

IMUN 507 IMMUNE MECHANISMS

SPRING 2020

Tuesdays and Thursdays 2:00 – 3:50 PM
B102AB Richards (Tuesdays) and 1101 BRB (Thursdays)

| | | |
|--------------------------|---|---|
| COURSE DIRECTORS: | Michael May 3800 Spruce St, OVH 200E 215-573-0940 maym@vet.upenn.edu | Bruce Freedman 3800 Spruce St, OVH 368E 215-573-8218 bruce@vet.upenn.edu |
|--------------------------|---|---|

COURSE GOALS: There are several goals for this course. First, building on the IMUN 506 foundation, we will further introduce you to basic principles, and current and emerging concepts in cellular immunology. Second, integrating with BIOM 555, we will introduce you to more basic principles, state-of-the art techniques, and current and emerging concepts in molecular immunology. Third, through the student-run journal clubs, we will work together to improve your ability to: critically evaluate primary literature, orally present your thoughts to an audience, and engage in scientific discussion.

COURSE DESCRIPTION: Faculty lectures will be taught from an experimental standpoint and assume basic knowledge of the immune system. To the greatest extent possible, faculty will teach through primary literature, with reference to reviews for background information. For each faculty lecture, one student will lead a journal club on one of the assigned papers.

READINGS: Each faculty is expected to provide a few reviews and possibly primary papers at least one week prior their lecture. Students should read these before the lectures. Faculty will assign at least one journal club paper that students also should read before the lecture class. Students presenting journal club need to read these before the presentations and may need to read the recommended reviews and papers to sufficiently prepare for their presentations. Texts that also may be useful for background reading include:

Janeway's Immunobiology (8th edition), by Murphy et al; Garland Press

Fundamentals of Immunology (7th edition) by Paul (ed). Raven Press

Readings and journal club papers will be posted on Canvas. Faculty lectures may be available by request, though often not until after the lecture.

JOURNAL CLUB EXPECTATIONS: Students are expected to meet with the faculty member (who assigned the paper) in advance of the presentation. Students should present: 1) a few introduction slides on background and the problem addressed or hypothesis tested, 2) schematics outlining experimental approaches or procedures for those that are complicated and/or not routine, 3) essential figures or figure panels, which may be all of them in a *Nature*, *Science*, or *Jl* paper or 50-75% in *Immunity*, *Cell*, *JEM*, or *Nature Immunology* paper, 4) figures or figure panels from supplementary materials if needed, 5) a few discussion/closing slides to place the authors'

findings within the contexts of the immediate field and immunology or biology as a whole, and 6) a few slides on new questions you would answer and experiments that you would conduct to do so. Presenters should be critical of the data by pointing out potential flaws; in addition, they should attempt to build an interaction-discussion with the audience, while keeping the presentation time to no more than 45 minutes.

For each paper, all students except the presenter are required to submit the following in writing via Canvas by 1:00 pm on the day of class.

- 1) One question or discussion point about any aspect of the paper. This question or point could be raised and incorporated into the class discussion of the manuscript.
- 2) A short paragraph or several bullet points discussing the next experiments that could be performed to follow up on the main findings of the paper.

Audience members should ask questions, make points, and engage in discussion as often as possible, while letting the presenter get through all of their slides.

FACULTY EXPECTATIONS: In addition to providing reading materials ahead of time, lecturing, and moderating journal clubs, faculty are expected to be available to meet with students ahead of journal club presentations. Faculty should also provide feedback to the journal club presenters immediately after class ends.

FINAL GRADES: Students' grades will be based on their journal club presentations and on their participation (asking questions, engaging in discussions, and submitting written assignments). The written submissions are worth 10% of the grade; students must submit these for at least 17 of the 19 lectures in order to receive the full 10%. Final grades will be determined by the course directors in consultation with participating faculty.

**IMUN 507 IMMUNE MECHANISMS
SPRING 2020**

| Date | Title/Topic | Lecturer | JC |
|-------------|---|--------------------|-----------|
| Tues 1/28 | Parasitic infections | Phillip Scott | Victor |
| Thurs 1/30 | NO CLASS | | |
| Tues 2/4 | NO CLASS | | |
| Thurs 2/6 | Primary immune deficiency and immune dysregulation | Sarah Henrickson | José |
| Tues 2/11 | Lymphoid malignancies | Craig Bassing | |
| Thurs 2/13 | Class-switch recombination | Craig Bassing | |
| Tues 2/18 | Journal club | Craig Bassing | Amanda |
| Thurs 2/20 | Immunity beyond immune cells | Maayan Levy | Evonne |
| Tues 2/25 | Design principles of immune responses | Christoph Thaiss | Chad |
| Thurs 2/27 | NO CLASS | | |
| Tues 3/3 | NO CLASS | | |
| Thurs 3/5 | Immune cell metabolism | Will Bailis | Franklin |
| Tues 3/10 | Microbiome-mediated immune defenses | Michael Abt | Seble |
| Thurs 3/12 | Early life microbiome and immune system development | Michael Silverman | Jordan |
| Tues 3/17 | Mosquito immunity | Michael Povelones | Breanne |
| Thurs 3/19 | X chromosome inactivation & sex differences & autoimmunity | Montserrat Anguera | Kate |
| Tues 3/24 | Tumor immunology | Chengcheng Jin | Kyabeth |
| Thurs 3/26 | Comparative models of inflammatory diseases | Elizabeth Lennon | Sam |
| Tues 3/31 | The microbiome and host immunity | Daniel Beiting | Lex |
| Thurs 4/2 | Systems biology of immune cells | Golnaz Vahedi | Diego |
| Tues 4/7 | Clinical allergy and the allergic march: relevance to the experimental immunologist | David Hill | Eric |
| Thurs 4/9 | Transplantation | Paige Porrett | Emily |
| Tues 4/14 | Macrophages and dendritic cells | Malay Haldar | Jen |
| Thurs 4/16 | Immune manifestations of bone marrow failure | Daria Babushok | Ceire |
| Tues 4/21 | Mucosal immunity | Jorge Henao-Mejia | Jay |
| Thurs 4/23 | Class debrief | | |