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
**SUNDAY, JANUARY 22**
Arrival and Registration

**MONDAY, JANUARY 23**

**Welcome and Keynote Session (Joint)**
- Jiandie Lin, University of Michigan Medical School, USA
- Jan Nedergaard, Harvard University, USA

**Brown/Beige Fat Activation and Function (Joint)**
- Antonio J. Vidal-Puig, University of Cambridge, UK
- Jan Nedergaard, Stockholm University, Sweden

**Workshop 1: Drug Discovery/Development in Obesity (Joint)**
- Bei Shan, Lilly China Research and Development Center, China
- Michelle L. Boland, MedImmune, USA
- Kfir Sharabi, Dana-Farber Cancer Institute, USA
- ChoSoon Jang, Princeton University, USA
- Zheng Sun, Baylor College of Medicine, USA

**Workshop 2: Chemical Biotechnology Applied to Metabolic Diseases**
- Richard D. DiMarchi, Indiana University, USA

**Diabetes (J3)**

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

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

Sponsored by AstraZeneca, Journal of Molecular Cell Biology (JMCB) and Novo Nordisk A/S. Part of the Keystone Symposia Global Health Series, supported by the Bill & Melinda Gates Foundation.


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

**Scientific Organizers:** Marc L. Reitman, Ruth E. Gimeno and Jan Nedergaard

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**Diabetes (J4)**

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

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**TUESDAY, JANUARY 24**

**Poster Session 1**

**Interorgan Metabolic Crosstalk via Secreted Factors (Joint)**
- Christoph Handschin, University of Basel, Switzerland

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**KEYSTONE SYMPOSIA**

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

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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 Secreted 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

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

*Pharmacological Approaches to Adipose Tissue Function*

**Anthony W. Ferrante**, Columbia University, USA

*Induction of Adipose Tissue Inflammation*

**Alyssa H. Hasty**, Vanderbilt 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

**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

**Heike Münzberg**, Pennington Biomedical Research Center, USA

*Central Circuits of Thermoregulatory Leptin Action*

**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**, USA

*Short Talk: Deciphering an AgRP-Dorsal Raphe Neural Circuit in Exclusive Control of Energy Expenditure*

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

*Phillipp E. Scherer*, University of Texas Southwestern Medical Center, USA

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

*Lipid-Mediated Metabolic Signaling*

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on Molecular and Cellular Biology

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Gerald I. Shulman, HHMI/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, Beth Israel Deaconess Medical Center, Harvard University, USA  
Role of Endoplasmic Reticulum Stress in Development of Obesity and Type 2 Diabetes

Umut Ozcan, Boston Children's Hospital, Harvard Medical School, USA  
Regulation of Fat Metabolism

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  
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  
Adipose Tissue Expandability, Lipotoxicity and the Metabolic Syndrome

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

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

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  
Ventral Medial Hypothalamic ERα Neurocircuits 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

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

Zhuxian 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

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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

Treatment of Obesity (J4)

*Ruth E. Gimeno, Eli Lilly & Company, USA  
Clinical Obesity Treatment - Quantitative Bioenergetics

Steven R. Smith, Florida Hospital, USA  
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  
Immune Dysregulation Underlying Type 1 Diabetes

Stephan Kissler, Joslin Diabetes Center, USA  
The Kidney and Glucose Homeostasis: Implications for Therapy

Ralph A. DeFronzo, University of Texas Health Sciences Center at San Antonio, USA  
Diabetes Trialog: Genes, Sex and the Microbiome

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

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