CAMB713: Neuroepigenetics

TIME: Thursdays 1:45-3:45 9/2 - 12/9

LOCATION: Stellar Chance 204

COURSE DIRECTORS:

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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):	lssues/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) 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 (Min. 2)	Preceptor	Торіс
9/2	Joe, Liz, Hao	Course Directors - Joe/Hao/Liz	Organizational Meeting
9/9	Joe, Liz, Hao	Course Directors - Joe	The essence of neuroepigenetics: DNA modification and related methods
9/16	Joe, Hao	Course Directors - Hao	3D genome/long non-coding RNA/Phase separation and related methods
9/23	Liz, Hao	Jennifer Cremins	3D genome and heterochromatin misfolding in fragile X
9/30	Liz, Joe	Erica Korb	Histone variants in neurodevelopmental disorders
10/7	Hao, Joe	Marisa Bartolomei	Imprinting in the brain and imprinting disorders
10/14	Liz, Joe	Colin Conine	Epigenetic inheritance and miRNAs
10/21	Joe, Hao	Richard Phillips	Epigenetic mechanisms driving central nervous system tumors
10/28	Liz, Joe	Joe Zhou	Epigenetic mechanisms underlying stress- related major depressive disorder
11/4	Liz, Joe	Naiara Akizu	Epigenetic mechanisms of neural development and diseases
11/11	Joe, Hao, Liz	Hongjun Song	Epitranscriptomics
11/18	Joe, Hao, Liz	Shelley Berger	твр
11/25	Thanksgiving	No class	
12/2	Joe, Hao, Liz	Liz	Chromatin regulation of alternative splicing
12/9	Joe, Hao	Нао	Single-cell Genomics (transcriptome/epigenome) in Neuroscience

Additional information on class Google sheet: https://docs.google.com/spreadsheets/d/1JkEbBcq-ASZS_9sh1j4dZ8rbKaS2Ff3SHsIoMp3H-fU/edit?usp=sharing