
GRADUATE SEMINAR IN CELL AND MOLECULAR BIOLOGY

Bio 796-1002 – Fall 2016
Class Meeting Friday, 9:30–11:20 AM
WHI 102A (Faculty Lounge)

COURSE DESCRIPTION

Biol 796-1002 is the primary course for SoLS Cell and Molecular Biology graduate students to learn advanced topics in cell and molecular biology, and related fields relevant to the research ongoing in SoLS laboratories. Material covered varies from semester to semester, but is always drawn from the primary research literature. Instruction includes a combination of self-directed reading and active in-class learning, via Socratic-style questioning by instructor and attending faculty, and group discussion by all attendees, enrolled or unrolled. The course is designed to prepare beginning students for the oral examinations of the thesis defense for Master's students, and the comprehensive exam and dissertation defense for PhD students, and to expand the knowledge and presentation skills of students at any level.

This semester's CMB journal club covers a wide breadth of advanced research topics, as drawn from the Current Opinions review journals:

- *Current Opinions in Cell Biology*
- *Current Opinions in Genetics and Development*
- *Current Opinions in Plant Biology*

Specific topics are assigned for each class meeting date, which are drawn from the topics that are repeatedly covered within these review journals. For Fall 2016, the list of topics is:

1. Review articles, “*Current Opinions*” journals, literature searches using “cited by” (instructor-led)
2. Cell nucleus
3. Cell architecture: structure and dynamics
4. Cell membranes and organelles
5. Cell growth, cell cycle, cell division, cell death
6. Cell adhesion, extracellular matrix, and migration
7. Cell regulation, cell signaling, and environmental interactions
8. Differentiation & gene regulation
9. Genomes, epigenomes, and expression mechanisms
10. Regulatory and metabolic networks
11. Developmental mechanisms, patterning & evolution
12. Pluripotency, reprogramming, regeneration, and repair

LEARNING OUTCOMES

Students will survey a broad range of advanced topics in current cell and molecular biology. They will enhance their ability to understand and evaluate complex articles from the original research literature, and their understanding of commonly-used methodologies.

Successful completion of this course will advance the student's abilities to:

- use citation searching to find research articles using the UNLV Library website and
- online literature databases
- read critically
- analyze published data
- evaluate experimental design

Students will gain experience in:

- oral presentations
- constructive group critiques
- effective scientific communication
- “thinking on their feet”: reasoning out loud to answer a difficult question in a back-and-forth Socratic questioning discussion, similar to oral examinations in graduate degree programs

Upon assignment of their topic, the student is expected to survey the Tables of Contents for each of the listed *Current Opinions* Volumes from 2012-2016. The student must select a review article as the foundation for their research paper selection. Students must obtain the Instructor's consent to select a scholarly review article from a different source during the same years. During the first class meeting, students will be instructed on how to use the UNLV library website to obtain “Cited by” information for a review article. Each student will select and present a current (within last 2 years) research paper that either **a) is a more recent original research article that cites the selected review article, or b) is cited within the selected review article.**

Format:

The 1hr, 50 min class format will consist of student presentations and class discussions.

Prerequisite:

Admission to any Graduate Program within School of Life Sciences and departmental permission of the instructor; or permission of the UNLV Graduate School and departmental permission.

Assigned Class Readings:

Required reading will be provided in the form of *Current Opinions* review articles and current research articles. These will be selected and distributed electronically by the presenting student via e-mail as PDF files one week in advance.

COURSE POLICIES

Attendance:

Because there are only 11 class periods, attendance to ALL classes is mandatory. Students will be permitted only one absence without excuse. If a student wishes an excused absence on a religious holy day that falls on a class day, the student MUST notify the instructor by email **before** the UNLV deadline of **September 11, 2016** (see Religious Holidays policy below). Additional absences may be excused by the instructor's permission if notified in advance

via e-mail (at least 7 days prior to the class meeting), but reading assignments must be completed and make-up work may be necessary for prolonged absences. Last minute excuses will only be accepted for medical or legal emergencies. Students may be excused for activities that enhance a student's academic career such as a scientific meeting or a professional/job interview.

Documentation may be requested for an excused absence. Make up work for an excused absence may require another paper presentation or a written literature summary. **Communication with the instructor is ESSENTIAL to mitigate the consequences of a planned or unplanned absence from class.**

Readings:

Students are absolutely required to read the assigned papers and Online Supplementary Material at the journal website (distributed as PDF files from the presenter) before class at a level in which they can be discussed. These papers will be highly technical and may require several readings, especially at the start of the semester. Students are expected to refer to previous literature or web based resources to obtain the necessary background for unfamiliar topics, and to familiarize themselves with the methods used. Students should expect to spend at least 4 hours per paper in order to be adequately prepared for the class discussion. Students are not expected to master all the material, but they must be able to demonstrate preparedness for discussion and awareness of what they do not know---the latter is demonstrated by asking questions for clarification. Students who disagree with an interpretation in the paper are expected to express their disagreement with an explanation of what seems incorrect. **There is no hiding from a 2-hour discussion; everyone will be expected to participate. All students attending will be questioned by the instructor; the presenter is not the only person "in the hot seat."**

Primary Research Paper Presentations:

Plan several weeks in advance for your turn to present a paper, so that you can choose the paper carefully. You will receive instruction in using the library databases as your starting point. This step takes time; plan to read several reviews, and then to read multiple abstracts in order to make your selection. Remember that you will be responsible for presenting each of the experiments and for providing the audience with enough background to appreciate the importance of the paper and understand the methodologies. It is good to move beyond your comfort zone into new areas that you are not familiar with, but try to avoid reaching too far into an area that you know nothing about. Prepare an introduction with enough background information to put the paper in perspective. For our class, you will need to provide more basic information that is not covered in the *Current Opinions* review article. Also, keep in mind that most of the time the information that is presented in the paper introduction is not adequate. Thus, you will have to refer to the cited earlier publications, other review articles, textbooks, and/or online resources for that relevant material. Be sure to provide enough information so that the audience can:

- 1). Understand the major biological questions being addressed.
- 2). Understand why the research is important.
- 3). Understand the major hypothesis(es) being tested.

Once you have provided the background information, you can present the paper one figure at a time, but try to keep the discussion focused by addressing the following points for each figure:

- 1). What is the hypothesis that they are trying to address with this set of experiments?

- 2). What methodologies are they using; are any techniques new or novel? Are the techniques appropriate to test the hypothesis?
- 3). What conclusions are the authors claiming?
- 4). Do you think the data the authors present justifies those conclusions? If not, what conclusions would you draw from the data?
- 5). How does the data in this figure set up the next experiment?

The best presentations are ones where the student is prepared enough to manage the paper so that most of it will be covered in the time frame of the class. This may require you to summarize data to move the discussion forward, and it may require you to skip past some data, figure panels, or supplementary figures to ensure that you cover the most important experiments.

Aim for a 50-minute presentation. This gives you some flexibility for open-ended discussions that can eat up time.

Be prepared to summarize the “take home message” at about 11:10 AM. This is the one item that you want the audience to all take away from your presentation. Keep this in mind as the discussion progresses and be prepared to “punt” and skip to the message if you run out of time.

As you prepare your presentation, familiarize yourself with the "copyright and fair use" policies of the university (see below). While standards vary between academic fields, biologists have a strict definition of plagiarism. Close paraphrasing of another's work is considered plagiarism, and requires attention to avoid unintended violation of ethical standards. To avoid any question of plagiarism in your own presentations or written work, be sure to follow the tips provided by the UNLV Writing Center: <http://writingcenter.unlv.edu/writing/plagiarism.html>

Electronic Mail:

Biol796-1002 students should use their Rebelmail or UNLVMail accounts to e-mail the instructor. **By UNLV policy, faculty and staff can only e-mail students or respond to student email inquires if they are received from Rebelmail or UNLVMail accounts.** The instructor is not obligated to read and response to electronic messages from students using non-University accounts. Effective use of the subject line will ensure a timely response to your email. **Start your subject line with “Biol796-“ or “CMB journal club-“ followed by a succinct indication of your topic.** Thoughtful use of the subject line is often seen by employers and collaborators as evidence of the sender’s professionalism.

Recording Class Activities:

Classes MAY NOT be recorded in any way.

GRADING

Grades will be based on class attendance and participation. Students will be deducted one grade point for each unexcused absence. Failure to read the assigned papers and failure to participation in the class discussions may be equated as an unexcused absence with the same consequences. In addition, failure to present a paper or summarize the current literature at the assigned time will result in a failing grade for the course. The following is an example of how grades may be calculated:

0-1 unexcused absence = A
2 unexcused absences = A-
3 unexcused absences = B+
4 unexcused absences = B
5 unexcused absences = B-
6 or more unexcused absences = F
Failure to present paper or literature summaries = F

Incompletes:

Incompletes will be given only in exceptional circumstances, and only when a presentation cannot be delivered during the semester because of an emergency excused absence. A student who receives an I is responsible for meeting with the instructor to develop a plan for a makeup assignment within the time allotted by UNLV policies, described below under Incomplete Grades.

UNIVERSITY POLICIES

Academic Misconduct—Academic integrity is a legitimate concern for every member of the campus community; all share in upholding the fundamental values of honesty, trust, respect, fairness, responsibility and professionalism. By choosing to join the UNLV community, students accept the expectations of the Student Academic Misconduct Policy and are encouraged when faced with choices to always take the ethical path. Students enrolling in UNLV assume the obligation to conduct themselves in a manner compatible with UNLV's function as an educational institution. An example of academic misconduct is plagiarism. Plagiarism is using the words or ideas of another, from the Internet or any source, without proper citation of the sources. See the Student Academic Misconduct Policy (approved December 9, 2005) located at: <https://www.unlv.edu/studentconduct/student-conduct>.

Copyright—The University requires all members of the University Community to familiarize themselves with and to follow copyright and fair use requirements. **You are individually and solely responsible for violations of copyright and fair use laws. The university will neither protect nor defend you nor assume any responsibility for employee or student violations of fair use laws.** Violations of copyright laws could subject you to federal and state civil penalties and criminal liability, as well as disciplinary action under University policies. Additional information can be found at: <http://www.unlv.edu/provost/copyright>.

Disability Resource Center (DRC)—The UNLV Disability Resource Center (SSC-A 143, <http://drc.unlv.edu/>, 702-895-0866) provides resources for students with disabilities. If you feel that you have a disability, please make an appointment with a Disabilities Specialist at the DRC to discuss what options may be available to you. If you are registered with the UNLV Disability Resource Center, bring your Academic Accommodation Plan from the DRC to the instructor during office hours so that you may work together to develop strategies for implementing the accommodations to meet both your needs and the requirements of the course. Any information you provide is private and will be treated as such. To maintain the confidentiality of your request, please do not approach the instructor in front of others to discuss your accommodation needs.

Religious Holidays Policy—Any student missing class quizzes, examinations, or any other class or lab work because of observance of religious holidays shall be given an opportunity during that semester to make up missed work. The make-up will apply to the religious holiday absence only. It shall be the responsibility of the student to notify the instructor within the first 14 calendar days of the course for fall and spring courses (excepting modular courses), or within the first 7 calendar days of the course for summer and modular courses, of his or her intention to participate in religious holidays which do not fall on state holidays or periods of class recess. For additional information, please visit: <http://catalog.unlv.edu/content.php?catoid=6&navoid=531>.

Transparency in Learning and Teaching—The University encourages application of the transparency method of constructing assignments for student success. Please see these two links for further information:

<https://www.unlv.edu/provost/teachingandlearning>

<https://www.unlv.edu/provost/transparency>

Incomplete Grades—The grade of I—Incomplete—can be granted when a student has satisfactorily completed three-fourths of course work for that semester/session but for reason(s) beyond the student's control, and acceptable to the instructor, cannot complete the last part of the course, and the instructor believes that the student can finish the course without repeating it. The incomplete work must be made up before the end of the following regular semester for undergraduate courses. Graduate students receiving "I" grades in 500-, 600-, or 700-level courses have up to one calendar year to complete the work, at the discretion of the instructor. If course requirements are not completed within the time indicated, a grade of F will be recorded and the GPA will be adjusted accordingly. Students who are fulfilling an Incomplete do not register for the course but make individual arrangements with the instructor who assigned the I grade.

Tutoring and Coaching—The Academic Success Center (ASC) provides tutoring, academic success coaching and other academic assistance for all UNLV undergraduate students. For information regarding tutoring subjects, tutoring times, and other ASC programs and services, visit <http://www.unlv.edu/asc> or call 702-895-3177. The ASC building is located across from the Student Services Complex (SSC). Academic success coaching is located on the second floor of the SSC (ASC Coaching Spot). Drop-in tutoring is located on the second floor of the Lied Library and College of Engineering TEB second floor.

UNLV Writing Center—One-on-one or small group assistance with writing is available free of charge to UNLV students at the Writing Center, located in CDC-3-301. Although walk-in consultations are sometimes available, students with appointments will receive priority assistance. Appointments may be made in person or by calling 702-895-3908. The student's Rebel ID Card, a copy of the assignment (if possible), and two copies of any writing to be reviewed are requested for the consultation. More information can be found at: <http://writingcenter.unlv.edu/>.

Rebelmail—By policy, faculty and staff should e-mail students' Rebelmail accounts only. Rebelmail is UNLV's official e-mail system for students. It is one of the primary ways students receive official university communication such as information about deadlines, major campus

events, and announcements. All UNLV students receive a Rebelmail account after they have been admitted to the university. Students' e-mail prefixes are listed on class rosters. The suffix is always [@unlv.nevada.edu](mailto:unlv.nevada.edu).

Library Resources — Students may consult with a librarian on research needs. For this class, the subject librarian is https://www.library.unlv.edu/contact/librarians_by_subject. UNLV Libraries provides resources to support students' access to information. Discovery, access, and use of information are vital skills for academic work and for successful post-college life. Access library resources and ask questions at <https://www.library.unlv.edu/>.

Final Examinations—The University requires that final exams given at the end of a course occur at the time and on the day specified in the final exam schedule. See the schedule at: <http://www.unlv.edu/registrar/calendars>.

SAMPLE