Scientific Organizers:
Randy J. Seeley, University of Michigan, USA
Matthias H. Tschöp, Helmholtz Zentrum München and Technische Universität München, Germany
Fiona M. Gribble, Cambridge Institute for Medical Research, University of Cambridge, UK

Joint with the meeting on Neuronal Control of Appetite, Metabolism and Weight

The twin epidemics of obesity and diabetes pose difficult challenges to the health of growing populations around the globe. A wide array of recent data link the gastrointestinal tract to the etiology of these diseases. Moreover, some of the most innovative approaches to treat obesity, diabetes and related metabolic disorders involve direct manipulation of the GI tract or manipulation of the signals that come from the GI tract. To this end, an important goal of this meeting will be to highlight a wide range of methodologies that can be brought to understand GI function as it relates to obesity and diabetes. One of the primary factors slowing research on this topic is that investigators with interest in GI function and metabolic disease come from a wide range of disciplines that are not generally represented at scientific meetings. A key goal of this meeting is to bring together leading investigators from around the globe. Gathering investigators who have been revealing function of the GI tract together with those sophisticated in metabolism – as well as encouraging early-career investigators to delve into this field – will be crucial to accelerate current work looking for novel therapeutic strategies. An important advance in our understanding of the GI tract is the appreciation of it as a major endocrine organ. A key component of the action of those GI hormones is their interaction with both the peripheral and central nervous system. Consequently, this meeting will be held jointly with a meeting that focuses on the “Neuronal Control of Appetite, Metabolism and Weight.” This is an ideal opportunity to bring together those who study how the GI tract generates these signals with those who study the neural systems that are targets for these signals.

Session Topics:
• Nutrient Sensing and Gut Signaling (Joint)
• Gut Bacteria as Cause and Treatment of Metabolic Diseases
• Stem Cells, Gut–Pancreas Development I
• Signaling from Periphery to Brain to Modulate Energy Balance (Joint)
• Controversies in Obesity/Diabetes Treatment. Surgery vs. Devices vs. Medicines. What Does the Future Hold?
• Stem Cells, Gut–Pancreas Development II
• Pharmacotherapies for Obesity and Type 2 Diabetes (Joint)
• Novel Aspects of Gut Function
plus two workshops

Scholarship Application & Discounted Abstract Deadline: January 12, 2017
Abstract Deadline: February 9, 2017
Discounted Registration Deadline: March 9, 2017
Gastrointestinal Control of Metabolism (Z6)
Scientific Organizers: Randy J. Seeley, Matthias H. Tschöp and Fiona M. Gribble
Lead Sponsor: Novo Nordisk A/S. Sponsored by MedImmune

Neuronal Control of Appetite, Metabolism and Weight (Z5)
Scientific Organizers: Lora K. Heisler and Scott M. Sternson

May 9-13, 2017 • Tivoli Hotel and Congress Center • Copenhagen, Denmark
Lead Sponsor: Novo Nordisk A/S. Sponsored by Arena Pharmaceuticals, Inc.

TUESDAY, MAY 9
Arrival and Registration

WEDNESDAY, MAY 10
Welcome and Keynote Session (Joint)
*Lora K. Heisler, 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, Howard Hughes Medical Institute, 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 (Z6)
*Timo D. Müller, Institute for Diabetes and Obesity, Germany
Anne-Charlotte Jarry, Paris Diderot University, France
Neuropeptide Y 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 Enteroeendocrine Cell Development and Function
Sara Lind Jepsen, University of Copenhagen, Denmark
Somatostatin Regulates GLP-1 Secretion through the Somatostatin Receptor Subtype 2

Workshop 1: Disorders and Diseases Associated with Weight Loss (Z5)
*Thomas Alexander Lutz, University of Zürich, Switzerland
*Petr Kotzbeck, Medical University of Graz, Austria
Yong Xu, Baylor College of Medicine, USA
5-HT Neurons and Eating Disorders
Manon Duquenne, Université Lille 2 - INSERM, France
A Role for Tanyocyte Exocytosis in the Central Control of Energy Homeostasis?
Christian Stockmann, PARCC – Paris Cardiovascular Research Center, France
The Role of Vascular Endothelial Growth Factor-A in the Context of Cancer Cachexia and Chemotherapy
Kevin G. Murphy, Imperial College London, UK
Investigating Disorders Associated with Weight Loss
Serge Luquet, Université Paris Diderot, France
Palatability Can Drive Feeding Independent of AgRP Neurons
Christin Kosse, Francis Crick Institute, UK
Functional Properties of GAD65 Neurons in the Lateral Hypothalamus
Yunlei Yang, SUNY Upstate Medical University, USA
Deciphering Anorexigenic Septohypothalamic Feeding Circuits

Gut Bacteria as Cause and Treatment of Metabolic Diseases (Z6)
*Gilles Mitieux, 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
Karine Clément, ICAN, France
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

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

* Session Chair † Invited but not yet accepted
**Emerging Energy Homeostasis Neurocircuitry (Z5)**

**Scientific Organizers:** Lora K. Heisler and Scott M. Sternson  
**May 9-13, 2017 • Tivoli Hotel and Congress Center • Copenhagen, Denmark**

**Neuronal Control of Appetite, Metabolism and Weight (Z5)**

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**Gastrointestinal Control of Metabolism (Z6)**

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**Poster Session 1**

**THURSDAY, MAY 11**

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

*Praveen Sethupathy,* Cornell University, USA  
**Fiona M. Gribble,** University of Cambridge, UK  
The Biology of Enteroendocrine Cells  
**Heiko Lickert,** Institute of Diabetes and Regeneration, Germany  
Dissecting Intestinal Stem Cell Lineage Decisions  
**James M. Wells,** Cincinnati Children’s Hospital Research Foundation, USA  
Human Pluripotent Stem Cell-Derived Gastrointestinal Organoids as New Models to Study Metabolic and Digestive Diseases  
**Lori Sussel,** University of Colorado, USA  
Loss of Beta Cell Identity Related to Diabetes  
**John Furness,** University of Melbourne, Australia  
Short Talk: Diversity of Enteroendocrine Cells between Species and Regions Studied at a Cellular and Subcellular Level  
**Sandra Guilmot,** Institut Cochin, France  
Short Talk: Contribution of ChREBP in Intestinal GLP-1 Production  
**Emerging Energy Homeostasis Neurocircuitry (Z5)**

*Qingchun Tong,* University of Texas Medical School at Houston, USA  
*Matthew R. Hayes,* University of Pennsylvania, USA  
**Sabrina Diano,** Yale University School of Medicine, USA  
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  
**Claire J. Foldi,** Monash University, Australia  
Short Talk: CNS Reward Pathways in Anorexia Nervosa: Insights from a Rat Model  

**Signaling from Periphery to Brain to Modulate Energy Balance (Joint)**

*Suzanne Lee Dickson,* Sahlgrenska Academy, Gothenburg University, Sweden  
Brain Ghrelin Signaling and Food Reward Behavior  
**Christian Lüscher,** University of Geneva, Switzerland  
Feeding Circuits that Can Override Metabolic Needs  
**J. Nicholas Betley,** University of Pennsylvania, USA  
How the Gut Regulates Metabolic Status  
**Ivan E. de Araujo,** Yale University School of Medicine, USA  
What Does Sugar Do to the Brain? Circuit Logic for Sugar Sensing  
**Céline E. Riera,** Cedars-Sinai Medical Center, USA  
Short Talk: The Sense of Smell Impacts Metabolic Health and Obesity  

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**Poster Session 2**

**FRIDAY, MAY 12**


*Ruth E. Gimeno,* Eli Lilly & 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  
Triple Gut Hormones as Therapy  
**David E. Cummings,** University of Washington, USA  
Metabolic Surgery: Mechanisms and Use of “Bariatric” Operations to Treat Type 2 Diabetes  
**Niels Vrang,** Glostrup, 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  

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

*Clemence Blouet,* University of Cambridge, UK  
**J. Nicholas Betley,** University of Pennsylvania, USA  
**Scott M. Sternson,** HHMI/Janelia Research Campus, USA  
Motivational Mechanisms Controlling Hunger  

*Session Chair† Invited but not yet accepted  
Program current as of October 17, 2017. Program subject to change. Meal formats are based on meeting venue. For the most up-to-date details, visit www.keystonesymposia.org/17Z6 and www.keystonesymposia.org/17Z5.
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Garret D. Stuber, University of North Carolina at Chapel Hill School of Medicine, USA
Lateral Hypothalamic Circuits for Feeding and Reward

Tamas L. Horvath, Yale School of Medicine, USA
Appetite Circuits in the Regulation of Complex Behavior

Roger D. Cone, University of Michigan, USA
Melanocortins: From Pharmacology to Pharmacotherapy

Tatiana Korotkova, Max Planck Institute for Metabolism Research, Germany
Short Talk: Gamma Oscillations Organize Top-Down Signaling to Hypothalamus and Enable Food-Seeking

Marcelo O. Dietrich, Yale University, USA
Short Talk: Behavioral Ontogeny of Hypothalamic Neurons

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
Youngjung 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 Crypto 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)

Stem Cells, Gut-Pancreas Development II (Z6)
*Lori Sussel, University of Colorado, USA
Andrew B. Leiter, University of Massachusetts Medical School, USA
Differentiation of Enteroendocrine Cells
Praveen Sethupathy, 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

Cutting-Edge Approaches in Obesity Research (Z5)
*Jeffrey M. Zigman, University of Texas Southwestern Medical Center, USA
*Daniela Kota, 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 and Oregon National Primate Research Center, USA
Obesity-Related Genes in the Rhesus Macaque
John N. Campbell, Beth Israel Deaconess Medical Center, USA
Short Talk: A Molecular Census of Arcuate Hypothalamus and Median Eminence Cell Types

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, University of Aberdeen, UK
Modifying CNS 5-HT Circuits to Reverse Obesity and Type 2 Diabetes
Ruth E. Gimeno, Eli Lilly & Company, USA
Current and Emerging Targets for Obesity Treatment
Tamer Coskun, Eli Lilly & Company, USA
Short Talk: Confirming Efficacy of Celastrol and Withaferin 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 North Carolina at Chapel Hill School of Medicine, USA
Lateral Hypothalamic Circuits for Feeding and Reward

Tamas L. Horvath, Yale School of Medicine, USA
Appetite Circuits in the Regulation of Complex Behavior

Roger D. Cone, University of Michigan, USA
Melanocortins: From Pharmacology to Pharmacotherapy

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**Barbara Cannon**, Stockholm University, Sweden
*Peripheral and Central Regulation of UCP1-Dependent Thermogenesis*

**Miguel López**, Universidad de Santiago de Compostela, Spain
*Hypothalamic AMPK: A Canonical Regulator of Energy Balance*

**Sangho Yu**, Pennington Biomedical Research Center, USA
*Preoptic Leptin Function Modulates Diet-Induced Weight Gain*

**Claire H. Feetham**, University of Manchester, UK
*Prolactin-Releasing Peptide Neurones Project from Dorsomedial to Paraventricular Hypothalamic Nucleus to Affect Energy Expenditure*

**Pablo B. Martínez de Morentin**, Rowett Institute of Nutrition and Health, UK
*Raphe Pallidus Serotonin Cells Modulate Brown Adipose Tissue Thermogenesis*

**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*

**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*

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

(Z6)

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

(Z5)

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**SUNDAY, MAY 14**