IMMUNOLOGY BICD140
FALL 2022

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IMMUNOLOGY BICD140
FALL 2022

1) PROFESSOR AND INSTRUCTIONAL ASSISTANTS:

PROFESSOR: DR. ELINA ZUNIGA http://biology.ucsd.edu/research/faculty/eizuniga

E-mail address: eizuniga@ucsd.edu

INSTRUCTIONAL ASSISTANTS:

NAME	POSITION	E-MAIL
Miyamoto, Kiana Terumi	Graduate Instructional Apprentice	ktmiyamo@ucsd.edu
Zangwill, Dina Rose	Graduate Instructional Apprentice	dzangwil@ucsd.edu
Nguyen, Katherine Mai Quyen	Teaching Assistant	k5nguyen@ucsd.edu
Jansky, Sean Andrew	Undergraduate Instructional Apprentice	sajansky@ucsd.edu

EMAIL COMMUNICATION (TO DR. ZUNIGA AND IAS): Please remember to include your first and last name in the body of the email and WRITE BICD140 IN E-MAIL SUBJECT (we may miss your email if you do not write BICD140 in the subject). We will not respond to any questions regarding the content of the exams by email or answer lengthy questions on course material or anything else that can be done in person before/after lectures, discussion sections or during office hours. We will address questions about the course material during office hours. Please talk to us during this time.

2) COURSE WEBSITE:

https://canvas.ucsd.edu

3) GOALS OF THE COURSE:

Immunology is the study of the physiological mechanisms that organisms use to defend their bodies from invasion by other organisms. The origins of the subject lie in the practice of medicine and in historical observations that people who survived the ravages of epidemic disease were untouched when faced with the same disease again—they had become immune to infection. Infectious diseases are caused by microorganisms, which have the advantage of reproducing and evolving much more rapidly than their human hosts. During the course of an infection, the microorganism can pit enormous populations of its species against an individual. In response, the human body invests heavily in cells dedicated to defense, which collectively form the immune system. Parham 3rd Edition.

During this quarter, we will explore the complex biology of the many cell types that defend the human body from infectious agents with the final goal of understanding how the immune system unites molecular, cellular, evolutionary and genetic principles to fight the war against pathogens.

Learning Immunology: Immunology is not a linear discipline. You have to bring together several concepts simultaneously in order to understand each aspect of immunity. As you read and review, you will find that you have to look up terms and definitions, and it is an interactive process. You learn subjects 1, 2, and 3, and then you can go back and understand subject 1 with more clarity. **You cannot learn immunology in one pass and you cannot learn it quickly before the exam.** Start studying from the first week, and do not fall behind.

4) PREREQUISITES:

BICD100 (Genetics) and BIMM100 (Molecular Biology), and their prerequisites. If a prerequisite has been waived to allow you to take this class, it is your personal responsibility to make up any deficiencies that you may have.

5) TEXT BOOK:

The Immune System, Garland publishing, Fourth Edition by Parham. The textbook is mandatory, there will be reading in it associated with every lecture. The lectures will make extensive use of the figures in the text, as well as other material. There are a limited number of texts on reserve at the Biomedical Library along with a somewhat more detailed book, Immunobiology -- by Charles Janeway, Jr. and Paul Travers. Immunobiology is available online (http://www.ncbi.nlm.nih.gov/books/bv.fcgi?call=bv.View..ShowTOC&rid=imm.TOC&depth=2).

6) LECTURES:

Tuesdays and Thursdays 12:30PM-1:50 PM (US Pacific Time)

LOCATION: YORK 2622.

Note that, unless otherwise stated in the schedule below, all lectures will be delivered in person. Lectures will be recorded via UCSD podcast (Podcast.ucsd.edu). Lectures will provide much information not contained in the reading and cover the major concepts indicated on the schedule. Please note that the schedule and readings indicated below may be modified somewhat during the quarter, and any changes will be announced in lecture. While lecture slides will be posted on the class website before the class, these notes are **not** intended to replace lectures, and there will be material presented in class that does not appear in the lecture slides. You will be responsible for information provided in lecture in addition to the material assigned in the text. It is your responsibility to keep track of last minutes changes in the slides. Information available on the website will not be handed out in class.

Reading: Reading assignments are noted on the schedule below. Any additional reading will be announced in lecture and on the web site. **You are strongly encouraged to read text material *before* lectures and/or use the reading to clarify and deepen concepts that were covered in lectures.**

SCHEDULE FOR LECTURES & EXAMS AND READING MATERIAL

Lecture 1: 9/22. Overview of the Immune System. Adaptive vs. Innate Immunity. Read Chapter 1. This lecture will be recorded ONLY and will be available in the course website. There will NOT be an in-person lecture on this date.

Lecture 2: 9/27. Innate Immunity. Read Chapter 2&3.

Lecture 3: 9/29. Innate Immunity cont. Read Chapter 2&3.

Lecture 4. 10/4. Adaptive Immunity. Read Chapter 4. **Where is the immune system?** Read Chapter 1 (1-11 to 1-14)

Lecture 5: 10/6. Antibodies: What are they, what do they do and how do they come to be? Read Chapter 4.

Lecture 6: 10/11. B cell development and rearrangement of antibody genes. Read Chapter 6.

Lecture 7: 10/13. B cell development and rearrangement of antibody genes cont. Read Chapter 6.

Lecture 8: 10/18. *EXAM# 1, including all material covered and reading material assigned for lectures 1-7. In-person only. Location: same room where lectures are delivered*

Lecture 9: 10/20. T cell recognition of antigen. Read Chapter 5.

Lecture 10: 10/25. T cell recognition of antigen cont. Read Chapter 5.

Lecture 11: 10/27. T cell development. Read Chapter 7.

Lecture 12: 11/1. T cell development cont. Read Chapter 7.

Lecture 13: 11/3. T cell activation. Read Chapter 8.

Lecture 14 11/8: T cell activation cont. Read Chapter 8.

Lecture 15: 11/10. EXAM #2, including all material covered and reading material assigned for lectures 9-14. In-person only. Location: same room where lectures are delivered

Lecture 16: 11/15. 11/14. B and T cell collaboration. Read Chapter 9.

Lecture 17: 11/17. B cell activation and antibody mediated immunity. Read Chapter 9.

Lecture 18: 11/22. Vaccines (by Dr. Susan Kaeck). Read Chapter 11&13. *The format of this lecture (in-person, Zoom or recorded) will be defined closer to the date based on Dr. Kaeck availability.*

https://www.salk.edu/scientist/susan-kaech/

11/24 Thanksgiving (UCSD Holiday)

Lecture 19: 11/29. Hypersensitivity. Read Chapter 14

Lecture 20: 12/1. Autoimmunity (by Dr. Ye Zheng). Read Chapter 14&16.

https://www.salk.edu/scientist/ye-zheng/

FINAL EXAM: Friday 12/09/2022 11:30AM-2:29PM, including all lecture and reading material assigned for the entire course with emphasis on material and reading assigned for lectures 16-20. In-person only. Location: TBA

7) I-CLICKER:

To enrich your learning experience through class participation I will use i-clicker in lectures. I>clicker is a response system that allows you to respond to questions I pose during class. You are required to purchase an i>clicker remote (available in bookstore) and register it online for in-class participation. We will start using clicker on the second lecture (just to practice) but points will only begin counting on the third lecture and thereafter. PLEASE REGISTER YOUR I-CLICKER BEFORE THE THIRD LECTURE.

How I-clicker answers will be graded? You will be graded on participation. You will earn one point per lecture (beginning on the third lecture) only if you respond to ALL BUT ONE QUESTION, regardless of the answer (correct and incorrect answers will count the same). THE POINT IS EARNED FOR THE OVERALL LECTURE NOT INDIVIDUAL QUESTIONS. You will get NO point if you miss more than one question during the lecture. The i-clicker points earned during the whole course will count for up to 5% of extra-credit (more explanation about extra-credit grading below).

How do I register my i-clicker? Each clicker has a unique serial number on the back of the remote. Write down the number and place a piece of scotch tape over that bar code and ID to preserve it. In order to receive credit for your votes, YOU WILL NEED TO REGISTER YOUR I>CLICKER REMOTE ONLINE. For this, please go to our course website, look for “I-clicker registration” on the left menu and follow the instructions to register you i-clicker.

8) OFFICE HOURS: Office hours with will be held every week, beginning the week of September 26th (week corresponding to lectures #2 and#3).

OFFICE HOURS WITH DR ZUNIGA: Office hours with Dr. Zuniga will be held every Thursdays from 2:00 PM to 3:00 PM at Tata Hall, Room 3102 I would be happy to talk with you about the class, Immunology in general, science and your studies. I am a wasted resource if you do not take advantage of my office hours!

OFFICE HOURS WITH IA:

IA	Day/Time	Location:
Miyamoto, Kiana Terumi	Fridays 1:30-2:30 PM	M.O.M's Café (Middle of Muir) on the first floor of Stewart Commons
Zangwill, Dina Rose	Mondays 11:30AM-12:30 PM	M.O.M's Café (Middle of Muir) on the first floor of Stewart Commons
Nguyen, Katherine Mai Quyen	Wednesdays 6:30-7:30 PM	HSS 1145L
Jansky, Sean Andrew	Wednesdays 3-4 PM	Audrey's Café at Geisel Library

9) DISCUSSION SECTIONS:

Discussion sections will be held every week beginning after the third lecture (October 1st). Discussion sections will be held in person only. Discussion sections are meant to have only a limited number of students so you should attend to the section that you are enrolled in.

SECTION	IA	DAY & TIME			LOCATION	
A01	Dina Zangwill	M	1:00 PM	1:50 PM	HSS	1315
A02	Dina Zangwill	M	2:00 PM	2:50 PM	HSS	1315
A03	Katherine Nguyen	W	8:00 PM	8:50 PM	HSS	1315
A04	Sean Jansky	W	9:00 PM	9:50 PM	HSS	1315

A05	Kiana Miyamoto	F	3:00 PM	3:50 PM	HSS	1315
A06	Kiana Miyamoto	F	4:00 PM	4:50 PM	HSS	1315

These sessions are a valuable part of this course, and attendance will count for 5% of your grade. To get the attendance credits you MUST attend the discussion section to which you are assigned.

I highly recommend that you take part in them. These sections serve to clarify, emphasize and expand points that have been introduced in lecture. The section leaders craft each meeting to include special topics and problem solving. PDF with material (slides, problem sets, etc) for the discussion sections will be posted on the website.

Special Topics: There are three discussion sections touching Special Topics, which are scheduled as follows:

Week corresponding to lectures #8: Flow Cytometry

Week corresponding to lectures #14: Transgenic mice

Week corresponding to lectures #18: Antibodies: measurement, characterization and applications.

Problem Solving: In addition to problems given at the end of the chapter, three problem sets will be assigned. You are encouraged to work these problems before section and to be prepared to discuss the answers during section

TENTATIVE SCHEDULE FOR DISCUSSION SECTIONS (Note that weeks before Thanksgiving are counted from Thursday to Thursday)

-Normal discussion section on Veterans day

-Discussion sections on Monday, Tuesday and Wednesday of Thanksgiving week are during normal hours

-No discussion section on Thursday and Friday of Thanksgiving week

- BEFORE Thanksgiving date, weeks for discussion section (scheduled below) are counted starting after the Thursday of the third lecture and therefore the sections hold Thursday or Friday will be, until Thanksgiving, advanced respect to other sections

Week after lecture #1: No discussion section

Week after lecture #3: Paharm Book: questions 1-2, 1-3, 1-4, 2-1, 2-7, 2-10, 3-1, 3-8, **3-11**, **3-12,** 3-13
(Bold questions will only be covered if time permits)

Week after lecture #5: Problem set #1 (except question #13-15)

Week after lecture #7: Flow Cytometry and Problem set #1 questions #13-15

Week after lecture # 9: Problem Set #2

Week after lecture # 11: Transgenic mice

Week after lecture #13: Review Midterm #2

Week after lecture #15: Antibodies: measurement, characterization and applications.

Week of lecture #17&19: Problem Set #3

11/22 Thanksgiving (UCSD Holiday)

Week of lecture #19&20: Review for final exam

10) OPTIONAL SEMINARS:

Information about *advanced seminars* by renowned immunologists is available at:

https://labs.biology.ucsd.edu/zuniga/global_immunotalks.htm

Attendance to these seminars is optional. However, it can help you to expand your knowledge in immunology and learn about the cutting-edge research in the field. Seminars are live on Wednesdays 9 AM PST and also recorded since April 22nd 2020, so you have recordings available in YouTube channel named "Global Immunotalks" for a great variety of seminars to expand the concepts learned as much as you wish.

11) EXAMS:

Your performance in the course will be evaluated by attendance to discussion sections (5%), 2 midterm exams (25% each) and the final exam (45%). There are no scheduled make-up exams. Note that all discussion sections held in your scheduled turn will add up to 5% of your grade. A proportional percentage (i.e. 5% ÷ total number of sections held in your scheduled turn) will be discounted for each discussion section you were absent (there are no-make-ups for discussion sections). Exams will consist of fill in the blank and multiple choice questions. An ID card (student ID or driver's license) will be required at every exam. Failure to take the exam will result in a zero. Extraordinary circumstances preventing you from taking an exam must be discussed in advance with the Student Affairs Office (1128 Pacific Hall) and Dr. Zuniga. If exceptions are made for these special circumstances, the make-up will be an ORAL exam given by Dr. Zuniga.

Midterms: Exam 1, covering all material covered and reading material assigned for lectures 1-7. Exam 2, covering all material covered and reading material assigned for lectures 9-14.

Final: Covering all lecture and reading material assigned the entire class with emphasis on material and reading assigned for lectures 16-20.

12) REVIEW SESSIONS:

The IAs will hold 2-hour review sessions on the weekend before each midterm and the final exam. Final times and locations will be indicated in course website or announced in lecture before corresponding review session

	Day/Time ***(2h sessions on weekend before each exam)***	**Location**	**IAs**
Mid 1	TBA in lecture and course website	Dina & Katherine	TBA
Mid 2	TBA in lecture and course website	Kiana & Katherine	TBA
Final	TBA in lecture and course website	Kiana & Dina	TBA

13) GRADING:

The grading is normalized to the higher scores (average of top 5 scores). After score normalization, 60-70% will be a D, 70-80% will be a C (>76% C+), 80-90% will be a B (>86% B+), and 90-100% of that will be an A (>96% A+). If you have a concern about your grade or your performance on an exam, you must address this with me within one week of the exam following the re-grade policy below, no exceptions.

REGRADE POLICY:

1. Give Professor Zuniga a written letter (after lecture) specifying which specific problem should be looked at and fully describe why you think the problem was wrongly graded.

2. The re-grade request must be handed to Prof Zuniga after lecture within 1 week after the exams are graded.

Extra credit: You can earn up to 5% extra-credit by using your i-clicker (see details above on how to use it). I estimate that we will use I-clicker in *approximately* 15 lectures. Thus, I-clicker participation per each lecture will be worth approximately 0.33 % of extra-credit grade (5% maximum divided 15 lectures=0.33% extra-credit per lecture).

14) The Learning Environment:

Participation in class (e.g. questions or responses to questions by the instructor) is strongly encouraged and contributes to a rich, interactive learning environment. Please refrain from eating, reading newspapers, scanning the web, and engaging in conversations during lectures and sections. Cell phones and messaging devices should be turned off. If you must leave class early, please sit in the back in an aisle seat so that you do not disturb others. Following these guidelines will help you, your colleagues, and instructors to stay focused on the material.

15) Academic integrity:

Work on exams must be solely your own. Cheating will not be tolerated and will result in an F in the course, as well as any additional disciplinary actions as indicated by the policy to maintain academic honesty. Please note, letting someone cheat off of your exam is cheating!!

Please review UCSD's Policy on Academic Integrity:

http://senate.ucsd.edu/Operating-Procedures/Senate-Manual/appendices/2

On each of your exams I will ask you to sign an honor code stating: *"I pledge not to cheat, plagiarize, steal, or lie in matters related to academic work."*

There will be NO written material allowed for reference during any of the exams.