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
KEYSTONE SYMPOSIA on Molecular and Cellular Biology

**Obesity and Adipose Tissue Biology (J4)**

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**Diabetes (J3)**

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

January 22-26, 2017 • Keystone Resort • Keystone, Colorado, USA

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**SUNDAY, JANUARY 22**

Arrival and Registration

**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

*Journal of Lipid Research Lectureship: Adipose Origin and Expansion*

Richard D. DiMarchi, Indiana University, USA

*Chemical Biotechnology Applied to Metabolic Diseases*

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

* Antonio J. Vidal-Puig, University of Cambridge, UK
* Jan Nedergaard, Stockholm University, Sweden
* Aaron M. Cypess, NIDDK, National Institutes of Health, USA
* Ajay Chawla, University of California, San Francisco, USA
* Patrick Seale, University of Pennsylvania, USA
* Andrea Galmozzi, The Scripps Research Institute, USA

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

*Bei Shan, Lili China Research and Development Center, China
*Michele L. Boland, MedImmune, USA
*MED10382, a Dual GLP-1/Glucagon Receptor Agonist, is More Effective on Alleviating Non-Alcoholic Steatohepatitis (NASH) Compared to Liraglutide in a Mouse Model of NASH*

**Adipose Tissue Development (J4)**

* Mitchell A. Lazar, Perelman School of Medicine, University of Pennsylvania, USA
* Evan D. Rosen, Beth Israel Deaconess Medical Center, Harvard University, USA
* Christian Wolfrum, ETH Zürich, Switzerland
* Silvia Corvera, University of Massachusetts Medical School, USA
* Zachary Sebo, Yale University, USA
* Rana K. Gupta, University of Texas Southwestern Medical Center, USA
* Mitchell A. Lazar, Perelman School of Medicine, University of Pennsylvania, 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
* Christoph Handschin, University of Basel, Switzerland
* Xingxing Kong, University of Basel, Switzerland

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

* Christoph Handschin, University of Basel, Switzerland

* Session Chair † Invited but not yet accepted
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**Long Noncoding and MicroRNAs and Metabolism (J3)**

*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 Thrombogenesis

*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 Sequestered 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, University of Iowa, USA*
Short Talk: FGF21 Signals Directly to Adipose Tissues to Acutely Enhance Insulin Sensitivity

**Adipose Inflammation; Adipokines (J4)**

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

*Ruth E. Gimeno, Eli Lilly & 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

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

**Poster Session 2**

**WEDNESDAY, JANUARY 25**

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

*Patrice D. Cani, Université Catholique de Louvain, 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?

*Jantje 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*
Primary Cilia

*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*
Central Circuits of Thermoregulatory Leptin Action

*Philipp E. Scherer, University of Texas Southwestern Medical Center, USA*
Lipid-Mediated Metabolic Signaling

*Clay F. Semenkovich, Washington University School of Medicine, USA*
Lipid-Mediated Metabolic Signaling
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**Poster Session 3**

**THURSDAY, JANUARY 26**

**Genetics and Systems Biology (J4)**

*Evan D. Rosen*, Beth Israel Deaconess Medical Center, Harvard University, USA  
Role of Hepatic Acetyl CoA in the Regulation of Hepatic Gluconeogenesis in Normal and Diabetic States

*Umut Ozcan*, Boston Children’s Hospital, Harvard Medical School, 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. Florez*, Massachusetts General Hospital, USA  
Pharmacoepigenetics 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  
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

*Feng Liu*, University of Texas Health Science Center, USA  
Short Talk: Dsba-L Suppresses Inflammation and Promotes Beiging and Thermogenesis by Improving Mitochondrial Function

*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

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

*Barbara Cannon*, Stockholm University, Sweden  
Regulation of Adipose Tissue Thermogenic Capacity by Estrogen-Related Receptors

*Erin L. Brown*, Johns Hopkins Medical Institute, USA  
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  
Ventral Medial Hypothalamus eRNAcircuits in the Regulation of Thermogenesis and Physical Activity

*Ludger Scheja*, University Medical Center Hamburg-Eppendorf, Germany  
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

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

*Dave Bridges*, University of Michigan, USA  
Skeletal Muscle Control of Systemic Metabolism: A Role for Transcription Factor E-B (TFEB) Signaling

*Constanza J. Cortes*, Duke University, USA  
Glucose Sensing by Skeletal Myocytes Couples Nutrient Signaling to Systemic Homeostasis

*Zhuoxian Meng*, University of Michigan, USA  
5-HT2C Receptors in Brainstem Neurons Regulate Glucose Homeostasis

*Erin L. Brown*, University of Michigan, 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

*Matthias Blüher*, University of Leipzig, Germany  
Regulation of Adipose Tissue Thermogenic Capacity by Estrogen-Related Receptors

*Shunbun Kita*, Graduate School of Medicine, Osaka University, Japan  
Adiponecitin/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

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**Fajun Yang**, Albert Einstein College of Medicine, USA

*Cyclin C Regulates Brown Fat Development and Function*

**Yanhui Zhang**, University of Iowa, USA

*SWELL1 is a Regulator of Adipocyte Size, Insulin Signaling and Glucose Homeostasis*

**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*

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**Treatment of Obesity (J4)**

*Ruth E. Gimeno*, Eli Lilly & 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*

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**Emerging Topics in Diabetes (J3)**

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

*Immune Dysregulation Underlying Type 1 Diabetes*

**Stephan Kissler**, Joslin Diabetes Center, USA

*Diabetes Trialog: Genes, Sex and the Microbiome*

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

(J4)

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

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