Obesity and Adipose Tissue Biology

Scientific Organizers:
Marc L. Reitman, NIDDK, National Institutes of Health, USA
Ruth E. Gimeno, Eli Lilly & Company, USA
Jan Nedergaard, Stockholm University, Stockholm, Sweden

Part of the Keystone Symposia Global Health Series, supported by the Bill & Melinda Gates Foundation

Joint with the conference on Diabetes

Obesity is a growing worldwide epidemic, increasing co-morbid conditions, such as diabetes. Adipose tissue is an endocrine organ that is both controlled by and sends signals to the brain and other organs. In addition, obesity causes an inflammatory state in the adipose tissue. The recognition that brown/beige adipose tissue is active in adult humans has triggered interest in understanding the physiology and relative importance of these tissues. This conference will bring together cell biologists, biochemists, geneticists, physiologists, drug developers and clinical researchers to spark interactions and collaborations that might lead to better treatments for obesity and diabetes. Specifically, it will examine recent advances in understanding of brown/beige adipose tissue function; obesity-induced adipose inflammation; control of adipose tissue, appetite, and energy metabolism; endocrine and paracrine signaling via secreted factors; emerging topics, including influence of the gut microbiome and bariatric surgery; genetic predisposition; and novel approaches to drug development and the treatment of obesity and diabetes.

Session Topics:
• Brown/Beige Fat Activation and Function (Joint)
• Adipose Tissue Development
• Interorgan Metabolic Cross-Talk via Secreted Factors (Joint)
• Adipose Inflammation; Adipokines
• Gut Microbiome and Bariatric Surgery (Joint)
• Neural Control of Adipose/Adipose Function
• Genetics and Systems Biology
• Treatment of Obesity
plus two workshops

Global Health Travel Award Application Deadline: August 23, 2016
Scholarship Application & Discounted Abstract Deadline: September 22, 2016
Abstract Deadline: October 25, 2016
Discounted Registration Deadline: November 22, 2016

Note: Scholarships are available for graduate students and postdoctoral fellows and are awarded based on the abstract submitted. Global Health Travel Awards are for investigators from low and middle income countries.

Meeting Hashtag: #KSobesity
www.keystonesymposia.org/17J4
**Obesity and Adipose Tissue Biology (J4)**

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**Diabetes (J3)**

**Scientific Organizers:** Jiandie Lin, Clay F. Semenkovich and Rohit N. Kulkarni

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**MONDAY, JANUARY 23**

**Welcome and Keynote Session (Joint)**

* Jiandie Lin, University of Michigan Medical School, USA
  * Marc L. Reitman, NIDDK, National Institutes of Health, USA
  * Philipp E. Scherer, University of Texas Southwestern Medical Center, USA
  * Richard D. DiMarchi, Indiana University, USA

**Workshop 1: Drug Discovery/Development in Obesity (Joint)**

* Antonio J. Vidal-Puig, University of Cambridge, UK
  * Jan Nedergaard, Stockholm University, Sweden
  * Aaron M. Cypess, NIDDK, National Institutes of Health, USA
  * Aysha Chawla, University of California, San Francisco, USA
  * Patrick Seale, University of Pennsylvania, USA

**Brown/Beige Fat Activation and Function (Joint)**

* Bei Shan, Lilly China Research and Development Center, China
  * Michelle L. Boland, Medimmune, USA
  * Andrea Galmozzi, Scripps Research Institute, USA
  * Christian Wolfrum, University of Pennsylvania, USA

**Adipose Tissue Development (J4)**

* Mitchell A. Lazar, Perelman School of Medicine, University of Pennsylvania, USA
  * Evan D. Rosen, Harvard University, USA
  * Zachary Sebo, Yale University, USA

**Exercise and Type 2 Diabetes (J3)**

* Clay F. Semenkovich, Washington University School of Medicine, USA
  * Laurie J. Goodyear, Joslin Diabetes Center, Harvard Medical School, USA
  * Juleen R. Zierath, Karolinska Institutet, Sweden

**Poster Session 1**

* Jonathan Z. Long, Dana-Farber Cancer Institute, USA
  * Nicolai Jacob Wewer Albrechtsen, University of Copenhagen, Denmark
  * Christian Wolfrum, ETH Zürich, Switzerland
  * Rana K. Gupta, University of Texas Southwestern Medical Center, USA

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**SUNDAY, JANUARY 22**

Arrival and Registration

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**MONDAY, JANUARY 23**

**Welcome and Keynote Session (Joint)**

* Jiandie Lin, University of Michigan Medical School, USA
  * Marc L. Reitman, NIDDK, National Institutes of Health, USA

**Workshop 1: Drug Discovery/Development in Obesity (Joint)**

* Bei Shan, Lilly China Research and Development Center, China
  * Michelle L. Boland, Medimmune, USA
  * Andrea Galmozzi, Scripps Research Institute, USA

**Brown/Beige Fat Activation and Function (Joint)**

* Antonio J. Vidal-Puig, University of Cambridge, UK
  * Jan Nedergaard, Stockholm University, Sweden

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**TUESDAY, JANUARY 24**

**Interorgan Metabolic Crosstalk via Secreted Factors (Joint)**

* Christoph Handschin, University of Basel, Switzerland

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* Session Chair † Invited but not yet accepted  Program current as of May 29, 2019. Program subject to change. Meal formats are based on meeting venue. For the most up-to-date details, visit www.keystonesymposia.org/17J4 and www.keystonesymposia.org/17J3.
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**Takashi Kadowaki**, University of Tokyo, Japan  
*Adiponectin Receptors: A Major Treatment Target in Type 2 Diabetes and Obesity-Linked Diseases*

**Jiandie Lin**, University of Michigan Medical School, USA  
*The Brown Fat Secretome: Metabolic Functions Beyond Thermogenesis*

**David J. Mangelsdorf**, University of Texas Southwestern Medical Center, USA  
*The Diverse Metabolic Actions of FGF21*

**Yonghao Yu**, University of Texas Southwestern Medical Center, USA  
*Large Scale Proteomic Analysis Identifies IGFBP5 as a Secreter mTORC1 Target that Mediates mTORC1-Dependent Feedback Inhibition of IGF-1 Signaling*

**Russell A. Miller**, Pfizer Inc., USA  
*Short Talk: Glucagon Stimulates Hepatic Glutamine Utilization by Increasing Metabolic Flux through GLS2*

**Lucas BonDurant**, Aulylam Pharmaceuticals, USA  
*Short Talk: FGF21 Signals Directly to Adipose Tissues to Acutely Enhance Insulin Sensitivity*

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**Adipose Inflammation; Adipokines (J4)**

* **Ajay Chawla**, University of California, San Francisco, USA  
  *Pharmacological Approaches to Adipose Tissue Function*

**Ruth E. Gimeno**, Eli Lilly and Company, USA  
*Induction of Adipose Tissue Inflammation*

**Anthony W. Ferrante**, Columbia University, USA  
*Macrophages as Adipose Tissue “Ferrostats”*

**Prashant Rajbandari**, University of California, Los Angeles, USA  
*Short Talk: Interleukin-10 Signaling Alters Chromatin Architecture in Adipose to Regulate Thermogenesis and Energy Expenditure*

**Min Jeong Choi**, Chungnam National University, South Korea  
*Short Talk: Secretory Factors Induced by Adipocyte Mitochondrial OxPhos Dysfunction Modulate Systemic Metabolism by Influencing the Adipose Immune Environment*

**Long Noncoding and MicroRNAs and Metabolism (J3)**

* **Jiandie Lin**, University of Michigan Medical School, USA  
  *Non-Coding Gene Regulation of the Pancreatic Islet*

**Lori Sussel**, University of Colorado Anschutz Medical Campus, USA  
*Non-Coding Gene Regulation of the Pancreatic Islet*

**Lei Sun**, Duke-NUS Graduate Medical School, Singapore  
*Singapore Regulatory Role of Long Noncoding RNAs in Adipose*

**Rohit N. Kulkarni**, Joslin Diabetes Center, Harvard Medical School, USA  
*A Role for MicroRNAs in Diabetes and Its Complications*

**Côngcong He**, Northwestern University, USA  
*Short Talk: Differential Roles of Autophagy in Insulin Production and Sensitivity*

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**Poster Session 2**

**WEDNESDAY, JANUARY 25**

**Gut Microbiome and Bariatric Surgery (Joint)**

**Patrice D. Cani**, ULouvain, Belgium  
*Specific Gut Microbiota and Intestinal Sensors: Focus on Novel Mechanisms Affecting Glucose and Energy Metabolism*

**Randy J. Seeley**, University of Michigan, USA  
*Gut Endocrine Signaling in Bariatric Surgery*

**Helen Raybould**, University of California, Davis, USA  
*The Microbiota-Gut-Brain Axis in the Control of Food Intake and Body Weight*

**Fredrik Bäckhed**, University of Gothenburg, Sweden  
*Does Altered Gut Microbiome after Bariatric Surgery Contribute to Improved Metabolism?*

**Janjte M. Gerdes**, Helmholtz Zentrum München, Germany  
*Short Talk: EphA/ephrin Signaling in Pancreatic Islets is Regulated by Primary Cilia*

**Chieh Jason Chou**, Nestlé Institute of Health Sciences SA, Switzerland  
*Short Talk: The Effect of Diets on the Metabolic Benefits Associated with Post Bariatric Surgery Microbiota*

**Neural Control of Adipose/Adipose Function (J4)**

* **Jan Nedergaard**, Stockholm University, Sweden  
  *Central Circuits of Thermoregulatory Leptin Action*

**Heike Münzberg**, Pennington Biomedical Research Center, USA  
*Adipose Triglyceride Lipase*

**Rudolf Zechner**, University of Graz, Austria  
*Adipose Triglyceride Lipase*

**Joerg Heeren**, University Medical Center Hamburg-Eppendorf, Germany  
**Brown Fat and Lipid Metabolism**

**Peter K. Jackson**, Stanford University, USA  
*Short Talk: Linking Monogenic and Complex Obesity to Primary Cilia: The Cep19 Obesity Protein Regulates a Conserved GTPase Cycle Coupling Cargo to the IFT-B Complex for Ciliary Transport of the BBSome and GPCRs*

**Qi Wu**, University of Gothenburg, Sweden  
*The Effect of Diets on the Metabolic Benefits Associated with Post Bariatric Surgery Microbiota*

**Substrate Flux and Metabolic Signaling (J3)**

* **Philipp E. Scherer**, University of Texas Southwestern Medical Center, USA  
  *Lipid-Mediated Metabolic Signaling*
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Gerald I. Shulman, Yale University School of Medicine, USA
Role of Hepatic Acetyl-CoA in the Regulation of Hepatic Gluconeogenesis in Normal and Diabetic States

Christopher B. Newgard, Duke University Medical Center, USA
Metabolic Flux and Homeostasis

Hongyuan Yang, University of New South Wales, Australia
Short Talk: Understanding Congenital Generalized Lipodystrophy

Poster Session 3

THURSDAY, JANUARY 26

Genetics and Systems Biology (J4)

*Evan D. Rosen, Harvard University, USA
Role of Endoplasmic Reticulum Stress in Development of Obesity and Type 2 Diabetes

Ruth J.F. Loos, Mount Sinai School of Medicine, USA
The Genetics of Obesity - Going Beyond Common Variation and Common Phenotypes

Jose C. Fiorez, Massachusetts General Hospital, USA
Pharmacogenetics of Type 2 Diabetes

Mitchell A. Lazar, Perelman School of Medicine, University of Pennsylvania, USA
Transcriptional Regulation of Metabolism

Yi Chen, Dana-Farber Cancer Institute, USA
Short Talk: Potassium Current Through KCNK3 Regulates Brown Adipose Thermogenesis and Obesity

Mechanisms of Nutrient Signaling (J3)

*Laurie J. Goodyear, Joslin Diabetes Center, Harvard Medical School, USA
SWELL1 is a Regulator of Adipocyte Size, Insulin Signaling and Differentiation

Antonio J. Vidal-Puig, University of Cambridge, UK
Adipose Tissue Expandability, Lipotoxicity and the Metabolic Syndrome

C. Ronald Kahn, Joslin Diabetes Center and Harvard Medical School, USA
Metabolic Signaling in Physiology and Disease

Hei Sook Sul, University of California, Berkeley, USA
Regulation of Fat Metabolism

Jun Wu, University of Michigan, USA
Beige-Fat-Specific Regulation in Mouse and Human

Fajun Yang, University of Texas Southwestern Medical Center, USA
5-HT2C Receptors in Brainstem Neurons Regulate Glucose Homeostasis

Adilson L. Guilherme, University of Massachusetts Medical School, USA
Short Talk: Suppression of Adipocyte Fatty Acid Synthase in Adult Mice Enhances Adipose Sympathetic Activity and Browning to Improve Glucose Homeostasis in Obese Mice

Workshop 2: Adipose Thermogenesis and a Little Bit More (J4)

*Barbara Cannon, Stockholm University, Sweden

*Matthias Blüher, University of Leipzig, Germany

Erin L. Brown, Johns Hopkins Medical Institute, USA
Regulation of Adipose Tissue Thermogenic Capacity by Estrogen-Related Receptors

Shunbun Kita, Graduate School of Medicine, Osaka University, Japan
Adiponectin/T-Cadherin System Regulates Exosome Biogenesis and Systemic Plasma Exosome Level

Pegah Poursharifi, University of Montreal-CRCHUM, Canada
ABHD6 Negatively Regulates Thermogenic Adaptive Responses under Cold Stress

Pingwen Xu, Baylor College of Medicine, USA
Carbohydrate Response Element Binding Protein Regulates de novo Lipogenesis in Brown Adipose Tissue and Adaptive thermogenesis

Roland H. Stimson, University of Edinburgh, Scotland
Direct Measurement of in vivo Substrate Utilisation by Human Brown Adipose Tissue

Claudio Villanueva, University of Utah School of Medicine, USA
Global Analysis of Plasma Lipids Identifies Liver-Derived Acyl-Carnitines as a Fuel Source for Brown Fat Thermogenesis

Mary N. Teruel, Stanford University, USA
Transcription Factor Dynamics Define a Circadian Code for Fat Cell Differentiation

Workshop 2: Metabolic Regulation in Physiology and Disease (J3)

*Dave Bridges, University of Michigan, USA

Constanza J. Cortes, Duke University, USA
Skeletal Muscle Control of Systemic Metabolism: A Role for Transcription Factor E-B (TFEB) Signaling

Zhuoxian Meng, University of Michigan, USA
Glucose Sensing by Skeletal Myocytes Couples Nutrient Signaling to Systemic Homeostasis

Tiemin Liu, University of Texas Southwestern Medical Center, USA
5-HT2C Receptors in Brainstem Neurons Regulate Glucose Homeostasis

Fajun Yang, Albert Einstein College of Medicine, USA
Cyclin C Regulates Brown Fat Development and Function

Yanhu Zhang, University of Iowa, USA
SWELL1 is a Regulator of Adipocyte Size, Insulin Signaling and Glucose Homeostasis

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Andrew C. Shin, Texas Tech University, USA

Insulin Receptor Signaling in POMC, but not AgRP, Neurons
Controls Adipose Tissue Insulin Action

Jakob G. Knudsen, University of Oxford, UK

Glucagon Secretion is Dependent on Alpha-Cell Fatty Acid Oxidation

Meilian Liu, University of New Mexico Health Sciences Center, USA

Adipose mTORC1 Suppresses Beige Fat Development via Autophagy-Dependent Mechanisms

Treatment of Obesity (J4)

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

Clinical Obesity Treatment - Quantitative Bioenergetics

Matthias Blüher, University of Leipzig, Germany

New Developments in Treatment of Obesity

Marc L. Reitman, NIDDK, National Institutes of Health, USA

Role of Body and Environmental Temperature in Energy Homeostasis and Drug Development

Denis P. Blondin, University of Sherbrooke, Canada

Short Talk: The Use of a Beta3-Adrenergic Receptor Agonist in Humans Stimulates BAT Glucose Disposal, but not Thermogenesis

Minna Lahesmaa, Turku PET Centre, Finland

Short Talk: Cannabinoid CB1 Receptors in Human Brown Adipose Tissue during Cold Exposure

Emerging Topics in Diabetes (J3)

*Rohit N. Kulkarni, Joslin Diabetes Center, Harvard Medical School, USA

Stephan Kissler, Joslin Diabetes Center, USA

Immune Dysregulation Underlying Type 1 Diabetes

Ralph A. DeFronzo, University of Texas Health Sciences Center at San Antonio, USA

The Kidney and Glucose Homeostasis: Implications for Therapy

Jayne S. Danska, Hospital for Sick Children Research Institute, Canada

Diabetes Trialog: Genes, Sex and the Microbiome

Meeting Wrap-Up: Outcomes and Future Directions (Organizers) (J4)

Meeting Wrap-Up: Outcomes and Future Directions (J3)

*Clay F. Semenkovich, Washington University School of Medicine, USA

FRIDAY, JANUARY 27