

CAMB713: Neuroepigenetics

TIME: 2 hours / week Thursdays 1-3pm

LOCATION: Small – medium seminar room in CRB or SCTR (up to 20 attendants)

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 set the premise
- 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
Shelley Berger	Cell and Dev. Biology 9-125 Smilow	215.746.3106	bergers@pennmedicine.upenn.edu
Nancy Bonini	Biology 204G Lynch	215.573.9267	nbonini@sas.upenn.edu
*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
Jennifer Phillips-Cremins	Bioengineering 304 Hayden Hall	215.898.4121	jcremins@seas.upenn.edu
Chris Pierce	Psychiatry 2223 TRL	215.573.7605	rcpierce@upenn.edu
Hongjun Song	Neuroscience 105 CRB	215.573.2449	shongjun@pennmedicine.upenn.edu
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