

CAMB/NGG713: Neuroepigenetics

TIME: Thursdays 1-3pm 9/7/23 – 12/07/23 (no class on 11/16 & 11/23)

LOCATION: CRB 302

COURSE DIRECTORS:

Zhaolan (Joe) Zhou	215.746.5025	zhaolan@pennmedicine.upenn.edu
Erica Korb	215.605.9759	ekorb@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 neuroepigenetics. It is based on 1) lectures on basic concepts of epigenetics and related methods by course directors, and 2) assigned literature readings covering a variety of experimental systems and concepts in the field, formal presentations by individual students, critical evaluation of primary data, and in-depth discussion of potential issues and future directions,

The goals of each seminar style session are:

- 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 (~10 min):	Context of topic in the field Historic perspectives of the topic Current understandings
Primary data (~30 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 ~1.5 hours

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

EVALUATION:

- 1) Knowledge of assigned paper and broadly relevant background/developments
- 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 Faculty Preceptors (*course directors)

Date	Preceptor	Topic
9/7	Course Directors (Joe/Erica/Hao)	Organization meeting & Lecture 1: 3D chromatin organization and neurogenomics methods
9/14	Course Directors (Erica)	Lecture 2: Histone modification
9/21	Course Directors (Joe)	Lecture 3: DNA modification
9/28	Kahlilia Blanco	A signaling pathway for transcriptional regulation of sleep amount in mice
10/5	Liz Heller	Chromatin mediated alternative splicing in brain
10/12	Erica Korb	Histone variants, histone PTMs
10/19	Yijing Su	Immediate and deferred epigenomic signatures of in vivo neuronal activation in mouse hippocampus
10/26	Hao Wu	Single-cell Epigenomics
11/2	Marisa Bartolomei	Genomic Imprinting in Brain
11/9	Hongjue Song	Epitranscriptomic regulation of neurogenesis
11/30	Shelley Berger	Metabolic-Epigenetic axis in learning and memory
12/07	Naiara Aquizu	Histone bivalency regulates the timing of cerebellar granule cell development