NGG 578/BIOL488 Advanced Topics in Behavioral Genetics (1.0 cu)
SPRING 2012
Course Directors: Ted Abel, Maja Bucan, Robert Schultz

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Robert Schultz <schultzrt@email.chop.edu>

Course meets on Tuesdays from 1:30 to 4:30
Location: TRC 10-146AB (Perelman Bldg).

Classes begin Jan 17
Spring break March 3 to 11
Classes end April 24
Spring semester ends May 8

This consists of two 0.5 cu courses called:

NGG 600-008 Behavioral Genetics of Psychiatric Disorders (0.5 cu)
Course Directors: Ted Abel, Maja Bucan

This course focuses on the use of genetic techniques to study the molecular and cellular bases of behavior. Reverse genetic approaches utilizing gene knockout and transgenic technology and forward genetic approaches using mutagenesis and quantitative genetic techniques will be discussed, as well as application of these studies to different model organisms. Genetic approaches to behavior and complex disease in humans will be illustrated with lectures and papers (student presentations) on neurodegenerative disorders, schizophrenia and bipolar disorders.

NGG 600-009 Neurodevelopmental Disorders (0.5 cu):
Course Director: Robert Schultz

This survey course will provide an introduction to autism and other neurodevelopmental disorders. The class will include clinical descriptions of autism and closely related disorders, such as Fragile X syndrome, for which there are now well-developed model systems. It will be team taught by experts in each of the content areas covered, including psychology, neurology, genetics, animal modeling, cognitive neuroscience. The scope will be from genes, to brain, to behavior to treatment.
**NGG 600-008 Behavioral Genetics of Psychiatric Disorders (0.5 cu)**  
**Course Directors: Ted Abel and Maja Bucan**  

**Tuesday January 17. Course Overview and Introduction.**  
Ted Abel and Maja Bucan

**Tuesday January 24. Reverse and Forward Genetics**  
Maja Bucan (Department of Genetics, bucan@upenn.edu)

*Background Reading:*


*Papers for Student Presentations:*


**Tuesday January 31. Introduction to Association and Linkage Analysis.**  
Marcella Devoto (Department of Pediatrics, devoto@email.chop.edu)

*Background Reading:*


*Papers for Student Presentations:*


Tuesday February 7. Neurodegenerative Disorders.

Alice Chen-Plotkin (Department of Neurology, chenplot@upenn.edu)

**Background Reading:**


**Papers for Student Presentations:**

(Students will be asked to rank-order these in terms of how convincing they are, so please evaluate them in this way)


Amita Sehgal (Department of Neuroscience, amita@upenn.edu)

**Background Reading:**


**Papers for Student Presentations:**


Ted Brodkin (Department of Psychiatry, ebrodkin@upenn.edu)

Background reading:


Papers for Student Presentations


Ted Abel (Department of Biology, abele@upenn.edu)

Background reading:


Papers for Student Presentations:


Tuesday March 6 SPRING BREAK NO CLASS
NGG 600-009 Neurodevelopmental Disorders (0.5 cu):
Course Director: Robert Schultz

Tuesday March 13:
Introduction to Autism and Other Neurodevelopmental Disorders
   Course overview (Schultz), Intro to ASD, diagnosis, psych
   assessment/issues in psychometrics (Judith Miller), Intro to other
   NDDs (Fragile X, Rett, TS, Neuorfibromatosis; Larry Brown)

Tuesday March 20:
Genetics of ASD and NDDs (Hakon Hakonarson; Jerry Schelleberg)
   Student Presentations on related papers

Tuesday March 27:
Model Systems (Jongens, Brodkin)
   Student Presentations on related papers

Tuesday April 3:
Cognitive Neuroscience: the Social Brain (Schultz); ASD with comorbid ADHD and
   cognitive rigidity (Yerys);
   Student Presentations on related papers

Tuesday April 10:
Cognitive Neuroscience: Comorbid ASD + Anxiety (Herrington)
   Biology of Sleep & Sleep Disturbance (Souders)
   Student Presentations on related papers

Tuesday April 17:
Neural Systems: proposed circuit pathologies for Rett syndrome (Greg Carlson); ASD
   Oscilropathies/MEG (Roberts)
   Student Presentations on related papers

Tuesday April 24:
The connected Brain: DTI (Verma)
   Biological foundations of ASD treatments (Rostain)
   Student Presentations on related papers

Classes end April 24
Spring semester ends May 8