

Course Description	Since the initial spread of the SARS-CoV-2 virus and COVID-19, we have witnessed the rapid development, testing, and dissemination of mRNA vaccines. In this seminar, we'll discuss several aspects of the vaccination approval pipeline from discovery to testing for safety and efficacy. While we will discuss biological mechanisms, the primary focus of this course will be in experimental design and drawing conclusions from data. In the usual seminar format, one or more people speak on a selected topic, and then there is a period for discussion of the topic. This course will give you practice using primary literature to learn about a topic, communicate that knowledge to others, and lead a discussion among your peers.
Credits	2
Instructor	<b>Prof. Keefe Reuther</b> <b>Email address: <a href="mailto:kdreuther@ucsd.edu">kdreuther@ucsd.edu</a></b> (please put BISP 194 in the subject line)
Synchronous Course Elements	<b>Class: TuTh 2:00pm-3:20pm on ZOOM (participation and attendance is mandatory)</b> <b>Office Hours: F 11am-12pm with 1 hour on ZOOM</b>
Asynchronous Course Elements	Readings, online pre-lab discussion board prompts, writing assignments and other course assessments and presentations.
Format	Critical, highly interactive group discussion of published papers facilitated by small group presenters
Prerequisites	upper division standing and BICD 100 (Genetics), recommended course work in basic immunology (BILD 2).
Texts	Nothing needs to be purchased. Students will access texts via URLs and pdfs posted on the course Canvas page.

<b>Course Schedule</b>		
Day	Topic	Grading
<b>Week 1 - Intro to Vaccines and Sars-CoV-2/COVID-19</b>		
Tuesday	Pollard, A. J., & Bijker, E. M. (2021). A guide to vaccinology: From basic principles to new developments. <i>Nature Reviews Immunology</i> , 21(2), 83–100.	
Thursday	Hu, B. et al. (2021). Characteristics of SARS-CoV-2 and COVID-19. <i>Nature Reviews Microbiology</i> , 19(3), 141–154.  Dolgin, E. (2021). The tangled history of mRNA vaccines. <i>Nature</i> , 597(7876), 318–324. <a href="https://doi.org/10.1038/d41586-021-02483-w">https://doi.org/10.1038/d41586-021-02483-w</a>	Pre-class Discussion Post 1  #FinAid Survey on Canvas
Sunday		Post-class Discussion Posts 1 due
<b>Week 2 - Development of mRNA COVID-19 vaccines</b>		
Tuesday	TBA	Pre-class Discussion Post 2
Thursday	TBA	Pre-class Discussion Post 3
Sunday		Post-class Discussion Posts 2 and 3 due
<b>Week 3 - Development of mRNA vaccines part 2 &amp; early stage trials</b>		
Tuesday	TBA	Pre-class Discussion Post 4
Thursday	TBA	Pre-class Discussion Post 5
Sunday		Post-class Discussion Posts 4 and 5 due
<b>Week 4 - Case control studies of vaccine safety &amp; efficacy</b>		
Tuesday	TBA	Pre-class Discussion Post 6
Thursday	TBA	Pre-class Discussion Post 7

Sunday		Post-class Discussion Posts 6 and 7 due
<b>Week 5 - Vaccination Communication and Public Health</b>		
Tuesday	TBA	Pre-class Discussion Post 8
Thursday	TBA	Pre-class Discussion Post 9
Sunday		Post-class Discussion Posts 8 and 9 due

**GRADING:**

Assessment:	Course %
Lecture attendance and participation	20%
Pre-class discussion topic (lowest score dropped)	25%
Post-class discussion topic (lowest score dropped)	15%
First paper presentation and discussion facilitation	15%
Second paper presentation and discussion facilitation	25%

A+	96-100%	B+	87-90%	C+	77-80%	D+	67-70%	F	0-60%
A	93-96%	B	83-87%	C	73-77%	D	63-67%		
A-	90-93%	B-	80-83%	C-	70-73%	D-	60-63%		

**Lecture Attendance and Participation:** The primary goal of this class is to discuss cutting-edge topics related to mRNA vaccines in a simulated professional environment. Whether you are a researcher preparing for a lab meeting, a grad student preparing for exams, or a faculty member heading to a seminar, understanding and evaluating primary literature well is a necessary skill that takes practice to hone. The primary literature is complex, with many studies seeming to contradict each other. There is too much of it for any one person to understand comprehensively. Therefore, expert professionals work in groups to discuss research. We will do the same in this course, but it requires commitment on all of our parts, including having your camera on if possible.

Beyond being present in Zoom meetings, you will be graded on how well prepared you are and therefore able to substantively contribute to the discussion. This includes spending time reading and attempting to understand each paper before class, completing any assignments, and being active in the chat and verbally at least when you are working together in small groups. You will receive 3 points for each class (1 point for attendance and 2 points for being prepared and actively participating). You may drop your lowest score. If you have an

excused absence and contact me before class via email then we will work out a way to make up your participation.

**Pre-class discussion prompts and #FinAid survey:** Prior to each class meeting, you will need to read the 1-2 papers being presented that day and respond to the discussion prompt in the weekly modules. It is due before class begins This also includes a survey that you **MUST** complete before week 1 ends to remain eligible for financial aid. Please see Canvas throughout the quarter for more details on these assignments. Each discussion prompt is due by 2pm the day of the class. Your lowest score is dropped (except the #FinAid survey) and you **DO NOT** need to complete this for the days you are presenting papers to the class.

**Post-class discussion prompts:** After each class meeting, you'll answer questions in a short, post-class discussion prompt listed in the weekly modules. There will be an option for those who just presented and an option for those who did not. Please see Canvas throughout the quarter for more details on these assignments. Each post -class discussion prompt is due by 11:59pm Sunday of that week. Your lowest score is dropped.

**Paper presentation and discussion facilitation:** Each student will present a paper with 1-2 partners. You'll first present in weeks 2 or 3 and then you'll present again with your group in weeks 4-5. While these presentations are structured similarly, the first round will be graded more easily and is worth less of your grade. You'll receive feedback to incorporate into your second presentation. I will present papers for week 1. Starting week 2, each class will consist of 2 student group presentations. The following is a rough outline of a presentation (feel free to modify as you see fit):

- Each paper discussion will last approximately ~35 minutes.
- Your group should create a simple yet cohesive PowerPoint presentation containing important figures and anything else that is better seen on screen than heard (e.g. an organizational chart of the experimental design). Don't put all your text in the PowerPoint - this is mainly about you talking about the paper out loud.
- Part 1 - a brief overview of the background, question, and experimental design (or synopsis if it's a review) - no more than 5 min.
- Part 2 - Answer any questions about the question and experimental design.
- Part 3 - Breakout group- give them a prompt to either present a description of a figure, primary set of results, or a section of the paper. ~10min
- Part 4 - Conclusions, context, and criticism/praise ~10min + any remaining time.

A good presentation is all about preparation and facilitation **NOT** about lecturing a bunch of facts. Prepare good questions that you think will stimulate discussion.

**Late or missing assignments/attendance:**

Assignments will be cut by 25% if they are late by 24 hours and 50% if they are late by more than 24 hours. We move fast in this course and it is imperative to keep up. If something outside of your control prevents you from turning in an assignment or being present in class (e.g., COVID, family emergency) then **please email me**. I want to help you succeed in the course!

**IMPORTANT NEW POLICY UPDATES!!!!**

If you are sick or test positive for COVID-19:

- If you test positive for COVID, or have been advised to quarantine but have not tested positive for COVID, then immediately contact the Office for Students with Disabilities ([OSD](#)) for temporary accommodations and the [College Dean](#) (UCSD students) or [Summer Session](#) (visiting students) office.
- Contact Dr. Reuther via email if this means you will miss the lab or a quiz.
- It is your responsibility to make contact ASAP - we can't help if you reach out after the issue has passed.

Other important policies:

- **If you receive any financial aid, you must complete the short assignment/survey on Canvas with #FinAid in the title. If you do not complete this by the end of week 1 you risk losing your financial aid eligibility!!! Dr. Reuther will discuss this on the first day of lecture.**

CONTACT: The best way to contact me is by email: [kdreuther@ucsd.edu](mailto:kdreuther@ucsd.edu). On all emails **PLEASE put BISP 194 in the subject line** to indicate that the email pertains to this course. If you email about anything regarding your status in the course, please include your UCSD username, and PID.

WEBSITE: Everything related to the class is kept on the Canvas site (<https://Canvas.ucsd.edu/webapps/login/>). Announcements of exam room changes and many other important matters will be posted on the Canvas site. Check the site often! All grades will be posted on Canvas.

## CAMPUS POLICIES

- [UC San Diego Principles of Community](#)
- [UC San Diego Policy on Integrity of Scholarship](#)
- [Religious Accommodation](#)
- [Nondiscrimination and Harassment](#)
- [UC San Diego Student Conduct Code](#)

### 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.

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.

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## STUDENT RESOURCES

Learning and Academic Support
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<p><a href="#">Ask a Librarian: Library Support</a>  <i>Chat or make an appointment with a librarian to focus on your research needs</i></p> <p><a href="#">Course Reserves, Connecting from Off-Campus and Research Support</a>  <i>Find supplemental course materials</i></p> <p><a href="#">First Gen Student Success Coaching Program</a>  <i>Peer mentor program that provides students with information, resources, and support in meeting their goals</i></p> <p><a href="#">Office of Academic Support &amp; Instructional Services (OASIS)</a>  <i>Intellectual and personal development support</i></p>	<p><a href="#">Writing Hub Services in the Teaching + Learning Commons</a>  <i>One-on-one online writing tutoring and workshops on key writing topics</i></p> <p><a href="#">Supplemental Instruction</a>  <i>Peer-assisted study sessions through the Academic Achievement Hub to improve success in historically challenging courses</i></p> <p><a href="#">Tutoring – Content</a>  <i>Drop-in and online tutoring through the Academic Achievement Hub</i></p> <p><a href="#">Tutoring – Learning Strategies</a>  <i>Address learning challenges with a metacognitive approach</i></p>
<p>Support for Well-being and Inclusion</p>	
<p><a href="#">Basic Needs at UCSD</a>  <i>Any student who has difficulty accessing sufficient food to eat every day, or who lacks a safe and stable place to live is encouraged to contact: <a href="mailto:foodpantry@ucsd.edu">foodpantry@ucsd.edu</a>   <a href="mailto:basicneeds@ucsd.edu">basicneeds@ucsd.edu</a>   (858) 246-2632</i></p> <p><a href="#">Counseling and Psychological Services</a>  <i>Confidential counseling and consultations for psychiatric service and mental health programming</i></p> <p><a href="#">Triton Concern Line</a>  <i>Report students of concern: (858) 246-1111</i></p> <p><a href="#">Office for Students with Disabilities (OSD)</a>  <i>Supports students with disabilities and accessibility across campus</i></p>	<p><a href="#">Community and Resource Centers Office of Equity, Diversity, and Inclusion</a>  <i>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              (858).822-.3542   <a href="mailto:diversity@ucsd.edu">diversity@ucsd.edu</a></i></p> <p><a href="#">Get Involved</a>  <i>Student organizations, clubs, service opportunities, and many other ways to connect with others on campus</i></p> <p><a href="#">Undocumented Student Services</a>  <i>Programs and services are designed to help students overcome obstacles that arise from their immigration status and support them through personal and academic excellence</i></p>

## LETTERS OF RECOMMENDATION

If you think you may want me to write you a letter of recommendation (or any other instructor), please consider what a good letter would contain and how your actions in the course demonstrate the qualities you will want highlighted in a good letter. When students ask me for a letter of recommendation, I ask them to write to me about how they demonstrated critical thinking, leadership, collaboration, and professionalism. I will be specifically looking for examples of these qualities *that I could have noticed* during class and office hours. Be sure to actively participate in the discussions, talk to me during the lab and my office hours: ask questions, offer your own ideas and interpretations of your results, bring

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interesting facts/papers that are connected to the material we are studying. If you don't actively show the qualities that are needed to write a good letter, it will be hard for me to write a letter that is meaningful and useful.

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### SUBJECT TO CHANGE POLICY

Due to unforeseen circumstances, minor aspects of this syllabus may change. This includes changes to scheduling, grading values, and policy. It is the responsibility of the instructor and instructional assistants to announce changes with reasonable notice in multiple formats (e.g. lecture and Canvas announcements, email, etc.). It is the responsibility of the student to make note of these changes and communicate with the instructor if you have questions or concerns about the changes.

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