

BILD 1: The Cell

Instructor: Andrew Cooper (he/him/his)

Office: HSS 1145C

E-mail: a5cooper@ucsd.edu (Include BILD 1 in the subject line)

Lecture Time: TuTh 5:00-6:20p CENTR 101

Office Hours: TuTh 3:30-4:30p HSS 1145C, F 6:00-7:00p [Zoom](#), or by appointment

Course Learning Objectives:

- 1) Explain the relationship between chemical structure and function of molecules such as DNA, RNA, proteins, amino acids, and lipids.
- 2) Compare and contrast how the structures and elements of prokaryotic cells, eukaryotic cells, and viruses' impact how they function.
- 3) Predict how and when molecules may enter or exit cells through various pathways in the cell membranes.
- 4) Analyze how energy is produced and used by cells, including processes such as cellular respiration and photosynthesis.
- 5) Explain how cells receive and act on external chemical signals, including the stages of cell signaling and how signals are amplified.
- 6) Explain mechanisms that lead to genetic diversity including mutation and meiotic recombination.
- 7) Analyze how environment interacts with genotypes to produce phenotypes.
- 8) Explain patterns and mechanisms of inheritance.
- 9) Apply the central dogma to explain how genes give rise to the traits we observe in organisms.
- 10) Explain how gene expression can be modulated.

Cognitive Competencies:

- 1) Evaluate claims based on scientific evidence and reasoning.
- 2) Uses feedback from exams and assignments to adjust study strategies.

Contacting Me: Please ensure that all e-mails include BILD1 in the subject line and if the matter requires immediate attention include URGENT in the subject line as well. If I

do not respond to an e-mail within 24-48 hours, please send it again. I regularly check my e-mail during normal business time (Weekdays 9:00 am-6:00 pm), but more sporadically on the weekend/holidays.

Optional Text: *Campbell Biology, 12th Edition* by Urry, Cain, Wasserman, Minorsky and Reese (Pearson 2016) ISBN 9780134093413. On the class schedule there will be parts of chapters from the text indicated that match with the lecture topics. These readings are not required but can be a good resource if you are confused about certain terms/concepts.

Canvas: All course related information will be posted on our Canvas site. The lecture slides will be posted before lecture. Please check the Canvas site and your UCSD e-mail regularly for any announcements as these will contain essential information.

Podcast: Lecture podcasts will be posted through the traditional podcast site and can be accessed through Canvas.

iClickers: iClickers are required for this course. The frequency in this classroom is CA. You must register your clicker on Canvas by Monday, April 10th. Clicker participation will be counted beginning with the lecture on Thursday, April 6th.

Instructional Assistants (IAs):

Name	Email
Saya French	skfrench@ucsd.edu
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Brenda Phan	buphan@ucsd.edu
Khushi Vakil	kvakil@ucsd.edu

Discussion Sections: Sections will meet beginning Week 2. The content will vary from meeting to meeting, however, active engagement with the material in each section is critical to developing your understanding of the lecture material. A portion of your grade will be based on attendance and active participation in section. Discussion sections will be meeting in person. You are required to attend/participate in your designated discussion time to facilitate potential contact tracing and ensure an equal student:IA ratio among the sections. If you experience extenuating circumstances that prohibit you from attending section, please let me know as soon as possible. I will evaluate these instances on a case-by-case basis. If you predict an ongoing inability to attend scheduled discussion section, please speak with me as soon as possible to work out an alternative.

Assignments: There will be six assignments posted throughout the quarter that will allow you to work with the lecture material and prepare for the exams. Each assignment

will be posted on Thursday morning and be due by 11:59p on Sunday. The specific post and due dates for each assignment are listed below. You are welcome to work with each other but the words submitted for your assignment should be your own. These assignments will be done directly in Gradescope and will be checked for plagiarism. If you have never used Gradescope before you will need to set-up your account. Follow the "[Joining a Course](#)" instructions looking at "Possibility 2". Our school does not allow the option of signing on with "School Credentials". At the end of the quarter your lowest assignment score will be dropped. Before attempting the first homework assignment make sure to watch the "Assignment Info" video posted on Canvas for advice on how you should approach answering homework and exam questions in this class.

Assignment #1 – Topics 2, 3, & 4	Posted 4/13	Due 4/16
Assignment #2 – Topics 7 & 8	Posted 5/4	Due 5/7
Assignment #3 – Topic 9	Posted 5/11	Due 5/14
Assignment #4 – Topics 10 & 11	Posted 5/25	Due 5/28
Assignment #5 – Topics 11 & 12	Posted 6/1	Due 6/4

Exams: The exam dates are set and will not be changed so plan your semester accordingly. Exam 1 is scheduled for Thursday, April 27th and will cover material from Topics 1-6. Exam 2 is scheduled for Thursday, May 18th and will cover material from Topics 7-9. The Final Exam is scheduled for Thursday, June 15th from 7:00-9:00p and will be cumulative but with an emphasis on the new material. If you do better on the Final than one (or more of the exams) then your Final Exam score will replace the lowest Exam score (more details below). All exam questions are free response. The exams will be taken on paper, using dark writing, because we will scan the exams into Gradescope for grading and feedback. Exams will consist of a mixture of multiple-choice and free response questions. More information will be given before the first exam.

Tokens: At the start of the quarter each student will be given four "tokens", which will be tracked and indicated in the gradebook. There will be opportunities throughout the quarter for individuals or the class as a whole to earn additional tokens. These tokens can be used for three different purposes. (1) You can trade one token for a 24-hour extension on a homework assignment. To use this token you will email me, with "BILD 1 Token" as the subject line, and let me know that you would like to use a token for a 24 hour homework extension. This must be done before the end of that 24-hour period, otherwise the 20% late deduction will be applied to your homework. (2) You can trade one token to redo a homework question. To use this token you will email me, with "BILD 1 Token" as the subject line and in the body of the email state which homework question you are redoing and then type your new answer. This email needs to be sent within five days of the homework grades being posted. (3) You can trade one token to redo a free response exam question. To use this token you will email me, with "BILD 1 Token" as the subject line and in the body of the email state which exam question you are redoing and then type your new answer. This email needs to be sent within five days of the exam grades being posted. For the homework and exam question redo I strongly encourage you to speak with me or your IA before submitting to make sure you have a firm understanding of what was wrong with your initial answer and what content

is needed for a correct answer. Do not copy a fellow student's answer and do not just copy the answer rubric or the grading comments on your answer. You can use multiple tokens to redo multiple questions on a homework assignment or exam. In order to redo a homework or exam question you must have attempted to answer the question on your initial submission. Questions with answers left blank or skipped cannot be redone.

Lecture Participation Points: Clicker points will be counted starting Thursday, April 6th. For each class where you answer $\geq 75\%$ of the questions, you will get participation points, if you do not then you will get a zero for the day. You do not need to get the correct answer. For a majority of clicker questions, you will have to submit answers twice (once before and once after discussion) and both of these submissions are required. Lecture participation for the first day of class is earned by completing the syllabus quiz on campus and getting a 3 out of 4 or better. There will be 18 lectures throughout the semester where participation can be earned. You only need to earn participation credit for 13 out of the 18 lecture days to earn full credit for lecture participation, meaning you have five "no questions asked" absences in the quarter. If you experience extenuating circumstances that prevent you from attending class for more than those five "no questions asked" absences please email me as soon as possible and we can discuss the possibility of making up those points.

Acing Chemistry in Biology Education (AChiBE) Assignments: This year, we have a special set of assignments in the first two weeks of the course associated with learning the chemistry behind life. Cells are made up of molecules like enzymes and DNA, and these molecules are chemicals that follow chemical principles. To understand life, it is crucial to not only understand but master some basic concepts about how molecules interact with each other.

This may seem daunting, but we will support you by giving you extra study materials, multiple opportunities for practice and demonstrating your proficiency. Although these assignments can be completed in any order, we expect that most students will do the following:

1. Take the AChiBE Pre-assessment Quiz, due at the end of the first week of class. The purpose of this quiz is to give you a sense of which chemistry topics you already understand or do not understand. If you get a question wrong, it will state the topic and link to a supplemental AChiBE module on that topic. The quiz will initially give you a grade based on your performance but this will not directly affect your grade. After the quiz is due we will give everyone who completed the pre-quiz full points in the gradebook where it will actually affect your grade.
2. Complete optional AChiBE modules on topics that are not yet mastered. For each topic, there is a module that contains pre-assessment questions, a video explainer designed by previous BILD 1 students that explains the chemistry topic in a real-world context, and post-assessment questions to help you understand whether you are solid in your learning. These are not graded, and you can answer the questions and watch the videos as many times as you'd like.

- Come to an optional Chemistry Clinic in week 2. The teaching team will be running extra online student hours in week 2 focused on chemistry. There will be extra chances to ask questions.
- Take the AChiBE 90% Post-assessment Quiz, due at the end of the second week of class. This will have questions that are similar to the pre-assessment and module post-assessment questions to test whether you have mastered the chemistry material. In order to get full credit on this assessment, you must score at least 90% on it (i.e. get at least 18 out of 20 questions correct). As with the pre-quiz, you will see your actual score on the quiz initially, however after the quiz is due you will be given points in the gradebook where it will actually affect your grade. Anyone who received a 36/40 or higher will receive full credit. If you complete the post-quiz but score less than 36/40 you will receive half credit. However, you may take the assessment as many times as you want (the questions change slightly each time), and if you score less than 36/40, you are encouraged to review the study materials and reach out for additional help before attempting the quiz again.

We believe that everyone can learn this material and that doing so will help you immensely in learning biology. We are here to support you in your journey!

Grading: Grading in this course is not curved, so in theory every person could earn an A! You are not competing with each other for grades, so work together!

	Option 1	Option 2	Option 3
Lecture Participation	15%	15%	15%
Discussion Section	10%	10%	10%
Assignments	16%	16%	16%
AChiBE	4%	4%	4%
Exam 1	15%	0%	15%
Exam 2	15%	15%	0%
Final	25%	40%	40%
Total	100%	100%	100%

Letter grades are assigned as follows:
 90-100: A
 80-89: B
 70-79: C
 60-69: D
 Below 60: F

Your final grade will be calculated using each of these possible point distributions and the one that results in the highest grade will be used. No + or – grades are given.

Late Work Policy: For all assignments, those turned in within 24 hours of the due date will be accepted but with a deduction of 20% of the possible points. Assignments submitted more than 24 hours after the due date will not be accepted.

If you experience extenuating circumstances (e.g., you are hospitalized) that prohibit you from submitting your assignments on time, please let me know. I will evaluate these instances on a case-by-case basis.

Disability Access: Students requesting accommodations for this course due to a disability must provide a current Authorization for Accommodation (AFA) letter (paper or electronic) issued by the Office for Students with Disabilities (link to OSD website.) Students are required to discuss accommodation arrangements with instructors and OSD liaisons in the department in advance of any exams or assignments.

Contact the OSD for further information:

858.534.4382 osd@ucsd.edu <http://disabilities.ucsd.edu>

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 <https://diversity.ucsd.edu>

<https://students.ucsd.edu/student-life/diversity/index.html>

<https://regents.universityofcalifornia.edu/governance/policies/4400.html>

Title IX Compliance: The University recognizes the inherent dignity of all individuals and promotes respect for all people. Sexual misconduct, physical and/or psychological abuse will NOT be tolerated. If you have been the victim of sexual misconduct, physical and/or psychological abuse, we encourage you to report this matter promptly. As a member of this community, I am interested in promoting a safe and healthy environment, and should I learn of any sexual misconduct, physical and/or psychological abuse, I must report the matter to the Title IX Coordinator. If you want to speak confidentially you may contact the Counseling Center.

The Office for the Prevention of Harassment & Discrimination (OPHD) provides assistance to 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 <http://ophd.ucsd.edu>

Students may receive confidential assistance at CARE at the Sexual Assault Resource Center at: 858.534.5793 sarc@ucsd.edu <http://care.ucsd.edu>

Counseling and Psychological Services (CAPS) at: 858.534.3755 <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 department Chair, a faculty member 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.

Academic Integrity: Students are expected to do their own work, as outlined in the UCSD Policy on Academic Integrity. Cheating and plagiarism will not be tolerated, and I will fail any student caught engaging in academic dishonesty. Any student caught cheating on an exam will receive a failing grade for the course. Plagiarism of any kind will not be tolerated and will result in a failing grade. If you are unsure of what constitutes plagiarism it is your responsibility to seek out clarifying information. The UCSD library website has a series of modules around plagiarism that can be found [here](#).

Writing Center: The Writing Center provides support for undergraduates working on course papers (i.e., laboratory reports and the research proposal) and independent writing projects. Writing mentors can help at any stage of the writing process, from brainstorming to final polishing.

The Writing Center offers: one-on-one appointments for undergraduates with peer writing mentors; group workshops addressing a variety of writing projects, genres, and issues; and Drop-In Zone for quick questions, targeted assistance, and a comfortable writing space. <https://writingcenter.ucsd.edu/>

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:

858.246.2632 foodpantry@ucsd.edu basicneeds@ucsd.edu

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/>

University of California, San Diego
Consent to Act as a Research Subject

Assessing the Impact of the Acing Chemistry in Biology Education (AChiBE) Program

Who is conducting the study, why you have been asked to participate, how you were selected, and what is the approximate number of participants in the study?

Melinda T. Owens and Claire Meaders and their research associates are conducting a research study to find out more about how the Acing Chemistry in Biology Education (AChiBE) program affects student learning and experience in the classroom. You have been asked to participate in this study because you are a student in a class that is being studied or used as a control. There will be approximately 2000 participants in this study.

Why is this study being done?

The purpose of this study is to create knowledge that has the potential to improve the learning and educational experience of introductory biology students at UC San Diego and beyond.

What will happen to you in this study and which procedures are standard of care and which are experimental?

If you agree to be in this study, the following will happen:

- Your data from this class including grades, homework and exam submissions, and survey responses will be included in the analysis to determine the effectiveness of the AChiBE program used in this course compared to other similar courses.

How much time will each study procedure take, what is your total time commitment, and how long will the study last?

Your participation involves only agreeing to let us use your data in our analysis. It will require no time on your part above the time you put into this course without agreeing to the study.

What risks are associated with this study?

Participation in this study may involve some added risks or discomforts. These include the following:

1. A potential for the loss of confidentiality. We will not share your personally identifying data with people outside our research team. Data will only be kept in

anonymized form for research purposes. Course data will be rendered confidential by removing any identifiers before analysis. Your instructor will never know whether or not you are participating in this study. Data from students who opt out of the study will be removed prior to data analysis by a person on the research team who is not your instructor. Research records will be kept confidential to the extent allowed by law. Research records may be reviewed by the UCSD Institutional Review Board.

Since this is an investigational study, there may be some unknown risks that are currently unforeseeable. You will be informed of any significant new findings.

What are the alternatives to participating in this study?

The alternatives to participation in this study are not to participate. If you choose to opt-out of participating in this research study, we will exclude your data from analysis. Whether you participate will have no impact on your experience or grade in the associated class as the professor will not know who is or is not participating in the study.

What benefits can be reasonably expected?

There is no direct benefit to you for participating in the study. The investigator, however, may learn more about how to improve student learning, and society may benefit from this knowledge.

Can you choose to not participate or withdraw from the study without penalty or loss of benefits?

Participation in research is entirely voluntary. You may refuse to participate or withdraw or refuse to answer specific questions on a questionnaire at any time without penalty or loss of benefits to which you are entitled, like grades. If you decide that you no longer wish to continue in this study at any time, simply respond to the online opt-out form here: <https://forms.gle/fkewm31xa4twQTXk8>

You will be told if any important new information is found during the course of this study that may affect your wanting to continue.

Can you be withdrawn from the study without your consent?

The PI may remove you from the study without your consent if the PI feels it is in the best interest of the study, for example if there is incomplete data or plagiarized

responses. You may also be withdrawn from the study if you do not follow the instructions given you by the study personnel.

Will you be compensated for participating in this study?

You will not be compensated for participating in this study.

Are there any costs associated with participating in this study?

There will be no cost to you for participating in this study.

Who can you call if you have questions?

Melinda Owens, Claire Meaders, or one of their associates has explained this study to you and answered your questions. If you have other questions or research-related problems, you may reach Melinda Owens at mtowens@ucsd.edu or (415) 290-8853.

You may call the Human Research Protections Program Office at 858-246-HRPP (858-246-4777) to inquire about your rights as a research subject or to report research-related problems.

Your Consent

If you consent to participate in this study, no action is needed. If you **do not** consent to participate in this study, or you choose to opt-out at any time during the quarter, please submit this form online at [link to course-specific opt-out form]. Your instructor will not have access to the list of students who opted out.