

Biology 399 | Immunology and Infectious Disease

Fall 2019

Time and Location: Tuesdays and Thursdays, 2:00pm – 3:20pm, Gerlinger 301

Professor: Matthew Barber, Ph.D.

- Email: mbarber@uoregon.edu
- Office hours: Tuesdays and Thursdays, 3:20 – 3:50pm, Pacific 321

GE: Denver Ncube

- Email: denvern@uoregon.edu
- Office hours: TBD

Course Description. In this course we will explore the principles of immune system function as well as factors that allow pathogenic microbes to cause infectious disease. We will focus primarily on the molecular, cellular, and genetic basis of infection and immunity. Examples will be drawn largely from human biology while also covering fundamental concepts relevant to diverse animals and plants.

Learning Goals. Upon completing this course, students will be able to:

1. Determine how molecular, cellular, and genetic processes contribute to immune system functions.
2. Describe and predict mechanisms that pathogenic microbes use to counteract the immune system and cause disease.
3. Determine how medical interventions including vaccines, antibiotics, and immunotherapy function to prevent and treat disease.
4. Draw connections between immune functions and the features of infectious and inflammatory disease.
5. Synthesize and evaluate primary research literature in the fields of immunology and infectious disease.
6. Communicate and evaluate research in the area of immunology and infectious disease through writing and poster presentation.

Email: Please include “BI399” in the subject line, so your email can be attended to in time. I will try to answer your email in a timely manner; however I do not often check our email in the evenings or during weekends.

Website: Syllabus, course materials, assignments and grades will be posted to the course Canvas site.

Textbook: Kuby Immunology, 8th edition.

Required supplies: iClicker, index cards and pen/pencil for Minute Papers.

General policy on missed assignments: Assignments must be turned in on time. The grading system is designed to allow some flexibility if you miss class or a homework assignment. If you anticipate an extended absence please contact the instructor. There will be no opportunities for extra credit. Please do not ask for exceptions.

Schedule:

Date	Subject	Reading
10/1	Immunology overview Introduction to pathogens	Kuby Ch. 1 pg. 12-21 (Fig. 1-5 to 1-7), Alberts reading
10/3	Cells and tissues of the immune system	Kuby Ch. 2 pg. 31-47 (until Primary Lymphoid Organs)
10/8	Immune receptors	Kuby Ch. 3 pg. 75-90 (Fig. 3-7 - Table 3-2)
10/10	Immune signaling	Kuby Ch 3 pg. 99-109 (Fig. 3-22 - end of Ch. 3)
10/15	Innate immunity	Kuby Ch. 4 pg. 113-120 (until Box 4-1), skim 121-144 (until Fig. 4-21)
10/17	The complement system	Kuby Ch. 5 pg. 165 - 180 (until table 5-4), skim rest of Ch. 5
10/22	Lymphocyte receptors, VDJ recombination	Kuby Ch. 6 pg. 205-225 (until Fig. 6-12)
10/24	Midterm 1	-
10/29	MHC and antigen presentation	Ch. 7 pg. 249 - 259 (until Table 7-2), 275 - 282 (Fig. 7-11 - 7-17)
10/31	T cells	Kuby Chapter 10 pg. 353 - 371 (until Fig. 10-10)
11/5	B cells Abstracts due	Kuby Ch. 11 pg. 391 - 401 (until Fig. 11-9), 413 - 417 (Fig. 11-18 - 11-20)
11/7	Cell-mediated immunity	Kuby Ch. 12 pg. 448-468 (Cell-Mediated Effector Responses)
11/12	Vaccines	Kuby Ch. 17 pg. 662-676 (Vaccines)
11/14	Midterm 2	-
11/19	Barrier immunity	Kuby Chapter 13 pg. 473-487 (until Fig. 13-7). Skim pg. 500-508. Optional: Hooper iBiology lecture
11/21	Antibiotics	Blair review
11/26	Tolerance and autoimmunity	Kuby Chapter 16, 593-617 (until Transplantation Immunology)
11/28	Thanksgiving Break	-
12/3	Poster Presentations	-
12/5	Poster Presentations	-

Evaluation:

1. Canvas questions before class (10%)
 - Questions on required readings will be posted on Canvas, answers must be submitted **before** each class.
2. In-class iClicker questions (10%)
3. Discussion session attendance and assignments (10%)
4. Midterm 1 (15%)
5. Midterm 2 (15%)
6. Abstract on poster topic (5%)
7. Poster presentation (15%)
8. Final exam (20%)

Note: your lowest Discussion session grade, as well as your lowest two Canvas quizzes and Clicker grades will be dropped from your final score. Therefore if you miss a week of class due to illness, travel, or other issues, you can still receive up to full credit in the course.

Succeeding in this course: This course is designed for students who have completed the introductory biology series and builds on concepts of molecular biology, cell biology, and genetics. I believe each of you who meets these requirements has the potential to succeed in this course. Here are my best recommendations for success:

- **Keep up with the readings and Canvas questions.** Class time will be spent building from content in the readings, so it's important arrive in class prepared. Pay particular attention to bolded terms, chapter summaries, and the "big picture" of the chapter/paper. Canvas questions are worth 10% of your grade, so even if you didn't have time to read as much as you wanted, do the questions! If you do the readings, the questions should not take much time. However, answering questions without doing the reading will leave you unprepared for exams.
- **Come to class on time.** You receive course credit for clicker questions, and material in class will be fair game for all exams. Reading the textbook is not enough!
- **Engage during class and in discussion sections.** Clicker questions and other in-class activities are meant to prepare you for the kinds of questions you will find on the exams, so coming to class and engaging with the material will help your performance.
- **Focus on the big picture and connecting content throughout the course.** Some amount of memorization will be necessary, but midterms will aim to test your ability to apply what you know in new ways. Don't get too bogged down in the details of weekly readings.
- **Prepare early.** Assignments, particularly the poster, will take time. Put in the effort early so you don't need to cram at the last minute.

If you follow these guidelines, I am confident you will succeed in (and hopefully enjoy) this course. Ultimately this course should provide you with a great foundational knowledge of immunology and mechanisms of infectious disease.

Classroom etiquette: Please arrive on time. Lectures and discussions begin promptly on the hour. Please do not leave early as this is disruptive to everyone. If you have an unusual circumstance and must leave early, please inform the instructor, and sit near the exit so your leaving is not disruptive. Finally, please be respectful of your fellow students.

Academic Integrity: You are expected to do your own work on homework, class presentations, and papers. Academic misconduct, including cheating and plagiarism, will not be tolerated. You are

encouraged to discuss ideas with other students and study together, but do not copy someone else's work or allow anyone to copy yours. All students are expected to conform to the Student Conduct Code. Please note that Instructors are required to file a written report of any academic misconduct with the Director of Student Conduct and Community Standards.

Inclusive Learning: In this class we aim to build an inclusive learning environment. We understand that our members represent a rich variety of backgrounds and perspectives. We are committed to providing an atmosphere for learning that respects diversity. While working together to build this community we ask all members to:

- be open to the views of others.
- honor the uniqueness of their colleagues.
- appreciate the opportunity that we have to learn from each other.
- value each other's opinions and communicate in a respectful manner.
- keep confidential discussions that the community has of a personal (or professional) nature.

Classroom courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, culture, religion, politics, sexual orientation, gender, gender variance, and nationalities. Class rosters are provided to the instructor with the students' legal names. We will gladly honor your request to address you by an alternate name or gender pronoun. Please advise us of this preference early in the quarter (or before) so that we may address you properly.

Students with disabilities: If there are aspects of the instruction or design of this course that result in barriers to your participation, please let us know as early as possible, in person or via email. You may also wish to contact Accessible Education Services in 164 Oregon Hall, by phone at (541) 346-1155 or uoaec@uoregon.edu. We welcome the chance to help you learn, and will work with you to make it a positive experience.

Discrimination and Harassment

Prohibited Discrimination and Harassment Reporting

Any student who has experienced sexual assault, relationship violence, sex or gender-based bullying, stalking, and/or sexual harassment may seek resources and help at safe.uoregon.edu. To get help by phone, a student can also call either the UO's 24-hour hotline at 541-346-7244 [SAFE], or the non-confidential Title IX Coordinator at 541-346-8136. From the SAFE website, students may also connect to Callisto, a confidential, third-party reporting site that is not a part of the university.

Students experiencing any other form of prohibited discrimination or harassment can find information at respect.uoregon.edu or aaeo.uoregon.edu or contact the non-confidential AAEO office at 541-346-3123 or the Dean of Students Office at 541-346-3216 for help. As UO policy has different reporting requirements based on the nature of the reported harassment or discrimination, additional information about reporting requirements for discrimination or harassment unrelated to sexual assault, relationship violence, sex or gender based bullying, stalking, and/or sexual harassment is available at [Discrimination & Harassment](#).

Specific details about confidentiality of information and reporting obligations of employees can be found at titleix.uoregon.edu.

Reporting

The instructor of this class is a Student Directed Employee. As such, **if you disclose to me, I will respond to you with respect and kindness. I will listen to you, and will be sensitive to your needs and desires. I will not judge you. I will support you.** As part of that support, I will direct students who disclose sexual harassment or sexual violence to resources that can help. **I will only report the information shared to the university administration when you as the student requests that the information be reported** (unless someone is in imminent risk of serious harm or is a minor). Please note the difference between 'privacy' and 'confidentiality.' As a Student Directed Employees I can offer privacy because I am not required to report certain information to the university. However, I cannot be bound by confidentiality in the same way that a counselor or attorney is. Confidential resources such as these means that information shared is protected by federal and state laws. Any information that we as student-directed employees receive may still be accessed by university or court proceedings. This means, for example, that I could still be called as a witness or required to turn over any related documents or notes that I keep. Please note also that we are required to report all other forms of prohibited discrimination or harassment to the university administration.

Mandatory Reporting of Child Abuse

UO employees, including faculty, staff, and GEs, are mandatory reporters of child abuse. This statement is to advise you that your disclosure of information about child abuse to the instructor may trigger my duty to report that information to the designated authorities. Please refer to the following links for detailed information about mandatory reporting: [Mandatory Reporting of Child Abuse and Neglect](#).

Safe Ride

541-346-7433 ext 2

pages.uoregon.edu/saferide

Safe Ride is an **assault prevention shuttle** that works to provide free, inclusive, and accessible alternatives to traveling alone at night for **UO students, faculty, and staff**.

We are a schedule-ahead service and riders can (1) call once we open to schedule a ride with a dispatcher or (2) leave a voicemail on the day of their ride request. We do not call riders ahead of time to confirm due to capacity constraints, but riders are always welcome to call us to double-check that their ride was scheduled. We are a feminist, 'for-the-students/by-the-students' organization and operate out of the Women's Center in EMU 12F.

Operating hours:

Spring term Sunday - Thursday | 7p - midnight

Friday + Saturday | 7p - 2a

Summer term Sunday - Thursday | 9p - midnight

Friday + Saturday | 9p - 2a

Fall/Winter term Sunday - Thursday | 6p - midnight

Friday + Saturday | 6p - 2a

Policy and rules:

1. We are a **schedule-ahead service**, we **do not call ahead**, and we can only wait for riders for 5 minutes at their pick-up time and location.
2. We only give rides to groups of **3 or less** to prioritize groups that are at higher risk.
3. We are a **free service** and do not accept tips.