

## FUNDAMENTAL IMMUNOLOGY & MICROBIOLOGY Fall 2021 – Spring 2022

### Course Director

Ming Li, PhD

### TAs

Anthony Antonelli  
Regina Bou Puerto  
Winston Chang  
Thais Klevorn  
Anthony Michaels  
Kathleen Mills  
Zhaoquan (Shasha) Wang

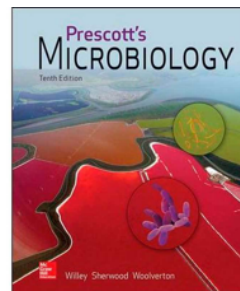
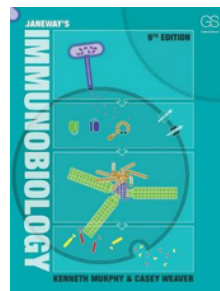
### Class Schedule

Wednesday & Friday  
9:00 AM – 11:45 AM or 1:30 PM – 4:15 PM

### Location

In Person: Lecture Hall A-950, BB 302-D, or WGC-C  
Remote: <https://weillcornell.zoom.us/j/99584065576>  
Password will be provided by email.

### Textbooks



Janeway's Immunobiology 9<sup>th</sup> Edition (2017)  
By: Kenneth Murphy & Casey Weaver

Prescott's Microbiology, 10<sup>th</sup> edition (2018)  
By: Linda Sherwood & Christopher J. Woolverton

**Course Structure:**

Lectures followed by Problem Based Learning (PBL) Discussion.

**Lecture Materials:**

Handouts and PBL reading will be uploaded to the shared course folder on OneDrive: [https://medcornell-my.sharepoint.com/:f:/r/personal/mil2033\\_med\\_cornell\\_edu/Documents/Fundamental%20Immunology%20%26%20Microbiology/Fundamental%20Immunology%20%26%20Microbiology%202021-2022?csf=1&web=1&e=WdjNBa](https://medcornell-my.sharepoint.com/:f:/r/personal/mil2033_med_cornell_edu/Documents/Fundamental%20Immunology%20%26%20Microbiology/Fundamental%20Immunology%20%26%20Microbiology%202021-2022?csf=1&web=1&e=WdjNBa). You will receive a notification by email when you've been granted access to the course folder. Please reach out to Anthony with any questions (ana2065@med.cornell.edu).

**Lecture Preparation:**

For Modules I, II, & IV please read the relevant chapter(s) in *Janeway's Immunology (9<sup>th</sup> edition)* before each lecture.

For Module III please read the relevant chapter(s) in *Prescott's Microbiology (10<sup>th</sup> edition)* before each lecture. The textbook reading is meant to provide background material so that more advanced concepts can be introduced during the lecture.

**PBL Discussion Preparation:**

Please read reviews and primary papers before the lecture. If you are scheduled to present, please prepare a Powerpoint presentation with a 5 minute introduction containing relevant technical or background information, all of the figures from the paper to be discussed, and a 5 minute conclusions/potential future directions section.

Everyone should be prepared to discuss the following questions:

1. What is the main question being asked in the paper?
2. What is the background leading up to the question?
3. For each figure:
  - a) What point does the figure make?
  - b) What experiments are done?
  - c) Are the appropriate controls used?
  - d) What do the results suggest?
  - e) Do the results support the authors' interpretation?
  - f) What are the caveats to the interpretation of the results?
  - g) What other experiments could be done to better/additionally test the hypothesis?
4. What are the conclusions drawn from the paper by the author?
5. What are the conclusions drawn by you, based on the results shown in the paper?
6. What are the overall strengths and weaknesses of the paper?
7. What are the implications for the field at large?

**NOTE:** PBL Discussions are a mandatory part of class. Attendance will be taken and amount of class participation will be noted.

**Exams and Review Sessions:**

There will be ONE midterm and ONE final exam per semester. Exams are generally comprised of a few questions drawn on all aspects of the course - lectures, papers, and textbook reading. The exams usually take place in the Computer Rooms (1300 York Avenue WCMC building, 2<sup>nd</sup> Floor, B211 and B213).

TAs will hold a Review Session a couple of days before each exam. Please prepare specific questions and e-mail them to the TAs at least one day before the scheduled review session. The TAs will also answer other questions that come up during the session, but it will be more effective and beneficial to you if you prepare and send the questions ahead of time.

**Grading:**

For each Semester:

- Participation 20%
- Midterm Exam 40%
- Final Exam 40%

For students taking both semesters, one final grade will be given at the end of each year. Each semester will count for 50% of the final grade.

**FUNDAMENTAL IMMUNOLOGY & MICROBIOLOGY**

**FALL 2021**

MODULE I Concepts and Elements of the Immune System							
Date	Day	Time	Room	Topic	Faculty	TA	*Reading
27-Aug	F	9:00 – 11:45am	A950	Basic Immunology Concepts	Ming Li	TAs	Ch. 1
1-Sept	W	9:00 – 11:45am	A950	Lymphatics, Vasculature and Lymphoid Tissue	Theresa Lu	Klevorn	Ch. 1
3-Sept	F	9:00 – 11:45am	A950	Granulocytes and Mast Cells	Tobias Hohl	Chang	Ch. 3
8-Sept	W	9:00 – 11:45am	A950	Monocytes and Macrophages	Justin Perry	Wang	Ch. 3
10-Sept	F	9:00 – 11:45am	A950	Dendritic Cells	Chrysothemis Brown	Bou Puerto	Ch. 3
15-Sept	W	9:00 – 11:45am	A950	B Cells	Jayanta Chaudhuri	Mills	Ch. 4-6, 8
17-Sept	F	9:00 – 11:45am	A950	T Cells	Ming Li	Mills	Ch. 4-6, 8
22-Sept	W	9:00 – 11:45am	A950	NK Cells	Joe Sun	Antonelli	Ch. 3
24-Sept	F	1:30 – 4:15pm	BB 302-D	Innate Lymphoid Cells	Greg Sonnenberg	Antonelli	Ch. 3
29-Sept	W	9:00 – 11:45am	A950	Review	-	TAs	-
1-Oct	F	1:30 – 4:30pm	E [B211] F [B213]	Midterm	-	Chang / Bou Puerto	-
MODULE II Innate and Adaptive Immune Responses							
Date	Day	Time	Room	Topic	Faculty	TA	*Reading
6-Oct	W	9:00 – 11:45am	A950	Innate Immune Sensing Pathways	Julie M. Blander	Wang	Ch. 2-3
8-Oct	F	9:00 – 11:45am	A950	Innate Immune Effector Pathways	Carl Nathan	Chang	Ch. 2-3
13-Oct	W	9:00 – 11:45am	A950	Antigen Presentation (MHC I)	Julie M. Blander	Klevorn	Ch. 6

Date	Day	Time	Room	Topic	Faculty	TA	*Reading	
15-Oct	F	9:00 – 11:45am	A950	Antigen Presentation (MHC II)	Gretchen Diehl	Bou Puerto	Ch. 6	
20-Oct	W	9:00 – 11:45am	A950	Antigen Receptor Signaling	Morgan Huse	Antonelli	Ch. 4, 7	
22-Oct	F	<b>IMP Scientific Retreat</b>						
27-Oct	W	9:00 – 11:45am	A950	Co-Stimulation	Morgan Huse	Mills	Ch. 9, 11	
29-Oct	F	9:00 – 11:45am	A950	Immunometabolism	Santosh Vardhana	Wang	-	
3-Nov	W	9:00 – 11:45am	A950	Gene Expression	Steve Josefowicz	Chang	Ch. 3, 7	
5-Nov	F	9:00 – 11:45am	A950	Cytokine Signaling	Lionel Ivashkiv	Bou Puerto	Ch. 3, 7	
10-Nov	W	9:00 – 11:45am	A950	Effector T Cell Responses	Andrea Schietinger	Klevorn	Ch. 9, 11	
12-Nov	F	9:00 – 11:45am	A950	Regulatory T Cells	Alexander Rudensky	Bou Puerto	Ch. 9	
17-Nov	W	9:00 – 11:45am	A950	Class Switch and Somatic Hypermutation	Jayanta Chaudhuri	Antonelli	Ch. 4-6	
19-Nov	F	1:30 – 4:15pm	BB 302-D	Germinal Center Responses	Gabriel Victora	Mills	Ch. 10	
(25-26) Nov	<b>Thanksgiving</b>							
8-Dec	W	9:00 – 11:45am	A950	<b>Review</b>	-	TAs	-	
9-Dec	Th	<b>First Rotation Symposium</b>						
10-Dec	F	1:30 – 4:30pm	E [B211] F [B213]	<b>Final</b>	-	Michaels / Antonelli	-	

\* Janeway's Immunobiology (9<sup>th</sup> edition)

**FUNDAMENTAL IMMUNOLOGY & MICROBIOLOGY**

**SPRING 2022**

MODULE III Microbes and Microbial Immunity							
Date	Day	Time	Room	Topic	Faculty	TA	*Reading
5-Jan	W	9:00 – 11:45am	A950	Bacterium	Sabine Ehrt	Wang	Ch. 3, 39
7-Jan	F	9:00 – 11:45am	A950	Mycobacterium	Michael Glickman	Wang	Ch. 3, 39
12-Jan	W	9:00 – 11:45am	A950	Immunity in Bacterium	Luciano Marraffini	Chang	Ch. 27
14-Jan	F	9:00 – 11:45am	A950	Immunity against Bacterium	Melody Zeng	Michaels	Ch. 33-34
(19-21) Jan	<b>WCGS Interview Session 1</b>						
26-Jan	W	9:00 – 11:45am	A950	Virus	Ethel Cesarman	Klevorn	Ch. 6, 38
28-Jan	F	9:00 – 11:45am	A950	Immunity against Virus	Brad Jones	Bou Puerto	Ch. 33-34
(2-4) Feb	<b>WCGS Interview Week Session 2</b>						
9-Feb	W	9:00 – 11:45am	A950	Fungus	Iliyan Iliev	Klevorn	Ch. 5, 26
11-Feb	F	9:00 – 11:45am	A950	Immunity against Fungus	Tobias Hohl	Mills	Ch. 33-34
16-Feb	W	9:00 – 11:45am	A950	Parasite	Bjorn Kafsack	Chang	Ch. 5, 25
18-Feb	F	9:00 – 11:45am	A950	Immunity to Protozoa	Kirk Deitsch	Michaels	Ch. 33-34
23-Feb	W	9:00 – 11:45am	A950	Immunity against Helminth	David Artis	Bou Puerto	Ch. 33-34
(2-4) Mar	<b>Spring Break</b>						
9-Mar	W	9:00 – 11:45am	A950	<b>Review</b>	-	TAs	-
11-Mar	F	1:30 – 4:30pm	E [B211] F [B213]	<b>Midterm</b>	-	Bou Puerto/ Wang	-

\*Prescott's Microbiology (10<sup>th</sup> edition)

MODULE IV Immune System in Health and Diseases								
Date	Day	Time	Room	Topic	Faculty	TA	*Reading	
16-Mar	W	9:00 – 11:45am	A950	Commensal and Mucosal Immunology	Randy Longman	Klevorn	Ch. 12	
18-Mar	F	9:00 – 11:45am	A950	Vaccine Immunology	Niroshana Anandasabapathy	Chang	Ch. 16	
23-Mar	W	9:00 – 11:45am	A950	Autoinflammatory disease	Franck Barrat	Wang	Ch. 15	
24-Mar	Th	<b>Second Rotation Symposium</b>						
25-Mar	F	9:00 – 11:45am	A950	Autoimmune Disease	Laura Donlin	Mills	Ch. 15	
30-Mar	W	9:00 – 11:45am	A950	Hypersensitivity and Allergy	Laurel Monticelli	Michaels	Ch. 14	
1-Apr	F	9:00 – 11:45am	A950	Transplant Immunology	Marcel van den Brink	Bou Puerto	Ch. 15	
6-Apr	W	1:30 – 4:15pm	WGC-C	Metabolic Disease	James Lo	Wang	-	
8-Apr	F	9:00 – 11:45am	A950	Wound Healing and Tissue Repair	Alan Hanash	Chang	Ch. 11	
13-Apr	W	9:00 – 11:45am	A950	Neuroimmunology	Daniel Mucida	Mills	-	
15-Apr	F	9:00 – 11:45am	A950	Tumor Immunology	Ming Li	Klevorn	Ch. 16	
22-Apr	F	9:00 – 11:45am	A950	<b>Review</b>	-	TAs	-	
27-Apr	W	1:30 – 4:30pm	E [B211] F [B213]	<b>Final</b>	-	Mills / Klevorn	-	

\* Janeway's Immunobiology (9<sup>th</sup> edition)

## LIST of FACULTY & TA

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