IMUN 506 IMMUNE MECHANISMS | FALL 2019

Monday/Wednesday/Friday 1:00 – 3:00 pm, Monday 12:00 – 1:00 pm
See schedule for locations

COURSE DIRECTORS:

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COURSE GOALS: There are several goals for this course. First, we will introduce you to basic principles, as well as current and emerging concepts in immunology. Second, we want you to think with considerable depth about how these principles and concepts were shaped through experiment, as well as their implications, limits and caveats. Third, the lectures, readings and exams should hone your ability to think clearly and critically about interpretation of data and design of experiments. Finally, we expect you to leave with a foundation that will enable you to keep abreast of the field through reading and critical appraisal of the literature.

COURSE DESCRIPTION: The course will be taught from an experimental standpoint and assume basic knowledge of the immune system. To the greatest extent possible, it will use the primary literature, with reference to texts for background information. We will begin with a brief overview of innate and adaptive immune processes, followed by in depth considerations of underlying cellular, molecular, and genetic events. Mechanisms governing immune activity and homeostasis at the organism level also will be considered.

BROWN BAGS: On several Mondays from 12:00–1:00 pm, there will be interactive presentations given by faculty on topics that students have found useful or requested in the past. The material presented in these Brown Bags will not be included in any of the exams. You may eat lunch during these presentations. Please make requests for additional topics you might want to be presented as Brown Bags.

JOURNAL CLUB DISCUSSIONS: The journal club discussions will involve group presentations and discussions of assigned primary literature papers on lectured topics. Faculty will randomly call on students to: introduce the paper, provide background, present and critique each figure, summarize the authors' conclusions, discuss to what extent the data support these conclusions, and relate these to the broader field.

EXAMS: There will be two exams, one mid-term and one final. Each will be a four hours long in-class exam, with students able to bring a one-page two-sided sheet of notes. Each exam will consist of four essay or brief answer questions based upon experimental data and/or concepts covered in lectures and assigned papers. Students will be able to choose any four questions out of the six assigned questions, which may come from any lecturer. Each exam will be marked based on a maximum possible score of 100.

WRITING ASSIGNMENT: Students will have a week off from class to work on a two-page grant proposal that will be written on any topic chosen by each student. Ideally, this topic would be from or relevant to research of the first rotation lab. Regardless, students should get advice from their rotation mentors on this proposal.

READINGS: Each lecturer will assign a review and up to three readings per lecture from the primary literature. Students are expected to have read these before the lecture. Some lecturers will provide a more extensive (but not requisite) list for your benefit, should you wish to expand your depth or background in certain areas. Background readings using the following recommended texts may also be suggested by individual lecturers, although it is each students' responsibility to ascertain how much background reading he/she needs and what specific readings would be beneficial. The recommended texts to be used for background reading are:

Janeway's Immunobiology (9th edition) by Murphy et al; Garland Press

Fundamental Immunology (7th edition) by Paul (ed); Raven Press

FINAL GRADES: Course grades will be based 45% on the mid-term exam, 10% on the writing assignment, and 45% on the final exam. Participation may be used as a factor for borderline grades.

CANVAS: You will need to download PDFs for assigned and suggested readings from the primary literature, as well as reading lists and outlines provided by individual lecturers, from a Canvas site (https://canvas.upenn.edu). To access this site you will need your PennKey and password.

DATE	TOPIC	FACULTY	ROOM
Wednesday, August 28	An Overview of Conceptual Development in Immunology	Michael Cancro	Hill 222
Friday, August 30	NO CLASS		
Monday, September 2	NO CLASS		
Wednesday, September 4 (2-4 pm)	Hematopoeisis	Warren Pear	Hill 220
Friday, September 6	Discussion: Hematopoeisis	Warren Pear	Hill 222
Monday, September 9 (12-1 pm)	BROWN BAG: Principles of Immunosurveillance	Michael May	Hill 222
Monday, September 9	Mechanism of Antigen Receptor Gene Assembly	Craig Bassing	Hill 222
Wednesday, September 11	Regulation of Antigen Receptor Gene Assembly	Craig Bassing	Hill 220
Friday, September 13	Discussion: Ig/TCR Gene Rearrangements	Craig Bassing	Hill 222
Monday, September 16	NO CLASS: Writing Week		
Wednesday, September 18	NO CLASS: Writing Week		
Friday, September 20	NO CLASS: Writing Week		
Monday, September 23 (12-1 pm)	BROWN BAG: Genetic Manipulation of Mice, Part I	Craig Bassing	Hill 131
Monday, September 23	Signal Transduction in Immune Cells: Receptor to Nucleus	Michael May	Hill 131
Wednesday, September 25	Signal Transduction in Immune Cells: Nucleus to Outcome	Andrew Wells	Hill 220
Friday, September 27	Molecular Basis of T Cell Recognition	Laurence Eisenlohr	Hill 132
Monday, September 30 (12-1 pm)	BROWN BAG: Genetic Manipulation of Mice, Part II	Craig Bassing	Hill 132
Monday, September 30	Antigen Processing	Laurence Eisenlohr	Hill 132
Wednesday, October 2	Lymphocyte Progenitors and Early T Cell Development	Ivan Maillard	Hill 222
Friday, October 4	Late T Cell Development and Selection	Terri Laufer	Hill 222
Monday, October 7 (12-1 pm)	BROWN BAG: Parasites and Allergies: What's the connection?	David Hill	Hill 222
Monday, October 7	T Lymphocyte Response – Heterogeneous Effector Cells	Christopher Hunter	Hill 222
Wednesday, October 9	T Cell Tolerance	Paula Oliver	Hill 222
Friday, October 11	NO CLASS		
Monday, October 14 (12-1 pm)	BROWN BAG: Immunology in the Post-genomics Era	Daniel Beiting	Hill 222
Monday, October 14	Lymphocyte Homeostasis	Michael Cancro	Hill 222
Wednesday, October 16	Discussion: T Cell Tolerance	Paula Oliver	Hill 222
Friday, October 18	NO CLASS		
Monday, October 21 (12-1 pm)	BROWN BAG: Imaging in Immunology	Daniela Gomez Atria	Hill 220
Monday, October 21	Lymphocyte Response – T Cell Memory	John Wherry	Hill 220
Wednesday, October 23	B Cell Development and Selection	David Allman	Hill 132
Friday, October 25	MIDTERM		TBA
Monday, October 28 (12-1 pm)	BROWN BAG: HSC History	Ivan Maillard	Hill 220
Monday, October 28	B Cell Tolerance	David Allman	Hill 220
Wednesday, October 30	Antibody Responses	David Allman	Hill 220
Friday, November 1	Polymorphonuclear Leukocytes and Complement	Kathleen Sullivan	Hill 222
Monday, November 4	Monocytes, Macrophages and Inflammation	Kathleen Sullivan	Hill 222
Wednesday, November 6	NO CLASS: IGG Retreat		
Friday, November 8	NO CLASS: IGG Retreat		
Monday, November 11	Tfh and Tfr regulation of germinal center responses	Michela Locci	Hill 222
Wednesday, November 13	Innate Antiviral Immunity and Intrinsic Immunity Concepts	Sara Cherry	Hill 222
Friday, November 15	Pattern Recognition, TLRs, and Bacterial Innate Immunity	Maayan Levy	Hill 222
Monday, November 18 (12-1 pm)	BROWN BAG: Introduction to CRISPR/Cas9	Jorge Henao-Mejia	JMB M100
Monday, November 18	Dendritic Cells	Edward Behrens	JMB M100
Wednesday, November 20	NK Cells	Taku Kambayashi	Hill 222
Friday, November 22	ILCs	De'Broski Herbert	Hill 222
Monday, November 25	Leukocyte Trafficking	Jorge Alvarez	Hill 222
Wednesday, November 27	NO CLASS: Thanksgiving Break		
Friday, November 29	NO CLASS: Thanksgiving Break		
Monday, December 2	The Role of the Microbiota in Immunity	Joseph Zackular	Hill 222
Wednesday, December 4	Mucosal Immunity	Michael Abt	Hill 222
Friday, December 6	NO CLASS		
Monday, December 9	FINAL EXAM		TBA