

OVERVIEW AND SYLLABUS  
CAMB 510 – Basic and Translational Immunology  
Spring 2020  
Mondays and Wednesday 10am-12noon  
BRB 253

**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 2 hours class, faculty will lecture for 60 minutes followed by a 60 minutes breakout discussion. During the breakout session, students will be separated into two pre-assigned groups and each group will have 1-2 student leaders/presenters. Each group will discuss the primary research paper and answer the previously assigned question using all available resources. Each group leader will have 10 minutes to present their question and answer to the whole class.

**READING ASSIGNMENTS:** One week prior to their lecture, faculty will assign a single review article that provides relevant background, as well as two primary research papers, one for each group. The faculty will also provide a discussion question on each paper to guide student reading and discussion. Students are responsible for reading these materials before each lecture. Each student is also required before each class to post on CANVAS a question that they would like the breakout group, or if needed the faculty lecturer, to answer during the breakout sessions.

**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. The exams are intended to encourage deep thinking about immunology generally 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: 40% mid-term exam, 40% final exam, and 20% on participation as judged by submitting questions on CANVAS. While student presentations will not be graded, the participating faculty and/or course director should provide feedback at the end of class.

**CANVAS:** The course directors will post assigned review, primary papers, and questions provided by specific faculty at least one week prior to each class. The students are required to post their question for each assigned paper by 5 pm the day before the breakout session.

**COURSE DIRECTORS:** Sharon Diskin ([diskin@email.chop.edu](mailto:diskin@email.chop.edu)), Norbert Pardi ([pnorbert@penncmedicine.upenn.edu](mailto:pnorbert@penncmedicine.upenn.edu)), and Michael Abt ([Michael.abt@penncmedicine.upenn.edu](mailto:Michael.abt@penncmedicine.upenn.edu)).

| Date                      | Topic  | Instructor(s)    |
|---------------------------|--|------------------|
| Jan 15 (Wed)              | Introduction to the immune system  | Michael Cancro   |
| Jan 20 (Mon)              | NO CLASS - MLK   |                  |
| Jan 22 (Wed)              | Hematopoiesis and lymphogenesis  | Warren Pear      |
| Jan 24 (Fri),<br>M100 JMB | Polymorphonuclear Leukocytes- Neutrophil Biology   | Daniel Hammer    |
| Jan 31 (Fri),<br>M100 JMB | Monocytes, macrophages, and inflammation   | Luis Montaner    |
| Feb 3 (Mon)               | Pattern recognition and TLRs   | Igor Brodsky     |
| Feb 5 (Wed)               | Intrinsic intracellular immunity   | Sunny Shin       |
| Feb 10 (Mon)              | NK, NKT, and other ILCs  | Taku Kambayashi  |
| Feb 12 (Wed)              | Dendritic cells  | Malay Haldar     |
| Feb 17 (Mon)              | T cell antigen processing, presentation, and recognition                                   | Ike Eisenlohr    |
| Feb 19 (Wed)              | Immunoglobulin structure and function  | Dave Allman      |
| Feb 24 (Mon)              | Antigen receptor gene diversification  | Craig Bassing    |
| Feb 26 (Wed)              | No class   |                  |
| Mar 2 (Mon)               | B cell responses/memory and germinal center reaction                                       | Dave Allman      |
| Mar 4 (Wed)               | T cell subset heterogeneity  | Chris Hunter     |
| Mar 9 (Mon)               | No Class – SPRING BREAK<br>Mid-Term Exam – DUE March 16 <sup>th</sup>                      |                  |
| Mar 11 (Wed)              | No class – SPRING BREAK  |                  |
| Mar 16 (Mon)              | Mucosal immunity and host microbiomes<br><b>Midterm Exam Due</b>                           | Michael Abt      |
| Mar 18 (Wed)              | Tolerance and immune privilege   | Paula Oliver     |
| Mar 23 (Mon)              | Metabolic Regulation of Immune Responses   | Will Bailis      |
| Mar 25 (Wed)              | V(D)J recombination, antibody repertoires, clone tracking in malignancy and other diseases | Nina Luning-Prak |
| Mar 30 (Mon)              | Viral manipulation of immune responses   | Mike Betts       |
| Apr 1 (Wed)               | Immune responses to gene therapies   | Jim Wilson       |
| Apr 3 (Fri)<br>BRB253     | CAR-T cell therapies   | Carl June        |
| Apr 6 (Mon)               | Targeting cancer antigens and neoantigens  | Gerry Linette    |
| Apr 8 (Wed)               | Vaccine development and challenges   | Harvey Friedman  |
| Apr 13 (Mon)              | Anti-cancer immune responses   | Joe Fraietta     |
| Apr 15 (Wed)              | Mechanisms regulating T cell immunosurveillance in cancer                                  | Gregory Beatty   |
| Apr 22 (Wed)              | Immune checkpoint therapies  | Jim Riley        |
| Apr 24 (Fri),<br>BRB252   | Exhaustion and re-activation of immune responses   | John Wherry      |
| Apr 27 (Mon)              | No class - Final Exam – DUE May 4 <sup>th</sup>  |                  |
| Apr 29 (Wed)              | No class - Final Exam Preparation  |                  |
| May 4th (Mon)             | <b>Final Exam Due</b>  |                  |