

# MCB 38: Stem Cell Biology, Ethics and Societal Impact Spring 2019

Lectures: MWF 9-10am, 2040 VLSB

## **Instructors**

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## **Graduate Student Instructors (GSI)**

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All office hours will be announced in class and written on bCourses

## **Course description**

What are stem cells? How do they function normally in the body and how can we harness their potential for treating diseases? What are the biological, ethical and political barriers to genetically engineering stem cells for use in regenerative medicine? To address these questions, we will start with the fundamentals necessary to understand stem cell biology. We will explore how stem cell technologies can be advanced and used in novel medical therapies, with a particular focus on innovations for manipulating and engineering stem cells. Integral to these topics will be a thorough dialog of ethical implications and the controversies surrounding stem cell research.

## **Discussion sections**

There are discussion sections once a week. Attendance in discussion sections is required. Please attend the section you are enrolled in. You will go over lecture material, discuss the reading assignments and have more in-depth discussions about the ethics and controversies related to stem cell research.

<b>Section</b>	<b>Day/time</b>	<b>Location</b>	<b>GSI</b>
101	F 12pm	85 Evans	Eduardo
102	F 11am	9 Evans	Eduardo
103	F 1pm	85 Evans	Monika
104	F 2pm	9 Evans	Monika

## **Reading material**

There is no textbook for this course. We will post short articles to read on bCourses throughout the semester. Some of these articles will have assignments associated with them due either in discussion section or on bCourses. Your GSI will keep you informed about reading assignments.

### **Course web site**

<https://bcourses.berkeley.edu/> or find it via CalCentral.

We will post lecture notes and other supplemental material in the “Files” section of bCourses. You should check the course web site for announcements or have them automatically emailed to you. It is up to you to check bCourses regularly.

### **Grades**

Discussion section assignments: 20%

2 Midterms: 2 x 25% = 50%

Final: 30%

**Discussion section assignments:** There will be short assignments for some of the articles you will read. Assignments will be listed on bCourses and your GSI will explain them in more detail.

**Exams:** There will be two midterm exams that take place in lecture (50 minutes total). The exams will be a combination of multiple choice, short answer questions and short essay questions.

Midterm 1 (covers Lec 1-11) is on Friday February 22

Midterm 2 (covers Lec 12-24) is on Friday April 5

Final exam is cumulative and takes place Monday May 13, 7-10pm.

### **Course Policies**

#### **Safe, Supportive, and Inclusive Environment:**

Whenever a faculty member, staff member, post-doc, or GSI is responsible for the supervision of a student, a personal relationship between them of a romantic or sexual nature, even if consensual, is against university policy. Any such relationship jeopardizes the integrity of the educational process.

Although faculty and staff can act as excellent resources for students, you should be aware that they are required to report any violations of this campus policy. If you wish to have a confidential discussion on matters related to this policy, you may contact the Confidential Care Advocates on campus for support related to counseling or sensitive issues. Appointments can be made by calling (510) 642-1988.

The classroom, lab, and work place should be safe and inclusive environments for everyone. The Office for the Prevention of Harassment and Discrimination (OPHD) is responsible for ensuring the University provides an environment for faculty, staff and students that is free from discrimination and harassment on the basis of categories including race, color, national origin, age, sex, gender, gender identity, and sexual orientation. Questions or concerns? Call (510) 643-7985, email [ask\\_ophd@berkeley.edu](mailto:ask_ophd@berkeley.edu), or go to <http://survivorsupport.berkeley.edu/>.

### **Accommodations**

If you need accommodations for any physical, psychological, or learning disability, or if you want instructors to have emergency medical information, please speak to one of us privately, either after class or during office hours.

Students who need academic accommodations (for example, a notetaker), should request them from the Disabled Students' Program, 260 César Chávez Center, 642-0518 (voice or TTY). DSP is the campus office responsible for verifying disability-related need for academic accommodations, assessing that need, and for planning accommodations in cooperation with students and instructors as needed and consistent with course requirements. For DSP students needing accommodations for the exams, please contact instructors at least two weeks prior to the midterms or final so that we can work out acceptable accommodations.

If there are any conflicts with the due dates of the exams or assignments for religious reasons, travel for campus sponsored extracurricular activities, medical and graduate school interviews, or for other reasons, please contact us.

### **Academic Honesty**

We expect you to do your own work and to uphold the standards of intellectual integrity. If you are having trouble with an assignment or studying for an exam, or if you are uncertain about permissible and impermissible conduct or collaboration, please come see us with your questions. UC Berkeley's cheating policy (<http://bulletin.berkeley.edu/academic-policies/#studentconductappealstext>) will be followed.

### **Incomplete Policy**

Under emergency/special circumstances, students may petition to receive an incomplete grade. Please clearly state your reasoning in your comments to us.

### **Letters of Recommendation:**

We are quite willing to provide letters of recommendation as needed for any of your applications (such as medical and graduate school and/or job opportunities). In addition to participating in the classroom discussions, please be sure to attend several of our course office hours. After the end of the course, please request an interview with one of us and bring a copy of your complete unofficial transcript, your CV and Personal Statement along with any recommendation forms that need to be filled in.

### **Additional Course Policies**

- Be sure to pay close attention to deadlines.
- In consideration of other students, please turn off your cell phone during class time.
- Anyone eating in class must share their food with all other students.
- If you have a conflict with the midterm or due dates of assignments, please see us in advance.
- For unexpected emergencies, please email us.
- You may discuss the general features of your discussion section assignments with other students, but the assignment that you submit must be completed on your own.

### Evaluation of the Course

Please let us know how things are going during the course by email or in person. Sometime during the middle of the semester we may solicit your feedback more formally on what is working well and what needs to be changed. Also, if you see either of us around campus (or at any sports events or other activities), feel free to introduce yourself and let us know how everything is going with the class and/or ask any questions.

### Fine Print

The course deadlines, assignments, exam times and material are subject to change at the whim of either instructor. You will be informed of any changes.

### Schedule of lecture topics

The exact schedule may change depending on how the course is going.

<b>Week</b>	<b>Dates</b>	<b>Lectures</b>	<b>Topics</b>
1	Jan 23-25	1-2	Stem cells, cell signaling and tissues
2	Jan 28-Feb 1	3-5	Embryonic stem cells
3	Feb 4-8	6-8	Adult stem cells and gene expression
4	Feb 11-15	9-11	iPSCs and hematopoietic stem cells
5	<i>Feb 18</i>		<i>No class (President's Day)</i>
	Feb 20		Review for exam 1
	<b>Feb 22</b>		<b>Midterm 1 (covers Lec 1-11)</b>
6	Feb 25-Mar 1	12-14	Genetic engineering
7	Mar 4-8	15-17	Somatic cell nuclear transfer and cloning
8	Mar 11-15	18-20	Bioengineering and regeneration
9	Mar 18-22	21-23	Neural stem cells
	<i>Mar 25-29</i>		<i>Spring break</i>
10	Apr 1	24	Sci-fi and stem cells
	Apr 3		Review for exam 2
	<b>Apr 5</b>		<b>Midterm 2 (covers Lec 12-24)</b>
11	Apr 8-12	25-27	Muscle stem cells
12	Apr 15-19	28-30	Pancreatic stem cells and diabetes
13	Apr 22-26	31-33	Aging
14	Apr 29-May 3	34-36	Cancer stem cells
15	May 6-10		RRR week reviews
	<b>May 13</b>		<b>Final exam (cumulative) 7-10pm</b>