BIO182 Seminar in Cell Signaling: LIFE, DEATH, AND DISEASE  
Tufts University; spring 2006

Professor: Dr. Kelly McLaughlin  
Contact Information:  
office address: Tufts University; office/lab Dana 017A  
office hours: Tuesday 3-4 or Friday 2:30-3:30 p.m.  
* email: kelly.mclaughlin@tufts.edu  
Class Meetings: Barnum 113, Monday and Wednesdays 10:30-11:45 a.m. (modified block E+)  
Course readings: Peer-reviewed articles from primary literature, review articles, handouts  
Prerequisites: BIO 41 (or equivalent)

Course description

BIO182 Seminar in Cell Signaling: Life, Death and Disease. In order to demonstrate the importance and processes of cellular communication, this course will focus on three areas of research: life (i.e. cancer, stem cells, teratomas), death (apoptosis) and disease (syndromes and developmental anomalies). During the past several decades, exploration in basic research has yielded extensive knowledge about the numerous and intricate processes involved in the development and maintenance of an organism. However, despite these efforts, many questions remain unanswered. In this class we will address various topics including: How are complex processes regulated during the construction of an organism? What causes a "normal" cell to suddenly proliferate uncontrollably? What triggers a cell to commit suicide? Students will be expected to present and read papers from the current literature, design and write a research proposal, and become familiar with selected signal transduction pathways.

Course Requirements and Assessment

Evaluation for this course will be based on the successful completion of a combination of class participation, oral presentations, short homework assignments, and a research grant proposal. In addition to examining how signal transduction pathways function during diverse biological processes another objective of this class is to explore how scientific findings are presented to specific groups of people (i.e. the general public and especially to other scientists). Since substantive contribution to classroom discussions will be a valuable component of this course, class participation is included in the grading system outlined below.

* No extra credit assignments will be given.

Grading

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<tr>
<th>Component</th>
<th>Percentage</th>
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<tr>
<td>Short homework assignments/ quizzes</td>
<td>15%</td>
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<tr>
<td>Paper presentations (10% for 1st; 15% for 2nd)</td>
<td>25%</td>
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<tr>
<td>Class participation</td>
<td>25%</td>
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<tr>
<td>*Student evaluation of proposal (peer review)</td>
<td>10%</td>
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<tr>
<td>*Final fellowship proposal</td>
<td>25%</td>
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<tr>
<td>Final grade total</td>
<td>100%</td>
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A FEW GENERAL POLICIES AND COMMENTS

**Reading Assignments:** The good news – there is NO textbook to buy for this class. The bad news – there is still plenty of reading material in the form of: review articles, primary literature and other handouts. Whenever possible I will place the assigned papers into folders located our class blackboard site (BIO182). Hardcopies of the papers will be provided in class one week before the assignment is due. It is the responsibility of the student for obtaining copies of the handouts prior to class.

**Homework and Quizzes:** To help prepare you for our class discussions, there will be a series of very short homework assignments. These assignments are to help you prepare for class and to better understand the techniques and results you have read about. Homework assignments are due at the beginning of class at 10:30 a.m. and will not be accepted late. If it appears that students are not preparing for class, unannounced quizzes will be given.

**Communication (Grant proposal):** One of the goals of this course is to help students improve their communication skills (both written and oral). To help achieve this goal, students will write a grant proposal that will be reviewed during our classroom “mock” study section (your review of a classmates proposal will count of 10% of your final grade). There will be several assignments throughout the semester to help guide you through the grant writing process. Good writing takes time and is hard work – and requires practice! Plagiarism, or any form of academic dishonesty will not be tolerated. All written assignments are due at the beginning of class (10:30 a.m.) in hardcopy and will not be accepted electronically.

*Research grant proposal evaluation:* Fellow classmates will review this proposal during “mock-study sections”. Grant authors will be given study section comments as part of the grant writing process. After considering the reviewers’ comments and writing either a rebuttal or revising the grant accordingly, the final grant proposal will be turned in the last day of class for a final grade (see syllabus for schedule).

**Communication (presentations):** Each student will present 2 papers from the primary literature during the class. A written evaluation will be given to each presenter after each presentation. If students would like to choose the paper they would like to present, they must submit the paper to K.M. for prior approval 3 weeks before the scheduled presentation date.

**Overall participation/attitude:** Since much of this class requires class participation, I ask that you come to class prepared, think about what you are doing, ask thoughtful questions, be organized and meticulous in your work, and contribute to the class discussions. Although attendance is not mandatory (people get sick, or have grad/med/job interviews…etc; “life-happens”), your level of participation in this seminar contributes 25% of your final grade. If you have to miss a class, I kindly request that you please send me an email to let me know that you will not be joining us. You are allowed to “drop-a-note” once during the semester.
LECTURE SCHEDULE

Week 1: Jan. 23rd (M)  INTRODUCTION TO COURSE
  • Course logistics (syllabus, presentations, final paper/grant)
  • Student information sheet
  • Overview Of Course Topics (life, death, disease)
  • Handouts week#2
  • Sign up sheet for presentations
  • "Dropping a note"

Jan. 23th – Feb 15th Topic:  Life – Controlling, Understanding, Avoiding...

Feb. 22nd – March 8th Topic:  Death - Suicide: A Strategy for Life

March 13th – April 5th Topic:  Disease – Mistakes happen

Special assignment dates:

Feb. 8th (W) Topic:  Library workshop
  DUE: Library Tisch Library - ERC Reference materials at Tufts University
  Assignment Meet in Room 223 Guest speaker - Regina Raboin

April 3rd (M)        KM: - HOW TO REVIEW A GRANT PROPOSAL - getting the most out of study section
  DUE: Grant application (2 copies)

April 10th (M)       Group #1: Study section – peer review session
  DUE: grant review

April 12th (W)       Group #2: Study section – peer review session
  DUE: grant review

April 19th - April 26th INDIVIDUAL MEETINGS WITH STUDENTS

May 1st (M) Summary of course, final discussion – last day of class

DUE: FINAL REVISED GRANT 5/1/06 by 10:30 a.m.
AS WITH A "REAL GRANT" APPLICATION LATE GRANTS APPLICATIONS WILL NOT BE ACCEPTED