

BIMM101: RECOMBINANT DNA Techniques

Winter Quarter, 2021

Instructor: Michael Burg, Ph.D mburg@ucsd.edu

Office Hours: TBD

Lecture: Asynchronous

Labs: Tue/Thu 1:00– 4:50 PM

Online: Attendance Required

LEARNING GOALS

- Apply knowledge of molecular biology concepts and molecular techniques to plan experiments, explain and troubleshoot results
- Demonstrate proficiency at the basic molecular biology techniques used in the lab
- Explain the importance of proper controls in designing experiments and interpreting results
- Perform basic lab math skills, statistical analysis, and graphing

LEARNING IN THIS COURSE

This course is designed to be a **collaborative** environment for everyone to learn together and construct a shared understanding of the material. **Active participation** both in class and in lab is expected. Being able to **communicate** understanding, and confusion, is critical to success in any discipline, and is very useful for learning¹. We will use class time to work on applying our knowledge, troubleshooting difficult topics, and practice solving problems.

Instead of memorization, we will focus on developing an understanding of fundamental concepts as they apply to different examples. Therefore, quizzes will include questions that are based on solving problems in new contexts.

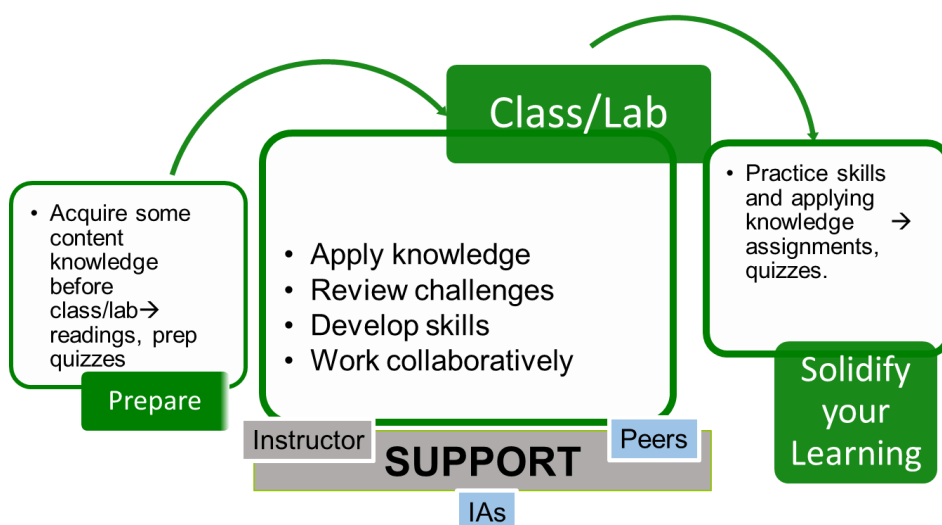
1 Smith et al., 2009. <http://www.sciencemag.org/content/323/5910/122.short>

Absences: Lab attendance is required –

if you miss one lab with no excuse, you will lose 5% from your final grade. If you miss two labs, you will be asked to drop the course. If you are ill, you must get in touch with me, not your IA, and make up the lab in a way that we will determine. You must be on time for lab. Two late arrivals to lab will be counted as one absence.

Late and missed assignments and quizzes

Late assignments will be subject to a 10% deduction per day (note that assignments handed in after the first 10 minutes of lab are considered late) up to a maximum of 2 days late (after which you will receive a 0). There are no make-up quizzes offered except in the case of a documented



medical or family emergency (in which case the instructor will decide how to go about the makeup testing).

ACADEMIC INTEGRITY

<https://students.ucsd.edu/academics/academic-integrity/index.html>

Integrity of scholarship is essential for an academic community. The University expects that both students and faculty will honor this principle and in so doing protect the validity of University intellectual work. For students, this means that all academic work will be done by the individual(s) to whom it is assigned, without unauthorized aid of any kind.

In this course, we need to establish a set of shared values. Following are values* adopted from the International Center for Academic Integrity (<http://www.academicintegrity.org/icaai/home.php>), which serve as the foundation for academic integrity.

Inclusion and accessibility (<http://disabilities.ucsd.edu>)

Any student with a disability is welcome to contact us early in the quarter to work out reasonable accommodations to support your success in this course. Students requesting accommodations for this course due to a disability must provide a current Authorization for Accommodation (AFA) letter issued by the Office for Students with Disabilities (OSD), which is located in University Center 202 behind Center Hall. Students are required to present their AFA letters to faculty and to the OSD Liaison in the Division of Biological Sciences in advance so that accommodations may be arranged. For further information, contact the OSD at 858-534-4382 or osd@ucsd.edu.

Course Requirements and Grading: Your final grade for the class will be calculated using the following criteria:

Final Exam	120 points
Quizzes (2 @ 60pts/each)	120 points
Lab Notebook	120 points
Misc lab points	90 points
CRISPR Report	250 points
Technique Report & presentation	200 points
Total	900 points

Point Cutoffs for Grade Assignments: (Cutoffs may be lowered at the instructor's discretion.)

99%	A+	79%	C+
90%-98%	A	70%-78%	C
89%	B+	60%-69%	D
80%-88%	B	<60%	F

In addition: Extra credit pts are available
Greater than 80% CAPE response: 5 pts

Lab notebooks: Each student will be assigned an individual digital lab notebook (Google Doc) that you will use for the quarter. These will be made available through the Canvas Site. Compete and organized lab notebook entries are a critical part of effective work in a research lab. As such, we expect students to practice good lab notebook entry habits. Please consult the lab manual for what

we expect in the lab notebooks, and use the template provided in the Google Doc. **Lab notebook entries will be regularly checked** and scored for various components: pre-lab work which often includes a summaries and predictions, in-lab work such as data analysis and discussion of data, and drawing conclusions in the form of an argument: claims, data to support claims, and explanations in the form of a biological or procedural mechanism, troubleshooting results when necessary. A grading rubric will be provided on Canvas.

CRISPR Write-up: Guidelines, rubrics, and due dates for the write-up and assignments will be posted on Canvas. The goal of the write-up is to practice presenting and summarizing results, as well as constructing scientific arguments (what you can conclude, evidence to support, and providing reasoning biological/molecular/experimental explanations or hypotheses) in the form of a short journal article. A draft will be submitted for peer-review, and then a final version. Check course schedule on Canvas for due-dates.

Technique Report & Presentation: Toward the end of the course everyone will choose a recombinant DNA/molecular biology technique to research, summarize, and present. The purpose is to explore other techniques that are typically used in molecular biology research, understand how the technique works and can be used, and communicate your understanding in the form of a short-written report and an oral presentation (delivered by video conferencing). Rubrics and guidelines will be posted on the course site.

Zoom-Lab Protocol

Zoom-Lab attendance is required Missing a laboratory session without a reasonable excuse (e.g. medical or family emergency) will automatically result in a GRADE deduction in your final course grade. Additional absences will result in being removed from the class. Please be on time for laboratory sessions. Multiple late attendances will result in additional lost course points.

Technical Support

For help with accounts, network, and technical issues: <https://acms.ucsd.edu/contact/index.html> Links to an external site.

For help connecting to electronic library resources such as eReserves and e-journals:

<https://library.ucsd.edu/computing-and-technology/connect-from-off-campus/> Links to an external site.

Academic integrity (<https://students.ucsd.edu/academics/academic-integrity/index.html> Links to an external site.)

Integrity of scholarship is essential for an academic community. The University expects that both faculty and students will honor this principle and in so doing protect the validity of University intellectual work. For students, this means that all academic work will be done by the individual(s) to whom it is assigned, without unauthorized aid of any kind. Anyone caught cheating (includes plagiarizing lab reports, cheating on a test, or changing an answer for a re-grade) will be reported to the Academic Integrity Office.

Inclusion and Accessibility

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For further information

Contact the OSD:

858-534-4382 [Links to an external site.](#) | <http://disabilities.ucsd.edu> [Links to an external site.](#) | osd@ucsd.edu |

Office of Equity, Diversity, and Inclusion:

858.822.3542 | diversity@ucsd.edu | <https://diversity.ucsd.edu/> [Links to an external site.](#)
<https://students.ucsd.edu/student-life/diversity/index.html> [Links to an external site.](#)

Student Resources for Support and Learning

There are many [resources on campus](#) that are directed to supporting your intellectual development. Do not be shy to make the most of these resources.

DISCRIMINATION AND HARASSMENT

The University of California, in accordance with applicable federal and state laws and university policies, does not discriminate on the basis of race, color, national origin, religion, sex, gender, gender identity, gender expression, pregnancy (including pregnancy, childbirth, and medical conditions related to pregnancy or childbirth), physical or mental disability, medical condition, genetic information, ancestry, marital status, age, sexual orientation, citizenship, or service in the uniformed services (including membership, application for membership, performance of service, application for service, or obligation for service in the uniformed services). The university also prohibits harassment based on these protected categories, including sexual harassment, as well as sexual assault, domestic violence, dating violence, and stalking. The nondiscrimination policy covers admission, access, and treatment in university programs and activities.

If students have questions about student-related nondiscrimination policies or concerns about possible discrimination or harassment, they should contact the Office for the Prevention of

Harassment & Discrimination (OPHD) at (858) 534-8298, <https://ophd.ucsd.edu/Links to an external site.>, or <http://ophd.ucsd.edu/report-bias/index.htmlLinks to an external site.>

Campus policies provide for a prompt and effective response to student complaints. This response may include alternative resolution procedures or formal investigation. Students will be informed about complaint resolution options. A student who chooses not to report may still contact CARE at the Sexual Assault Resource Center for more information, emotional support, individual and group counseling, and/or assistance with obtaining a medical exam. For off-campus support services, a student may contact the Center for Community Solutions. Other confidential resources on campus include Counseling and Psychological Services, Office of the Ombuds, and Student Health Services.

Re-Grade Policy on Lab Reports: Your lab reports will be graded by your IA, based on the same lab report guidelines (general and specific) that you receive. Note that I work closely with all the IAs to ensure that the grading is accurate and equivalent between sections. If you disagree with the grading of your lab report, discuss this with your IA first to get clarification on why points were deducted.

Making Up Quizzes and Exams:

Please note that it is extremely burdensome for the instructor and IAs to have to prepare and proctor make-up exams. Missing a scheduled quiz or exam will only be excused for medical reasons where documentation can be provided.

LECTURES WILL CORRESPOND TO LAB TOPICS

See lecture/lab schedule