Neuronal Control of Appetite, Metabolism and Weight

Scientific Organizers:
Lora K. Heisler, University of Aberdeen, UK
Scott M. Sternson, HHMI/Janelia Research Campus, USA

Joint with the meeting on Gastrointestinal Control of Metabolism

Obesity, a condition that is becoming a leading cause of human morbidity and mortality, is among the global healthcare challenges of the 21st century. Obesity is primarily a result of the cumulative effect of increased food intake beyond the body’s energetic requirements over time. Emerging research reveals critical integrative neuronal systems that control both energy and glucose homeostasis, which have encouraging implications for the future treatment of obesity. This symposium will fuse existing knowledge with the latest discoveries in the neural circuits underpinning nutrient sensation, satiety, food reward, developmental programming and glucoregulatory function. Furthermore, recent findings will be presented on the peripheral regulation of these neural circuits by gut and adipocyte-derived signals. The application of cutting-edge neuroscience approaches and the clinical relevance of basic science discoveries to obesity research will also be highlighted. Recent advances in emerging treatment options will be discussed, including surgical interventions and next-generation pharmacotherapies. In combination with a joint symposium on the Gastrointestinal Control of Metabolism, this exciting program will bring together breaking research from both basic science and translational realms on the etiology and treatment of obesity and type 2 diabetes.

Session Topics:
• Nutrient Sensing and Gut Signaling (Joint)
• Workshop 1: Disorders and Diseases Associated with Weight Loss
• Interactions between Ingestive Signals and Reward Circuits
• Emerging Energy Homeostasis Neurocircuitry
• Signaling from Periphery to Brain to Modulate Energy Balance (Joint)
• Hypothalamic Signals Modulating Hunger and Complex Behavior
• Cutting Edge Approaches in Obesity Research
• Pharmacotherapies for Obesity and Type 2 Diabetes (Joint)
• Workshop 2: CNS Regulation of Adipose Tissue
• Programming Obesity: Early Environmental Influences

Scholarship Application & Discounted Abstract Deadline: January 12, 2017
Abstract Deadline: February 9, 2017
Discounted Registration Deadline: March 9, 2017

Note: Scholarships are available for graduate students and postdoctoral fellows and are awarded based on the abstract submitted.

May 9–13, 2017 | Tivoli Hotel and Congress Center | Copenhagen | Denmark

www.keystonesymposia.org/meetings | 1.800.253.0685 | 1.970.262.1230
a 501(c)(3) nonprofit educational organization

Meeting Hashtag: #KSneuron
www.keystonesymposia.org/17Z5
TUESDAY, MAY 9
Arrival and Registration

WEDNESDAY, MAY 10
Welcome and Keynote Session (Joint)
* Lora K. Heisler, Rowett Institute, University of Aberdeen, UK
* Randy J. Seeley, University of Michigan, USA
Stephen O’Rahilly, University of Cambridge, UK

Metabolic Disease: Lessons from Natural Human Variation
Klaus H. Kaestner, University of Pennsylvania School of Medicine, USA
The Intestinal Stem Cell Niche – At the Base of It All

Nutrient Sensing and Gut Signaling (Joint)
* Andrew Butler, St. Louis University, USA
* Fiona M. Gribble, University of Cambridge, UK
Ronald M. Evans, HHMI/The Salk Institute, USA

Gut Feelings: Systemic Reach of Intestinal FXR
Kristina Schoonjans, École Polytechnique Fédérale de Lausanne – EPFL, Switzerland
Bile Acid Signaling in Metabolic Disease
Joshua Thaler, University of Washington, USA
Short Talk: Prevention of Microglial Inflammatory Signaling Reduces Susceptibility to Diet-Induced Obesity

Workshop 1: Disorders and Diseases Associated with Weight Loss (Z5)
* Timo D. Müller, Institute for Diabetes and Obesity, Germany
Anne-Charlotte Jarry, Paris Diderot University, France
Neuromedin U Blocks Gastric Emptying through Vagal-Dependent Mechanisms and Improves Oral Glucose Tolerance
Geke Aline Boer, University of Copenhagen, Biomedical Institute, Denmark
Acute Reduction of GIP: Effects on Lipid and Bone Metabolism
Emily C. Bruggeman, University of Texas Southwestern Medical Center, USA
Ghrelin Receptor Deletion Increases Morbidity and Mortality in a Prader-Willi Syndrome Mouse Model

Natalia Petersen, University of Copenhagen, Denmark
"Tailoring" the Intestinal Epithelium for Type 2 Diabetes Treatment: Modulation of L-Cell Differentiation

Hai-Bin Ruan, University of Minnesota, USA
Diet- and Microbiota-Sensitive Intestinal O-GlcNAc Signaling Controls Enteroendocrine Cell Development and Function

Sara Lind Jepsen, University of Copenhagen, Denmark
Somatostatin Regulates GLP-1 Secretion through the Somatostatin Receptor Subtype 2

Interactions between Ingestive Signals and Reward Circuits (Z5)
* Matt Carter, Williams College, USA
* Agatha A. van der Klaauw, University of Cambridge, UK
Michael A. Cowley, Monash University, Australia
Leptin Receptor Expressing Neurons of the Dorsomedial Hypothalamus Play a Limited Role in Regulating Food Intake but a Critical Role in Regulating Metabolism

Suzanne Lee Dickson, Sahlgrenska Academy, Gothenburg University, Sweden
Brain Ghrelin Signaling and Food Reward Behavior

Christian Löscher, University of Geneva, Switzerland
Feeding Circuits that Can Override Metabolic Needs

Claire J. Foldi, Monash University, Australia
Short Talk: CNS Reward Pathways in Anorexia Nervosa: Insights from a Rat Model

Gut Bacteria as Cause and Treatment of Metabolic Diseases (Z6)
* Gilles Milhieux, INSERM, France
Fredrik Bäckhed, University of Gothenburg, Sweden
Microbial Signaling from the Gut and Resulting Effects on Host Metabolism

Martin J. Blaser, New York University School of Medicine, USA
Effects of the Early Life Microbiota on the Development of Metabolic Illnesses

* Session Chair † Invited but not yet accepted  Program current as of October 2, 2019. Program subject to change. Meal formats are based on meeting venue. For the most up-to-date details, visit www.keystonesymposia.org/17Z5 and www.keystonesymposia.org/17Z6.
**Neuronal Control of Appetite, Metabolism and Weight (Z5)**

**Scientific Organizers:** Lora K. Heisler and Scott M. Sternson

Lead Sponsor: Novo Nordisk A/S. Sponsored by Arena Pharmaceuticals, Inc.

**Gastrointestinal Control of Metabolism (Z6)**

**Scientific Organizers:** Randy J. Seeley, Matthias H. Tschöp and Fiona M. Gribble

May 9-13, 2017 • Tivoli Hotel and Congress Center • Copenhagen, Denmark

Lead Sponsor: Novo Nordisk A/S. Sponsored by MedImmune

**Abstract & Scholarship Deadline:** January 12, 2017 / **Abstract Deadline:** February 9, 2017 / **Discounted Registration Deadline:** March 9, 2017

---

**Poster Session 1**

**THURSDAY, MAY 11**

**Emerging Energy Homeostasis Neurocircuitry (Z5)**

*Qingchun Tong*, University of Texas Medical School, USA

Short Talk: Metabolite Profiling of Plasma and Cecum Elucidates the Impacts of Host Genetics and Environment on the Gut Microbiota

*Matthew R. Hayes*, University of Pennsylvania, USA

Short Talk: Mitochondrial Control of the Melanocortin System

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

LepRb Signaling and the Regulation of Transcription

*Joseph T. Bass*, Northwestern University, USA

Identification of an SCN-AgRP Circadian Neurocircuit Regulating Obesity and Systemic Metabolism

*Lori M. Zeltser*, Columbia University, USA

Gene X Environment Interactions that Promote Anorexia-Like Behavior

*Ali Guler*, University of Virginia, USA

Short Talk: Dopamine Signaling in the SCN Regulates Circadian Consumption of High-Fat Diet

*Mathias Treier*, Max-Delbrueck-Center for Molecular Medicine, Germany

Short Talk: Identification of the Hypothalamic Circuit Maintaining Food Foraging

**Stem Cells, Gut–Pancreas Development I (Z6)**

*Praveen Sethupathy*, Cornell University, USA

**Microbiome as Therapy**

*Edna A. Trujillo*, University of Wisconsin-Madison, USA

Short Talk: Metabolite Profiling of Plasma and Cecum Elucidates the Impacts of Host Genetics and Environment on the Gut Microbiota

**Poster Session 2**

**FRIDAY, MAY 12**

**Hypothalamic Signals Modulating Hunger and Complex Behavior (Z5)**

*Clemence Blouet*, University of Cambridge, UK

*J. Nicholas Betley*, University of Pennsylvania, USA

Short Talk: Behavioral Ontogeny of Hypothalamic Neurons

*Matthew R. Hayes*, University of Pennsylvania, USA

Short Talk: Gamma Oscillations Organize Top-Down Signaling to the Hypothalamus and Enable Food-Seeking

*Roger D. Cone*, University of Michigan, USA

Melanocortins: From Pharmacology to Pharmacotherapy

*Tatiana Korotkova*, Max Planck Institute for Metabolism Research, Germany

Short Talk: How the Gut Regulates Metabolic Status


*Ruth E. Gimeno*, Eli Lilly and Company, USA

Jens Juul Holst, University of Copenhagen the Panum Institute, Denmark

The Role of the Gut in the Development of Type 2 Diabetes

*Tricia M. Tan*, Imperial College London, UK

Short Talk: The Sense of Smell Impacts Metabolic Health and Obesity

---

*Session Chair † Invited but not yet accepted  Program current as of October 2, 2019. Program subject to change. Meal formats are based on meeting venue. For the most up-to-date details, visit www.keystonesymposia.org/17Z5 and www.keystonesymposia.org/17Z6.
Cutting-Edge Approaches in Obesity Research (Z5)

Scientific Organizers: Lora K. Heisler and Scott M. Sternson
Lead Sponsor: Novo Nordisk A/S. Sponsored by Arena Pharmaceuticals, Inc.

Gastrointestinal Control of Metabolism (Z6)

Scientific Organizers: Randy J. Seeley, Matthias H. Tschöp and Fiona M. Gribble
May 9-13, 2017 • Tivoli Hotel and Congress Center • Copenhagen, Denmark
Lead Sponsor: Novo Nordisk A/S. Sponsored by MedImmune


Niels Vrang, Gubra, Denmark
Short Talk: The Effect of FXR, PPAR-α/δ and GLP-1 Agonism on Liver Disease in Diet-Induced Obese and Biopsy-Confirmed Mouse Models of NASH

Wendy M. McKimpson, Columbia University, USA
Short Talk: Foxo1-Expressing Cells in the Gut as a Source of Insulin for Diabetes Treatment

Makoto Fukuda, Baylor College of Medicine, USA
Short Talk: Gut Hormone GIP Drives Hypothalamic Pathogenesis of Obesity

Workshop 2 (Z6)

*Lene Jessen, Zealand Pharma, Denmark
Maria H. Hauge, Copenhagen University, Denmark
Gq and Gs Signaling Acting in Synergy to Control GLP-1 Secretion

Youngjun R. Kim, Columbia University, USA
Pyruvate Kinase as a Novel Metabolic Regulator of Beta Cell Loss in Diabetes

Alyce M. Martin, Flinders University, Australia
Gut Serotonin Is a Signaling Nexus between the Gut Microbiome and Host Metabolism

Louise Olofsson, University of Gothenburg, Sweden
Role of the Gut Microbiota in Diet-Induced Hypothalamic Inflammation

Anette Christ, University of Massachusetts Medical School, USA
Long-Term Epigenetic Re-Programming of Myeloid Precursor Cells in a Hyperlipidemic Environment

Nadja Gebert, Leibniz Institute on Aging, Germany
Age and Diet Affect the Intestinal Crypt Proteome

Jonathan D. Douros, Duke University, USA
Increased Glucose-Dependent Insulinotropic Polypeptide (GIP) Secretion and Signaling Improves Beta-Cell Function following Vertical Sleeve Gastrectomy (VSG)

Cutting-Edge Approaches in Obesity Research (Z5)

*Jeffrey M. Zigman, University of Texas Southwestern Medical Center, USA
*Daniela Cota, Neurocentre Magendie, France
Stephen Liberles, Harvard Medical School, USA
Molecular and Genetic Analysis of the Vagus Nerve

Andres Lozano, University of Toronto, Toronto Western Hospital, Canada
Deep Brain Stimulation to Treat Obesity or Anorexia

Kevin L. Grove, Novo Nordisk, USA
Obesity-Related Genes in the Rhesus Macaque

John N. Campbell, University of Virginia, USA
Short Talk: A Molecular Census of Arcuate Hypothalamus and Median Eminence Cell Types

Stem Cells, Gut-Pancreas Development II (Z6)

*Lori Susse, University of Colorado Anschutz Medical Campus, USA
Andrew B. Leiter, University of Massachusetts Medical School, USA
Differeintiation of Enterocendocrine Cells

Praveen Sethuapathy, Cornell University, USA
Microbiota, MicroRNAs, and Intestinal Stem Cell Function

Susumu Seino, Kobe University Graduate School of Medicine, Japan
Beta-Cell Glutamate Signaling Is Critical for Incretin-Induced Insulin Secretion

William L. Holland, University of Texas Southwestern Medical Center, USA
Short Talk: Glucagon Receptor Inhibition Restores Functional Beta Cell Mass and Reverses Hyperglycemia in Type-1 Diabetic Mice

Poster Session 3

SATURDAY, MAY 13

Pharmacotherapies for Obesity and Type 2 Diabetes (Joint)

*Malcolm J. Low, University of Michigan, USA
*Roger A. Adan, Brain Center Rudolf Magnus, Netherlands

Daniel J. Drucker, Lunenfeld-Tanenbaum Research Institute, Canada
The Control of Gut Hormone Activity: Role of Dipeptidyl Peptidase-4

Matthias H. Tschöp, Helmholtz Zentrum München and Technische Universität München, Germany
Gut Peptide Combination Therapy to Treat Obesity

Lora K. Heisler, Rowett Institute, University of Aberdeen, UK
Modifying CNS 5-HT Circuits to Reverse Obesity and Type 2 Diabetes

Ruth E. Gimeno, Eli Lilly and Company, USA
Current and Emerging Targets for Obesity Treatment

Tamer Coskun, Eli Lilly & Company, USA
Short Talk: Confirming Efficacy of Celaslort and Wfthaferin A in a Diet-Induced Obese (DIO) Mouse Model

Shamina M. Rangwala, Janssen, Johnson & Johnson, USA
Short Talk: Gdf15-Mediated Mechanisms of Food Intake Reduction and Weight Loss

Poster Session 4

Workshop 2: CNS Regulation of Adipose Tissue (Z5)

*Kate Ellacott, University of Exeter Medical School, UK
*Mads Tang-Christensen, Novo Nordisk A/S, Denmark

Justin J. Rochford, University of Aberdeen, UK
Inhibition of Gamma Synuclein Directly Alters Adipocyte Mitochondrial Function and Lipid Metabolism
Peripheral and Central Regulation of UCP1-Dependent Thermogenesis

Barbara Cannon, Stockholm University, Sweden

Miguel López, Universidad de Santiago de Compostela, Spain

Sangho Yu, Pennington Biomedical Research Center, USA

Claire H. Feetham, University of Manchester, UK

Pablo B. Martínez de Morentin, Rowett Institute of Nutrition and Health, UK

Raphe Pallidus Serotonin Cells Modulate Brown Adipose Tissue Thermogenesis

Programming Obesity: Early Environmental Influences (Z5)

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

*Alicja A. Skowronski, Columbia University, USA

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

Maternal Metabolic and Dietary Environmental Influences on Offspring Metabolic Health and Behavior

John Speakman, Institute of Genetics and Developmental Biology, CAS, China

The Impact of Maternal Diet on Hypothalamic Remodeling during Development and Subsequent Susceptibility to High Fat Diets in the Mouse

Jens C. Brüning, Max Planck Institute for Metabolism Research, Germany

Effect of Insulin on Brain Development and Metabolic Programming

Novel Aspects of Gut Function (Z6)

*John Furness, University of Melbourne, Australia

Thue W. Schwartz, University of Copenhagen, Denmark

Nutrient and Gut Microbiota Metabolite Sensing through GPCRs in the GI Tract

Gilles Mithieux, INSERM, France

Central Regulation of Metabolism Initiated by Intestinal Gluconeogenesis

Tony K.T. Lam, Toronto General Research Institute, Canada

Gut Nutrient Sensing

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

SUNDAY, MAY 14