Biological Literature and Communication

BIOL 4700 – Fall 2014, Room: Wolfe Hall 1240
Dr. Rafael Garcia-Mata
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Office Hours:

Tue/Thu 11:00-12:00
The instructor can also answer E-mail questions at almost any time, and is available by appointment at other times.

Important dates:

Last day to drop classes: Sept. 08
Last day to withdraw from classes: Oct. 31
Holidays: Sept 1: Labor Day, Sept 13: Fall break, November 26: Thanksgiving

Course Description: Biology of Embryonic Stem Cells and their role in Medicine

This course will focus on the approaches that scientists use to communicate with one another. To accomplish this, we will read primary research articles, discuss their content and conclusions, and formulate our own opinions on the results and interpretations put forth by the authors. The goal of this course is to give you the skills needed to go beyond understanding the "mass media" view of science, and to acquaint students with the methods and processes used by the scientific community to communicate, evaluate findings, and develop a consensus on basic concepts. Our discussions will focus on the biology of embryonic stem cells and their potential use in medical therapies. Ethics in scientific research and writing will also be addressed.

This is a writing/discussion-based class that *requires class attendance and class participation*. Selected papers from the scientific literature will be assigned and covered in-depth during class. Students are expected to be prepared and have completed reading assignments prior to each class. In addition, each student will write an 8-10 page term paper and prepare a 15-minute oral presentation on an approved topic. Detailed instructions for the reading assignments, the preparation of the Term paper and Oral presentation will be provided in class.

The primary research articles used in this course usually contain microscopic images and/or complex graphical representations of averaged data sets. When reading these articles in preparation for class, students are required to complete a Figure Facts template provided in advance as a Word document for selected figures in each article. Prior to the class meeting, students upload the completed template into an assignments folder in Blackboard. Students should also bring a hard copy of their completed template to class, so they can refer to their notes as we examine the data.

Student Evaluation:

Grades will be determined based upon student performance on writing assignments, class participation (including attendance) and oral presentations. An approximate breakdown of how the class will be graded is as follows:

	% of grade
Class Participation	15
Attendance (days present/class period)	15
Class Assignments (in class and take home)	25
Term Paper (Due November 25)	30
Oral Presentation (November 27- December 6)	15

Important Dates:

Sep 22	Must have an approved topic by this date
Oct 15	Outline for Term paper due (1 page)
Nov 03	Rough draft of Term paper due (4-5 pages)
Nov 31	Term paper due (8-10 pages)
Nov 27	Oral presentations begin

Attendance and Class participation

Since this course is based almost entirely on demonstrating comprehension of the materials presented, students are required to attend every class. Unexcused absences will not be tolerated, and excused absences should be rare. While attending class is important, participating in class discussions is also critical for a good grade in this class. Students must demonstrate that they have read the assignments and that they have done the extra background analyses needed to comprehend the material. The only way to do this is to get involved in the discussions. ***Everyone will talk every class period, so come prepared.***

Writing assignments have specific due dates – papers handed in late will receive a penalty of no less than 5% per day late. Writing assignments will be uploaded in Blackboard. Power Point presentations (see below) will be provided to the instructor as electronic files prior to the date of presentation. Appropriate media formats are CDs or flash drives.

Term Paper

By the third week of the semester, students will have selected a topic on which to prepare a term paper (Sept. 22). The final term papers will be 8-10 double-spaced type written pages (not counting references). A list of suggested topics is provided, but students are also encouraged to come up with their own ideas. Nevertheless, I must approve all topics. The term paper will be based on the primary scientific literature, and several steps in the paper's presentation will be graded – e.g. an outline (due Oct. 15), a rough draft (due Nov 03) and the final draft (due Nov 31). These are estimated dates and are subject to change.

Oral presentation

During the last two weeks of the semester (prior to finals week) we will have student presentations of their term papers. The Power Point presentations will be 15 minutes in length (10-12 min plus a few min for questions), and will include an introduction of the topic's relevance, methods used to gather pertinent data, summary of the findings, comments on the conclusions drawn and a discussion of the future of the topic. Students will also be graded on knowledge of the topic, organization, ability to handle questions, etc. Although I will be grading each student, presentations also will be evaluated by the student's peers, which will impact their overall score on the presentation. Note that on days in which we have presentations class will probably run long, so please let me know if you have a class immediately following this one.

Grading Scale (tentative):
Grades will be determined based upon student class performance and class tests. Grades will be letter-based and will utilize a straight scale (see below) unless overall class performance dictates use of a curve.

A = 93-100%	B- = 80-82%	D+ = 67-69%
A-= 90-92%	C+ = 77-79%	D = 63-66%
B+ = 87-89%	C = 73-76%	D- = 60-62%
B = 83-86%	C- = 70-72 %	F = 0-59%

I will be posting the grades for each of the assignments regularly so you will know in advance how you are doing overall. PLEASE DON'T WAIT UNTIL THE CLASS IS FINISHED TO TRY TO IMPROVE YOUR GRADE. You will have plenty of opportunities during the semester to improve your grades. Once the class is finished the grades are final.

Issues that will be discussed in class (not necessarily in order):

Understanding the scientific process
Funding of scientific research
Finding scientific papers
Writing an abstract
Writing a scientific paper
Reading primary scientific papers
Scientific Meetings – International, Regional
Preparing oral and poster presentations
Plagiarism and scientific misconduct
Use of audio/visual equipment (PowerPoint)
Inception of ideas, authorship, patents

Some potential term paper topic areas: Pick any other topic that interests you but all topics require final approval

ES cell and their use in therapeutics (pick a particular disease or strategy)
Whole genome analysis- It's use in identifying therapeutic targets
Whole genome analysis- It's use in preventive medicine
Any signal transduction pathway
Proteomics in identifying therapeutic targets
Gene Therapy – pick a disease or a strategy
Tumor suppressor genes (pick one)
Knockout mouse models of disease
Antibiotic over-prescription
New antibody therapeutics – Herceptin, Remicade
SARS, Ebola, H1N1 Flu
Angiogenesis and cancer therapy

Please read the attached statement on academic dishonesty:

Since much of the course requires individual research and writing, special emphasis will be placed on the importance of avoiding plagiarism, either intentional or otherwise. It should be recognized that students handing in assignments that do not represent their own work will receive a failing grade in this course. Thus, it is important to understand what plagiarism is and how to avoid it. One class period may be devoted to this topic.