

Biology of Memory: Systems and Diseases

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GOALS, STRUCTURE AND EVALUATION

GOALS

The goals of the course are threefold:

- Gain a basic understanding of the biological mechanisms underlying learning and memory in mammals
- Learn to critically evaluate and present original literature in the field
- Learn to work as a member of a team in preparing and presenting Project Proposals

STRUCTURE

The course will be focused on the current knowledge of three important questions in the learning and memory field:

- 1- How are long-term memories formed, consolidated and stored?
- 2- What is the contribution of retrieval to memory storage?
- 3- Can we increase or decrease memory strength in normal and pathological conditions?

In the first part of the course, I will provide lectures giving the background and fundamentals for each of the questions. The second part of the course will be comprised of three “cycles” (one per question). Each cycle will have three parts (each taking one day of class time):

- The first day will consist of student-led discussions of original literature (which I will provide; typically three papers per class). All students will be responsible for all papers. Students will take turns discussing the major findings of each paper, followed by a general discussion of the combined papers by the whole class.
- For the second and third days of each cycle, students will be divided into teams (5 students per team). The ultimate goal of each team is to (i) take what was discussed in the original literature sections, coupled with my lectures and any other material each team chooses, and (ii) develop a Project Proposal describing in as much detail as possible the next experimental steps each team would take to advance the field, on the question under discussion. Towards that end:
 - The second day of each cycle will be a brainstorming session in class, wherein each team will cluster together and plan their Project Proposal. I will circulate among the teams throughout the session to answer questions and facilitate discussions.
 - The third day of each cycle will be the presentation of each team’s Project Proposal, followed by a general discussion of all the proposals.

- The composition of the teams will change for each cycle

FINAL EXAM

There will be only one exam in the course. It will be a take-home exam consisting of one question. The exam answer can be no longer than 5 pages (double spaced, Arial 11 font).