

BISP 194 - Adv Topics in Modern Biology - Muotri [WI20]

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Human brain organogenesis and applications

Winter 2020 BISP194/285

Tu 4-6pm SCRM 1013A/B

Course director: Alysson R. Muotri

One of the greatest challenges remaining in biomedical research is to understand how the brain works. The development of the human central nervous system is an intricately orchestrated series of events that occurs over several months and ultimately gives rise to the circuits underlying cognition and behavior. Given the complexity of the central nervous system, one useful approach to understand the human brain is by deconstructing from scratch. Human pluripotent stem cells have the remarkable ability to differentiate in any tissue of the body, including brain organoids. These brain organoids can be derived from any person, and used to model brain circuits in vitro. This course will focus on the principles of human brain organogenesis and disease modeling using recently developed organoid technologies. The goal of this course is that you will not only learn about these exciting discoveries and their implications for neural development and disease, but also you will learn to read, critically evaluate, and present primary data from published recent articles in the scientific literature.

PREREQUISITES: BICD100 (Genetics), BIBC100[02] (structural/metabolic biochemistry), an introductory course in Neuroscience, and their prerequisites. Additionally, it is **HIGHLY RECOMMENDED** that you have completed BIMM100 (Molecular Biology) before taking this class.

Enrollment is limited to 21 students.

Dates (7): 1-14; 1-21; 1-28; 2-4; 2-11; 2-18; 2-25

Students are expected to attend ALL classes.

No textbook is required. However, Thompson & Thompson, *Genetics in Medicine*, 7th edition, Saunders-Elsevier, ISBN # 9781416030805, is a valuable reference book, chapters 1-4 and 9-14. Also, *Principles of*

Neural Science, Kandel ER et al., 5th ed. **[ISBN 0-07-139011-1](#)**

<http://en.wikipedia.org/wiki/Special:BookSources/0071390111>, might be helpful.

Contact:

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Grades will be based upon:

- Participation
- Presentation and discussion of scientific papers

Course Summary:

Date	Details
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