Day 1: Tuesday, February 25, 2014

7:30 a.m. Registration (Lister Hill Auditorium, NIH Campus)
8:15 a.m. Opening Remarks
Griffin Rodgers, Director of NIDDK, NIH
Meeting Overview
Carol Haft and Maren Laughlin, NIDDK, NIH
Aaron Cypess, Joslin Diabetes Center, Harvard University
Houchun Harry Hu, Children’s Hospital, Los Angeles

Session I: Physiological Functions and Clinical Relevance of Human BAT: the 2013 Perspective
Kong Chen (Moderator)

8:30 a.m. Six Years with Adult Human Brown Adipose Tissue and Many More to Come
Jan Nedergaard, Stockholm University, Sweden

9:00 a.m. Treating Metabolic Disease through Pharmacological Activation of Human BAT
Aaron Cypess, Joslin Diabetes Center, Harvard University

9:30 a.m. Fat Depots and Bone: the Role of Human BAT
Miriam Bredella, Massachusetts General Hospital

10:00 a.m. Brown and Beige Fat: Basic Biology and Novel Therapeutic Opportunities
Bruce Spiegelman, Dana Farber Cancer Institute, Harvard Medical School

10:30–11 a.m. Break

Session II: Measuring Human BAT Activity: Pushing the Limits of PET/CT
Denis Richard (Moderator)

11:00 a.m. Does Cold-Activated Brown Fat Contribute Significantly to Daily Energy Expenditure?
Otto Muzik, Wayne State University School of Medicine

11:15 a.m. Novel Approaches to Investigating Fatty Acid Metabolism in Human BAT
Kirsi Virtanen, University of Turku and Turku University Hospital, Finland

11:30 a.m. The Norepinephrine Transporter: A Novel Target for Imaging Brown Adipose Tissue
Yu-Shin Ding, New York University School of Medicine

11:45 a.m. Insight into the Functional Organization of Human BAT
Igal Madar, Johns Hopkins University School of Medicine
12:00 p.m.  **Imaging of Brown Fat Metabolism using Hyperpolarized Carbon-13 MRI**  
Lanette Friesen-Waldner, University of Western Ontario, London

12:15–2:00 p.m.  **Poster Session and Lunch Buffet in Atrium**

2:00 p.m.  **Deciphering Brown Adipogenesis from a Progenitor and Inductive Signaling Perspective**  
Yu-Hua Tseng, Joslin Diabetes Center, Harvard Medical School

2:30 p.m.  **Pharmacological Approaches to Induce Brown and Beige Fat Cell Development**  
Shingo Kajimura, University of California, San Francisco

3:00 p.m.  **The Role of FGF21 in Brown Fat**  
Alexei Kharitonenkov, Lilly Research Laboratories, Indianapolis

3:20 p.m.  **Brown Fat Dynamics: Elucidation of Molecular Drivers Based on the Innate Expertise of a Hibernator**  
Sandra L. Martin, University of Colorado School of Medicine, Aurora

3:40–4:00 p.m.  **Break**

4:00 p.m.  **Brown Adipose Tissue Quantification Using Magnetic Resonance Imaging**  
E. Brian Welch, Vanderbilt University Medical Center

4:15 p.m.  **Brown Adipose Tissue Perfusion: From Mice to Men**  
Marielle Scherrer-Crosbie, Massachusetts General Hospital

4:30 p.m.  **Detecting BAT Mass and Thermogenic Activity by Using Nonlinear 1H MRI and Hyperpolarized 129Xe Gas MRI**  
Rosa Tamara Branca, University of North Carolina, Chapel Hill

4:45 p.m.  **Passive and Active Microwave Radiometry for Non-Invasive Detection of Human Brown Fat**  
Fred Sterzer, MMTC, Inc.

5:00 p.m.  **Peptide Probes for Targeted Brown Adipose Tissue Imaging**  
Mikhail G. Kolonin, University of Texas Health Science Center, Houston

5:20 p.m.  **Adjournment**
Day 2: Wednesday, February 26, 2014

7:30–8:00 a.m. **Registration (Lister Hill Auditorium, NIH Campus)**

8:00 a.m. **Effect of Ambient Temperature on Human Brown Fat Activity and Recruitment**  
Wouter van Marken Lichtenbelt, Maastricht University Medical Center, Netherlands

8:30 a.m. **Exploring the Roles of Brown Fat in Children**  
Vicente Gilsanz, Children’s Hospital Los Angeles

9:00 a.m. **Signal Transduction Pathways Converging to Promote “Brown(ing)” Adipocytes**  
Sheila Collins, Sanford-Burnham Medical Research Institute

9:30 a.m. **Brown Adipose Tissue Improves Glucose Metabolism and Whole Body Insulin Sensitivity in Humans**  
Maria Chondronikola, University of Texas Medical Branch, Galveston

9:50–10:15 a.m. **Break**

10:15 a.m. **Acute Cold Exposure Elicits Increases in BAT Oxidative Metabolism in Individuals with Type 2 Diabetes**  
Denis Blondin, Université de Sherbrooke

10:35 a.m. **Autologous Matrix Assisted Cell Transplantation as a Strategy for the Expansion of Human BAT**  
Andreas Stahl, UC Berkeley

11:00 a.m. **Open Floor Discussion of Research Gaps and Opportunities**
- What are the potential physiological roles for adult human BAT/beige/brite cells?
- What technologies, in addition to imaging or temperature detection, are needed to assess the role(s) of adult human BAT?
- Is there more to be learned from the mouse regarding the role(s) of adult human BAT?
- Are epidemiologic studies of human BAT needed?
  - Impact of climate and environment
  - Impact of exercise and diet
- Impact of age, gender, body composition, genetics
- Unique populations

12:00–1:30 p.m.  **Poster Session and Lunch Buffet**

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<th>Time</th>
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| 1:30 p.m. | Hope for a Therapy Based on Thermogenic Drugs and BAT  
Eric Ravussin, Pennington Biomedical Research Center, Louisiana State University System |
| 2:00 p.m. | Does hBAT Play a Role in Non-Shivering Thermogenesis?  
Kong Chen, NIDDK, NIH |
| 2:30 p.m. | Insights from Understanding CNS Pathways in Regulating the Sympathetic Outflow to BAT  
Shaun Morrison, Oregon Health and Science University |
| 3:00 p.m. | Brown Adipose Tissue and Sleep Regulation  
Éva Szentirmai, Washington State University, Spokane |
| 3:20 p.m. | Does Sarcoplpin and Muscle Based Thermogenesis Compensate in BAT Deficient Mammals?  
Muthu Periasamy, Ohio State University, Columbus |
| 3:40 p.m. | Closing Remarks |
| 4:00 p.m. | Adjournment |