

OVERVIEW AND SYLLABUS
CAMB 510 – Basic and Translational Immunology
Spring 2024
Monday and Wednesday 10:15am-12noon
Room BRB 252

COURSE GOALS: There are several goals for this course. One is to introduce students to basic fundamental principles and emerging therapeutics concepts in immunology. A second goal is to challenge students to think with considerable depth about how these principles and concepts were shaped through experiments, as well as their implications, limits and caveats. A third goal is to hone the ability of students to think clearly and critically about the testing of a specific hypothesis through experimental design and data interpretation. These goals will be achieved through lectures, readings, class discussions, and take-home exams. The course aims to provide students with foundations that will enable them to keep abreast of basic and translational immunology topics through critical appraisal of the literature and seminars.

COURSE DESCRIPTION: Each class will involve a faculty member lecturing from an experimental standpoint of the literature that assumes basic knowledge of the subject. There are three course directors and at least one of them will attend every session. During each 1 hour 45 minute class, faculty will lecture for 75 - 90 minutes.

READING ASSIGNMENTS: One week prior to their lecture, faculty will assign a single review article that provides relevant background, as well as one primary research paper. Students are responsible for reading this material before each lecture.

ARTICLE CRITIQUE: Students will select one primary research article from a selection of four papers provided by the directors of the course. From the selected article:

- 1- Identify a weakness in a specific experiment and explain why it is a weakness (5 pts).
- 2- Propose two ways to improve that particular experiment (5pts).
- 3- Describe two additional experiments to verify the conclusions reached by that experiment (5pts).
- 4- Make a graphical abstract summarizing the question, approach and conclusions of the paper (5pts). This can be made using any design software the student chooses and/or can be hand drawn as well.

The article critique will be graded and count for 20% of course grade. This is due no later than Wednesday, April 24th.

CLASS PARTICIPATION: Class discussions during lectures is a very important part of the learning curriculum. To encourage interactions with the faculty, class participation will be evaluated and consist of 10% of the course grade. During each class, approximately halfway through the lecture, there will be a designated break for Q/A and discussion with the lecturer. The break will be at least 5 minutes, but can go longer depending on discussion. The class will be divided into 9 groups of 3-4 students. Each group will be assigned specific lectures where they will be asked to either prepare a question for the lecturer prior to class and post to the Canvas discussion board or ask a question on the lecture during class in this period. The TA will initiate the discussion by sharing any questions posted to Canvas. After all Canvas questions have been discussed, students are welcome to ask any other questions they may have. Students are also encouraged to participate in the discussion of the questions. If a student misses their designated class and does not ask a question, the points for that class can be made up in a different class, however, only one class can be made up at a time.

EXAMS: There will be two take-home exams: a mid-term and a final. Students will have a week to work on each exam, using any materials from class or outside as resources. However, student may not work together to answer the exam questions. The exams are intended to encourage deep thinking about immunology generally, experimental data interpretation, and/or deeper reading into some important areas that, because of time constraints, could not be given the in-depth coverage they warrant in class lectures. It is expected that answers will reflect this and will reference appropriate literature sources. Faculty may suggest some primary papers to help direct students in formulating their answers.

COURSE GRADE: The course grade will be based on: 35% mid-term exam, 35% final exam, 20% on Article critique, and 10% Class Participation.

CANVAS: The course directors will post assigned review, primary papers, at least one week prior to each class. Mid-Term and Final Exam will be posted on CANVAS.

COURSE DIRECTORS: Amelia Escolano (aescolano@wistar.org), Chengcheng Jin (Chengcheng.Jin@Pennmedicine.upenn.edu) and Michael Abt (michael.abt@penmedicine.upenn.edu)

TEACHING ASSISTANT: Angela Corrigan (Angela.Corrigan@Pennmedicine.upenn.edu)

Date	Topic	Lecturer	Course Director
Jan 19 (Fri)	Introduction to the immune system	Mike Cancro	All three
Jan 22 (Mo)	Complement	Wenchao Song	Escolano
Jan 24 (We)	Hematopoiesis and lymphogenesis	Warren Pear	Escolano
Jan 31 (We)	Pattern recognition and TLRs	Kellie Jurado	Escolano
Feb 2 (Fri)	Monocytes, macrophages, and inflammation	Malay Haldar	Escolano
Feb 5 (Mo)	Dendritic cells	Chengcheng Jin	Jin
Feb 7 (We)	NK, NKT, and other ILCs	Taku Kambayashi	Jin
Feb 12 (Mo)	Antigen receptor gene diversification	Craig Bassing	Abt
Feb 14 (We)	Immunoglobulin structure and function	Dave Allman	Escolano
Feb 19 (Mo)	B cell repertoire selection/ regulation of B cell response	Dave Allman	Escolano
Feb 21 (We)	antigen processing, presentation, and recognition	Ike Eisenlohr	Abt
Feb 28 (Wed)	T cell development - Thymic selection	Ivan Maillard	Abt
Mar 1 (Fri)	MHC restriction and T cell selection	Ivan Maillard	Jin
Mar 4 (Mo)	Th Cell Subsets	Chris Hunter	Abt
Mar 6 (We)	Germinal Center Formation/ Tfh cell	Michela Locci	Abt
Mar 8 (Fri)	Mid-Term Exam Distributed		
Mar 11 (Mo)	No class Mid-Term Exam Prep		
Mar 13 (We)	Class- I CD8 T cells and T cell exhaustion	John Wherry	Jin
Mar 18 (Mo)	Lymphoid Organ organization and Lymphocyte Trafficking - MIDTERM EXAM DUE	Mike May	Abt
Mar 20 (Wed)	Tolerance and immune privilege	Paula Oliver	Abt
Mar 25 (Mon)	Mucosal Immunity & Microbiome	Michael Abt	Abt
Mar 27 (We)	V(D)J recombination, antibody repertoires etc	Nina Luning Prak	Escolano
Apr 1 (Mo)	Metabolic Regulation of Immune Responses	Will Bailis	Escolano
Apr 3 (We)	Immune response to HIV	Mike Betts	Escolano
Apr 5 (Fri)	Vaccine development and challenges	Norbert pardi	Escolano
Apr 10 (We)	Immune responses to gene therapies	Jim Wilson	Jin
Apr 15 (Mo)	Neutrophils in regulation of anti-tumor immunity	Eveniy Eruslanov	Abt
Apr 17 (We)	Anti-cancer immune responses	Joe Fraietta	Jin
Apr 22 (Mo)	No Class - Article Critique DUE		
Apr 24 (Wed)	Immune checkpoint therapies	Alex Huang	Jin
Apr 29 (Mo)	Mechanisms regulating T cell immunosurveillance in cancer Final Exam Distributed	Gregory Beatty	Jin
May 1 (Wed)	No class Final Exam Prep		
May 6 (Mo)	Final Exam DUE		