

KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

Diabetes: Many Faces of the Disease (EK18)

Scientific Organizers: Lori Sussel, Juleen R. Zierath and Laura C. Alonso

Sponsored by AstraZeneca and Novo Nordisk A/S

Obesity: From Cell to Patient (EK17)

Scientific Organizers: Kevin L. Grove, Rachel L. Batterham and Shane T. Hentges

February 1-3, 2021 • Virtual at your computer

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MONDAY, FEBRUARY 1

Welcome Remarks and Keynote Address (Joint) (8am Denver/Mountain Time Start)

*Kevin L. Grove, Novo Nordisk, USA

*Lori Sussel, University of Colorado Anschutz Medical Campus, USA

Morris F. White, Boston Children's Hospital, Harvard Medical School, USA

Peripheral and Central Faces of Hepatic Insulin Resistance

Gut Instincts: Influence of the Intestine on Glucose Homeostasis (Joint) (8:40am Denver/Mountain Time Start)

*Kevin L. Grove, Novo Nordisk, USA

*Mary-Elizabeth Patti, Joslin Diabetes Center, USA

Hypoglycemia After Bariatric Surgery: Lessons Learned About Intestinal Control of Glucose Metabolism

Max Nieuwdorp, University of Amsterdam, Netherlands

Does the Disease Start with the Gut Microbiome?

Roy Taylor, Newcastle University, UK

T2DM: Simple Etiology but Heterogenous Individuals

Aneta Stefanidis, Monash University, Australia

Short Talk: The Importance of Brown Fat in Mediating Changes in Glucose Regulation following Vertical Sleeve Gastrectomy

Chisayo Kozuka, RIKEN Center for Integrative Medical Sciences, Japan

Short Talk: Bromodomain-Containing Proteins Regulate Glucose Metabolism via Gut-Liver FGF15/19 Pathway

Career Roundtable (Joint) (12:30pm Denver/Mountain Time Start)

Diego V. Bohórquez, Duke University, USA

Murielle M. Veniant, Amgen Inc., USA

Kristen Jane Nadeau, University of Colorado Denver, USA

Poster Session 1 (Joint) (1:30pm Denver/Mountain Time Start)

Muscling in on Insulin Resistance (3pm Denver/Mountain Time Start) (EK18)

Juleen R. Zierath, Karolinska Institutet, Sweden

Skeletal Muscle Mediators and Exercise-Induced Adaptations Governing Insulin Sensitivity in Type 2 Diabetes

*Joseph T. Brozinick, Eli Lilly and Company, USA

Therapeutically Targeting Skeletal Muscle to Treat Type II Diabetes: Could Urocortin 2 be Exercise in a Bottle?

*Bret H. Goodpaster, Translational Research Institute for Metabolism and Diabetes, USA

Fat Accumulation in Muscle: Implications for Diabetes

Lena Espelage, German Diabetes Center, Germany

Short Talk: Contraction Response in Skeletal Muscle Glucose Uptake Is Regulated by the Two RabGAPs TBC1D1, TBC1D4 and the Key Components of Exercise Signaling, AMPK and Rac1, in a Cooperative Manner

Taiyi Kuo, Columbia University, USA

Short Talk: Systemic Benefits of Gc Inhibition to Preserve Insulin Sensitivity

Dongyin Guan, Baylor College of Medicine, USA

Short Talk: Canonical and Non-Canonical Clock Regulators in Obesity and Diabetes

Adam J. Rose, Monash University, Australia

Short Talk: An Endocrine-Hepato-Muscular Metabolic Cycle Links Skeletal Muscle Atrophy and Hyperglycemia in Type 2 Diabetes

Christoffer Clemmensen, University of Copenhagen, Denmark

Short Talk: GDF15 as a Regulator of Energy Metabolism: Physiology vs. Pharmacology

Central Adaptations to Body Weight Change (3pm Denver/Mountain Time Start) (EK17)

*Thomas H. Meek, Novo Nordisk, USA

Hans Rudolf Berthoud, Pennington Biomedical Research Center, USA

Central Effects of Bariatric Surgery

*Stephanie E. Fulton, University of Montreal, Canada

Curbing Hedonia: Neurometabolic Adaptations to High-Fat Diet and Obesity

Dana M. Small, Yale University School of Medicine, USA

Striatal – Prefrontal Circuit Sensitivity to Insulin Determines Working Memory Ability in Youth with Obesity

Murielle M. Veniant, Amgen Inc., USA

GIPR Antagonist Antibodies Conjugated to GLP-1 Peptides Decrease Weight in Obese Preclinical Models

Elinor L. Sullivan, Oregon National Primate Research Center, USA

[NOT AVAILABLE ON DEMAND] The Influence of Maternal Nutrition and Metabolic State on Offspring Risk for Psychiatric Disorders

Chen Liu, University of Texas Southwestern Medical Center, USA

Short Talk: Atypical Antipsychotics Target Hypothalamic Melanocortin 4 Receptors to Cause Weight Gain

Natasha Gaito, Virginia Tech, USA

Short Talk: In silico Analysis of the POMC and NPY Promoters: The Role of Methylation in Environmental Triggers of Obesity

TUESDAY, FEBRUARY 2

Diabetes – One Name, Many Variations (8am Denver/Mountain Time Start) (EK18)

*Laura C. Alonso, Weill Cornell Medicine, USA

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Ellen E. Blaak, Maastricht University, Netherlands
Obesity Metabolic Phenotypes Leading to Type 2 Diabetes Mellitus: Implications for Personalized Prevention

Kristen Jane Nadeau, University of Colorado Denver, USA
Emerging Aspects of T2D in Youth

Matthew B. Johnson, University of Exeter Medical School, UK
Genetic Insights into Autoimmune Diabetes

***Carmella Evans-Molina**, Indiana University, USA
Type 1 Diabetes: Taking the Long View

Kevan C. Herold, Yale University, USA
Cancer Immunotherapy and T1D

Alka M. Kanaya, University of California, San Francisco, USA
Heterogeneity of Type 2 Diabetes Subtypes by Ethnicity

Debora R. Sobreira, University of Chicago, USA
Short Talk: An Integrative Platform to Uncover the Mechanisms of the Association of TCF7L2 and T2D

Adipose Tissue Communication (8am Denver/Mountain Time Start) (EK17)

***Kevin L. Grove**, Novo Nordisk, USA

***Philipp E. Scherer**, University of Texas Southwestern Medical Center, USA
Novel Insights into the Endocrine Actions of the Adipocyte

Ana Domingos, University of Oxford, UK
Sympathetic Innervation of Adipose Tissue

Sean M. Hartig, Baylor College of Medicine, USA
Leveraging MicroRNA Targets to Treat Obesity

Camilla Charlotte Schéele, University of Copenhagen, Denmark
Early Differentiation of Human Brown and White Adipocytes at Single Cell Level Reveals Common Subtype with Genetic Association to Body Fat Distribution

Stephanie Wesolowski, University of Colorado, USA
Metabolic Programming in the Fetal Liver- Potentiation of Gluconeogenesis by Hypoxemia

Kai Sun, University of Texas Health Science Center at Houston, USA
Short Talk: Adipose-Derived MMP14 Is a Key Player in Metabolic Health

Aimee L. Edinger, University of California, Irvine, USA
Short Talk: A Drug-Like Sphingolipid Opposes Mitochondrial Fragmentation and Corrects the Adiponectin:Leptin Ratio and Obesity

Meet the Editors (Joint) (12:30pm Denver/Mountain Time Start)

Katherine Samaras, Frontiers in Endocrinology, Australia

Jeff Holly, Frontiers in Endocrinology, UK

Kristan van der Vos, Cell Reports Medicine, Netherlands

Allyson Evans, Cell Press, USA

Poster Session 2 (Joint) (1:30pm Denver/Mountain Time Start)

The Failing Beta Cell in T1D and T2D (3pm Denver/Mountain Time Start) (EK18)

Chantal Mathieu, KU Leuven, Belgium
Dialog Between the Immune System and the Beta Cell

Laura C. Alonso, Weill Cornell Medicine, USA
ER Stress: The Good, the Bad and the Ugly

***Marc Prentki**, Montreal Diabetes Research Center, Canada
Novel Metabolic Enzyme Glycerol 3-P-Phosphatase: From β -cell Gluco-detoxification to Healthy Aging

***Lori Sussel**, University of Colorado Anschutz Medical Campus, USA
Beta Cell Dysfunction Contributes to T1D

Feyza Engin, University of Wisconsin-Madison, USA
Short Talk: Targeting Beta Cell Unfolded Protein Response in T1D

Sangeeta Dhawan, City of Hope, USA
Short Talk: DNA Hydroxymethylation and Functional Beta Cell Mass in Health and Diabetes

Joan Mir-Coll, InSphero AG, Switzerland
Short Talk: Human Islet Microtissues as an in vitro and in vivo Model System for Diabetes

Blaise Su Jun Low, National University of Singapore, Singapore
Short Talk: Modeling the Insulin Secretion Defects in MODY3 using Patient iPSC-derived Beta Cells

A Gut Feeling: How the Gut Speaks to the Brain (3pm Denver/Mountain Time Start) (EK17)

***Rachel L. Batterham**, University College London, UK
[NOT AVAILABLE ON DEMAND] STEP Amylin Trials

Darleen A. Sandoval, University of Colorado, USA
Lessons From Mouse Models of Bariatric Surgery

Diego V. Bohórquez, Duke University, USA
A Gut Choice for Sugars

***Gary J. Schwartz**, Albert Einstein College of Medicine, USA
Bottom Up Control of Appetite

Alison Nicole McRae, Mayo Clinic, USA
Short Talk: Overexpression of Regulator Of G-Protein Signaling (RGS) In Obesity Contributes To Impaired GPCR-Mediated Hormone Secretion In Human Enteroendocrine Cells: A Single-Cell RNA Sequencing Study of Gut Epithelium in Human Obesity

Geke Aline Boer, University of Copenhagen, Biomedical Institute, Denmark

Short Talk: GIP Receptor Deletion in Mice Confers Resistance to Obesity via Alterations in Energy Expenditure and Adipose Tissue Lipid Metabolism

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Elizabeth Ann Killion, Amgen, USA

Short Talk: Chronic Glucose-Dependent Insulinotropic Polypeptide Receptor (GIPR) Agonism Desensitizes Adipocyte GIPR Activity Mimicking Functional GIPR Antagonism

Ki-Suk Kim, University of Colorado Anschutz Medical Campus, USA

Short Talk: The Role of Bile Acid Receptor Expressed in Intestinal Stem Cells on Enteroendocrine Cell Differentiation after Bariatric Surgery

WEDNESDAY, FEBRUARY 3

Novel Therapeutic Strategies (8am Denver/Mountain Time Start) (EK18)

***Juleen R. Zierath**, Karolinska Institutet, Sweden

***Jose C. Florez**, Massachusetts General Hospital, USA
Have GWAS Helped Classify Diabetes?

Emma Ahlqvist, Lund University, Sweden

Subclassifying Diabetes by Combining GWAS and Clinical Phenotyping

Paul W. Franks, Lund University, Sweden

Precision Medicine in Obesity and Diabetes

Rory J. McCrimmon, University of Dundee, UK

Mechanisms of Therapies for T2D and Potential Crossover to T1D

Carla J. Greenbaum, Benaroya Research Institute at Virginia Mason, USA

Therapies to Stop T1D...Determining Risk and Conducting Trials

Allan Ertmann Karlsen, Novo Nordisk, Denmark

Stem Cell Mediated Treatments for Diabetes

Feeding Behavior: Top Down or Bottom Up? (8am Denver/Mountain Time Start) (EK17)

Linda Rinaman, Florida State University, USA

GLP-1 Neural Signaling in Stress and Metabolism

***Lori M. Zeltser**, Columbia University, USA

Effects of Social Isolation on Stress-Induced Behavior in Females

***Michael Krashes**, NIDDK, National Institutes of Health, USA

High-Fat Food Biases Hypothalamic and Mesolimbic Expression of Consummatory Drives

Lotte Bjerre Knudsen, Novo Nordisk A/S, Denmark

GLP-1 in the Treatment of Obesity, Mechanisms that Translate into Durable Weight Loss in Patients

Manolis Kellis, Massachusetts Institute of Technology, Broad

Institute, USA

Single-Cell Multi-Tissue Dissection of Obesity-Exercise Circuitry in Human and Mouse

Katherine Blackmore, George Washington University, USA

Short Talk: An Obligatory Forebrain-Hypothalamic ER Stress Driven Circuit Mediates Hepatic Steatosis during Obesity

Workshop and Panel Discussion: COVID and Diabetes (11:30am Denver/Mountain Time Start) (EK18)

***Lori Sussel**, University of Colorado Anschutz Medical Campus, USA

Alpana P. Shukla, Weill Cornell Medical College, USA

Interaction between T2D and Obesity and COVID Outcomes

G. Todd Alonso, University of Colorado, USA

COVID and T1D

Shuibing Chen, Weill Cornell Medical College, USA

COVID Directly Infects Beta Cells and Affects Beta Cell Function

Katie C. Coate, Vanderbilt University Medical Center, USA

ACE2 is Expressed in the Islet Microvasculature and Ducts of Human Pancreas

Francesco Dotta, University of Siena, Italy

Human Beta Cells Express ACE2

Dirk Homann, Icahn School of Medicine at Mount Sinai, USA

Experimental and Natural SARS-CoV-2 Infection of the Human Pancreas

Workshop and Panel: Patient Perspective and Stigmas (11:30am Denver/Mountain Time Start) (EK17)

***Rachel L. Batterham**, University College London, UK

Vicki Mooney, ECPO Executive Director & Patient, Spain

Francesco Rubino, King's College London, UK

Joseph Nadglowski, Obesity Action Coalition, USA

Networking Lounge (Joint) (1:30pm Denver/Mountain Time Start)

CNS Control of Energy Homeostasis and Blood Glucose (Joint) (3pm Denver/Mountain Time Start)

***Shane T. Hentges**, Colorado State University, USA

POMC Neurons: Distinct Roles in Food Intake, Metabolism and Glucose Regulation

***Michael A. Cowley**, Monash University, Australia

Hypothalamic Control of Glucose Homeostasis

Martin G. Myers, Jr., University of Michigan, USA

Control of Food Intake and Energy Balance via the NTS and DMH

Michael W. Schwartz, University of Washington, USA

Unraveling Diabetes Remission Induced by the Brain

Ian Enrique Gonzalez, University of Michigan, USA

Short Talk: Paraventricular Hypothalamic Calcitonin Receptor Expressing Neurons Regulate Energy Balance

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Juliana Bezerra Medeiros de Lima, Wayne State University, USA

Short Talk: ARC GHR Neurons Control System Glucose Sensitivity via Muscle Glucose Uptake

Closing Remarks (5:50pm Denver/Mountain Time Start) (EK18)

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