



Biology 475 - Molecular Biology Lab Syllabus



Lab Schedule

Time: Thursday 12-4

Text: handouts, websites, research articles – all provided

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Welcome

Welcome to Molecular Biology Lab. It will be an exciting term, all thanks to NSF's continued confidence in this research-driven curriculum! As always, we will be requiring pre-lab assignments that will involve significant preparation each week; if you don't have your pre-lab done, there is no chance to make up these points. Major assignments will include a very involved lab notebook, two mid-term exams, and a computer-based portfolio using Word templates.

Grading

Lab Notebook - 30X7 = 210 total

Two Mid-Terms (including dead week) – 80X2 = 160 total

Portfolio Project (due/graded 2 times during term) = 100 total

Grand Total = 500

Week	Method
1	Syllabus Overview, Using Pipetteman, Introduction to Cloning
2	Restriction Mapping Mystery DNA (pre/inlab)
3	Plasmid Preparation and Sequencing Reactions (pre/inlab)
4	Sequence Gels and Loading, Mapping and Biology Workbench Follow-Up*
5	Sequence Assessment, BLAST, Mid-term (over first four labs)*
6	Genomics, PCR (Full-Length and DGGE) - weeks 1-5 websites due
7	Southern Blotting
8	Probes - DNA and Antibody
9	DGGE
10	Wrap-Up, Mid-term (over last four labs)

*1 pre/inlab for all (even though there are 2 separate templates)

Final Webpages/Notebooks Due Monday, June 6 - NO EXCEPTIONS

ALL ASSIGNMENTS WILL BE COMPLETED INDIVIDUALLY

You may occasionally work with a partner but you will be graded individually on all of the following...

Lab Notebooks

You will be provided with a lab notebook. A Pre-lab will be due and checked the first day of lab, first thing in lab. ALL materials generated in lab must be recorded in this book in ball-point ink according to the following protocol. Notebooks will remain with me in the lab after the course as they document original research relevant to this project. You may photocopy them for free - but you need to ask to do this, arrange a time, and do the copying yourself.

Pre-Lab Assignments: 17 points EACH WEEK

You must come to lab prepared with these; they will be checked while you are working on the lab. I STRONGLY recommend you use down-time to start pre-labs for the following week IN ADVANCE.

- (1) Title of Lab (1 pt)
- (2) Goal(s) of lab: one sentence summary statement. (2 pts)
- (3) Equipment/Reagent List: Name, function of major equipment, chemicals/solutions, or kits. (7 pts)
- (4) Procedure Outline: For this section, split the page and write a GENERAL outline of procedures on the left side. During lab, record specific notes, changes, etc. on the right side of the page. (7 pts)

In-Lab Assignments: 13 points EACH WEEK, *These must be completed in lab as you do the work.*

- (1) In-Lab Procedures: Record things as you see/do them; record changes to procedures. (3 pts)
- (2) Results: Outline major results of each lab. You may be taping data into the notebook. (4 pts)
- (3) Final Resting Place: Where did you put your stuff and how did you label it. (1 pt)
- (5) Discussion: 2 pts.
- (4) Quality of Final Data: for many labs, you will be evaluated directly on raw data (e.g. amount and quality of DNA obtained). Each lab will indicate what will be judged. 3 pts.

Webpages and Electronic Equipment

You will be provided with hard-copy and desktop templates specific to EACH lab. Pages will be completed in Word. They are less involved than my usual webpage assignments but require weekly imaging and data entry. As you work on your labs, you really should take hard-copy notes about what things will go where and update things regularly - OR THIS ASSIGNMENT COULD BE A REAL STRESSER. Strongly note that they will be collected and graded twice during the term. ADHERE to the guidelines and templates provided.

Some General Rules

(1) Your webpages will be posted long-term on the internet. Bad spelling/grammar, weird pictures, and "too-much-information" material will be seen by more than just me. Think of this project like an on-line resume. After you turn it in, you will not have access to change it. It is YOUR discretion whether to use your full name or not.

(2) DO NOT go overboard on pictures. You need very few each week. During each lab session, take and insert them into the Word template. GET RID OF WHAT YOU AREN'T USING!) NO IMPORTED IMAGES (even with authorization) and no videos. Clean things out of your folder after you assemble each page to avoid confusion.

(3) NSF and Waksman Foundation have given us 3K for digital cameras; each costs between 300-500 - MORE than your lab fees. Cameras do not leave this lab and are not available for check-out.

(4) Each student will be assigned one NS201 computer during class and a user/password. You are only to use this machine and access information. Although we will make every effort to let you use computers for outside of lab-times, we cannot guarantee that this room will always be available.

- Keep all experiments away from the computers (not past the tape lines)
- Save course materials as directed; that is where we will go to grade them
- Do not change any machine settings, preferences, desk-tops, print-drives, etc.

User is "molecular" (on "this computer") and password is "redlayer"

Mid-Terms

There will be 2 lab mid-term exams - one at week 5 over the first 4 weeks of class and one at week 10 over the last 4 weeks of class. Both are worth 80 pts.