CAMB713: Neuroepigenetics

TIME: Thursdays 1-3pm  9/3 – 12/10 (organizational meeting 9/3, no class on 11/26)

LOCATION:  Zoom (virtual)
https://pennmedicine.zoom.us/j/97654240270
Passcode: 039745

COURSE DIRECTORS:
Zhaolan (Joe) Zhou  215.746.5025  zhaolan@pennmedicine.upenn.edu
Elizabeth Heller  215.573.7038  eheller@pennmedicine.upenn.edu
Hao Wu  215.573.9360  haowu2@pennmedicine.upenn.edu

GOALS: This is a course intended to bring students up to date concerning our understanding of Neural Epigenetics. It is based on assigned topics and readings covering a variety of experimental systems and concepts in the field of Neuroepigenetics, formal presentations by individual students, critical evaluation of primary data, and in-depth discussion of potential issues and future directions, with goals to:

1) Review basic concepts of epigenetics in the context of neuroscience
2) Learn to critically evaluate a topic (not a single paper) and rigor of prior research
3) Improve experimental design and enhance rigor and reproducibility
4) Catch up with the most recent development in neuroepigenetics
5) Develop professional presentation skills - be a story teller

FORMAT: Each week will focus on a specific topic of Neuroepigenetics via a “seminar” style presentation by a class member with the following expectations:

Consultation with preceptor prior to presentation
Introduction (~20 min):  Context of topic in the field
                             Historic perspectives of the topic
                             Current understandings
Primary data (~40 min):  Questions of interest
                             Design of experiments
                             Interpretation of data
Discussion (~20 min):  Issues/challenges
                             Proposed future experiments
                             Future directions in a big picture

Engage class for discussion and participation, and manage the presentation in 2 hours

One or more course directors and a guest preceptor will be present each week to facilitate discussions

EVALUATION:
1) Read assigned paper and relevant background/developments broadly
2) Consultation with faculty preceptor
3) Peer evaluation and faculty evaluation
4) Enforcement – grading policy: 50% class participation
                              50% presentation

COURSE UNIT VALUE: 1 unit
ENROLLMENT LIMITS: 15 (maximum)
PREREQUISITES:  BIOM555 or permission by course directors
List of Topics of Interest

The molecular basis of epigenetics (An overview by course directors)
Cutting-edge technologies in studying neuroepigenetics
Neurogenesis and adult neurogenesis
Neuronal differentiation and cellular diversity
Synaptogenesis and synaptic plasticity
Neuronal activity-dependent gene regulation
Epigenetic mechanisms in learning and memory
Epigenetic mechanisms in the context of neurodevelopmental disorders
Epigenetic mechanisms in the context of neuropsychiatric disorders
Epigenetic mechanisms in the context of aging and neurodegeneration
Imprinting in the central nervous system
Transgenerational inheritance in the context of stress
Transgenerational inheritance in the context of addiction

List of Faculty Preceptors (*course directors)

Marisa Bartolomei  
Cell and Dev. Biology  
9-123 Smilow  
215.898.9063  
bartolom@pennmedicine.upenn.edu

Naiara Aquizu Lopez  
5052 Colket Translational Research Building  
215.590.2232  
aquizun@email.chop.edu

Shelley Berger  
Cell and Dev. Biology  
9-125 Smilow  
215.746.3106  
bergers@pennmedicine.upenn.edu

Felice Elephant  
Drexel  
215.895.0220  
fe22@drexel.edu

Peter Hamilton  
VCU  
804.628.3003  
peter.hamilton@vcuhealth.org

*Liz Heller  
Pharmacology  
10-115 Smilow  
215.573.7038  
eheller@pennmedicine.upenn.edu

Erica Korb  
Genetics  
9-133 Smilow  
215.573.5705  
ekorb@pennmedicine.upenn.edu

Ian Maze  
Mount Sinai  
212.824.8979  
ian.maze@mssm.edu

Hongjun Song  
Neuroscience  
105 CRB  
215.573.2449  
shongjun@pennmedicine.upenn.edu

*Hao Wu  
Genetics  
527 CRB  
215.573.9360  
haowu2@pennmedicine.upenn.edu

*Zhaolan (Joe) Zhou  
Genetics  
452A CRB  
215.746.5025  
zhaolan@pennmedicine.upenn.edu