Systems and Cellular Neuroscience 04-432

Instructor: Jonathan J. Couey
Email: j.j.couey@gmail.com (Please include "SCN04-432" in the subject line)
Office hours are on as posted on Twitch, YouTube, or by appointment.
Teaching Assistant: None

Course Information:

Time and Location: https://www.twitch.tv/gigaohmbiological Thursdays 1900EST plus journal clubs TBA

Course Description: This course is an introduction to systems and cellular neuroscience wherein students are expected to develop a greater appreciation for both the history of and the current state of contemporary hypotheses of brain function and the current scientific questions systems neuroscience seeks to address. We will discuss the organization of the brain and its subsystems, their functions, and outstanding questions that are currently being addressed around the world. In addition to a regular focus on primary literature, this course will discuss scientific methodologies and how they are employed to investigate brain function. There will be space within the context of the course for discussion of and even focus on the many acute ethical and moral issues that are encountered during the execution of neurobiological investigations.

Instructor Goals: As your instructor, I have three main goals: 1) to enable YOU to inspire ever more humans to be fascinated by the biological world around them and of which they are an integral part (with the brain as a particular subject matter), 2) to share my unique insight into Biology as a field and neurobiology as a fascination, and 3) to help contribute to the development of more thoughtful, aware, and contemplative fellow humans while improving these same qualities in myself through the share journey of discovery that teaching is.

To accomplish these goals, I will provide you with lectures covering the broad concepts and ideas at the cutting edge of modern "neuroscience". I will also provide suggested reading with the idea of providing a guided tour of the field, and how it has evolved over the last twenty-five years.

Learning Objectives and Goals for the Students:

- ✓ Recognize, be able to define, and come to understand the uses and limitations of various concepts and methodologies in neuroscience like transgenic animals, optogenetics, machine learning, receptive fields, functional correlations, etc.
- ✓ Become familiar with the state of the art or cutting edge of various contemporary technologies, and what the biological limits that are encountered when working on these technologies.
- ✓ Develop greater self-confidence in your own critical thinking skills in the context of reading and integrating across disciplines of primary literature while developing a more keen sense of the ever-present what you don't know.