

CAMB 510 Immunology
Spring 2019

Location: BRB 253

Time: 10:00-11:30 am

Course Organizers: De'Broski R Herbert PhD: debroski@vet.upenn.edu
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Course Goals and Objectives:

This course aims to educate CAMB students in the basic principles of including the basic and applied aspects of hematopoiesis, antigen presentation, signalling, mechanisms of innate and adaptive immunity, lymphocyte development, memory, and protection against pathogens.

Student Learning Outcomes/Learning Objectives:

By the end of this course, students will:

1. Recognize immunological organs, cells, and molecules that participate in the response to viruses, bacteria, and parasites and describe the mechanisms that mediate pathogen clearance and protection from reinfection.
2. Identify and describe mechanisms of immune regulation.
3. Recognize immune-mediated diseases (hypersensitivities, immune deficiencies, autoimmunity) and describe the immunological mechanisms involved in disease onset.
4. Explain the importance of hematopoiesis, lymphocyte differentiation, and memory development.
5. Be able to present and critically evaluate a journal article covering a current topic in basic immunology.

Format and Procedures:

The course is team-taught and consists of a series of lectures.

III. Grading: There is a letter grade for this course.

Grade Scale:

A = 90-100%

B = 80-89.99%

C = 70-79.99%

F = 69.99% or lower

The course grade is based on class participation (5%), journal club presentation (25%) and two exams:

Midterm Exam: 35% (covers through last lecture of the first part)

Final Exam: 35% (covers second half of the course)

Exams will be primarily in essay format and students will be allowed take home the exam.

Academic Integrity:

Each student in this course is expected to abide by the School's Honor Code. Any work submitted by a student in this course will be the student's own work.

Schedule

All classes 10am - 11:30 am at BRB 253

Wed	Jan-16	Intro to the immune system	Cancro
Mon	Jan-21	Myeloid cells -Neutrophils	Gabrilovich
Wed	Jan 23	Myeloid cells - Macrophages	Montaner
Fri	Jan 25	Review and Presentations	
Mon	Jan 28	Pattern Recognition	Brodsky
Wed	Jan 30	Regulation of hematopoiesis	Pear
Fri	Feb 1	Review and Presentations	
Mon	Feb 4	Subversion of innate immunity	Cherry
Wed	Feb 6	Immunity to Bacteria	Shin
Fri	Feb 8	Review and Presentations	
Mon	Feb 11	NK and NKT cells	Kambayashi
Wed	Feb 13	Innate lymphoid cells	Herbert
Fri	Feb 15	Review and Presentations	
Mon	Feb 18	Antigen processing	Eisenlohr
Wed	Feb 20	Dendritic Cells	Haldar
Fri	Feb 22	Review and Presentations	
Mon	Feb 25	T cell recognition of peptide/MHC	Terry Laufer
Wed	Feb 27	Mid-term exam	
Fri	Mar 1	no class (you're welcome)	
	Mar 4-8	Spring Break	

Mon	Mar 11	Mucosal Immunity	Henao-Mejia
Wed	Mar 13	T cell memory and anti-viral immunity	Wherry
Fri	Mar 15	Review and Presentations	
Mon	Mar 18	T cell development and selection	Oliver
Wed	Mar 20	T cell subsets, Cytokines, and tolerance	Oliver
Fri	Mar 22	Review and Presentations	
Mon	Mar 25	Manipulation of immunity with genes	Kar Muthumani
Wed	Mar 27	Immunity and gene therapy	Kar Muthumani
Fri	Mar 29	Review and Presentations	
Mon	Apr 1	Immunoglobulin Structure and function	Allman
Wed	Apr 3	B cell response development, selection	Allman
Fri	Apr 5	Review and Presentations	
Mon	Apr 8	Signaling in immune cells II	Jordan
Wed	Apr 10	Signaling in immune cells I	May
Fri	Apr 12	Review and Presentations	
Mo	Apr 15	Ag receptor gene assembly	Bassing
Wed	Apr 17	T follicular helper cells	Locci
Fri	Apr 19	Review and Presentations	
Mon	Apr 22	Immunodeficiency	Sullivan
Wed	Apr 24	HIV manipulation of host immune response	Betts
Wed	Apr 26	Review and Presentations	
Mon	Apr 29	Immune response to Parasites	P. Scott
Wed	May 1	Review	
Fri	May 3	Final Exam	

CAMB 510 PRESENTATION

- On the first day of class, each student will be assigned a presentation corresponding to the lecture for that week. On each "Review and Presentation" day there will be a brief review of the concepts for that week followed by 2 student presentations. Adherence to the time allotted is critical and failure to adhere will result in reduction of overall grade.

GENERAL REQUIREMENTS

You should take this presentation seriously. All presenters are also encouraged to seek advice and to get input on the paper and your presentation from at least one faculty member with expertise in the research area that the paper addresses.

THE PRESENTATION

The total time allotted is 30 minutes, so talks should be planned for 15 - 20 minutes to allow time for questions during the talk and for discussion afterwards. The discussions that we usually have are a big part of what makes the journal club so valuable and successful. Students are especially encouraged to voice questions and comments at the journal club. So leave time in your presentation for discussion!

Guidelines for presenting

To convey most information, a suggested order of presentation is:

1. A summary of what will be said. The listener should know from the onset where the discussion will be going. This introduction can be brief. Tell the audience why they should pay attention!

2. Background (5 minutes).

3. Review of the paper (10 - 12 minutes).

4. Summary, conclusions, implication for other areas (3 - 5 minutes).

- Avoid slides with more than 12 lines of text. Keep fonts large enough to be easily read from the back of the room.

- Figures should usually be comprehensible by visual inspection, i.e. without explanation. This sometimes requires:

1. Enlarging the important parts of the figure to permit projection at an adequate size.

2. Breaking figures up into several slides to focus on one point at a time.

3. Adding drawing elements (boxes, arrows, labels, etc) to draw attention to the part of the figure you are discussing.

4. Writing the conclusion of the figure at the top. "A 60kD factor released by $\gamma\delta$ T Cells activates Shk (scalp hair kinase)".

5. Writing in or illustrating any necessary info from the figure legend to explain methods, statistical analyses, etc.

- Only selected figures need be presented. It is more important to make sure that you have time to explain the figures that you show than it is to present all of the data or even all of the concepts in the paper.

- No information should be displayed that is not discussed. When figures or tables are presented, the discussion should be built around them. If not, the audience will select either the talk or the slide for attention.

V. Recommended Text:

Peter Parham, The Immune System. 2015, 4rd Edition (3rd edition is also appropriate).

Other References:

1. [Richard Coico](#), [Geoffrey Sunshine](#), [Eli Benjamini](#), Immunology : A short course. 6th Edition

2. Muphy, Kenneth P, Immunobiology: Janeway's Immunobiology
3. Male, David K., Immunology.
4. Pier, Gerald Bryan, Lyczak, Jeffrey B., Wetzler, Lee M., Immunology, Infection, and Immunity