OVERVIEW AND SYLLABUS
CAMB 510 – Basic and Translational Immunology
Spring 2023
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 (one each from CB, GTV, and MVP) and at least one of them will attend every session. During each 1 hour 45 minute class, faculty will lecture for 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 these materials before each lecture.

NEWS & VIEWS ARTICLE: Students will select one primary research paper from those assigned by faculty lecturers to write a "News & Views" style summary of the article. News & Views article will be graded and count for 20% of course grade. The article should (1) highlight the majors findings in the paper, (2) place the findings in context of the current state of the field, and (3) identify the next questions to be addressed. The student's article will be shared with the faculty for comments and feedback. Maximum of 4 students can select the same article. Notify the course TA, Kevin, when you have selected an article to confirm its availability. News & Views article is due no later than Wednesday April 26th.

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. The class will be divided into 8 groups of 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 or ask a question on the lecture during the class.

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, and 20% on News & View article, 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: Ameila Escolano (aescolano@wistar.org), Norbert Pardi (pnorbert@pennmedicine.upenn.edu), and Michael Abt (michael.abt@pennmedicine.upenn.edu)

TEACHING ASSISTANT: Kevin Mears (mearsk@pennmedicine.upenn.edu)

Date	Topic	Lecturer	Course Director
Jan 11 (We)	**Introduction to the immune system**	Michael Cancro	Escolano/Pardi/Abt
Jan 16 (Mo)	**No class (MLK day)**		
Jan 18 (We)	**Complement and myeloid cells - defenders of the universe**	Kate Sullivan	Abt
Jan 23 (Mo)	**Hematopoiesis and lymphogenesis**	Warren Pear	Abt
Jan 25 (We)	**Polymorphonuclear Leukocytes- Neutrophil Biology**	Eveniy Eruslanov	Abt
Jan 30 (Mo)	**Monocytes, macrophages, and inflammation**	Malay Haldar	Pardi
Feb 1 (We)	**Pattern recognition and TLRs**	Kellie Jurado	Pardi
Feb 6 (Mo)	**Antigen receptor gene diversification**	Craig Bassing	Pardi
Feb 8 (We)	**Immunoglobulin structure and function**	Dave Allman	Pardi
Feb 13 (Mo)	**B cell repertoire selection/ regulation of B cell response**	Dave Allman	Escolano
Feb 15 (We)	**No Class**		
Feb 20 (Mo)	**No Class - News & Views article Preparation**		
Feb 22 (We)	**NK, NKT, and other ILCs**	Taku Kambayashi	Escolano
Feb 27 (Mo)	**Antigen processing, presentation, and recognition**	Ike Eisenlohr	Escolano
Mar 1 (We)	**T cell development - Thymic selection**	Ivan Maillard	Escolano
Mar 6 (Mo)	**MHC restriction and T cell selection**	Ivan Maillard	Escolano
Mar 8 (Wed) *BRB 253*	**Th Cell Subsets**	Chris Hunter	Abt
Mar 10 (Fri)	**Class- I CD8 T cells and T cell exhaustion Mid-Term Exam Distributed**	John Wherry	Pardi
Mar 13 (Mo)	**No Class - Mid-Term Exam Preparation**		
Mar 15 (We)	**Germinal Center Formation/ TfH cell**	Michela Locci	Pardi
Mar 20 (Mo)	**Lymphoid Organ Organization and Lymphocyte Trafficking - Mid-Term Exam DUE**	Mike May	Pardi
Mar 22 (Wed)	**Tolerance and immune privilege**	Paula Oliver	Abt

Mar 27 (Mon)	**No Class - News & Views article Preparation**		
Mar 29 (We)	**V(D)J recombination, antibody repertoires, clone tracking in malignancy and other diseases**	Nina Luning Prak	Pardi
Apr 3 (Mo)	**Metabolic Regulation of Immune Responses**	Will Bailis	Pardi
Apr 5 (We)	**Immune response to HIV & Covid 19**	Mike Betts	Escolano
Apr 10 (Mo)	**Vaccine development and challenges**	Norbert Pardi	Pardi
Apr 12 (We)	**Immune responses to gene therapies**	Jim Wilson	Abt
Apr 17 (Mo)	**Mucosal Immunity & Microbiome**	Michael Abt	Abt
Apr 19 (We)	**Anti-cancer immune responses**	Joe Fraietta	Abt
Apr 21 (Fri)	**Targeting cancer antigens and neoantigens**	Gerry Linette	Abt
Apr 24 (Mo)	**Immune checkpoint therapies**	Alex Huang	Abt
Apr 26 (Wed)	**Mechanisms regulating T cell immunosurveillance in cancer**	Gregory Beatty	Abt
Apr 28 (Fri)	**Dendritic cells** **Final Exam Distributed**	Chengcheng Jin	Escolano
May 1 (Mo)	**No Class Final Exam preparation**		
May 3 (We)	**No Class Final Exam preparation**		
May 5 (Fri)	**No Class Final Exam Due**		