Syllabus, Molecular Basis of Human Disease, BIMM 110, winter 2022

Time: 8:00 AM to 8:50 AM, Monday, Wednesday, and Friday
Zoom: https://ucsd.zoom.us/j/99986386641
Location: Pepper Canyon Hall 106

Instructor: Professor Dong-Er Zhang, email: d7zhang@ucsd.edu

Instructive Assistants:
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EQUALITY, DIVERSITY AND INCLUSION & PRINCIPLES OF COMMUNITY

Diversity and equity statement
It is important for us to make sure that how we teach this course and how we accommodate different student needs reflects the differences of race, ability, sexual orientation, age, and gender identity that enrich our classroom experience and campus. If you have any concerns related to diversity and equity in the course, please contact the instructor.

UC San Diego Principles of Community (https://ucsd.edu/about/principles.html)
As we continue to confront the senseless killings of Breonna Taylor, Ahmaud Arbery, George Floyd and many others, we would like to remind everyone of UC San Diego's Principles of Community. Our campus consists of diverse communities, and we acknowledge that our society carries biases based upon race, ethnicity, sex, gender, and multiple other dimensions. We reject acts of discrimination based on race, ethnicity, sex, gender identity, age, disability, sexual orientation, religion, and political beliefs and will confront and appropriately respond to such acts. We also affirm the right to freedom of expression and promote the open expression of our individuality and diversity within the bounds of respect, courtesy, confidentiality, and sensitivity. Above all, we are committed to the highest standards of civility and decency for everyone because we are supporting and promoting a community in which all people can work and learn together in an atmosphere free of demeaning or abusive treatment. If you have any concerns about what you have experienced in this course, please contact the instructor and/or consider using the resources given below.

Discrimination and harassment
The Office for the Prevention of Harassment & Discrimination (OPHD) aids students, faculty, and staff regarding reports of bias, harassment, and discrimination. OPHD is the UC San Diego Title IX office. Title IX of the Education Amendments of 1972 is the federal law that prohibits sex discrimination in educational institutions that are recipients of federal funds. Students have the right to an educational environment that is free from harassment and discrimination.

Students have options for reporting incidents of sexual violence and sexual harassment. Sexual violence includes sexual assault, dating violence, domestic violence, and stalking. Information about reporting options may be obtained at OPHD at 858-534-8298, ophd@ucsd.edu, or http://ophd.ucsd.edu. Students may receive confidential assistance at CARE at the Sexual Assault Resource Center at 858-534-5793,

sarc@ucsd.edu, or http://care.ucsd.edu, or Counseling and Psychological Services (CAPS) at 858-534-3755 or http://caps.ucsd.edu.

Students may feel more comfortable discussing their particular concern with a trusted employee. This may be a student affairs staff member, a faculty member, a department chair, or other university official. These individuals have an obligation to report incidents of sexual violence and sexual harassment to OPHD. This does not necessarily mean that a formal complaint will be filed.

If you find yourself in an uncomfortable situation, ask for help. The university is committed to upholding policies regarding nondiscrimination, sexual violence, and sexual harassment.

STUDENT RESOURCES

ACADEMIC SUPPORT

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

STUDENT RESOURCES

Basic Needs	Provides access to food, housing, and financial resources
Counseling and Psychological Services (CAPS)	Provides services like confidential counseling and consultations for psychiatric services and mental health programming
Community Centers	As part of the Office of Equity, Diversity, and Inclusion the campus community centers provide programs and resources for students and contribute toward the evolution of a

	socially just campus
[Office for Students with Disabilities](#)	Documents student disabilities, provides accessibility resources, and reasonable accommodations
[Triton Concern Line](#)	Report students of concern at (858) 246-1111
[Office of the Ombuds](#)	The Office of the Ombuds provides a confidential, safe space for students, staff, and faculty to talk about concerns and problem-solve issues arising from interpersonal and group conflict.

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/ , or 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 | https://care.ucsd.edu

Counseling and Psychological Services (CAPS): 858.534.3755 | https://caps.ucsd.edu

CAMPUS SAFETY REQUIREMENTS AND EXPECTATIONS
(From https://keepteaching.ucsd.edu/fall-2021/index.html#syllabus)
Keeping our campus healthy takes all of us. You are expected to follow the [campus safety requirements](#) and pursue personal protection practices to protect yourself and the others around you. These include:

Participate in the university's daily screening process.
Everyone must complete a [Daily Symptom Survey](#) to access a university-controlled facility.

Participate in the university's testing program.
All students are required to participate in the [COVID-19 Testing program](#) as required by their vaccination status:
- o Unvaccinated students with approved exceptions must complete a COVID-19 test twice a week.
- o Students who are fully vaccinated must complete a COVID-19 test once a week, for the first four weeks of the quarter.
- o

Wear a well-fitted face covering that covers your nose and mouth at all times.
Everyone is required to [wear face coverings indoors](#) regardless of vaccination status. If you see someone not wearing a face covering or wearing it incorrectly, then kindly ask them to mask up.

Monitor the daily potential exposure report.
Every day the university will update the potential exposure report with building and some classroom information and the dates of exposure. Download the [CA COVID Notify app](#) to your phone to receive an alert if you have been potentially exposed to COVID-19.

Assist in the contact tracing process.
If you're contacted by a case investigator, it means you have been identified as [close contact](#), please respond promptly. You must assist with identifying other individuals who might have some degree of risk due to close contact with individuals who have been diagnosed with COVID-19.

Contact the instructional team if you are impacted by COVID-19
Please note that due to the ongoing COVID-19 Pandemic, changes may be made in response to new developments and information.

PRIVACY PRACTICES IN THIS COURSE
(From https://cio.ucop.edu/privacy-tips-for-your-syllabus/)
This course is a community built on trust; as a learning community, we are collectively responsible for upholding privacy protections. In order to create a community built on trust and the most effective learning experience, our interactions, discussions, and course activities must remain private and free from external intrusion. We have obligations to each other to preserve privacy and cultivate fearless inquiry. We respect the individual dignity of all and will refrain from actions that diminish others' ability to learn.

As your instructor, I am committed to protecting your privacy by only using university-approved course technologies and adhering to the Family Educational Rights and Privacy Act (FERPA) [link to your location's FERPA notice] and Campus Privacy Office guidelines. This includes using your educational data only as allowed by FERPA, for example, for legitimate educational purposes such as submitting your final grades to the registrar's office. Communications in this course are subject to the [UC Principles of Community](#) and the [Electronic Communications Policy](#).

Please note the following privacy practices for our course:

Course platform. This course uses Canvas, which may collect information about your engagement with course materials. I will review this information periodically to ensure students are engaged and look for

signs of students falling behind. I will also review this information in case of academic misconduct allegations, if relevant.

Online/video classes. Regarding video-conferencing, while I ask, to the extent you are comfortable and able, that you keep your videos on during lessons to aid in the development of our learning community, I also understand that may not always be possible. Know that you will not be penalized for choosing to disable your video during synchronous course sessions. You are welcome to use an appropriate virtual background if you do not want to have your surroundings visible. Be mindful of others who may not wish to be visible or recorded in the background.

You may use your name or a pseudonym on Zoom (pseudonyms may only be used on this platform with my prior approval). Students with an official FERPA block on directory information with the registrar are not required to use their name or camera during online classes.

Also, lectures that given via Zoom will be recorded. You may turn off your video should you not wish to be recorded.

Using learning materials. Course materials (videos, assignments, problem sets, etc.) are for use in this course only. You may not upload them to external sites, share with students outside of this course, or post them for public commentary without my written permission. We will not pin or take screenshots of fellow classmates or record sessions during synchronous online sessions or share discussion thread posts from the learning management system unless granted explicit permission to do so. Unauthorized sharing or uploading to exam questions, test answers, or summaries of exams is prohibited.

Using live class recordings. We are recording class meetings to support remote students and to provide everyone in the class with useful study aids. These recordings will be available for review through our learning management system. Students are prohibited from recording the class themselves unless a student has an approved academic accommodation for such recording. The university strictly prohibits anyone from duplicating, downloading, or sharing live class recordings with anyone outside of this course, for any reason.

Sharing student information. You may work on group projects with other students or be asked to review or respond to their work. Other materials and activities may provoke debate, argument, or spirited discussion; some of us may volunteer sensitive personal information. Do not share others' personal information, including class dialogue or performance, on sensitive topics outside of our course community. Student work, discussion posts, and all other forms of student information related to this course should be handled with respect and remain within interactions of this course. You may publicly post your own work, provided it does not violate academic dishonesty policies or show responses to assessments; public posting of group work requires consent from all group members. Research conducted as part of a class is subject to UC research policies and may include sensitive information. Students may not share research information without permission from the instructor.

Sharing course information with others. Do not post images or identifiable conversations that occur in class to social media or to those beyond our learning community. Sharing private information about our course community (including discussions, activities, presentations, student work, etc.) with others for the purpose of inviting external attention, intrusion, ridicule, or harassment is an egregious breach of trust. Violating these principles will be handled according to the [link to applicable academic honor code].

Course Description:
This course presents 1) genetic, biochemical, and molecular biological approaches used to identify the molecular basis of human diseases; 2) the current understanding of selected major human diseases at molecular and cellular levels with resulted physiological consequences; 3) successful and possible therapeutic treatment of these human diseases based on molecular basis of pathology. This is an upper level undergraduate class. It is expected that students taking BIMM 110 already have a good background in molecular biology, metabolic biochemistry, and genetics.

There is no required course textbook. Lecture slides will be posted on the Canvas website

Website for the course: canvas.ucsd.edu/

Week 1:
January 3, Lecture 1: Diseases, genes, and human life span
January 5, Lecture 2: Chromosome, Cell Cycle, Human Disease Pedigree
January 7, Lecture 3: Hemophilia and gene therapy

Week 2:
January 10, Lecture 4: Identification of disease genes by analyzing human genome
January 12, Lecture 5: Gene expression, mutation, and red blood cells
January 14, Lecture 6: Sickle cell anemia and thalassemia

Week 3:
January 17, Martin Luther King Jr. Day
January 19, Lecture 7: Cell lines and animal models to study human diseases
January 21, Lecture 8: Gene editing and therapeutic potential

Week 4:
January 24, Review of lectures 1 - 8
January 26, Midterm exam 1
January 28, Lecture 9: Meiotic disjunction and chromosomal numerical abnormalities

Week 5:
January 31, Lecture 10: Chromosomal abnormalities
February 2, Lecture 11: Epigenetics in gene expression and related human diseases
February 4, Lecture 12: Epigenetics and X-inactivation, B cell-specific XIST complex (Cell paper)

Week 6:
February 7, Lecture 13: Muscle disorders
February 9, Lecture 14: Human Mitochondrial Diseases
February 11, Lecture 15: Cystic Fibrosis

Week 7:
February 14, Presidents' Day
February 16, Review of Lecture 9 - 15
February 18, Midterm exam 2

Week 8:
February 21, Lecture 16: Neurodegenerative diseases - I
February 23, Lecture 17: Neurodegenerative diseases - II
February 25, Lecture 18: Neurodegenerative diseases - III

Week 9:
February 28, Lecture 19: Cancer - I
March 2, Lecture 20: Cancer - II
March 4, Lecture 21: Cancer - III

Week 10:
March 7, Lecture 22: Gametogenesis, embryo development, and infertility
March 9, Lecture 23: Stem cells and related therapies
March 11, Review of Lectures 16 - 23

Week 11:
March 14, Final exam (8:00 - 11:00 AM)

Class attendance: Students are expected to attend all lectures, at least listen to the recorded lectures

Professor Office Hours (start from week 2): Professor Zhang will hold her office hours on Thursday from 3:00 PM to 4:00 PM.

Office hours of IAs (start from week 2):
Casey Cheng, Friday 9-10am, https://ucsd.zoom.us/j/93438478257
Matthew Tam, Monday 8-9pm, https://ucsd.zoom.us/j/91610405948
Mengdan Liu, Wednesday 9:30-10:30am, https://ucsd.zoom.us/j/94704419326
Minghao Zhang, Wednesday 5-6pm), https://ucsd.zoom.us/j/98166540179

Discussion Sections headed by Instructional Assistants (start from week 2):

A01	Mengdan Liu	W	11:00a-11:50a	HSS	1315
	https://ucsd.zoom.us/j/99614076787				
A02	Matthew Tam	W	10:00a-10:50a	WLH	2206
	https://ucsd.zoom.us/j/94294265255				
A03	Casey Cheng	W	12:00p-12:50p	HSS	1128A
	https://ucsd.zoom.us/j/94921506735				
A04	Minghao Zhang	W	4:00p-4:50p	WLH	2115
	https://ucsd.zoom.us/j/97408553224?pwd=MHJoeXdwK2o0NGNJcE9UMUV4Y3dwZz09, password: BIMM110				
A05	Mengdan Liu	F	3:00p-3:50p	APM	2301
	https://ucsd.zoom.us/j/94753686534				
A06	Casey Cheng	F	11:00a-11:50a	HSS	1128A
	https://ucsd.zoom.us/j/96457692056				

Course grading

Overall course letter grades will be calculated as:
Midterm 1, 25% + Midterm 2, 25% + Final, 50%
One third A, one third B, one third C and lower (53-64 – D, 0-52 – F)

Regrades: Any requests for regrades must be submitted in writing (clearly state the reason for regrade request and attach the statement to the complete exam) within 7 days after the exams have been returned for the midterm (the deadline of final exam regrade will be announced later). Professor Zhang reserves the right to regrade the entire exam when a request is submitted, which may change the score in either directions.