

BIMM 101 **Recombinant DNA Techniques** Winter 2014

Lecture:	M,W,F	2:00p – 2:50p	CSB 004
Lab:	W,F	3:00p – 7:00p	Section 800261: YORK 4318 Section 800262: YORK 4332

Instructor

Dr. Dan Clark	dan@ucsd.edu	
Office hours:	W, 1:00p-1:45p	H&SS 1145LA

TAs

Anthony Phan	atphan@ucsd.edu
Jonathan Hetzel	jhetzel@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 for Bimm101.

Required Texts

BIMM 101 Lab Manual from University Readers
From Genes to Genomes by Dale (1st, 2nd, or 3rd edition)
(Electronic version of 1st and 3rd edition available on Roger)
Readings on 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).
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

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 (200 points)

1. *Lab notebook (60 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. Also, your TA will do 3 random notebook checks during 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 AND/OR results**
- iv. **Calculations AND/OR analysis**

2. *Homework (140 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, and must be submitted to ted.ucsd.edu.

Assessments (300 points)

4. *Quizzes (150 points)*. Six quizzes will be given at the beginning of most Wednesday labs. 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.

5. *Lab participation (50 points)*. Your TA will record 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.

6. *Final (100 points)*. There will be one final exam for the course. The final will consist of 50 multiple-choice questions. This will cover the entire course, and will be administered from 2:00 pm – 4:00 pm on March 14th in YORK 4318 and YORK 4332. There will be no lab that day.

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	Done?	My Grade
Lab 2 Notebook Carbon Copies	1/15	10	[]	
Labs 5 & 6 Notebook Carbon Copies	1/29	10	[]	
Labs 9 & 10 Notebook Carbon Copies	2/12	10	[]	
Lab Notebook Spot check 1	(Any)	10	[]	
Lab Notebook Spot check 2	(Any)	10	[]	
Lab Notebook Spot check 3	(Any)	10	[]	
Homework Assignment 1	2/7	35	[]	
Homework Assignment 2	2/26	35	[]	
Homework Assignment 3	3/5	35	[]	
Homework Assignment 4	3/12	35	[]	
Quiz 1	1/15	25	[]	
Quiz 2	1/22	25	[]	
Quiz 3	1/29	25	[]	
Quiz 4	2/5	25	[]	
Quiz 5	2/12	25	[]	
Quiz 6	2/19	25	[]	
Lab/Discussion Participation	(All)	50	[]	
Final	3/14	100	[]	
Total		500		

Date	Lab number	Experiments	Assignments etc.
Jan 8	Lab 1	Dilutions	
Jan 10	Lab 2	Agarose gel	Give carbons handout
Jan 15	Lab 3	Start Vibrio DNA extractions	Quiz 1; collect carbons for lab 2
Jan 17	Lab 4	Finish Vibrio DNA extraction	Assign phenol and ethanol articles
Jan 22	Lab 5	Quantitate Vibrio DNA using nanodrop Set up digest of Vibrio DNA and pGEM Intro to reading scientific papers	Quiz 2; Handout on carbons for lab 5 and 6
Jan 24	Lab 6	Check digests on gel Set up ligation of Vibrio DNA and pGEM Practice bacteriological techniques	
Jan 29	Lab 7	Check digests on gel Transform cells	Quiz 3; Collect carbons for lab 5 and 6
Jan 31	Lab 8	Check for glowing colonies Paper discussion	Assign homework 1 on genomic library
Feb 5	Lab 9	PCR lux AB Start overnights from non-glowing whites Bioinformatics 1	Quiz 4
Feb 7	Lab 10	Purify plasmids from non-glowing white colonies Check PCR product on gel and clean-up Digest PCR product and pGEM	Collect homework 1
Feb 12	Lab 11	Clean up and quantitate digests on gel Ligation of luxAB into pGEM Bioinformatics 2	Quiz 5; Collect carbons for lab 9 and 10
Feb 14	Lab 12	Make comp. cells and transform with luxAB Start barcoding digestions	
Feb 19	Lab 13A Lab 12 end	Screen for glowing colonies Finish DNA extr. and set up barcode PCR	Quiz 6; Assign homework 2
Feb 21	Lab 13 B & C Lab 14 A & B	Check barcode PCR on gel – clean up and send for sequencing Isolate cheek cell DNA and set up PCR	Re-do barcode PCRs that didn't work?
Feb 26	Lab 15 A & B Lab 14 A Barcoding bioinf. part 1	Digest PTC PCR and run gel Analyze barcode results part 1 Paper discussion	Collect homework 2
Feb 28	Lab 16 A	Observe worms and induce with IPTG Paper discussion	Assign paper analysis (Hmk 3)
Mar 5	Lab 17 A & B Barcoding bioinf. part 2	Extract RNA from worms and set up RTPCR Finish analyzing barcode results	Collect paper analysis (Hmk 3); Assign homework 4
Mar 7	Lab 18	Analyze RTPCR results Paper discussion	
Mar 12	Review	Check out lab lockers	Collect homework 4
Mar 14	Final exam	Final exam (in laboratory room)	