

Cellular Neuroscience BIOL 463/563
Spring 2015 Mon,Wed 8:30-9:50, Chapman 307

Instructor: Kip Keller, office: Huestis 228A

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Office hours: Mon, Wed 10:10-11:50 or email for appt.

Please consult the class website on Canvas regularly for reading assignments, homework and other updates.

Topics:

The class will focus first on classic papers/principles in cellular neuroscience, including how action potentials and synaptic potentials are generated. From there we will move to a number of contemporary topics in synaptic function and plasticity, while still highlighting classic findings that have shaped our understanding, as well as recent exciting advances in the field.

Learning Goals:

First, students will become acquainted with a broad set of concepts and methods in cellular neuroscience. This will include gaining historical perspective on the development of ideas and methods in neuroscience, as well as obtaining a deeper understanding of the neuronal processes that allow brains to learn and adapt.

Second, students will learn to critically assess scientific data from the primary literature, and to evaluate controversies in the field, a set of skills that are critical for becoming a scientifically literate citizen.

Third, students will develop a basic competence to think about cellular physiology quantitatively.

Readings:

Most of the hard work for this class is in the reading, which will consist primarily of original research articles. In some cases these articles will require multiple readings to fully understand. *Readings should be completed before coming to class.* Students will be asked to describe findings presented in figures from the papers and answer questions. Please print out and bring the readings to class.

In addition, topic reviews, review articles and web-videos may provide perspective and background. In most cases, these are not required, but you may find them helpful (and in some cases entertaining). The format for discussing the papers will vary, but in general I will ask someone to come to the board and lead the class through a particular figure. We will continue through each figure in the paper in turn with lecture and discussion to increase our understanding of the broader implications. For some papers, I will assign students to particular figures before class. For others, I will call on students at random and will endeavor to make sure through selection of “volunteers” that everyone participates equally. All articles are available for download through Canvas, and students are responsible for downloading and reading articles well in advance.

Note well: Use of computers, tablets, and phones is not allowed in class as they impede discussion and have been shown to adversely affect learning by classmates. Papers should be printed out ahead of time and brought to class.

Homework:

Most weeks will require completion of a homework assignment, together worth 20% of your total grade. These are designed to give you practice working with the ideas presented in the readings and in class. Students are encouraged to discuss the homework assignments, but the submitted work must be the

student's own. Homework must be submitted as a .pdf or .xls file through Canvas by 8:00 AM of the date listed on the assignment. Late homework will not be accepted and will receive no credit.

Attendance:

Class attendance, like the reading, is mandatory. If you must miss a class due to an emergency or an unavoidable conflict, come see me. Students are responsible for the reading for classes they must miss, as each topic builds on the ones before. **Only** documented illness, injury or death in the immediate family are acceptable excuses for missed deadlines.

Grading:

20% homework. Due by 8AM of the date listed on the assignment.

10% in-class participation.

35% first midterm (take-home)

35% second midterm (not cumulative, but building on the first half)

Email:

Class communication will be via email and Canvas. Please check every day for updates to the reading list, and other important class-related information. The first homework is minimal and will allow us to confirm procedures for handing in and returning assignments.

Statement on academic honesty:

Students are expected to adhere to the highest standards of academic honesty. Plagiarism is a serious breach of academic ethics and as per University of Oregon policy (<http://conduct.uoregon.edu>) is potential grounds for failure in the course. While discussion amongst students is encouraged, all written work must reflect each student's own ideas and writing. All referenced material, quoted material, or paraphrasing must be cited appropriately. Students are encouraged to consult the Instructor if there are any questions about appropriate citation.

Disabilities:

If there are aspects of the instruction or course design that result in barriers to your inclusion, please notify Dr. Keller as soon as possible. You are also welcome to contact Disability Services in 164 Oregon Hall, 541-346-1155.