Pancreatic Islet Dysfunction from GWAS*

**Karen L. Mohlke**, University of North Carolina at Chapel Hill School of Medicine, USA  
*Adipose Tissue Genomics and Type 2 Diabetes*

**Alan D. Attie**, University of Wisconsin-Madison, USA  
*Genetics of Insulin Secretion*

##### Short Talks Chosen from Abstracts

##### Workshop 2 (J5)

###### Short Talks Chosen from Abstracts

##### Workshop 2 (J6)

###### Short Talks Chosen from Abstracts

##### From Systems Biology to Metabolic Physiology (J5)

**Kristina Schoonjans**, École Polytechnique Fédérale de Lausanne – EPFL, Switzerland

*Systems Approaches to Mapping the Metabolic Network*

**Dave Pagliarini**, Morgridge Institute for Research at University of Wisconsin-Madison, USA

*Regulation of Mitochondrial Metabolism by Reversible Phosphorylation*

**David E. James**, University of Sydney, Australia

*The Role of Reactive Oxygen Species in Insulin Resistance*

##### Short Talk Chosen from Abstracts

##### Novel Approaches to Single Cell Biology (J6)

**Heiko Lickert**, Institute of Diabetes and Regeneration, Germany  
*Deciphering Mechanisms of  $\beta$ -Cell Failure and Regeneration by Single Cell RNA Sequencing*

**Diego Balboa**, Centre for Genomic Regulation, Spain  
*Development and Utility of Single Cell Approaches for Disease Modelling*

**Patrick MacDonald**, University of Alberta, Canada  
*Connecting Single Islet-Cell Function and Transcriptomics*

##### Short Talk Chosen from Abstracts

##### Meeting Wrap-Up: Outcomes and Future Directions (Organizers) (J5)

##### Meeting Wrap-Up: Outcomes and Future Directions (Organizers) (J6)

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**SATURDAY, FEBRUARY 1**

**Departure**