Note: this is a live document, subject to change; your instructor will notify you of important updates

BIO 30S: The Molecular Basis of Disease

Tue/Thu 9:00AM – 11:00AM | 3 units | Location: TBD

Teaching Team

Instructor: Tony Boutelle, PhD ("Dr. B") | aboutell@stanford.edu | Office Hours: Thursday 11:00AM-12:00PM, Green Library Coupa Cafe | Pronouns: he/him

Teaching Assistant: | | Office Hours: , | Pronouns:

Overview

Course Description

What are the molecular underpinnings of human disease? This course will introduce students to core elements of biological sciences, offering an introduction to topics like biological macromolecules, genetics, and evolution, and their relevance to human disease. Focusing on three categories of disease: infectious diseases, cancer, and inherited diseases, students will uncover our current molecular understanding of the causes of each and explore the groundbreaking biomedical research aimed at curing and preventing them.

Land Acknowledgement

Stanford sits on the ancestral land of the Muwekma Ohlone Tribe. This land was and continues to be of great importance to the Ohlone people. Consistent with our values of community and inclusion, we have a responsibility to acknowledge, honor, and make visible the University's relationship to Native peoples.

Learning Goals

By the end of this course, students should be able to:

- Describe the "Central Dogma" of biology
- Apply central themes in biological sciences (the flow of information, the transformation of matter, evolution) to human disease
- Summarize key, emerging molecular technologies and therapeutic strategies relevant to the prevention and treatment of human disease
- Interpret and evaluate data from scientific literature
- Compare and contrast three categories of human disease (Infectious Disease, Cancer, Inherited Diseases)
- Create a compelling and informative science communication podcast

Note: this is a live document, subject to change; your instructor will notify you of important updates

Course Policies

Preparation for Class

There is no required textbook for this course. You can access links to the course material through the Modules page on Canvas. Please contact the teaching team if you find a broken link or cannot access a reading behind a paywall. To get the most out of our class time, you should complete the reading before the corresponding class.

Attendance/Participation (16% of grade)

This course will combine lectures with active learning and discussions and will involve two team-based projects. Therefore, your attendance is expected and required for all classes. The teaching team will arrive on time every day and, to make the most of our time together, we expect you to arrive on time as well. If you are late, quietly let yourself in and jump into class. Persistent lateness may impact your grade. You will never be cold called during class, but you are encouraged to ask and answer questions and are expected to participate in partnered and small group discussions. Please email your TA X and your instructor Dr. B if you have planned absences or need to miss class for an unplanned health or personal emergency to ensure you can make up the missed material.

Technology can aid our learning, but it can also be a big distraction in the classroom. You may use an electronic device to take notes or as directed by your instructors in the classroom. However, we ask that you refrain from off-task uses of your devices, including cell phones. This policy will help your learning and prevent you from distracting your classmates.

Weekly Assignments (14% of grade)

In Weeks 1-4 and 6-7, you will complete Weekly Assignments (WAs) based on the material from the week of class, the readings, and aimed at preparing you for your group projects. These assignments will be due every Friday evening at 11:59PM. Most of the assignment should be approachable after you complete the preparation for both class periods, and you are encouraged to work on the assignment throughout the week. You might find it useful to review your answers after Thursday class. Satisfactory work (>80%) will receive full credit. Unsatisfactory work (<80%) will receive half credit with an opportunity to revise and resubmit for full credit. You may request a 2-day extension by emailing your TA X before the due date. Barring extenuating circumstances, late work will receive, at most, half credit.

Team-Taught Lesson (30% of grade)

In the first week of class, you will be sorted into Disease Teams for the Week 5 Team-Taught Lesson (TTL) where you and your group will step up and lead a ~25-minute lesson during class. Instructions can be found on Canvas.

Note: this is a live document, subject to change; your instructor will notify you of important updates

Final Project – Podcast (30% of grade)

Your TTL Disease Team will develop an aspect of your TTL into a 6–8-minute audio podcast. Instructions can be found on Canvas.

Final Assessment (10% of grade)

In Week 8, there will be an in-class Final Assessment to measure your progress towards the learning goals of the course.

Assessment

You will receive a letter grade in this class, but each assignment will be assessed on a Satisfactory, Revise, or Incomplete scale and will be accompanied by individual or group feedback from your instructor(s). Satisfactory work meets all of the requirements for a given assignment and will receive full credit. Revise indicates a good faith effort with some requirements for the assignment yet to be satisfactorily met. Revises are marked at half credit. You will have 1 week to revise and resubmit the assignment to complete Satisfactory work for full credit. Incomplete assignments will receive no credit. Barring extenuating circumstances, late work will receive, at most, half credit.

Letter Grade Scale

Grade	Point Range (%)
A	≥ 93.0
A-	92.9 – 90.0
B+	89.9 – 87.0
B	86.9 – 83.0
B-	82.9 – 80.0
C+	79.9 – 77.0
C	76.9 – 73.0
C-	72.9 – 70.0
Credit ≥ 70.0	
D+	69.9 – 67.0
D	66.9 – 63.0
D-	62.9 – 60.0
NP	≤ 60.0

Academic Integrity

The Stanford Honor Code was composed by students in 1921 and updated in 2023. It expresses the University's expectations for academic integrity, which are intended to protect your development as a scientist and critical thinker. Some key points:

- You may not submit the same written work for different classes.
- Plagiarism (copying passages from other people's work without attribution) is forbidden.

- Having someone else complete an assignment for you is forbidden.
- The use of or consultation with generative AI will be treated analogously to assistance from another person. You may *not* submit any text generated by ChatGPT or any other similar technology as part of, or in place of, any written assignment for this course.

Course Privacy Statement & Recording Policy

As noted in the University's recording and broadcasting courses policy, students may not record class meetings without permission from the instructor. These policies protect the privacy rights of instructors and students, and the intellectual property and other rights of the University. Students who need further accommodation should contact the Office of Accessible Education.

Resources & Accessibility

Academic Support

Learning is meant to push you! But it's not a challenge you need to undertake alone. If you need academic support beyond our teaching team, there are a variety of options available to you free of charge from the Summer Academic Resource Center (SARC), including academic advising and tutoring.

Access and Accommodations

Stanford is committed to providing equal educational opportunities for disabled students, and so are we. Disabled students are a valued and essential part of the Stanford community. We welcome you to our class.

If you experience disability, please register with the Office of Accessible Education (OAE). Professional staff will evaluate your needs, support appropriate and reasonable accommodations, and prepare an Academic Accommodation Letter for faculty. To get started, or to re-initiate services, please visit oae.stanford.edu.

If you already have an Academic Accommodation Letter dated for the current quarter, we invite you to share your letter with us. Academic Accommodation Letters should be shared at the earliest possible opportunity (within the first 2-3 weeks of the quarter) so we may partner with you and OAE to identify any barriers to access and inclusion that might be encountered in your experience of this course.

First Generation & Low-Income (FLI) Students

We believe that learning should be accessible. In light of this philosophy, we have committed to finding readings and creating projects that should be free of additional cost to complete. If you have concerns about costs associated with this course, please reach out to the teaching team, and we will work together to identify University resources to support you.

Student Athletes

Note: this is a live document, subject to change; your instructor will notify you of important updates

If you will be absent from class to represent the University through athletics, please provide us with your schedule as soon as possible (by the end of Week 2). We will work together with you to ensure you get the most out of this course.

Resources for Health & Wellness

Being human is hard! During the quarter you might experience issues like anxiety, depression, or problems eating or sleeping. If the content or demands of this course are the source of these issues, please contact us for guidance. We want you to be well and to be in position to learn as much as you want to from this course. We also understand that a lot will happen to you outside of our classroom and our Canvas site this quarter. Resources on campus include Vaden Health Center, Counseling and Psychological Services (CAPS), and the Confidential Support Team (CST). Do not hesitate to contact the teaching team for help connecting with these resources or find out more on this webpage.

Preferred Pronouns

We will gladly honor your request to address you by your chosen name and/or gender pronouns. Please advise us of your preferences early in the quarter so that we can note your preference in our records.

Course Calendar

	Tuesday	**Thursday**
Week 1	Introduction	Biology 101
	Group assignment, group contract	
Week 2	Bacteria I	Bacteria II
	Brainstorm, topic draft	
Week 3	Viruses I	Viruses II
	Prepare for TTL	
Week 4	Cancer I	Cancer II
	TTL tutorial (outside of class)	
Week 5	TTLs	TTLs
	TTL Reflection, podcast scripting	
Week 6	Cancer III	Peer Review
	Peer review podcast scripts	
Week 7	Inherited Disease I	Inherited Disease II
	Revise, record, and edit podcast	
Week 8	Podcast Airing	Conclusion
	Final Project Reflection	