

Midwest Islet Club (MIC) 2021 Virtual Annual Investigator Meeting

July 13-15, 2021



Tuesday, July 13, 2021 (Central Daylight Time)

10:00 – 10:10 pm **Welcome**
Roland Stein, Vanderbilt University

10:10 – 11:25 am **Session 1. Cellular Stress**
Chair: Scott Soleimanpour, University of Michigan

“Lipotoxicity Stimulates β Cell Extracellular Vesicle Secretion Which Induces β Cell Dysfunction and Perturbs β Cell Transcriptional Identity”
Tracy Her, Mayo Clinic

“Hyperglycemia delays ER Export of Proinsulin via altered ER Redox Homeostasis”
Kristen Rohli, University of Iowa

“Synergistic effect of ERAD and Autophagy on Proinsulin Maturation and β Cell Survival”
Neha Shrestha, University of Michigan

“The Mitochondrial Life Cycle Determines β cell Maturity through Activation of the Integrated Stress Response”
Gemma Pearson, University of Michigan

“Small Molecule Enhancer of Insulin Secretion Selectively Induces an Adaptive Stress Response”
Michael Kalwat, Indiana Biosciences Research Institute

11:25 – 11:35 am **Break**

11:35 – 12:05 pm **Session 2. Genetic Disposition**
Chair: Emilyn Alejandro, University of Minnesota

“Integrative Multi-omic Approaches define a RFX6 Network Module as Critical for Human β cell Dysfunction in Type 2 Diabetes”
Vivek Rai, University of Michigan

“Analysis of the Impact of Human G6PC2 Non-Synonymous Single Nucleotide Polymorphisms on G6PC2 Stability, Enzyme Activity and Human Health”
Emily Overway, Vanderbilt University

12:05 – 12:15 pm **Break**

12:15– 1:15 pm

Session 3. Transcriptional Regulation

Chair: Chad Hunter, University of Alabama, Birmingham

“The Chd4 Helicase Controls Genes Critical for β Cell Function”

Rebecca Davidson, Indiana University

“RyR2/IRBIT regulates Insulin Gene Methylation and Transcription, and Controls Insulin Secretion and Content in the Insulinoma Cell Line INS-1”

Kyle Harvey, Purdue University

“Whole Body and β Cell Specific Loss of Transcription Factor 19”

Joseph Blumer, University of Wisconsin, Madison

“Identification of Direct Transcriptional Targets of Nfatc2 that Promote β Cell Proliferation in Human Islets”

Shane Simonett, University of Wisconsin, Madison

1:15 – 1:30 pm

Break

1:30 – 3:30 pm

Poster Session I

Wednesday, July 14, 2021 (Central Daylight Time)

10:00 – 11:00 am

Session 4. Metabolism and Cell Signaling

Chair: Matt Merrins, University of Wisconsin, Madison

“Slow Oscillations Persist in Pancreatic β cells after Deletion of Phosphofructokinase M: Evidence for Molecular Redundancy”

Isabella Marinelli, University of Michigan

“In vivo Genetic Evidence that the Pyruvate Kinase Isoforms PKM1 and PKM2 Differentially Control β Cell Fuel Sensing”

Hannah Foster, University of Wisconsin, Madison

“Lipid Droplets Protect Human β Cells from Lipotoxic-induced Stress and Cell Identity Changes”

Xin Tong, Vanderbilt University

“Hypusine Biosynthesis is Critical for Postnatal β -cell Maturation and Function”

Craig Connors, Indiana University

11:10 – 11:10 am

Break

11:10 – 11:55 am

Session 5. Channel Activity

Chair: Maria Remedi, Washington University in St Louis

“GLP-1 increases β - and δ -cell Glucose-stimulated Ca^{2+} Oscillations through Activation of HCN Channels”

Karolina Zaborska, Vanderbilt University

“Changing KATP Activity – Two Paths to Diabetes?”

Nathaniel York, Washington University in St Louis

“Neuronal but Not Pancreatic KATP-GOF Mutations Underlie Cognitive Dysfunction in DEND Syndrome”

Shaul Yahil, Washington University in St Louis

11:55 – 12:05 pm

Break

12:05 – 1:20 pm

Session 6. Insulin Secretion/ β Cell Function

Chair: David Jacobson, Vanderbilt University

“Reduced β Cell SPCA1 Leads to Decreased Insulin Secretion and Autophagy”

Robert Bone, Indiana University

“ α -Synuclein Regulates Peripheral Insulin Secretion and Glucose Transport”

Nadeeja Wijesekara, University of Toronto

“Synaptotagmin 9 Affects Early Phase of Insulin Secretion by Regulating Tomosyn’s Protein Abundance”

Asmita Pathak, University of Alabama, Birmingham

“Pharmacological Blockade of the EP3 Prostaglandin E2 Receptor Promotes β Cell Mass and Identity in the Setting of Diabetes”

Karin Bosma, Vanderbilt University

“Evidence for Circadian Control of Glucose-Stimulated Insulin Secretion in Transplanted Human Stem Cell Derived Pancreatic β -cells”

Satish Sen, Mayo Clinic

1:20 – 1:30 pm

Break

1:30 – 3:30 pm

Poster Session II

10:00 – 11:00 am

Session 7. Inflammation

Chair: Emily K Sims, Indiana University

“Inflammatory Signaling in Pancreatic Islets Propagates Invasion of Pathogenic Immune Cells in Autoimmune Diabetes”

Annie Piñeros, University of Chicago

“RIPK3-mediated Necroptosis is an Alternative Form of TNF α -induced β cell Death”

Christopher Contreras, Indiana Biosciences Research Institute

“Metabolic Blockade of Glycolysis can Delay Type 1 Diabetes Induction”

Miranda Chavez, University of Alabama, Birmingham

“Protective Responses of Pancreatic Islet Cells to Inflammatory Cytokines”

Jennifer Stancill, Medical College of Wisconsin

11:00 – 11:10 am

Break

11:10 – 11:55 am

Session 8. Alpha Cell

Chair: Danielle Dean, Vanderbilt University

“Selective Activation of α cell Gq Signaling Improves Glucose Homeostasis in Mice”

Liu Liu, NIH

“Utilizing Human Pseudoislet and Transplantation Models to Define Mechanisms Underlying α Cell Dysfunction in Type 1 Diabetes”

Yasminye Pettway, Vanderbilt University

“Amino Acid-stimulated α Cell Proliferation Requires Glutaminase Activity”

Walter Siv, Vanderbilt University

11:55 – 12:05 pm

Break

12:05 – 12:10 pm

Introduction to Keynote Presentation

Al Powers, Vanderbilt University

12:10 – 12:50 pm

Keynote Presentation: On the Shoulders of Giants: The Noble and Often Nobel Role Played by Diabetes Research Advances

David Harlan, MD

Director, Diabetes Center of Excellence

University of Massachusetts Medical School

Introduction by: Al Powers, Vanderbilt University

1:00 – 1:45 pm

Session 9. Omics

Chair: Rafael Arrojo e Drigo, Vanderbilt University

“Single Cell Lineage Analysis Reveals Extensive Multimodal Transcriptional Control during directed β -cell Differentiation”

Chen Weng, Case Western Reserve

“Analysis of the Single-cell Metallome of Pancreatic β Cells with Synchrotron X-Ray Fluorescence after Exposure to Low-grade Inflammation”

Kira Slepchenko, Ohio University

“PDX1 Bookmarks a Pancreatic Progenitor Program in Adult Islets (ChIPseq, RNAseq; Mouse and Human)”

Xiaodun Yang, University of Pennsylvania

1:45 – 1:55 pm

Break

1:55 – 2:40 pm

Session 10. Experimental Models/Techniques

Chairs: Kok Lim Kua and Teresa Mastracci, Indiana University

“Unravelling Interactions between Genetics, Nutrition, and Sex using Experimental Models of Early-onset Type 2 Diabetes”

Taylor Morriseau, University of Manitoba

“A Functional Genomic Approach to Identify Reference Genes for Human Pancreatic β -cell Real-time Quantitative RT-PCR Analysis”

Maria Iñes Alvelos, Université Libre de Bruxelles

“Biochemical Approach for Acinar to β Cell Conversion”

Uylissa Rodriguez, University of Pittsburgh

2:40 – 3:00 pm

Awards

Roland Stein, Vanderbilt University