

**NIEHS OBESITY GRANTEE MEETING  
SEPTEMBER 21-22, 2016  
NATCHER AUDITORIUM, NIH BETHESDA**

***Goals and logistics of the meeting***

*This meeting will gather NIEHS grantees researching the relationship between environmental factors and metabolic disorders (obesity, diabetes, liver diseases). The goals are to highlight key research produced by these researchers and to discuss issues and new directions for the field.*

**Wednesday September 21, 2016**

**8:30-9:00 Introductions, Welcome, and Overview of Grants**

Jerry Heindel, PhD, and Bonnie Joubert, PhD, NIEHS

**9:00-10:15 Session I: Measured Endpoints**

Session Chairs: Matthew Cave, MD, University of Louisville, and

**TBD**

**Focus Questions:** What endpoints are currently measured in human and animal studies examining obesity, diabetes or liver disease? What sub-clinical indicators should be considered? How can scientists integrate endpoints that cover obesity, diabetes, and lipid disorders in the same experiment or study population? Example endpoints include markers of inflammation, lipid levels, adiposity, insulin resistance, sexual dimorphism, and related endpoints.

9:00-9:15 Overview presentation

9:15-9:45 Two presentations from attendees (10 minutes each with time for questions)

9:45-10:15 General discussion

**10:15-10:45 Break**

**10:45-12:00 Session II: Experimental Designs to Assess Altered Set Points**

Session Chairs: Angela Slitt, PhD, University of Rhode Island, and

**TBD**

**Focus Questions:** How can we design experiments to determine whether excess weight gain, abnormal liver lipid levels and/or disrupted pancreatic function reflect an altered set point/sensitivity determined during development? What are the best approaches to evaluating altered set points in animal studies (high fat/sugar diets, exercise, fasting, and response to sugar challenge)? What are the best approaches to evaluating altered set points in human studies? Are there alternative experimental designs we should be considering?

10:45-11:00 Overview presentation

11:00-11:30 Two presentations from attendees (10 minutes each with time for questions)

11:30-12:00 General discussion

**12:00-2:00 Box Lunch and Poster Session in Foyer**

**2:00-3:15 Session III: Genomic and Epigenomic Mechanisms**

Session Chairs: Allan Just, PhD, Icahn School of Medicine at Mount Sinai, and Andrea Baccarelli, Columbia University Mailman School of Public Health

**Focus Questions:** What GxE and epigenetic mechanisms may be involved in the disease endpoints and what technologies are available for animal or human studies? What are the challenges to overcome? Do environment-related epigenetic marks persist across the lifespan? Are there mechanisms to modify epigenetic marks in adulthood to reduce disease susceptibility? What approaches are needed (genome-wide vs. sequencing targeted *loci*)? What epigenetic modifiers should be considered other than DNA methylation and how can we do this (e.g. histone modification and miRNA)?

2:00-2:15 Overview Presentation

2:15-2:45 Two presentations from attendees (10 minutes each with time for questions)

2:45-3:15 General discussion

**3:15-4:30 Session IV: New Biomarkers in Epidemiology Studies**

Session Chairs: Qi Sun, ScD, Harvard T.H. Chan School of Public Health, and Mirek Styblo, PhD, University of North Carolina at Chapel Hill

**Focus Questions:** What biomarkers can be assessed to indicate increased susceptibility to disease at or near birth? What tissues/samples are most relevant and should be considered? For example, stem cells from cord blood, foreskin cells, IPS cells, buccal cells, hair, exfoliated urothelial cells, or exfoliated cells in breast milk. What are the challenges of such sample collection? What should be prioritized in new and existing animal and human studies of metabolic disorders? Are there new biomarkers of exposure that can be measured also?

3:15-3:30 Overview presentation

3:30-4:00 Two presentations from attendees (10 minutes each with time for questions)

4:00-4:30 General discussion

**4:30-4:45 Wrap up and expanded discussion time**

**5:00 Bus back to Hotel**

**Evening on Own**

## Thursday September 22

### 8:15-8:30 Introduction to Day's Activities

Jerry Heindel, PhD, and Bonnie Joubert, PhD, NIEHS

### 8:30-9:45 Session V: Design and Methodological Considerations for Basic Science

Session Chairs: Saurabh Chatterjee, MSc, PhD, University of South Carolina, and Richard Phipps, PhD, University of Rochester Medical Center

**Focus Questions:** What new endpoints and pathways should be examined in animal studies and how do we incorporate them? For example, sirtuins, ROS, circadian rhythm, brain addiction, hedonic pathways controlling emotions, pathways controlling satiety, muscle function, microbiome, neurotensin, etc. What are the best animal models to use? Do we need to consider collaborative cross to facilitate cross species extrapolation?

8:30-8:45 Overview Presentation

8:45-9:15 Two presentations from attendees (10 minutes each with time for questions)

9:15-9:45 General discussion

### 9:45-11:00 Session VI: Design and Methodological Considerations for Epidemiology

Session Chairs: Meredith McCormack, MD, MHA, Johns Hopkins University, and TBD

**Focus Questions:** What are the crucial windows of susceptibility (timing) for exposure and how is this measured in epidemiology? Where do we need more data? What effect modifiers (diet, breastfeeding, physical activity, behavior) have been examined and what should be examined more adequately in future studies? What are the crucial limitations in current epidemiology studies and what methods should be used to address these? What other approaches should we be thinking about?

9:45-10:00 Overview presentation

10:00-10:30 Two presentations by attendees (10 minutes each with time for questions)

10:30-11:00 General discussion

### 11:00-11:15 Break

### 11:15-12:30 Session VII: Interventions in Animal or Epidemiology Studies

Session Chairs: Vasantha Padmanabhan, U Michigan, and Emily Oken, Harvard T. H. Chan School of Public Health

**Focus Questions:** Can we use nutritional interventions to reduce the effects of developmental exposures to chemicals (e.g. antioxidants, omega 3 fatty acids, coenzyme Q 10, and folic acid)? To what extent can the effects of chemical exposures be reduced by intervention strategies?

11:15-11:30 Overview presentation

11:30-12:00 Two presentations by attendees (10 minutes each with time for questions)

12:00-12:30 General discussion

**12:30-1:00 Session VIII: Future Directions**

Session Chair: Jerry Heindel PhD, NIEHS

**Focus Questions:** What are key research gaps in this field? How can we better integrate basic and clinical areas to increase research impact? What additional activities may be useful (working groups, webinars, session proposals at basic society meetings, etc.)? What opportunities may be possible with the NIEHS or with partners such as the Obesity Society, Diabetes Association, or NIDDK?

12:30-1:00 General Discussion

**1:00 Closing Remarks**

Jerry Heindel, PhD, and Bonnie Joubert, PhD, NIEHS