WORKSHOP ON NEUROGENETIC TOOLS: USING MOUSE MODELS TO STUDY HUMAN NEURODEGENERATIVE DISEASE
Monday, May 8 – Friday May 12, 2017

Course Organizers:
Mike Sasner, Ph.D., The Jackson Laboratory and
Kelly LaRue, Ph.D., The Jackson Laboratory

For more information please contact
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Course Goals

- Participants will be able to describe a diversity of genetic methods and models employed in the study of neuron and circuit function and neurological disease in the mouse.
- Participants will practice laboratory techniques associated with the visualization of genetically expressed markers in the mouse nervous system.
- Participants will be able to navigate bioinformatic tools and databases for neuroscientists.
- Participants will interact with leaders in the field of neurobiology.

All sessions will be in the Highseas Conference Center unless otherwise noted

Sunday
3:00 pm Arrivals
6:00 pm Dinner

Monday

Introduction to Neurodegenerative disease and The Jackson Laboratory

8:00 am Introduction to JAX
Nadia Rosenthal, Ph.D. Scientific Director at The Jackson Laboratory

8:30 Course overview and History of mouse models
Mike Sasner, Ph.D., Research Scientist at The Jackson Laboratory

9:30 Model validity
Robert Burgess, Ph.D., Professor at The Jackson Laboratory
10:30 Break
11:00 **PNS Disease Models**
Gregory Cox, Ph.D., Professor at The Jackson Laboratory
12:00 Lunch
1:00 Transportation to Main Lab
1:15 Group A: **WORKSHOP: Biomethods in the Mouse**
Kristin Cough, Animal Use Trainer at The Jackson Laboratory
*Location: GRB Training Lab 3245*
Group B: **WORKSHOP: Single Cell Genomics Prep**
Paul Robson, Ph.D. Director of Single Cell Biology at The Jackson Laboratory
*Location: TBD*
2:30 Break
3:00 Group B: **WORKSHOP: Biomethods in the Mouse**
Kristin Cough, Animal Use Trainer at The Jackson Laboratory
*Location: GRB Training Lab 3245*
Group A: **WORKSHOP: Single Cell Genomics Prep**
Paul Robson, Ph.D. Director of Single Cell Biology at The Jackson Laboratory
*Location: TBD*
4:15 Transportation back to Highseas
4:30 **Student Symposium and Social Hour**
6:00 Dinner

**Tuesday**
**Resources for neuroscience**

8:30 am **Cre driver resources: tools and best practices**
Mike Sasner, Ph.D., Research Scientist at The Jackson Laboratory

9:30 **WORKSHOP: The CrePortal Resource at MGI: finding suitable mouse Cre recombinase lines and additional integrated data at MGI**
Cynthia Smith, Research Scientist at The Jackson Laboratory and
David Shaw, Database User Support Specialist at The Jackson Laboratory
10:30 Break
11:00  **Complex Trait Genetics and Database Resources**  
Elissa Chesler, Ph.D., Professor at The Jackson Laboratory

12:00 pm  Lunch

1:00  **WORKSHOP: Exploring cell types using the Allen Brain Atlas: navigating the multimodal data sets featuring transgenic lines**  
Terri Gilbert, Ph.D., Application Scientist at The Allen Institute

5:00  **Generation of transgenic mice with tightly regulated expression for cell type-specific studies**  
Tanya Daigle, Ph.D., Scientist at The Allen Institute

6:00  Dinner

**Wednesday**

**Genetic tools for neuron function and circuit analysis**

8:30 am  **GcAMP**  
Loren Looger, Ph.D., Group Leader at HHMI Janelia Research campus

9:30  **Optogenetics and Optopatch**  
Adam Cohen, Ph.D., Professor at Harvard University

10:30  Transportation

11:00  **Option 1: DEMONSTRATION: Perfusion and Brain Dissection (striatum, cortex, hippocampus, hypothalamus, cerebellum, etc.)**  
Jim Miller, Necropsy Technologist at The Jackson Laboratory  
*Location: GRB Training Lab 3245*

**Option 2: Electrophysiology Basics**  
Kristen O’Connell, Ph.D., Professor at The Jackson Laboratory  
*Location: TBD*

12:00 pm  Lunch

1:00  **WORKSHOP: Tissue Clearing: CLARITY vs. iDISCO**  
Doug Richardson, Ph.D., Director of Imaging at Harvard Center for Biological Imaging  
*Location: GRB Training Lab 3245*

4:45  **WORKSHOP: TissueVision**  
Tim Ragan, Ph.D., CEO of TissueVision  
*Location: GRB Training Lab 3245*

5:45  Transportation back to Highseas (optional)
6:00 Dinner on your own

**Thursday**

**Genetic analysis**

8:30 am  **Single cell genomics**  
Paul Robson, Ph.D., Director of Single Cell Biology at The Jackson Laboratory

9:30  **CRISPR**  
Bill Buaas, Ph.D., Associate Director of Genetic Engineering Technologies at The Jackson Laboratory

10:30  **Break**

11:00  **Viral vectors**  
Ryuta Ishimura, Ph.D., Molecular and Viral Vector Scientist at The Jackson Laboratory

12:00 Lunch

1:00  **Computational Genomics**  
Greg Carter, Ph.D., Professor at The Jackson Laboratory

2:00  **WORKSHOP: Single cell genomics analysis**  
Paul Robson, Ph.D., Director of Single Cell Biology at The Jackson Laboratory

6:00 Dinner

**Friday**

**Development of Genetic Disease Models**

8:30 am  **Models with a purpose: AD variants**  
Gareth Howell, Ph.D., Professor at The Jackson Laboratory

9:15  **Creation of Clinically Relevant Models**  
Catherine Kaczorowski, Ph.D., Professor at The Jackson Laboratory

10:00  **AlzForum resources**  
Kelly Dakin, Ph.D., Scientific Content Manager at AlzForum

10:30 Break

11:00  **The Science, Art, & Anecdotes of Behavioral Testing: Improving Reproducibility & Translation in Animal Models**  
Stacey Rizzo, Ph.D., Associate Director of Mouse Neurobehavioral Phenotyping at The Jackson Laboratory
12:00 pm  Lunch

1:00  Pre-clinical Imaging
Paul Territo, Ph.D., Professor at Indiana University

2:00  Pre-clinical Pharmacology
Paul Territo, Ph.D., Professor at Indiana University and
Stacey Rizzo, Ph.D., Associate Director of Mouse Neurobehavioral Phenotyping at
The Jackson Laboratory

3:45  Transportation to Main Lab (optional)

4:00  Faculty meetings (optional)

5:45  Transportation back to Highseas (optional)

6:00  Lobster Dinner