

MIC 2024 Schedule of Events

The University of Chicago
David Rubenstein Forum
1201 E. 60th St, Chicago, IL 60637
<https://drtc.bsd.uchicago.edu/mic-2024>

Wednesday, July 10, 2024

11:30 am – 1:00 pm

Registration/Poster Set-Up/Lunch

1:00 pm

Welcome and Introduction

Raghu Mirmira

University of Chicago

1:15 pm – 1:45 pm

Young Investigator Award Presentation/Talk

Danielle Dean

Vanderbilt University

1:45 pm – 2:45 pm

Session I. The Blueprints of β -Cell Maturity and Function

Moderator: Michael Kalwat, Indiana Biosciences Research Institute

1:45 pm

Katy Matson

Michigan Technological University

miR-483 deficiency induces β -cell dedifferentiation to α -cells

2:00 pm

Kelly Vazquez

Wheaton College

Modulation of the biomechanical environment alters β -cell function and maturity

2:15 pm

Madison Thomas

University of Pittsburgh

The acute knock out of glucagon in α -cells leads to impaired glucose homeostasis and β -cell dysfunction

2:30 pm

Jennifer Stancill

Medical University of South Carolina

Thioredoxin reductase 1 is required for normal pancreatic β -cell function

2:45 pm – 3:00 pm

Break

3:00 pm – 4:15 pm

Session II. Conductors of the Insulin Secretion Symphony

Moderator: Katie Coate, Vanderbilt University

3:00 pm

Nathaniel York

Washington University in St. Louis

Chronic KATP inhibition or depolarization results in decreased Ca²⁺-sensitivity of insulin secretion

3:15 pm

Ben Thompson

University of Michigan

Regulation of islet pulsatility by pyruvate dehydrogenase

- 3:30 pm Ava Stendahl University of Michigan
Loss of the mitochondrial inorganic phosphate transporter impairs β -cell glucose-stimulated insulin secretion despite a maintenance of ATP levels
- 3:45 pm Jade Stanley Vanderbilt University
SLC7A2-dependent arginine transport in α -cells signals arginine tone to regulate insulin secretion
- 4:00 pm Shannon Townsend Washington University in St. Louis
Serotonin signals through the cilia-localized serotonin receptor 6 to stimulate β -cell autocrine insulin secretion

4:15 pm – 4:30 pm **Break**

4:30 pm – 6:00 pm **Session III. Metabolic Matrix: Stress, Obesity, and Islet Health**
Moderator: Jing Hughes, Washington University in St. Louis

- 4:30 pm Brian List Ohio University
Reducing glycolysis uniquely maintains normal islet function in chronic hyperglycemic conditions
- 4:45 pm Luhui Zhang Mayo Clinic
Effects of diet-induced obesity on circadian regulation of β -cell function and islet circadian transcriptome in male and female mice
- 5:00 pm Rashaun Williams Washington University in St. Louis
Impact of in vivo microenvironment on viability and function of transplanted islets
- 5:15 pm Catharina Villaca Indiana University
Impaired on-demand protein synthesis drives β -cell dysfunction
- 5:30 pm Molly Mulcahy University of Wisconsin-Madison
Cholecystokinin expression in islets under metabolic stress
- 5:45 pm Christopher Acree Vanderbilt University
High-resolution mapping of glucose-derived ^{13}C in pancreatic islets using MIMS-EM: Unraveling organelle interactions and metabolic flux

6:00 pm – 7:00 pm **Cocktail Hour**

7:00 pm – 9:00 pm **Dinner and Posters**

8:00 am – 9:00 am

Breakfast

9:15 am – 10:15 am

Session IV. Cellular Crossroads: ER Stress and Inflammation

Moderator: John Corbett, Medical College of Wisconsin

9:15 am

Jacob Bartosiak

Medical College of Wisconsin

IL-1 β inhibits encephalomyocarditis virus (EMCV) replication in pancreatic islets

9:30 am

Erica Cai

Indiana Biosciences Research Institute

Genome-scale *in vitro* CRISPR screens identify an ER export cargo protein as a mediator for β -cell stress response and autoimmune vulnerability

9:45 am

Renato Branco

Indiana University

Knockout of ryanodine receptor 2 partially prevents tunicamycin-induced misfolded protein accumulation and β -cell death

10:00 am

Paul Sidlowski

Medical College of Wisconsin

Bromodomain and extraterminal domain proteins in inflammatory activation of pancreatic islet resident macrophages

10:15 am – 10:30 am

Break

10:30 am – 11:45 am

Session V. Rewriting Diabetes: Innovations in T1D Research

Moderator: Sarah Tersey, University of Chicago

10:30 am

Justin Choe

Mayo Clinic

ST8Sia6 overexpression protects pancreatic β -cells from spontaneous autoimmune diabetes in NOD mice

10:45 am

Titli Nargis

University of Chicago

Inhibition of 12-lipoxygenase modifies autoimmune diabetes pathogenesis and delays progression to hyperglycemia in human gene replacement mice

11:00 am

Matthew Austin

Indiana University

Characterizing the role of autophagy in type 1 diabetes development

11:15 am

Alexander Hopkirk

Vanderbilt University

Altered islet morphology and increased extracellular matrix deposition in type 1 diabetes

11:30 am

Charanya Muralidharan

University of Chicago

Inhibition of the PERK (eukaryotic initiation factor 2 α kinase) decreases risk of autoimmune diabetes in mice

11:45 am – 1:00 pm

Lunch

1:15 pm – 1:45 pm

Awards and Lacy Medal Presentation

1:15 pm

Midwest Islet Club Presentation and Poster Awards
Sarah Tersey, Sarah May University of Chicago

1:30 pm

Lacy Medal Lecture Introduction and Award
Maureen Gannon Vanderbilt University

1:45 pm

2024 Lacy Medal Lecture

Rohit Kulkarni

Harvard Medical School
Joslin Diabetes Center

2:45 pm

Closing Remarks

MIC Organizers

3:00 pm

Meeting Adjourned



Poster Abstracts

- #1** Proinsulin Misfolding and Endoplasmic Reticulum Homeostasis in Beta Cells
- #2** β cells adapt to insulin resistance via posttranslational modification of the translation factor eIF5A
- #3** Wnt4 controls insulin biosynthesis, processing, and secretion in pancreatic beta cells
- #4** Intermittent fasting in mouse model predisposed to proinsulin misfolding reverses diet-induced diabetes
- #5** Human islets exhibit sex differences in transcriptional response to proinflammatory cytokines
- #6** Insights into Gene and Protein Expression Dynamics in Pancreatic β -Cells during Diabetes Progression
- #7** Glucose Intolerance as a Consequence of Hematopoietic Stem Cell Dysfunction in Offspring of Obese Mice
- #8** PERK Inhibition Leads to Reversible Pancreatic Acinar Cell Dedifferentiation and Protection Against Pancreatitis
- #9** Sex-dependent β cell intrinsic and extrinsic signalings in IRE1 α β -/- NOD mice
- #10** Type 1 Diabetes Therapeutic Compound MSB-61: Using RNA Sequencing to Identify the Mechanism
- #11** Txnrd1 has a protective role against glucose intolerance
- #12** LONP1 regulation of mitochondrial protein folding provides insight into beta cell failure in type 2 diabetes
- #13** Investigating the ligands and receptors present in islet cells during compensation and expansion
- #14** Identification of PDPR as a key contributor of metabolic plasticity in beta cells
- #15** Investigating effects of modulating glucokinase activity on human islet function and cell composition under diabetogenic conditions
- #16** Retinoic acid signaling and GATA4 synergy regulates islet development and function
- #17** Heterogeneous enhancer states orchestrate β cell responses to metabolic stress
- #18** Potent MSB-61 as Type 1 Diabetes (T1D) therapy: mechanism of action in insulin secretion
- #19** Not Provided
- #20** The role of the B-cell GLP-1 receptor in adaptive proliferation in response to two different metabolic stress conditions
- #21** HRD1 deficiency in pancreatic beta cells
- #22** Proinsulin Oxidative Folding Defect in Diabetes
- #23** The Role of Autophagy and Intermittent Fasting on β -cell Mass and Identity in KATP-induced Diabetes
- #24** Early Autophagy Dysregulation and Immune-Mediated Beta Cell Dysfunction in NOD Mouse Model of Type 1 Diabetes
- #25** Dysglycemia induced by the variant S64F MAFA in male mice is dependent on genetic background
- #26** Amino acids modulate beta cell KATP activity via the PEP cycle and OXPHOS
- #27** Insulin hypersecretion induces an adaptive transcriptional signature in β -cells
- #28** Down Syndrome and Diabetes: Characterizing a Unique Form Of Auto-Immune Diabetes Using Isogenic Trisomy 21 iPSC-Derived β -Cells
- #29** Pivotal role of NADH:ubiquinone oxidoreductase assembly factor 8 in beta cell stress adaptation
- #30** Lipid Droplets Regulate Glucagon Secretion by Primary Human Alpha Cells
- #31** The Mechanisms of Pulsatile Basal Insulin Secretion
- #32** Synergy between retinoic acid signaling and GATA transcription factors contributes to islet development and function
- #33** Impact of Hypersecretory Stress and ER Stress on Proliferation in Human EndoC- β H1 and mouse MIN6 β -cells
- #34** STIM1 Interacts with G Protein-Coupled Estrogen Receptor Signaling to Maintain β Cell Identity in Female Mice
- #35** Investigating the Role of Polyamine Metabolizing Enzyme SMOX in Islet β Cell Inflammation
- #36** Roundabout Receptors are Required for Maintaining Islet Architecture during Acute Pancreatitis
- #37** RNA-binding protein Cpeb1 activates immune signaling pathway but is dispensable for islet maturation and function
- #38** Glucose stimulation activates mitochondrial dynamics in pancreatic β -cells
- #39** Compartmentalized glucose-sensing in beta cell primary cilia
- #40** Following Vertical Sleeve Gastrectomy, Low Protein Diet Increases Weight Loss and Insulin Sensitivity, High Protein Diet Increases GIP secretion, and Both Increase Islet Sensitivity to GIP
- #41** RIPK1 kinase activity mediates TNF α +IFN γ -induced inflammation and β -cell cytotoxicity
- #42** Autophagy Promotes Islet α Cell Function by Maintaining Endoplasmic Reticulum Proteostasis and Glucagon Production

- #43** Identification of Small Molecules that Mimic the Effect on Insulin Secretion of Zfp148 Deletion
- #44** LRRK2 promotes β -cell apoptosis following inflammatory damage
- #45** β Cell Heterogeneity in the IFN- α Response
- #46** Sodium/potassium ATPase: A key transducer of islet secretagogue and inhibitor signal strength
- #47** CHD3 helicase modulates pancreatic β cell function in the absence of CHD4
- #48** The diabetes-associated K⁺ channel TALK-2 reduces human β -cell endoplasmic reticulum Ca²⁺ stores and cytosolic Ca²⁺ entry, which enhances basal insulin secretion and blunts glucose-stimulated insulin secretion
- #49** Mechanisms by which RA signaling and GATA6 synergize during pancreas development
- #50** Differentiation of GMP-Grade iPSCs into Pancreatic Islets Increases Possibility of Clinical Application for T1D
- #51** Development of a novel zebrafish model of Mutant Insulin gene Induced Diabetes of Youth
- #52** The impact of endogenous GLP-1 signaling through the β -cell on β -cell mass regulation in response to various metabolic stressors
- #53** Genome-wide in vivo CRSPR screen uncovers ZBED3 as a transcriptional regulator of beta cell vulnerability in type 1 diabetes
- #54** RIPK1 promotes IFN γ +dsRNA-induced death in T1D-prone β -cells
- #55** Engineering Functionalized Lipid Nanoparticles for Targeted β -Cell Therapeutics
- #56** Alginate Microencapsulation Protects Islets From IL-1 β For Enhanced Function
- #57** Identifying Conditional Dependence of Proteins Regulating Islet Biology with Machine Learning
- #58** eIF5A mediates the translational regulation of cell fate decisions in the developing pancreas
- #59** Examining Macrophage Integrated Stress Response Mechanisms in Type 1 Diabetes Development
- #60** Rapid Generation and Systematic Confirmation of Transgenic Mouse Models of IPMN for Chemical Pancreatectomy Analysis
- #61** Chemical Pancreatectomy in a Rat Model of Pancreas Transplantation
- #62** The MODY-associated gain-of-function mutation in TALK-1 L114P decreases insulin and somatostatin secretion leading to hyperglucagonemia and hyperglycemia
- #63** BET bromodomain inhibitors selectively attenuate IL-1 β -induced transcription of NF- κ B targets in β -cells
- #64** Loss of β -cell NRF2 alters β -cell function but does not impair systemic glucose homeostasis
- #65** Physiologic Adaptations to Metabolic Stress in a Model of Islet Alpha Cell Loss
- #66** Identification of type 2 diabetes- and obesity-associated human β -cells using deep transfer learning