

BE209: Principles of Molecular Cell Biology and Biotechnology

Spring 2009

Course website: <http://128.197.125.63/>

Course email: bmebio@gmail.com

Course Lectures:

Mon, Wed: 10 am - Noon

location: PHO206 , Charles River Campus

[lab schedule and notes](#)

[lab manuals and Discussion notes](#)

[people](#)

[lecture notes](#)

[administrative: rules, notes](#)

[locations](#)

Lecture Outline

Date	Lecture Number	Day	Topic	Chapter	Lecture Notes
14-Jan	1	Wed	introduction to cells	1	L01.pdf
21-Jan	2	Wed	chemical components of cells and Basic Energetics	2, 3	L02.pdf
26-Jan	3	Mon	Proteins and catalysis	3, 4	
28-Jan	4	Wed	DNA, Chromosomes, and Genomes.	5	
2-Feb	5	Mon	DNA Replication, Repair, and Recombination.	6	
4-Feb	6	Wed	How Cells Read The Genome: From DNA to Protein.	7	
5-Feb		Thurs	Homework Due - email by midnight		
9-Feb	7	Mon	Control of Gene Expression.	8	
11-Feb	8	Wed	Mid-term preview / important material And Problem Set review.		
17-Feb	9	Tues	MIDTERM 1		
18-Feb	10	Wed	Membrane Structure and transport	11, 12	
23-Feb	11	Mon	Energy from food	13	
25-Feb	12	Wed	Energy Conversion: Mitochondria and Chloroplasts.	14	
2-Mar	13	Mon	transport	15	
4-Mar	14	Wed	Mechanisms of Cell Communication.	16	
16-Mar	15	Mon	The Cytoskeleton. Cell Junctions, Cell Adhesion, and the Extracellular	17	

			Matrix.		
18-Mar	16	Wed	The Cell Cycle and apoptosis	18	
19-Mar		Thurs	Homework Due - email by midnight		
23-Mar	17	Mon	cell division and meiosis	19, 20	
25-Mar	18	Wed	Mid-term preview / important material And Problem Set review.		
30-Mar	19	Mon	MIDTERM 2		
1-Apr	20	Wed	Genome engineering	10	
6-Apr	21	Mon	DNA sequencing	TBD	
8-Apr	22	Wed	Microarrays / RNAi	TBD	
13-Apr	23	Mon	Mass Spectrometry / Protein Engineering	TBD	
15-Apr	24	Wed	Computation / NCBI	TBD	
22-Apr	25	Wed	Cancer, Stem Cells / Nuclear Transfer ("cloning")	21	
23-Apr		Thurs	Homework Due - email by midnight		
27-Apr	26	Mon	Evolution / Model Organisms	9	
29-Apr	27	Wed	problem Set review and Final Summary		
			Final Exam 2pm -4 pm		

Book	Essential Cell Biology, 2nd Edition. Authors: Bruce Alberts, Dennis Bray, Karen Hopkin, Alexander Johnson, Julian Lewis, Martin Raff, Keith Roberts and Peter Walter
-------------	---

	A closely related, older, book is online here
--	---

Assignments

Assignments	<p>Reading: You need to do it! It will not be possible for you to learn all that you need to if you do not. Not everything can be learned from problem sets and lectures alone.</p> <p>Problem Sets.</p> <p>Problem sets will be posted at least a week before they are due. They are due by midnight on the Thursdays indicated.</p> <p>You will be responsible for uploading the files to a website we will designate.</p> <p>There will be a 20% deduction per day the assignment is late.</p>
Lab Assignments	<p>Pre-lab questions. Due at the beginning of lab.</p> <p>Post-lab questions. Due at beginning of subsequent lab.</p> <p>Final lab report (just one). Due in class on Wed. April 29.</p>
Grading	<p>Course grade will be based upon:</p> <ol style="list-style-type: none">(1) Two Midterms and one final exam(2) problem sets(3) pre- and post-lab questions(4) final lab report(5) lab attendance(6) attendance at discussion sections.(7) verbal participation in class <p>Your final grade will come from: 60% exams, 10% problem sets, 30% lab assignments</p> <p><i>No makeup assignments will be given for missed assignments or missed labs/discussions.</i></p> <p><i>The only extra credit given will be based on your verbal participation in lecture.</i></p>

Academic Code	<p>You may discuss the content of a given problem and solution methods and approaches with fellow classmates, but THE WORK YOU HAND IN MUST BE YOUR OWN. You are expected to formulate, analyze, and write all solutions to homework problems by yourself. Copying the solutions of another student or from other sources is cheating and will be not be tolerated.</p> <p>You are expected to adhere to the Academic Code of Conduct of the College of Engineering: http://www.bu.edu/eng/handbook/chapter09/</p>
----------------------	---

BE209: Principles of Molecular Cell Biology and Biotechnology**Lab Syllabus**

Week of	Lab Title	Assignments Due
Jan 26	Lab 1 Prokaryotes and Eukaryotes	
Feb 2	Lab 2 Bacterial Growth	Lab 1 Postlab assignment Lab 2 Prelab assignment
Feb 9	Lab 3 Fermentation and Photosynthesis	Lab 2 Postlab assignment Lab 3 Prelab assignment
Feb 17	President's Day	
Feb 23	Lab 4 Biochemistry of Protein Folding	Lab 3 Postlab assignment Lab 4 Prelab assignment
March 2	No Lab	Lab 4 Postlab assignment*
March 9	Spring Break	
March 16	No lab	
March 23	Lab 5 Restriction Digestion	Lab 5 Prelab assignment
March 30	Lab 6 Ligation and Transformation	Lab 6 Prelab assignment
April 6	Lab 7 Evaluating Transformation	Lab 7 Prelab assignment
April 13	Lab 8 GFP Expression and PCR Analysis	Lab 8 Prelab assignment
April 20	Lab 9 Time-series Analysis (at home)	
April 29		Final Lab Report*

*Due Wednesday in class.

Time and Locations

Due to space constraints, the class is divided into 5 lab groups and each group is assigned to one of the following lab time and locations:

M 4:30-7:30pm, SCI 303
M 5-8pm, SCI311
T 12-3pm, SCI 303
T 1-4pm, SCI 311

(possibly) M 12:00-3:00pm, SCI 311

Contact Information

Teaching Fellows:

Jack Stopa jstopa@bu.edu
Carolyn Ritterson critters@bu.edu

Lab Director: Dr. Xin Brown xing@bu.edu

Laboratory Information

Attendance

Laboratories will commence on time and are expected to take three hours to complete. You will need the full three hours to adequately complete the lab exercise. Therefore, you are expected to be prepared by reading the appropriate chapters in the textbook and the laboratory manual and by answering the pre-lab questions before the lab.

You are expected to be punctual to every laboratory meeting. This is to ensure minimal disruption of the class, your preparedness for the day's activities and your safety. Because TFs review safety procedures at the start of the class, you are a safety hazard to yourself and your classmates if you miss these instructions because you are late.

Attendance in laboratory is required. You may turn in work pertaining only to the laboratories for which you are present. There is no makeup lab if you miss a lab.

Safety

Because of chemical and biological hazards encountered in the laboratory and in the field, you are expected to wear pants or long skirts and closed-toed shoes in this class. Students not properly dressed may be asked to leave the laboratory at the TF's discretion.

If you have a medical condition that requires special precautionary measures in the laboratory, notify your TF as soon as possible so that alternative arrangements can be made.

Eating, drinking, smoking, inserting or removing contact lenses and applying makeup are not permitted in the laboratories.

Cell phones, radios, CD and cassette players are not permitted in the laboratory.

Maintenance

You are responsible for keeping your bench neat and clean. At the end of every laboratory:

- Wipe down the bench and discard loose paper
- Turn off any equipment at your bench
- Arrange equipment in an orderly fashion on the bench top
- Return any materials to the TF bench
- Follow any other directions from your TF

Assignments

Pre-lab and some post-lab assignments should be hand-written on the tear-out sheets provided in the laboratory manual. Laboratory Report should be typed, double-spaced and the pages should be numbered.

Late Work Policy

Pre-lab assignments and post-lab assignments must be turned in at the beginning of each lab. Late assignments will not be accepted and will receive no points. The final laboratory report is Due April 30 in class. Late paper will be penalized 20% of the total points per day late.

Academic Conduct Policy

The assignments are designed to help you understanding the material. It is expected that you will work independently on the completion of all written assignments. We encourage you to collaborate with your classmates in brainstorming ideas, but the written work **must** be your own.

Final Laboratory Grades

You must have a passing grade in the laboratory (60%) in order to pass the course. Your laboratory grade is the sum of your grades on all laboratory assignments:

Prelab Assignments	30 pts.
Postlabs Assignments	30 pts.
Final Laboratory Report	40 pts.

Times & Locations	<p><u>Lecture:</u> MW, 10 – 12, PHO 206</p> <p><u>Discussion Sections:</u> Monday 1-2pm CAS B18A Thursday 12-1pm KCB 107</p> <p><u>Labs:</u> M 4:30-7:30pm, SCI 303 M 5-8pm, SCI311 T 12-3pm, SCI 303 T 1-4pm, SCI 311 (possibly) M 12:00-3:00pm, SCI 311</p>
----------------------------------	---

Instructors	Prof. Martin Steffen bmebio@gmail.com 617-414-7935, Rm. ERB 504 Med Campus: Evans E-637
Lab Director	Dr. Xin Brown xinq@bu.edu 617-358-4193
Teaching Fellows	<u>GTFs:</u> Laura Rupprecht lauracr@bu.edu Jack Stopa jstopa@bu.edu Carolyn Ritterson critters@bu.edu Mary Goldsmith marygold@bu.edu
Office Hours	Martin Steffen: Monday, 12:30-1:30, ERB 504 And by appt at the medical school: 670 Albany St., Rm. 512 GTF hours - Mary Goldsmith 2:30 - 3:30, Monday, Rm 211, 64 Cummington Laura Ruprecht 12:30 -1:30, Wednesday, Rm 211, 64 Cummington Jack Stopa 2:00 - 3:00, Thursday, Rm 724, LSEB Carolyn Ritterson TBD