

BIEB 123 Molecular Methods in Ecology and Evolution Lab: Spring 2010

Instructor: Dr. Goran Bozinovic
gbozinovic@ucsd.edu

Office Hours: 2208 Muir Biology - Thursday 10-11 am (or by appointment)

Lectures: Monday/Wednesday 11:00 am - 11:50 pm 3406 York Hall

Lectures will cover the theory behind the experiments performed in lab. The quizzes and exams will have questions on material that will be covered during lectures.

Labs: Monday/Wednesday 12:15 pm - 3:00 pm 3406 York Hall

TAs: Everson, Elysa (eeverson@ucsd.edu)
Cambell, Ellsworth (ells@ucsd.edu)

Required Course Materials:

1. Molecular Methods in Ecology and Evolution Lab Manual purchased at Soft Reserves
2. Lab notebook that uses carbon copies. Available in the bookstore and in the Grove general store
3. UV blocking lab safety glasses, which can be purchased in the bookstore.
4. A lab coat with long sleeves, which can be purchased in the bookstore
5. A calculator

Course Requirements

1. Lab Notebook: It is mandatory that you keep a complete lab notebook. The notebook must contain everything that you did in the lab, including:

- Any changes in the protocol
- All data/results
- All calculations done during experiments
- Observations

2. Take home assignment: There will be one take home assignment on dilutions worth 10 points.

3. Quizzes: There will be 7 scheduled quizzes (TBA) during lab periods, 10 points each. They will be given at the beginning of lab, and collected 15 minutes later. If you arrive after the quiz has been handed out, you will not be able to make it up.

4. Lab Reports: 4 lab reports throughout the quarter are worth 40 points each. While you will be collecting and sharing data with a lab partner, and you are welcome to discuss your results with your classmates, you must hand in your own lab report, written in your own words. You will be penalized for copying another lab report or for handing in the same (or very similar, such as just a few words changed here and there) lab reports as your partner.

All lab reports should include:

Purpose of the experiment. This section should be BRIEF - no more than a few

Sentences: simply state why you are doing the experiment.

Results should include the following:

- data or data analysis
- figures, gels (or representations thereof)
- any sample calculations
- a brief statement about what each result means

Discussion:

- Note any unusual observations
- Discuss success or failure of the experiment - if there was a problem, discuss probable source.

Lab reports should have no more than 5 pages of text - figures can go on separate pages. More specific description of the lab report can be found in the course WebCT page. Although the lab report will be submitted electronically, all carbons from the labs associated with a lab report must be handed in class the day the lab is due.

Lab report Late policy.

Lab reports are due at the beginning of lecture on the assigned due date (must be electronically submitted before 11 AM of the due date).

Penalty for turning lab reports late:

- **5 points** if handed in later on the same date;

After the first late day, you lose **2 points/day**, so
-7 points if handed in anytime the next day
-9 points if handed in the 3rd day etc.

Lab report due dates:

<u>Labs to be included in the Lab Report</u>	<u>Due date</u>
lab 2- lab 6	Mon April 26th
lab 7- lab 12	Mon May 17th
lab 13- lab 15	Wed May 26th
lab 16- lab 18	Wed June 09th

5. Lab attendance: Attendance is taken within the first 15 minutes of every lecture session. If you are ill, please notify me (gbozinovic@ucsd.edu).

6. Exam: There will be one cumulative exam on March 11th worth 100 points. Depending on the performance of the class the exam scores might be adjusted.

- The exam adjustment policy:

- 1) If any student receives a 100% on the exam it will NOT be curved;
- 2) If any student receives a score between 95 and 100%, that will be the new maximum score (for example if the highest grade is 96, everyone's score will increase by 4 points);
- 3) If the highest score is less than 95% then that student's score will be the new 95% (for example if the highest grade is 89, everyone's score will increase by 6 points).

Extra points for lab performance will be given throughout the course for such things as PCR success, DNA extraction, etc.

Grading: Total possible points: **376**

Attendance (2 points per lab) 36 points

Dilution assignment (10 points) 10 points

7 Quizzes (10 points each) 70 points

4 Lab reports (40 points each) 160 points

Exam 100 points

Total possible points 376 points

- * **Extra Credit (20 pts.)** - individual or group:
 - 10' presentation - topic of choice relevant to course material
 - an interesting experiment
 - new technique
 - emerging area of interest...

"First Come - First Serve": please notify the instructor one week prior

No more than 2 individuals / groups per class

* dates: 04/05 - 06/02 (17 class sessions)

Please make sure you regularly check your scores in WebCT to make sure no errors have occurred.

Letter grades will be assigned as follows:

Grade Overall class percentage

A+, A, A- 98, 92, 90

B+, B, B- 88, 82, 80

C+, C, C- 78, 72, 70

D+, D, D- 68, 62, 60

F Below 60

Policy on cheating: Anyone caught cheating (which includes but it is not limited to plagiarizing lab reports, cheating on a test or quiz, or changing an answer for a regrade) will be reported to the Academic Integrity Office.

Letters of recommendation: If you think you need a letter of recommendation at some point in the future, please save our lab reports and tests, for I will ask for some of them to review. Also, I will write letters only for those who receive an A in the course. Finally, even if you have an A, if you have never spoken to me or come to my office hours, I may not agree to write a letter for you.

BIEB 123 Spring 2010 Dr. Bozinovic

Student contract:

I received a copy of the syllabus.

I understand that if I am late for lab on a day a quiz is give, I will not be allowed to take the quiz and will receive a 0 score for that quiz.

I fully understand the grading and late policy of the class outlined in the syllabus.

I understand that if I plagiarize a lab report and it is detected by Turnitin.com, the matter will go to the Academic Integrity Office on campus. I also understand that if I give a lab report to a student who takes the lab in a subsequent quarter, and he or she plagiarizes my lab report, I will also be subject to disciplining by the Academic integrity Office.

Print Name

Signature

Date

Name of lab partner:

Tentative Schedule

Date

3/29		Introduction Safety Rules Laboratory Waste Disposal Pipetting and Dilutions
3/31	Lab 1	Straight and Serial Dilutions
04/05	Lab 2	Introduction to Morphology and Phylogenetic Analysis Genomic DNA Isolation from several invertebrate and vertebrate species; DNA Barcoding
04/07	Lab 3	Downloading GenBank Record Using BLAST analysis in GenBank Clustal Sequence alignments Primer Design - Primer3Plus
04/12	Lab 4	Spectrophometric Analysis of Nucleic Acid Polymerase-Chain Reaction (PCR) COX gene amplification
04/14	Lab 5	Gel Electrophoresis PCR Product Clean-up Sequencing Reactions
04/19	Lab 6	Chromatogram clean-up Sequence Alignment and phylogeny
04/21	Lab 7	PCR Amplification and Gene Annotation
04/26	Lab 8	Agarose gel electrophoresis of PCR Product Gel Purification LAB REPORT I DUE
04/28	Lab 9	Clone PCR product using TOPO vector Transform ligation onto competent cells

05/03	Lab 10	Colony PCR for positive clones Clone selection for overnight culture
05/05	Lab 11	Run out colony PCR Isolate Plasmid DNA Sequencing reaction Prep
05/10	Lab 12	Molecular Evolution and Population Genetics
05/12	Lab 13	DNA Isolation by Saline Mouthwash DNA Amplification
05/17	Lab 14	PCR product digestion with HaeIII PCR product analysis Phenotype analysis LAB REPORT II DUE
05/19	Lab 15	Bioinformatics and Analysis
05/24	Lab 16	Gene Expression: <i>Drosophila</i> Heat-shock exp. RNA isolation
05/26	Lab 17	RNA Quantification Real-Time PCR (RT-PCR) set-up LAB REPORT III DUE
06/02	Lab 18	Bioinformatics Gene expression analysis
06/07		EXAM lab check-out
06/09		LAB REPORT IV DUE