Purpose

The purpose of this course is to provide examples in which the cell biology topics covered in BIOM 600 are studied in the context of immune cells or used to explain immune system function. This course will help students become proficient at reading and critically assessing the published literature and encourage students to actively participate in scientific discussions with their peers.

Format

The course format will be as follows:

We will meet once weekly (Tuesdays, 9:00-10:30 am, SCL204) and discuss one of the papers provided by participating faculty members. This is not necessarily the most cutting-edge article in the field, but one that demonstrates key cell biology concepts. All articles are available as pdf files on the Canvas site.

Each week, one student (as assigned) will give a 10-15 minute chalk-talk style overview of the key concepts covered in the article. PowerPoint presentations are not allowed. After the assigned student introduces the paper, other students will take turns presenting figures from the paper. The discussion of each figure will cover:

1) What is the question?
2) Describe the techniques being used.
3) State the results.
4) Explain the statistical analysis used to interpret the data.
5) What are the authors conclusions?
6) Are there alternative explanations? Were the appropriate controls used?
7) How did this figure fit within the overall context of the paper?

On Canvas you will find copies of the course schedule as well as pdf files for the individual papers we will be considering. The course schedule contains contact information for all course faculty and a list of students assigned to each paper. You are strongly encouraged to contact the faculty member associated with the paper to discuss your 10-15 minute overview before your scheduled date. Participation is a big part of your grade in this class. Be prepared to participate in discussion of all figures and all aspects of the papers.

Final Project

At the end of the term there will be a short “final project”. This final project will allow you to hone your analytical and writing skills while learning something new about a topic of interest. To complete this project you will select an immunology focused paper that is related to a topic covered in BIOM 600. Based upon this published work you will write a 1-2 page brief review that includes an illustration (model) of the key findings.
The paper should include the following parts:
1) Synopsis of the main conclusion(s) of the paper.
2) A schematic model (illustration) of the findings.
3) A summary of methods used and key experimental discoveries.
4) How it draws upon cell biology and basic cell biological principles.
5) How this impacts our understanding of immune system functions.
6) Future questions related to this topic that remain unresolved.

Final projects must be submitted by December 13th via email to Paula Oliver (paulao@mail.med.upenn.edu). Also please direct any questions about the project or requirements directly to Paula Oliver or Jan Burkhardt (jburkhar@mail.med.upenn.edu).

**Assessment and Course Grades**

Grades for this course will be determined by:
1) The quality of your 10-15 minute overview.
2) The quality of your description of figures.
3) Your overall level of participation and intellectual engagement.
4) The quality of your final project.
IMUN 601 Molecular Immunology 2017
Tuesdays, 9:00-10:30 AM, SCL 204

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THEMES (based on BIOM 600)

Signaling and Quality Control
- Signal transduction (May)
- Calcium signals (Freedman)
- Quality control (Oliver)

Cytoskeleton and Cell Motility
- Cytoskeleton (Burkhardt)
- Immune cell motility (Burkhardt)

Ion Channels
- Ion Channels (Freedman)

Membranes and Secretion
- Protein folding (Argon)
- Immunological secretion (Marks)
- Endocytosis of antigens (Eisenlohr)

Cell Stress and Cell Metabolism
- Cell Stress Response (Argon)
- Immune Cell Metabolism (Oliver)
<table>
<thead>
<tr>
<th>DATE</th>
<th>FACULTY</th>
<th>TOPIC</th>
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<tr>
<td>9/12</td>
<td>May</td>
<td>Immune signal transduction</td>
<td>Sen/Baltimore, Cell, 1986</td>
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<td>Liu, Nat Commun, 2010</td>
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<td>Marshall, JCB, 2015</td>
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<td>Blander, Nature, 2006</td>
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