

## CAMB/NGG 713: Neuroepigenetics

TIME: Thursdays 1:45-3:45  
9/8 - 12/8/2022

LOCATION: CRB 302

### COURSE DIRECTORS:

Zhaolan (Joe) Zhou	215.746.5025	zhaolan@pennmedicine.upenn.edu
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GOALS: This is a course intended to bring students up to date concerning our understanding of neuroepigenetics. It is based on assigned topics and 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 storyteller

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

Oral Presentation with Slides

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 director

Date	Directors	Preceptor	Topic	Papers (PubMed ID or Preprint link)
8-Sep	Joe, Hao	Course Directors	Organization meeting and lecture by course directors	
15-Sep	Erica, Hao	Course Directors	Lectures by course directors	
22-Sep	Erica, Joe	Hongjun Song	Epitranscriptomic regulation of neurogenesis	PMID: 28965759
29-Sep	Erica, Hao	Shelley Berger	Metabolic-Epigenetic axis in learning and memory	PMID: 35921439; Background PMID: 28562591
6-Oct	Hao, Joe	Naiara Akizu	Epigenetic basis of neurodevelopmental disorders	PMID:34637754
13-Oct	Joe, Hao	Marisa Bartolomei	Genomic Imprinting in Brain	PMID: 32707083
20-Oct	Erica, Joe	Liz Heller	Chromatin mediated alternative splicing in brain	PMID: 34480866; Comment PMID: 34534452
27-Oct	Hao, Erica	Colin Conine	Epigenetic Inheritance and miRNAs	PMID: 33568480
3-Nov	Hao, Joe	Yijing Su	Neuronal activity induced chromatin accessibility changes	PMID:28166220
10-Nov	Joe, Hao	Zhaolan (Joe) Zhou	Epigenetic basis of stress related major depression	PMID: 35013139
17-Nov	Erica, Hao	Erica Korb	Histone variants in neurodevelopmental disorders	PMID: 31491386
24-Nov	Thanksgiving	No class		
1-Dec	Joe, Erica	Kavitha Sarma	Non-canonical chromatin structures in neurodifferentiation	PMID: 35013239
8-Dec	Hao, Erica	Hao Wu	Chromatin and gene-regulatory dynamics of the developing brain	PMID: 34390642; Background PMID: TBA