

## **BIMM 101 Recombinant DNA Techniques Summer I 2015**

Lecture:	T-F	9:30a – 10:45a	Sequo 147
Lab:	T-F	11:00a – 3:00p	Section 843525: York 4318 Section 843526: York 4332

### **Instructor**

Dr. Dan Clark	daclark@ucsd.edu	
Office hours:	T 8:30a – 9:15a	H&SS 1145LB

### **TAs**

Layla Fijany	lfijany@ucsd.edu
Shereen Georges	sgeorges@ucsd.edu

### **Objectives**

- Form accurate mental pictures of molecular biological principles.
- Gain proficiency in molecular biological techniques.
- Extend analytical reasoning skills and apply them to laboratory results.
- Master use of online molecular biology tools.

### **Learning Goals and Outcomes**

Refer to detailed document posted on [ted.ucsd.edu](http://ted.ucsd.edu) for Bimm101.

### **Required Texts**

BIMM 101 Lab Manual from University Readers  
Readings on [ted.ucsd.edu](http://ted.ucsd.edu)

### **Required Materials**

(Needed by *first day of lab* – all are available at the bookstore)  
Lab coat **AND** UV-blocking safety glasses (must be worn every day in lab).  
Shoes and long pants are also required to be worn at all times in the lab.  
Lab notebook with carbon copies.  
Fine-point sharpie (dark ink) for labeling images.  
Calculator (NO cell-phone calculators permitted on assessments).

### **Grading**

The scores you earn on all assignments and assessments will be summed (this total will be rounded up to the nearest integer, if applicable). Your letter grade will be assigned according to the table on the following page. Grades can be checked throughout the semester at [ted.ucsd.edu](http://ted.ucsd.edu)

### Grading (continued)

Letter	Class points	Letter	Class points
A+	467-500	C+	366-382
A	450-466	C	350-365
A-	433-449	C-	333-349
B+	416-432	D+	316-332
B	400-315	D	300-315
B-	383-399	F	0-299

### Assignments

1. *Lab notebook (50 points)*. It is mandatory that you keep a lab notebook. The lab notebook will be scored in two ways. The carbon copies of labs 2, 5&6, and 9&10 will be turned in to your TAs for grading according to the rubric on [ted.ucsd.edu](http://ted.ucsd.edu). Also, your TA will do 2 random notebook checks during the later weeks of the course. The notebook must contain everything you do in the lab, including (for every lab):

- i. The **date, title** and **purpose**
- ii. Any **changes in protocol**  
(if none, refer to the lab manual page number and state “no changes”)
- iii. **Predictions** (of future results) AND/OR **results**
- iv. **Calculations** AND/OR **analysis**

2. *Homework (120 points)*. There will be 4 homework assignments due throughout the class. Homework will be **due at the beginning of lecture** on the assigned due date.

### Assessments

3. *Quizzes (200 points)*. Quizzes (8 total, 25 points each) will be given at the **beginning** of most Wednesday and Friday labs (though quiz 1 is on a Thursday). These will be short-answer format, and will each cover material from the previous one or two labs, as well as the set-up, materials, and protocol for that day’s lab.

4. *Lab participation (30 points)*. Your TA will record on-time attendance for each lab, and will be available to assist, train, and monitor you in lab. **A single missed lab with no excuse will result in a 0 grade for your lab participation score, and each lab attended over 5 minutes late will result in a 5 point deduction.** The remaining points will be distributed at the discretion of the TA, based on your preparedness, participation in the laboratory work **and paper discussions**, engagement with your lab partners and TA, and quality and success of your experiments.

5. *Final (100 points)*. There will be one final exam for the course. The format will include multiple choice and short-answer questions. This will cover the entire course, and will be administered from 11:00 am – 3:00 pm on August 1<sup>st</sup> in York 4318 and 4332. There will be no lecture or lab that day, just the final exam.

### Closing Fine Print

Policy on cheating: Anyone caught cheating (includes plagiarizing lab reports, cheating on a test, or changing an answer for a regrade) will be given an F for that assignment/assessment and be reported to the Academic Integrity Office. Any second offense will result in dismissal from the course and an F grade.

Maintaining Academic Integrity: Students agree that by taking this course all required papers will be subject to submission for textual similarity review to Turnitin.com for the detection of plagiarism. All submitted papers will be included as source documents in the Turnitin.com reference database solely for the purpose of detecting plagiarism of such papers. Use of the Turnitin.com service is subject to the terms of use agreement posted on the Turnitin.com site.

### Tracking My Grade

Grade Item	Date (Due/On)	Points	My Grade
Lab 2 Notebook Carbon Copies	7/2	10	
Labs 5 & 6 Notebook Carbon Copies	7/9	10	
Labs 9 & 10 Notebook Carbon Copies	7/16	10	
Lab Notebook Spot check 1	[7/17-7/29]	10	
Lab Notebook Spot check 2	[7/17-7/29]	10	
Homework Assignment 1	7/15	30	
Homework Assignment 2	7/23	30	
Homework Assignment 3	7/28	30	
Homework Assignment 4	7/31	30	
Quiz 1	7/2	25	
Quiz 2	7/8	25	
Quiz 3	7/10	25	
Quiz 4	7/15	25	
Quiz 5	7/17	25	
Quiz 6	7/22	25	
Quiz 7	7/24	25	
Quiz 8	7/29	25	
Lab/Discussion Participation	[6/30-7/31]	30	
Final	7/31	100	
<b>Total</b>		<b>500</b>	

Date	Lab number	Experiments	Assignments, etc.
6/30	Lab 1	Dilutions	
7/1	Lab 2	Agarose gel	Give carbons handout
7/2	Labs 3 & 4	Vibrio DNA extractions	<b>Quiz 1</b> ; collect <b>carbons for lab 2</b>
7/3	NO LAB		
<b>7/7</b>	Lab 5	Quantitate Vibrio DNA using nanodrop Set up digest of Vibrio DNA and pGEM Intro to reading scientific papers	Handout on guidelines for labs 5 and 6
7/8	Lab 6	Check digests on gel Set up ligation of Vibrio DNA and pGEM Practice bacteriological techniques	<b>Quiz 2</b>
7/9	Lab 7	Check digests on gel Transform cells	Collect <b>carbons for lab 5 and 6</b>
7/10	Lab 8	Check for glowing colonies <b>Paper discussion</b>	<b>Quiz 3</b> Assign homework 1 on genomic library
<b>7/14</b>	Lab 9	PCR lux AB Start overnights from non-glowing whites Bioinformatics 1	
7/15	Lab 10	Purify plasmids from non-glowing white colonies Check PCR product on gel and clean-up Digest PCR product and pGEM	<b>Quiz 4</b> Collect <b>homework 1</b>
7/16	Lab 11	Clean up and quantitate digests on gel Ligation of luxAB into pGEM Bioinformatics 2	Collect <b>carbons for lab 9 and 10</b>
7/17	Lab 12 A & B	Make comp. cells and transform with luxAB Start barcoding extraction	<b>Quiz 5</b>
<b>7/21</b>	Lab 13 A Lab 12 C	Screen for glowing colonies Finish DNA extr. and set up barcode PCR	Assign homework 2
7/22	Lab 13 B & C Lab 14 B	Check barcode PCR on gel – clean up and send for sequencing Isolate cheek cell DNA and set up PCR	<b>Quiz 6</b>
7/23	Lab 15 A & B Lab 16	Digest PTC PCR and run gel Observe worms and induce with IPTG <b>Paper discussion</b>	Collect <b>homework 2</b>
7/24	Lab 14 A Barcoding bioinf. part 1	Analyze barcode results part 1 <b>Paper discussion</b>	<b>Quiz 7</b> Assign homework 3
<b>7/28</b>	Lab 17 A & B Barcoding II	Extract RNA from worms and set up RTPCR Finish analyzing barcode results	Collect <b>homework 3</b> ; Assign homework 4
7/29	Lab 18	Analyze RTPCR results <b>Lab Checkout</b>	<b>Quiz 8</b>
7/30	Review	Open review with TAs and professor in lab	
7/31	Final exam	<b>Final exam</b> (in laboratory rooms 11a-3p)	<b>Homework 4 due</b> via email