

BIBC 194 – Structure, Medicine, Disease
Fall Quarter 2023
York 3010
Tuesdays 2:00 to 3:20 pm

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Contacting me

If possible, please schedule office hours if you have questions related to course material. It is much easier to explain concepts in person than by email. If you need to send me an email, please include “BIBC 194” in the subject line and allow a business day for me to reply. If I have not replied in a business day, please send the email again. I don't respond to email on weekends.

Course Description

Whatever biology-related career you envision for yourself, your work is likely to revolve around disease and medicine. But what is medicine and what is a disease? How do drugs work, why does a mutation disrupt protein function or cause drug resistance, and how do we talk about *any* of this when we address non-scientists?

In this course, we'll aim to start with well understood diseases and medicines, such as small molecules with known mechanisms of action. We'll model those mechanisms and sure up our basic understanding of structural biochemistry, enzyme inhibition, and some important biological pathways. Then we'll address some less well understood topics.

Not all drugs have known mechanisms. Some drugs are stigmatized or feared. Not all diseases can be cured or even treated. Nevertheless, it's our job, as scientists, to be informed, persuasive, and culturally aware. This seminar is a staging ground for the doctor-patient and scientist-layperson interactions that many of you plan to have in the future. Listening, presenting, and responding thoughtfully—those are hard-won skills, and we'll practice each.

Course Materials and Tools

Every article used in the class is available online, but most journals are behind paywalls. Download articles while on campus or use the [UCSD VPN](#).

There are two programs you can use to visualize macromolecular structures. One is UCSF Chimera. The other is Mol*. Both generate nice images, and have good features for investigating binding and mutations. I am more familiar with Chimera.

Grading Information

97%-100%	A+	77-80%	C+
93-97%	A	73-77%	C
90-93%	A-	70-73%	C-
87-90%	B+	60-70%	D
83-87%	B	<60%	F
80-83%	B-		

Assignment	Weight
Attendance	90
Presentation	5
Participation	5
	100%

Attendance and Participation

This is an in-person course. Attendance accounts for 90% of your grade, but I know that life happens. People have jobs, get sick, etc. So, **two absences from class will be excused without question**. Absences for any sincerely held religious belief, observance, or practice will be accommodated.

Course Format

This is *your* class. I'm here to provide some background and to help curate topics, but class time will focus on student presentations and discussions. We'll have about nine meetings for y'all to present on the topics below. I'll post associated papers to Canvas. Your task is to be *interested* and to put together talks that are *interesting*. Telling stories is a major part of *all* STEM careers. Now's the time to start sharpening that skill.

Student presentations will be graded generously. I know some folks have stage fright or are less comfortable with their words, and we won't let that hurt your grade. What I do want to see, though, is genuine engagement. It's clear when someone is giving a talk that they don't care about. Let's work together to avoid that, first and foremost.

Presentation topics and associated papers are on Canvas. Ideally, you will work with a review article and a research article. Draw relevant background from the review—convince us the topic matters!—and present one or two key findings from the article. If possible, show us the mechanism of action at the macromolecular level using Chimera or Mol*. I'll demonstrate how to do so in class.

Student Resources for Support and Learning

Library Help

For questions about eReserves and research tools:
<https://library.ucsd.edu/ask-us/triton-ed.html>

Learning Resources

[Writing Hub](#)
[Supplemental Instruction](#)
[Tutoring](#)
[Mental Health Services](#)

Community Centers

Learn about the different ways UC San Diego explores, supports and celebrates the many cultures that make up our diverse community.
<https://students.ucsd.edu/student-life/diversity/index.html>

Accessibility

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 (please make arrangements to contact me privately) and to the OSD Liaison in the department in advance so that accommodations may be arranged.

Contact the OSD for further information: <https://disabilities.ucsd.edu/>.
osd@ucsd.edu | 858. 534.4382

Inclusion

I am committed to creating a learning environment that supports diversity of thought, perspective, experience, and identity. This will be key to our

success. Science is all about pooling insight and seeing problems from as many perspectives as possible. So, please share your thoughts.

I am also open to anonymous feedback am fully willing to facilitate it.

Office of Equity, Diversity, and Inclusion:

858.822.3542 | diversity@ucsd.edu | <https://diversity.ucsd.edu/>
<https://students.ucsd.edu/student-life/diversity/index.html>
<https://regents.universityofcalifornia.edu/governance/policies/4400.html>

Basic Needs

Any student who has difficulty accessing sufficient food to eat every day, or who lacks a safe and stable place to live, and believes this may affect their performance in this course, is encouraged to contact:

foodpantry@ucsd.edu | basicneeds@ucsd.edu | (858)246-2632

Technical Support

For help with accounts, network, and technical issues:

<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/>

For help installing Zoom for video conferencing, virtual office hours, synchronous lectures:

<https://blink.ucsd.edu/technology/file-sharing/zoom/index.html>

UC San Diego Academic Policies

Academic Integrity

Academic Integrity is expected of everyone at UC San Diego. This means that you must be honest, fair, responsible, respectful, and trustworthy in all of your actions. Lying, cheating, or any other forms of dishonesty will not be tolerated because they undermine learning and the University's ability to certify students' knowledge and abilities. Thus, any attempt to get, or help another get, a grade by cheating, lying or dishonesty will be reported to the Academic Integrity Office and will result in sanctions. Sanctions can include an F in the class and suspension or dismissal from the University. So, think carefully before you act. Before you act, ask yourself the following questions: a) is my action honest, fair, respectful, responsible, and trustworthy, and b) is my action authorized by the instructor? If you are unsure, don't ask a friend, ask your instructor, instructional assistant,

or the Academic Integrity Office. You can learn more about academic integrity at academicintegrity.ucsd.edu.

(Source: Bertram Gallant, T. (2017). Teaching for integrity. UC San Diego Academic Integrity Office.)

Refer to:

[UCSD Student Conduct Code](https://students.ucsd.edu/_files/student-conduct/ucsandiego-student-conduct-code_interim-revisions1-16-18.pdf)

(https://students.ucsd.edu/_files/student-conduct/ucsandiego-student-conduct-code_interim-revisions1-16-18.pdf)

[Principles of Community](https://ucsd.edu/about/principles.html)

(<https://ucsd.edu/about/principles.html>)

Religious Accommodation

It is the policy of the university to make reasonable efforts to accommodate students having bona fide religious conflicts with scheduled examinations by providing alternative times or methods to take such examinations. If a student anticipates that a scheduled examination will occur at a time at which his or her religious beliefs prohibit participation in the examination, the student must submit to the instructor a statement describing the nature of the religious conflict and specifying the days and times of conflict.

For final examinations, the statement must be submitted no later than the end of the second week of instruction of the quarter.

For all other examinations, the statement must be submitted to the instructor as soon as possible after a particular examination date is scheduled.

If a conflict with the student's religious beliefs does exist, the instructor will attempt to provide an alternative, equitable examination that does not create undue hardship for the instructor or for the other students in the class.

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, ophd@ucsd.edu, or reportbias.ucsd.edu.

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>

Subject to Change Policy

The information contained in this 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.