

BE209: Principles of Molecular Cell Biology and Biotechnology

Objectives

- Apply information learned in lecture to concrete situations
- Learn to use scientific instruments
- Make biological observations
- Collect and analyze biological data
- Learn to report experimental results scientifically

Lab Syllabus

BE209 has a total of ten lab modules. The first four lab modules are independent experiments concentrating on different components of a cell, whereas the last six lab modules are six consecutive steps of a continuous molecular cloning experiment. Each lab has a pre-lab assignment and a post-lab assignment. At the end of the semester, you also need to write a final lab report summarizing your findings for the molecular cloning experiment.

Week of	Lab Title	Assignments Due
Jan 22	Lab 1 Prokaryotes and Eukaryotes	
Jan 29	Lab 2 Biochemistry of Protein Folding	Lab 1 Post lab assignment Lab 2 Prelab assignment
Feb 5	Lab 3 DNA and Chromosomes	Lab 2 Post lab assignment Lab 3 Prelab assignment
Feb 12	Lab 4 Fermentation and Photosynthesis	Lab 3 Post lab assignment Lab 4 Prelab assignment
Feb 19	No lab, Presidents' Day	
Feb 26	Lab 5 Isolating Plasmid DNA	Lab 4 Post lab assignment Lab 5 Prelab assignment
March 5	Spring Break	
March 12	Lab 6 Restriction Digestion	Lab 5 Post lab assignment Lab 6 Prelab assignment
March 19	Lab 7 Ligation and Transformation	Lab 6 Post lab assignment Lab 7 Prelab assignment
March 26	Lab 8 Evaluating Transformation	Lab 7 Post lab assignment Lab 8 Prelab assignment
April 2	Lab 9 GFP Expression and PCR Analysis	Lab 8 Post lab assignment Lab 9 Prelab assignment
April 9	Lab 10 Time-series Analysis	Lab 9 Post lab assignment
April 23		Final Lab Report due Wednesday in class

Who, When and Where

Lab session	Time	Location	TF
B1	Mon 6:30-9:15 pm	SCI 305	Elliot Tague <tague2@bu.edu>
B2	Tue 6:30-9:15 pm	SCI 305	Tiebin Wang <tbwang@bu.edu>
B3	Wed 2:30-5:15 pm	SCI 305	Remy Peace <repeace@bu.edu>
B5	Thu 3:30-6:15 pm	SCI 305	Elliot Tague <tague2@bu.edu>
B6	Tue 12:30-3:15 pm	SCI 305	Tiebin Wang <tbwang@bu.edu>

Policies

Attendance

Attendance in lab is required. With the exception of Lab 1, the homework assignment you submit at the beginning of each lab will serve as attendance. You may not submit assignments for a classmate who is not present. You must inform your TF as soon as possible if you cannot attend a lab. We will try our best to switch you to a different lab session. However, due to time and space constraints, this might not always be possible. You are still required to turn in your assignments, but you will only receive 50% of the grade for the missed lab. If you miss 3 or more labs, you will receive an incomplete for the course.

You are expected to be punctual to every lab. This is to ensure minimal disruption of the class, your preparedness for the day's activities and your safety. TFs review safety procedures and demonstrate critical techniques at the start of the class, you are a safety hazard to yourself and your classmates if you miss these instructions. In the event if your TF is late, contact lab director Dr. Xin Brown (x84193). You are expected to wait in the lab until you are explicitly dismissed.

Lab exercises will take two to three hours to complete. You are expected to be prepared by reading the lab manuals and answering the pre-lab questions before the lab.

Safety

Because of chemical and biological hazards encountered in the lab and in the field, you are expected to wear pants or long skirts and closed-toed shoes. Students not properly dressed may be asked to leave the laboratory at the TF's discretion. Gloves are available in the lab. Lab coats and goggles are not required, but you are encouraged to wear them if you have them already.

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

Eating, drinking, inserting/removing contact lenses or applying makeup are not permitted in the lab. If you need to use your laptop or cell phone to record your lab results, make sure you take off your gloves and wash your hands first to prevent contamination of your laptop or cell phone.

Waste must be disposed of appropriately. All liquid waste must be collected in the liquid waste container on the bench. All sharps, including needles, razor blades, Pasteur pipettes, pipette tips and glass slides, must be disposed of in the sharps container (usually made of red rigid plastic). All solid, non-sharp biohazard waste, including contaminated gloves and paper towels, must be disposed of in the biohazard waste container (usually a big cardboard box lined with red plastic bag). If you are not sure where to dispose your waste, ask your TF.

If there is a spill or any personal injury, inform your TF immediately. Your TF will assess the situation and handle it according to the BU lab safety guidelines. If it is a minor spill or a minor injury, he or she will help with the clean-up, provide first aid and report the incident after lab. If the situation is severe, he or she will contact the appropriate authorities for assistance.

If you observe any unsafe behavior in the lab, report to your TF.

Assignments

The assignments are designed to help you to understand 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. Do not give your finished work to a fellow student. Students found guilty of plagiarism may receive an F for the course from the faculty and may be suspended or expelled by the Academic Conduct Committee.

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. You may not hand in assignments for your

classmates. If you are in a lab session that is not attended by your usual TF, hand in your assignment to the attending TF.

For the final lab report, you must submit a paper copy to your TF and an electronic copy to turnitin.com by the appropriate deadlines to avoid late penalties. The deadline for the paper copy is the end of class on the due date and the deadline for the electronic copy is the midnight of the due day. Your TF will check the originality scores of all papers submitted and check that an electronic copy has been submitted on time. If any paper is substantially similar in phrasing to a published source (e.g. textbook, laboratory manual, or scientific journal) or another student's work, it constitutes plagiarism. Students found guilty of plagiarism may receive an F for the course from the faculty and may be suspended or expelled by the Academic Conduct Committee. You will not receive any points for the final lab report if you fail to submit the electronic copy to turnitin.com.

Final Lab Grades

Lab grade is 30% of your final course grade. You must have a passing grade in the lab in order to pass the course. Your lab grade is the sum of your grades on all lab assignments:

Prelab Assignments	30%
Postlab Assignments	30%
Final Lab Report	40%