

## BIMM100 – Molecular Biology

Summer II, 2023

RCLAS: Use zoom link below for every lecture

<https://ucsd.zoom.us/j/95075658242>

Meeting ID: 950 7565 8242

T, Th at 11am-1:50pm

## Course Description

BIMM100. Molecular Biology (4 quarter units) Molecular Biology is the study of gene structure, function and regulation at the molecular level. It describes fundamental mechanisms, shaped by evolution, that underlie all known life on our planet - mechanisms that when impaired, for example by mutation or by parasitic interference, lead to human disease. You will be introduced to our current understanding of genome structure and gene expression and the key experimental observations and deductions made by scientists, which have shaped, and continues to shape, our knowledge in this rapidly developing field of biology. As you will learn, this is a field of intense research with new exciting discoveries reported daily. Prerequisites: BILD 1; BIBC 103 or BILD 4 or BILD 70 or BIMM 101; BENG 120 or CHEM 40A or CHEM 40AH; BENG 120 or CHEM 40B or CHEM 40BH.

## Instructor

**Instructor:** Corinne Moeller-McCoy, PhD Candidate

**Email:** [cmoeller@ucsd.edu](mailto:cmoeller@ucsd.edu); *Please include BIMM100 in the subject line*

**Office Hours:** W/F 1-2PM via zoom

**Course Website:** [canvas.ucsd.edu](https://canvas.ucsd.edu)

Login: UC San Diego Active Directory credentials

### Instructional Assistants (IAs):

Shane Samarasena; [ssamarasena@ucsd.edu](mailto:ssamarasena@ucsd.edu); OH: W 2-4pm via zoom

Vy Dang; [h0dang@ucsd.edu](mailto:h0dang@ucsd.edu); OH: T/Th 6-7pm via zoom

### Office Hours

My office hours are optional and will take place via zoom 12-2PM every Wednesday and Friday. Please come to go over questions related to the problem set, lectures, readings, discussion, etc. Office hours may also be made by appointment.

### IA/TA

Section A01: 9-9:50 AM; Shane Samarasena

Section A02: 10-10:50 AM; Shane Samarasena

Section A03: 11-11:50 AM; Vy Dang

Section A04: 1-1:50 PM; Vy Dang

## Inclusion Statement

I am committed to creating a learning environment that supports diversity of thought, perspective, experience, and identities. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, culture, religion, politics, sexual orientation, gender, gender variance, and nationalities. Class rosters are provided to the instructor with the student's legal name. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me early in the semester so that I may make appropriate changes to my records. It is my hope that in this course we will develop a supportive learning community that will foster rich discussions through the sharing of personal ideas, experiences, and relationships to course material. Honesty, listening for understanding, a willingness to share your ideas, and respect for self and others are basic guidelines that can help create a positive learning environment. Your participation and feedback is important to the success of the course and I welcome your thoughts throughout the semester on how we might improve class processes that will encourage effective communication and dialogue.

## Course Expectations

What I expect of you	What you can expect of me
<p><b>Be informed.</b> Read this syllabus carefully and completely so you understand the course structure and expectations.</p> <p><b>Be attuned.</b> Keep up with readings and lab assignments, as each one builds on the previous one.</p>	<p><b>Enthusiasm.</b> To be prepared for each class and to bring my enthusiasm for teaching to each lecture, lab, and office hour meeting.</p> <p><b>Responsiveness.</b> To respond to emails within 24 hours. For those that know me already, you know that I usually respond faster than this. Emails received on weekends or while I'm traveling may take longer.</p>
<p><b>Ethical.</b> A good attitude and maintenance of honest and ethical principles towards me, your classmates, and the execution of the course. Please read UC San Diego's <a href="#">Principles of Community</a> and <a href="#">Conduct Code</a>.</p>	<p><b>Timely feedback.</b> To make every effort to return graded assignments within one week of the submission date and to post solutions or code as soon as is reasonably possible after the submission date.</p>
<p><b>Integrity.</b> An honest, fair, responsible, respectful, trustworthy, and courageous effort on all academic work and collaboration. Please read UC San Diego's Policy on <a href="#">Integrity of Scholarship</a>. Then, take the <a href="#">integrity pledge</a>!</p> <p><b>Be flexible.</b> This course may be affected by the remote format or unavoidable emergencies, necessitating last-minute rescheduling.</p>	<p><b>Integrity.</b> To uphold integrity standards and create an atmosphere that fosters active learning, creativity, critical thinking, and honest collaboration.</p> <p><b>Reasonable</b> accommodation and understanding for student situations that arise; however, I will not make exceptions for one person that are not available to every other person in the course.</p>

## Course Learning Outcomes

After taking this class, you should know the key concepts of the central dogma of molecular biology, including the composition of genomes and the basic mechanisms of replication, transcription, RNA processing, translation and RNA turnover, and how the complexes that perform these activities identify their targets, carry out their function and can be regulated to meet cellular needs. In addition, you should have a basic understanding of the experimental approaches and deductions that have shaped, and continues to shape, our understanding of these concepts. You should also be able to interpret, and predict the outcome of, basic experiments to study factors and pathways in molecular biology processes. Doing well in this class requires solid prior understanding of genetics, biochemistry and organic chemistry.

## Course Materials and Tools

### Text/Readings/Other Material

Lodish et al., Molecular Cell Biology, 8<sup>th</sup> Edition, Freeman, 2016 is optional.

Problem set, lecture, discussion, midterm and final questions will draw largely on material presented in class.

### CANVAS: Learning Management System

Login: UC San Diego Active Directory credentials

## Course Format

Summer Session 2023 is offered as remote instruction. You can access the campus notice [here](#). This class will take place in a hybrid format, which means that you will engage with some elements in real-time (synchronous), and other elements at your own pace (asynchronous), within due dates. Lectures, discussion and office hours will be synchronous and take place via the scheduled class time on zoom. Some lectures will be cut short so that you may complete an assignment related to lecture at your own pace (asynchronously).

It is essential that you attend real-time Lectures, Office Hours and Discussion Sections to stay connected and earn extra credit active participation points!

All problem sets, lecture questions, midterm and final are open note. You may not use AI to complete any assignments as this violates academic integrity for original work (i.e. this constitutes plagiarism). YOU are expected to complete the work assigned to you so I can see if you are learning and what you've learned; I'm not interested in knowing what your artificial intelligence tool can do or what it knows. I have a professional and ethical obligation to follow Senate Policy, which states that I must report all suspected academic integrity violations to the Academic Integrity Office, which I will do.

On the day of the midterm and final, you will have a 24 hour window to complete the exam and upload it to Canvas. Discussion time may be used to review problem set and lecture questions. Extra credit may be earned if you are an active participant during lecture.

If your score on the final is better than the midterm, it can replace your midterm grade

## Grading Information

### Summary of Grade Criteria

Course Component	Points	Weight
<b>LECTURE</b>	<b>200</b>	<b>30%</b>
Course Introduction	10	
Research Assignments (4 @ 30 points each)	120	
Bio-interactives (2 @ 60 points total)	60	
Final Reflection	10	
<b>QUIZZES &amp; EXAMS</b>	<b>450</b>	<b>70%</b>
Midterm	150	
Final	300	
<b>TOTAL</b>	<b>650</b>	

### Grading Scale

Grading Scale					
A+	98% - 100%	B+	88% - < 90%	C+	78% - < 80%
A	92% - < 98%	B	82% - < 88%	C	72% - < 78%
A-	90% - < 92%	B-	80% - < 82%	C-	70% - < 72%
					<i>Grades will not be curved</i>

### Grading Procedure and Feedback

This course will **not** be graded on a curve, it is on an absolute scale, out of **650** points, described above. You are therefore responsible for **every** point you earn.

Please feel free to work on the problem sets together, review them in discussion, bring them to my office hours, and bring them to your IA/TA's office hours. Some of the problem set questions will be reviewed in discussion.

### Attendance and Participation

Attendance and participation is not mandatory in lecture, but is strongly encouraged. Essential material for the course will be covered during lecture and extra credit points may be earned.

Attendance and participation is not mandatory in discussion, however your TA/IA will keep track of students who regularly attend and participate – at the end of the quarter these students will be eligible to earn extra credit. Furthermore, answers to the problem sets will **ONLY** be discussed in discussion and in office hours. You are encouraged to work together to complete the problem sets. Answer keys will **NOT** be posted to the course website. If you would like to work with your peers, your TA and I to get to the correct answer, attendance at either discussion or office hours is your opportunity to do so.

## Late or Missing Assignments

Deadlines described below must be adhered to. Please contact me ASAP if deadlines cannot be met. If I do not hear from you, late or missing assignments will receive a zero.

## Course Schedule

REVIEW THIS SCHEDULE OFTEN TO ENSURE DEADLINES ARE MET.

Week	Day	Date	Lecture			Section
			Lecture		Assignment, Activities, Due Dates	Discussion
1	M 8/7					A01: 9-9:50AM A02: 10-10:50AM A03: 11-11:50AM A04: 1-1:50PM
	Tu 8/8		L1	Introduction; Overview  Central Dogma; DNA structure; DNA replication/repair  Chromosomes and Telomeres  Recombinant DNA Techniques  PCR		
	W 8/9				Course Introduction Due	A01: 9-9:50AM A02: 10-10:50AM A03: 11-11:50AM A04: 1-1:50PM
	Th 8/10		L2	DNA sequencing  Northern Blotting  Southern Blotting  Western Blotting		
	Sun 8/13				Bio-Interactive #1 Due	
2	M 8/14					A01: 9-9:50AM A02: 10-10:50AM A03: 11-11:50AM A04: 1-1:50PM
	Tu 8/15		L3	Transcription  Gene Expression in Prokaryotic Organisms	Research Assignment #1 Due	
	W 8/16					A01: 9-9:50AM A02: 10-10:50AM

						A03: 11-11:50AM A04: 1-1:50PM
	Th 8/17		L4	Gene Expression in Eukaryotic Organisms  Eukaryotic Pol-I, -II, -III transcription  Activation and repression of Transcriptional Initiation  Regulation of Transcription Factor Activity		
	Sun 8/20				Bio-Interactive #2 Due	
3	M 8/21					A01: 9-9:50AM A02: 10-10:50AM A03: 11-11:50AM A04: 1-1:50PM
	Tu 8/22		L5	mRNA capping, nuclear export  Polyadenylation Post-transcriptional gene regulation		
	W 8/23					A01: 9-9:50AM A02: 10-10:50AM A03: 11-11:50AM A04: 1-1:50PM
	Th 8/24			<b>MIDTERM</b>	Midterm to be submitted by 11:59PM	
	Sun 8/27					
4	M 8/28				Research Assignment #2 Due	A01: 9-9:50AM A02: 10-10:50AM A03: 11-11:50AM A04: 1-1:50PM
	Tu 8/29		L6	Translation  mRNA turnover  RNA Polymerase I/III		
	W 8/30					A01: 9-9:50AM A02: 10-10:50AM A03: 11-11:50AM A04: 1-1:50PM
	Th 8/31		L7	Non-coding RNA  RNA Quality Control		

				Chromatin Remodeling		
	Sun 9/3				Research Assignment #3 Due	
5	M 9/4					A01: 9-9:50AM A02: 10-10:50AM A03: 11-11:50AM A04: 1-1:50PM
	Tu 9/5		L8	Chromatin Immunoprecipitation  Genomics  Cancer		
	W 9/6					A01: 9-9:50AM A02: 10-10:50AM A03: 11-11:50AM A04: 1-1:50PM
	Th 9/7			Review Session (Presented by your peers; 10pts E.C.)	Research Assignment #4 Due	
	F 9/8			<b>FINAL EXAM</b>	Final to be submitted by 11:59PM	

## UC San Diego Principles of Community

The University of California, San Diego is dedicated to learning, teaching, and serving society through education, research, and public service. Our international reputation for excellence is due in large part to the cooperative and entrepreneurial nature of the UC San Diego community. UC San Diego faculty, staff, and students are encouraged to be creative and are rewarded for individual as well as collaborative achievements.

To foster the best possible working and learning environment, UC San Diego strives to maintain a climate of fairness, cooperation, and professionalism. These principles of community are vital to the success of the University and the well being of its constituents. UC San Diego faculty, staff, and students are expected to practice these basic principles as individuals and in groups.

[Click here for the complete UC San Diego Principles of Community in English and Spanish.](#)

## Student Resources for Support and Learning

### ACADEMIC SUPPORT

<a href="#">Geisel Library</a>	Research tools and eReserves
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<a href="#">Content Tutoring with the Teaching + Learning Commons</a>	Drop-in and online tutoring through the Academic Achievement Hub
<a href="#">Supplemental Instruction with the Teaching + Learning Commons</a>	Peer-assisted study sessions through the Academic Achievement Hub to improve success in historically challenging courses
<a href="#">Writing Hub Services in the Teaching + Learning Commons</a>	Improve writing skills and connect with a peer writing mentor
<a href="#">Learning Strategies Tutoring</a>	Address learning challenges with a metacognitive approach
<a href="#">OASIS</a>	Intellectual and personal development support
<a href="#">Student Success Coaching Program</a>	Peer mentor program that provides students with information, resources, and support in meeting their goals
<a href="#">Academic Integrity</a>	Policy on Academic Integrity of Scholarship and strategies to excel with integrity
<a href="#">Technical Support</a>	Assistance with accounts, network, and technical issues

## STUDENT RESOURCES

<a href="#">Basic Needs</a>	Provides access to food, housing, and financial resources
<a href="#">Counseling and Psychological Services (CAPS)</a>	Provides services like confidential counseling and consultations for psychiatric services and mental health programming
<a href="#">Community Centers</a>	As part of the <a href="#">Office of Equity, Diversity, and Inclusion</a> the campus community centers provide programs and resources for students and contribute toward the evolution of a socially just campus
<a href="#">Counseling and Psychological Services</a>	Individual, group, couples, and family psychotherapy services for registered undergraduate and graduate students
<a href="#">Office for Students with Disabilities</a>	Documents students disabilities, provides accessibility resources, and reasonable accommodations
<a href="#">Triton Concern Line</a>	Report students of concern at (858) 246-1111



## Additional Optional Information

### **Subject to Change Policy**

The information contained in the course syllabus, other than the grade and absence policies, may be—under certain circumstances such as mutual agreement to enhance student learning—subject to change with reasonable advance notice, as deemed appropriate.

### **Letter of Recommendation Policy**

If you would like a letter of recommendation, a minimum grad of an A- must be earned. I also encourage you to come office hours, engage in active class participation and demonstrate qualities that may be included in a LOR. Please provide a month notice prior to LOR deadline submission.

### **Technology Policy**

This is an online course, and therefore online resources are available to you for integrated questions, problem sets, the midterm and final.