BIMM 101 Recombinant DNA Techniques Fall 2015

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Instructional Assistants (IAs):

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Lectures: MWF 11 – 11:50 SEQUO 147
Labs: WF 12 – 4 York 3306, 3406

Course Website: http:// ted.ucsd.edu

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

Learning objectives:

- Learn the theory behind molecular techniques, and the applications of the methodologies in biological research
- Become proficient at basic molecular biology techniques
- Learn the importance of proper controls in designing experiments and interpreting results
- Improve lab math skills and ability to graph data correctly
- Learn to make logical conclusions from experimental data
- Become familiar with bioinformatics databases and applications
- Learn to find, read, and evaluate primary literature
- Become aware of the implications of the technology for society

Required texts:

BIMM 101 Lab Manual from Soft Reserves (*softreserves.ucsd.edu*)
Recommended Text*: From Genes to Genomes* by Dale (1st or 2cd edition) on reserve at BML and electronic version available from UCSD computer
http://onlinelibrary.wiley.com/book/10.1002/0470856912
Readings on TED (ted.ucsd.edu)

Required Materials – needed by second day of class:

Labcoat (the bookstore has cheap ones)
UV blocking safety glasses (also at bookstore)
Lab notebook with carbon copies (bookstore or Grove general store)
Fine point Sharpie for labeling – get a dark color
A calculator

Remember that lab attendance is required – if you miss two labs, you will be asked to drop the course. If you are ill, you must leave a message with your instructor, not your TA, and make up the lab in a way that we will determine. You must be on time for lab; the TAs go over the experiments at the beginning of lab, and also quizzes are administered then.

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 assignments: there will be two take-home assignments
Dilutions (10 pts) due October 2 in Lab
DNA quantification (20 pts) due October 14 in Lab

3. Quizzes: There will be 4 scheduled quizzes (dates TBD) during lab periods. Each quiz is worth 10 points. 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: Two lab reports throughout the quarter are worth 100 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:
1. Purpose of the experiment: this section should be BRIEF – no more than a few sentences: simply state why you are doing the experiment.
*2. Result*s should include the following:
- data or data analysis
- figures, gel pictures (or representations thereof)
- sample calculations
- a brief statement about what each result means
3. 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. *General instructions and specific instructions for each lab report can be found in the course TED 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 1 PM 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:

Labs to be included in the Lab Report	Due date	
Labs 3-9	October 30	Lab Report #1
Labs 14-16	December 2	Lab Report #2

** Please submit your Lab Reports at the beginning of the lab.

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. Lab performance: There are no points for lab performance per se. However, your effort, attitude, and the success of your experiments will be considered when assigning the final grade, especially if you are on the borderline between two grades. If you miss one lab with no excuse, you will lose 5% from your final grade. If you miss two labs, you will receive an F for the course.

7. Exams: There will be two exams – **Midterm** (100 pts) on Friday, Nov 14 at 11AM in the lab, and **Final exam** (125 pts) on Friday, December 4th. 11:30AM in the lab. Final exam is cumulative. 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 that 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).

Grading:

Dilution assignment	10
Lab 2 (DNA quantification) assignment	20
4 Quizzes (10 points each)	40
PCR Presentation	20
Barcode Analysis	10
2 Lab reports (100 points each)	200
Midterm Exam	100
Comprehensive Final Exam	125
Total possible points:	**525**

Please make sure you regularly check your scores in TED 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
***Note*: Just coming to lab does not ensure that you will get a passing grade in the class. You must hand in all assignments and get passing scores on those assignments (an average of 70) to get a C- in the class.**

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.

BIMM 101 Fall 2015 Student contract:

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

_____ _____
Name Date

All lab reports for the class must be independently written, i.e., **your own work in your own words**. While discussion of data among lab partners is encouraged, each student on their own must complete all text, references, figures, graphs, and tables. The submission of reports by lab partners that contain shared work is forbidden, and will result in points being deducted from both reports. The exception to this is when a figure is the raw data that is supplied to each member of the group (specifically absorption spectra and gel photographs). In this case the labeling of that figure must be done independently. If you have questions about the difference between discussing your work with others and unauthorized collaboration, please ask your instructor or T.A. for clarification.

Because lab reports are to be your own work in your own words, you may not copy to any extent current or past laboratory reports that were written by other students. This is known as plagiarism**,** which is a direct attempt by the student to present the work of others as his/her own, and is no different than cheating on an exam. Directly copying material from other sources without putting it in your own words is also plagiarism, even if the source is cited as a reference. Plagiarism in lab reports is rigorously sought out and penalized. Students are required to upload an electronic version of each lab report to Turnitin.com, where the report is screened with a plagiarism checker against all reports in the Turnitin database. All incidents of plagiarism will automatically be turned in to the Academic Integrity Coordinator. Following UCSD's Policy on Integrity of Scholarship (www-senate.ucsd.edu/manual/appendices/app2.htm), students found to have committed plagiarism or other academic misconduct will receive both an administrative (decided by the Council of Deans) and academic penalty (decided by the instructor). Furthermore, all submitted reports are retained in the Turnitin database. Similarity hits by the plagiarism checker will also reveal the name of the student who provided the plagiarized material. Giving one's own lab report to other students to allow them to copy material from that report is also academic dishonesty, and will be pursued and penalized as rigorously as for the student committing the plagiarism.

2. **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**.

_____ _____
Name **Date**

BIMM101 Labs Schedule, Fall 2015

Date	Labs	Experiments
9.25	1	Dilutions, Graphing
9.30	2	Agarose gel
10.2	3	Start *Vibrio* DNA extractions; Finish *Vibrio* DNA extraction **Dilution Assignment Due**
10.7	4	Finish *Vibrio* DNA Extractions; Practice bacteriological techniques
10.9	5	Quantitate Vibrio DNA using Nanodrop; Set up PCR Variations
10.14	6	Check PCR product on gel and cleanup Set up digest; Image J **DNA Quantification Assignment Due**
10.16	7	Clean up and quantitate digests on gel Ligation of luxAB into pGEM Bioinformatics 1
10.21	8	Transformation cells PCR Presentations Primer Design exercise
10.23	9	Add Aldehyde and Screen Plan Synthetic Bio Project Start overnights for Syn Bio
10.28	10	Isolate BioBricks Plasmids Quantitate Plasmids Set up Digests
10.30	11	Cleanup digests; remove stuffer Run gel and do Gel Extractions Set up ligations **LAB REPORT 1 DUE** in lab
11. 4	12	Bug DNA Extraction Transform Cells *Paper Discussion* **EXAM 1 in Lab 11AM-12:15PM**
11.6	13	Screen colonies; Measure Fluorescence Check Barcode PCR on gel – cleanup and send for sequencing (Re-do barcode PCRs if needed)
11.13	14	Observe worms and induce with IPTG Analyze Barcode Results – part 1
11.18	15	Extract RNA from worms and set up RTPCR Isolate cheek cell DNA and set up PCR Analyze Barcode Results – part 2
11.20	16	Digest PTC PCR and run gel Analyze RTPCR Results ***Barcode Analysis due***
11. 24	17	*Paper Discussion*
12/2	18	**LAB REPORT 2 Due in Lab** Review
12/4	19	**FINAL EXAM In Lab 11:30AM – 2PM**