Course Syllabus

Welcome to BIMM 101: Recombinant DNA Laboratory! In BIMM101 we aim to function as an inclusive learning community to develop an understanding of experimental design, common molecular biology lab techniques, critical analysis of data and literature, and experimentation. We will do most of our exploration through a by working on a CRISPR editing experiment.

Instructor:

Dr. Lisa McDonnell (she/her) **lmcdonnell@ucsd.edu (mailto:lmcdonnell@ucsd.edu)**

I only send and receive correspondence via my UCSD email address or the course Canvas site.

 Office Hours: Thursdays, 12-1pm, see Zoom link on Canvas

Also – please make use of time in the lab to talk. If Thursdays and lab time are not sufficient, please email me.

Being proactive to ask questions during office hours is something I value and appreciate – please ask whatever questions you may have about course material. I'm also more than happy to chat about other topics (e.g., career goals (or confusions!), hobbies, other projects, research…..)

Instructional assistants:

IA names and email addresses	
Yiyi Shen	**yis225@ucsd.edu (mailto:yis225@ucsd.edu)**
Irene Choi	**ivchoi@ucsd.edu (mailto:ivchoi@ucsd.edu)**

Class & Lab Times:

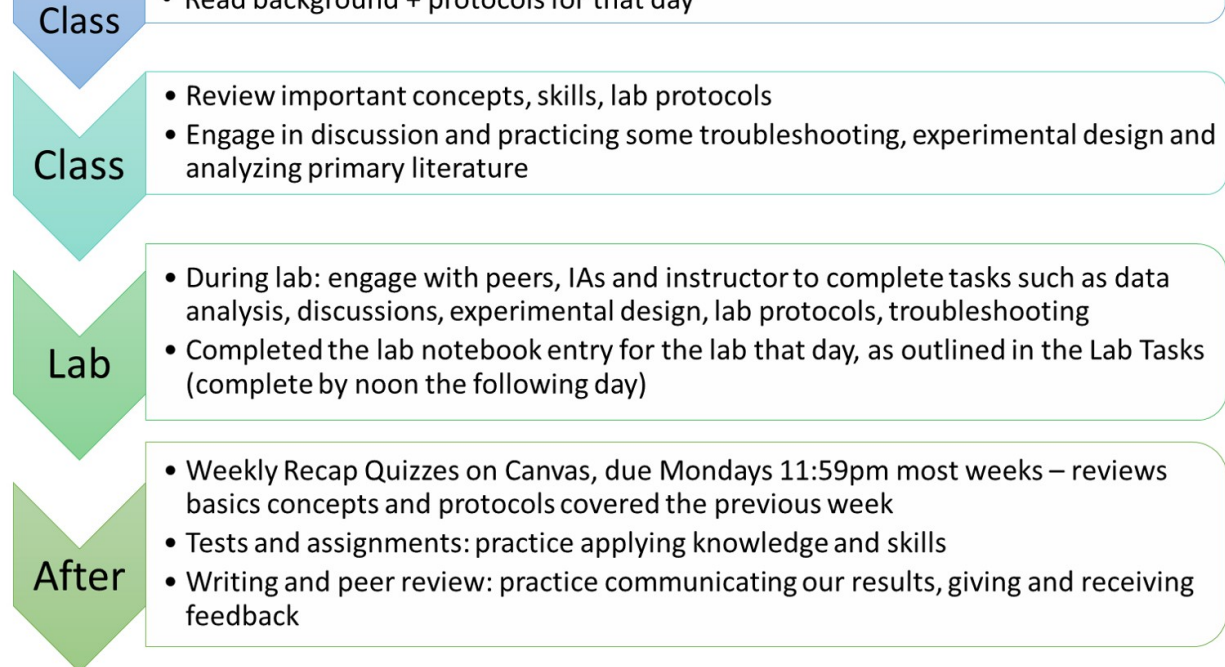**Class:** Wednesdays and Fridays, 10:30 am-11:50 am in Tata Hall 2501

Lab: Wednesdays and Fridays, 12:30 pm - 4:20 pm in York Hall 4318 (B01) and 4332 (B02)

Course schedule: https://tinyurl.com/3f6tadrd   (https://tinyurl.com/3f6tadrd)

Overall Course Structure

	• Check lab schedule to know what we are doing and which protocols are relevant
Before	• Review Lab Tasks posted on Canvas, and complete the "before lab" work
	• Read background + protocols for that day

Class	• Read background + protocols for that day
Class	• Review important concepts, skills, lab protocols • Engage in discussion and practicing some troubleshooting, experimental design and analyzing primary literature
Lab	• During lab: engage with peers, IAs and instructor to complete tasks such as data analysis, discussions, experimental design, lab protocols, troubleshooting • Completed the lab notebook entry for the lab that day, as outlined in the Lab Tasks (complete by noon the following day)
After	• Weekly Recap Quizzes on Canvas, due Mondays 11:59pm most weeks – reviews basics concepts and protocols covered the previous week • Tests and assignments: practice applying knowledge and skills • Writing and peer review: practice communicating our results, giving and receiving feedback

Broad Learning goals

- Apply knowledge of molecular biology concepts and lab techniques to plan experiments, explain and troubleshoot results
- Explain the importance of proper controls in designing experiments and interpreting results
- Perform basic lab math skills, statistical analysis, and graphing
- Conduct experiments using various recombinant DNA/molecular biology techniques
- Draw conclusions based on evidence and reasoning
- Use basic bioinformatics databases and applications
- Find, read, and evaluate primary literature
- Critically evaluate scientific writing (your own, and that of peers)
- Collaborate with one another to learn foundation biological concepts and laboratory skills

This course is designed to be an environment for everyone to learn and construct a shared understanding of the material. Active participation by asking and answering questions and participating in discussions (e.g., during office hours, class, lab), is encouraged. Being able to communicate understanding, and confusion, is critical to success in any discipline, and is very useful for learning. To encourage collaboration, grades will not be assigned on a curve. Instead of memorization, we will focus on developing an understanding of fundamental concepts as they apply to different examples. Therefore, tests and assignments will include questions that are based on solving problems in new contexts, analyzing and interpreting data to draw conclusions, and critiquing claims.

Safety

Safety precautions are crucial in the laboratory setting. Biology lab safety training and assessment (**https://biology.ucsd.edu/education/undergrad/course/ug-labs.html (https://biology.ucsd.edu/education/undergrad/course/ug-labs.html)**) must be completed by the **beginning of the second lab** in week 1. Appropriate laboratory attire and personal protective equipment (PPE) are required, including laboratory coats that

cover to the knees, UV-blocking safety glasses or googles, long pants or equivalent, long socks or equivalent, and closed-toe and closed-heel shoes.

Masks are required at all times during class and lab. There is no eating or drinking allowed in class or lab (for eating and drinking and mask breaks please step outside**. Due to the long exposure times, KN95 masks OR doubling-up on masks is required in** lab**.**

Laboratory attendance

Attendance in laboratory is required. **Attending the first lab is required to maintain your seat in the course.**

Additional policies are available online (**https://biology.ucsd.edu/education/undergrad/course/ug-labs/index.html (https://biology.ucsd.edu/education/undergrad/course/ug-labs/index.html)**) Attendance in the lab (both via Zoom and in-person) is required in this course. Only the instructor can approve an absence. Please get in touch with your Instructor as soon as possible if you are unable to attend lab because of illness, quarantine, or family emergency. In excused cases the instructor will work with you to ensure you are able to complete the required course work. An unapproved absence will result in grade a 2% drop in course grade, and two unapproved absences will result in a failing course grade.

ADD/DROP DEADLINES are different for lab courses than lecture courses. Students who drop a Biology **lab** class after the end of the second class meeting will be assigned a "W". Additional details: **http://biology.ucsd.edu/go/ug-labs (http://biology.ucsd.edu/go/ug-labs)**

Grading

BIMM101 has multiple grading components:

Course components and value of each

Weekly Recap Quizzes (on Canvas)	8
Lab notebooks	15
Molecular Biology Review	3
Tests	20
CRISPR write-up	25
TAS2R38/PTC Assignment	6
Final Exam	15
Professionalism	3
Extra credit (e.g., surveys)	0.5

Because different people may excel in different aspects, tests or the CRISPR write-up or the final exam we be to 25% (tests), or 30% (CRISPR write-up), or 20% (final exam), depending on what benefits each individual student, bringing the total to 100 points (extra credit will be added to the total possible 100). **See descriptions below of each component**

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The following grading scheme will be used. The course is **not** graded on a curve (i.e., 20% of students getting A, 20% B, 20% C, and such). Thus, the ability to do well in this course is not dependent on others doing poorly.

Course points range and letter grade

95-100	A+	71-74	C+
91-94	A	67-80	C
87-90	A-	63-66	C-
83-86	B+	55-62	D
79-82	B	0-54	F
75-78	B-		

DO NOT USE THE "TOTAL POINTS" IN CANVAS GRADES TO DETERMINE YOUR GRADE. The total column does not account for flexible weighting and dropping of low scores (for some components of the course) - thus, it is not an accurate reflection of your grade. Occasionally I will post updates - and you can always estimate your grade using the weighting scheme described above and information below.

Weekly Recap Quizzes: The quizzes posted on Canvas are meant as a basic review of concepts covered in class and lab the week prior. Note these are often easier than what will find on the tests and final exam. Most weeks a Recap Quiz is due Monday at 11:59pm (e.g. Monday of Week 2 there will be a Recap Quiz about the material from Week 1). These quizzes are also a good chance for you to notice if you are confused on certain topics or protocols. I RECOMMEND you do these quizzes as soon after we finish Friday lab as possible. **Please follow-up on things you are confused about! Ask questions in class or lab, come to office hours!**

There will be approximately 7 Recap Quizzes. The lowest score is dropped and if your average score on the remaining quizzes is 85% or higher, you will receive full points (adjusted at the end of the quarter). This means it is ok to miss a question here and there, and one quiz. Because the lowest score is dropped there are no extensions or make-ups for missed quizzes because of illness or emergencies.

Lab notebooks: Each student will be assigned an individual digital lab/research notebook (Google Doc) that you will use for the quarter. These will be made available through the Canvas Site and via email to you directly. Complete 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 notebook guidelines (Canvas), which includes a link to an example notebook. **Lab notebook entries will be regularly and randomly checked for both before-lab work and in-lab** work. In total, at least 8 entries will be checked and scored. The two lowest scores will be dropped. The remaining scores will be averaged and the

average used to determine the points out of 15 (e.g., if your average is 85%, you will receive 12.75 out of 15 course points). *If you find yourself unable to complete up to two lab notebook entries because of illness or family emergency there are no extensions - those missed entries will count as the two low scores to be dropped.*

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Molecular Biology Review Assignment: An assignment with questions to review some background molecular biology and experimental design concepts will be due during Week 1. This assignment will be scored 1.5 points for on-time completion, and 1.5 points for correctness. Instructions to submit the assignment will be posted on Canvas.

Tests: There are two tests scheduled (not including the final exam or a practice test). All tests are open notes (paper notes only: you will not be permitted to use computers to access digital lab notebooks). The remaining tests will be weighted such that the highest-scoring test is worth 12/20 course points, and the second test score is 8/20 course points.

CRISPR Write-up: The goal of the write-up is to write a short scientific article to present results of the CRISPR experiment, including an introduction, methods summary, 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). A draft will be submitted for peer-review, and then a final version. Consult course schedule for due dates, and guidelines/rubrics will be provided on Canvas.

TAS2R38/PTC Assignment: This assignment will involve analyzing data generated by yourself, and the class and answering questions about the analysis. The assignment will be posted on Canvas, please consult the course schedule for due date.

Final Exam: The final exam will synthesize concepts and skills from the entire course, and takes place in-person during the last lab period. The exam is open notes (paper notes only).

Professionalism: This portion of the course grade is intended to motivate students to consider the impact of their actions on their own learning and the learning of others in the course. Unprofessional interactions consume time yet have no meaningful benefits to you, your fellow students, and/or the teaching team. Analogously in the workplace, being unprofessional to your colleagues or supervisors will only discount you. When you are discounted, you will not be invited for new opportunities that you may or may not be aware of. Professionalism can be demonstrated through individually demonstrating meaningful participation in the course (especially during lab time), maturity and respectful behavior towards others.

By default, every student is assumed to be professionally mature. Hence, this component is awarded to every student at the beginning of the quarter. During the quarter, based on observations by the teaching team, which includes but is not limited to participating in lab sessions, one-on-one interactions, electronic communication, contributing data to class data sets according to deadlines, and follow-up conversations on grades, your professionalism credit may be deducted.

Example interactions with meaningful benefits:

- Actively participating in lab sessions, which includes being prepared to engage in discussions and ask questions.
- Developing deeper insight into course material, concepts, biology, and/or society in general
- Working collaboratively to improve in skill building and future opportunities
- Contributing to an inclusive learning environment
- Learning conceptually and meaningfully why full credit was not awarded for an assignment
- Clarifying course material that facilitates deeper learning

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- Reporting errors or problems in class, on assignments, or for other course material
- Arriving on-time to lab sessions and being prepared to work in lab

Example interactions that have no meaningful benefits and thus should be avoided:

- Not showing up or being late to lab session
- Contributing inequitably to team work
- Harassing and/or bullying the instructional team or other students, either in person or online
- Asking questions when the information is already available or will eventually be known (this does not include asking clarifying questions about content/concepts)
- Ignoring the directions or requests from the instructional team

Extra Credit: The 0.5% extra credit can be earned by completing course evaluations and related surveys which aim to improve the course and the educational experiences of your future peers. There are no other opportunities for extra credit beyond what is assigned by the course instructor.

LATE Assignments and quizzes

Assignments must be submitted on time to be eligible for full credit. Late assignments may be subject to a 10% penalty per day, to a maximum of 2 days late. Please get in touch immediately if you anticipate challenges completing work on time.

REGRADES

If a grading error has been made, you should submit a re-grade request to your Instructional Assistant or Dr. McDonnell. Students who submit items for re-grading understand that we may re-grade the entire item and the score may go up or down.

Academic integrity

https://students.ucsd.edu/academics/academic-integrity/index.html **(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 (https://www.academicintegrity.org/)** , which serve as the foundation for academic integrity.

	As students we will……..	As the teaching team we will…..
Honesty	· Honestly demonstrate your knowledge and abilities according to expectations listed in the syllabus or in relation to specific assignments and exams	· Give you honest feedback on yo abilities on assignments and exams
	· Communicate openly without using deception, including citing appropriate sources	· Communicate openly and hones standards of the course through the s assignments and exams

		assignments and exams
Responsibility	· Complete assignments on time and in full preparation for class · Show up to class on time and be mentally and physically present · Participate fully and contribute to team learning and activities	· Give you timely feedback on you · Show up to class on time and be · Create relevant assessments an
Respect	· Speak openly with one another while respecting diverse viewpoints and perspectives · Provide sufficient space for others to voice their ideas	· Respect your perspectives even deeply and critically · Help facilitate respectful exchang
Fairness	· Contribute fully and equally to collaborative work, so that we are not freeloading off of others on our teams · Not seek unfair advantage over fellow students in the course	· Create fair assignments and exa timely manner · Treat all students and collaborat
Trustworthiness	· Not engage in personal affairs while on class time · Be open and transparent about what we are doing in class Not distribute course materials to others in an unauthorized fashion	· Be available to all students whe · Follow through on our promises · Not modify the expectations or s everyone in the course
Courage	· Say or do something when we see actions that undermine any of the above values · Accept the consequences of upholding and protecting the above values	· Say or do something when we s above values · Accept the consequences of uph values

* This class statement of values is adapted with permission from Tricia Bertram Gallant Ph.D.

All course materials are the property of the instructor, the course, and the University of California, San Diego and **may not** be posted online, submitted to private or public repositories, or distributed to unauthorized people outside of the course. Any suspected instances of a breach of academic integrity will be reported to the Academic Integrity Office for review and possibly given a score of 0.

In this course we do a lot of group work, and I often encourage you to discuss and share thinking. It is important to get feedback on your ideas and work, but you are still responsible for producing your own work, in your own words, from your own effort.

One of the most common reasons for violating academic integrity is not having enough time to complete work or do the thinking necessary to produce good work. A lab class is particularly demanding of your time, hence using advanced scheduling to plan when you will need to do work to ensure you have sufficient time is critical. Please reach out if you want to discuss time management skills - I'm happy to talk about this!

Student Resources for Support and Learning

ACADEMIC SUPPORT

Campus resources

Geisel Library **(https://library.ucsd.edu/ask-us/triton-ed.html)**   Research tools and eReserves

Content Tutoring with the Teaching + Learning Commons **(https://commons.ucsd.edu/academic-support/content-tutoring/index.html)**   Drop-in and online tutoring through the Academic Achievem...

Supplemental Instruction with the Teaching + Learning Commons **(https://commons.ucsd.edu/academic-support/supplemental-instruction/index.html)**   Peer-assisted study sessions through the Academic Achiever... improve success in historically challenging courses

Writing Hub Services in the Teaching + Learning Commons **(https://commons.ucsd.edu/academic-support/writing/index.html)**   Improve writing skills and connect with a peer writing mentor

Learning Strategies Tutoring **(https://commons.ucsd.edu/academic-support/learning-strategies/index.html)**   Address learning challenges with a metacognitive approach

OASIS **(https://oasis.ucsd.edu/?_ga=2.146842423.1063588650.1568051897-1453425416.1558586832)**   Intellectual and personal development support

Student Success Coaching Program **(https://students.ucsd.edu/sponsor/success/?_ga=2.175235234.1063588650.1568051897-1453425416.1558586832)**   Peer mentor program that provides students with information,... and support in meeting their goals

Academic Integrity **(http://academicintegrity.ucsd.edu/)**   Policy on Academic Integrity of Scholarship and strategies to ... integrity

Technical Support **(https://acms.ucsd.edu/contact/index.html)**   Assistance with accounts, network, and technical issues

STUDENT RESOURCES

Campus resources

Basic Needs **(https://basicneeds.ucsd.edu/)**   Provides access to food, housing, and financial resources

Counseling and Psychological Services (CAPS) **(https://caps.ucsd.edu)**   Provides services like confidential counseling and consultations for psychiatric services and mental health programming

Community Centers **(https://students.ucsd.edu/student-life/diversity/index.html)**   As part of the **Office of Equity, Diversity, and Inclusion** **(https://diversity.ucsd.edu/)** the campus community centers provide programs and resources for students and contribute

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[Counseling and Psychological Services](https://wellness.ucsd.edu/caps/Pages/default.aspx)
(https://wellness.ucsd.edu/caps/Pages/default.aspx)

Individual, group, couples, and family psychotherapy services for registered undergraduate and graduate students

[Office for Students with Disabilities](http://osd.ucsd.edu/)
(http://osd.ucsd.edu/)

Documents students disabilities, provides accessibility resources, and reasonable accommodations

[Triton Concern Line](https://blink.ucsd.edu/instructors/advising/concern/index.html)
(https://blink.ucsd.edu/instructors/advising/concern/index.html)

Report students of concern at (858) 246-1111

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/** **(https://ophd.ucsd.edu/)**, or **http://ophd.ucsd.edu/report-bias/index.html** **(http://ophd.ucsd.edu/report-bias/index.html)**

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.

CARE at the Sexual Assault Resource Center: 858.534.5793 | **sarc@ucsd.edu (mailto:sarc@ucsd.edu)** | **https://care.ucsd.edu** **(https://care.ucsd.edu)**
Counseling and Psychological Services (CAPS): 858.534.3755 | **https://caps.ucsd.edu** **(https://caps.ucsd.edu)**

ACCESSIBILITY

http://disabilities.ucsd.edu **(http://disabilities.ucsd.edu)** | **osd@ucsd.edu (mailto:osd@ucsd.edu)** | 858-534-4382

Any student with a disability is welcome to contact me early in the quarter to work out accommodations to support their success in this course. Students requesting accommodations for this course due to a disability should work through the Office for Students with Disabilities (OSD). Instructors will receive Authorization for Accommodations Letters from the OSD online portal. Whenever possible, we will use universal designs that are inclusive. If you have feedback on how to make the class more accessible, please get in touch!

INCLUSION

It is our goal to create a learning environment that supports diversity of thought, perspective, experience, and identities. We encourage all of you to participate in discussion and contribute to the field from your perspective. If you have feedback on how to make the class more inclusive, please get in touch!

Office of Equity, Diversity, and Inclusion:

858.822.3542 | **diversity@ucsd.edu (mailto:diversity@ucsd.edu)** | **https://diversity.ucsd.edu/** **(https://diversity.ucsd.edu/)**

https://students.ucsd.edu/student-life/diversity/index.html **(https://students.ucsd.edu/student-life/diversity/index.html)**

https://regents.universityofcalifornia.edu/governance/policies/4400.html (https://regents.universityofcalifornia.edu/governance/policies/4400.html)

CHILDREN IN CLASS/SECTION

I understand that childcare situations may be complicated. If you need to bring a child to class, you may do so. Please be prepared to bring the child outside should they be disruptive to the class. It is also important to follow all masking rules. Do your best to participate and engage, but also please get in touch with me if you have any questions or concerns. Please note that children are not allowed in the lab.

LETTERS OF RECOMMENDATION

If you think you may want me to write you a letter of recommendation (or any other instructor), please consider what a good letter would contain and how your actions in the course demonstrate the qualities you will want highlighted in a good letter. When students ask me for a letter of recommendation, I ask them to write to me about how they demonstrated critical thinking, leadership, collaboration, and professionalism. I will be specifically looking for examples of these qualities *that I could have noticed* during lab and office hours. Be sure to actively participate in the discussions, talk to me during the lab and my office hours: ask questions, offer your own ideas and interpretations of your results, bring interesting facts/papers that are connected to the material we are studying. If you don't actively show the qualities that are needed to write a good letter, it will be hard for me to write a letter that is meaningful and useful.

SUBJECT TO CHANGE POLICY

The information contained in the course syllabus may be – under certain circumstances (e.g., to enhance student learning or respond to our ever-changing world) – subject to change with reasonable advance notice, as deemed appropriate by the instructor.

TECHNICAL SUPPORT

For help with accounts, network, and technical issues: **https://acms.ucsd.edu/contact/index.html (https://acms.ucsd.edu/contact/index.html)**

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

https://library.ucsd.edu/computing-and-technology/connect-from-off-campus/ (https://library.ucsd.edu/computing-and-technology/connect-from-off-campus/)