



THIS DOCUMENT IS A WORKING DRAFT AND IS SUBJECT TO CHANGE

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
Kelly LaRue kelly.larue@jax.org or Erin McDevitt erin.mcdevitt@jax.org

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