IMUN 601 Molecular Immunology – Syllabus – Fall 2024

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Purpose

The purpose of this course is to provide examples in which the cell biology topics covered in BIOM 600 are relevant to the functions of immune cells, the immune system, or inflammatory disease states. This course will help students become proficient at reading and critically evaluating the published literature and facilitate scientific discussions with peers.

Format

We will meet weekly (Thursdays, 10:15 – 11:45 am, SCL 0104) to discuss the paper provided by participating faculty members. Article selection will emphasize papers that demonstrates the key cell biology concepts discussed in BIOM 600. **All articles are available as pdf files on the Canvas site.**

Each week, two students (as assigned) will lead the discussion starting with a ~15 minute presentation that reviews the key concepts covered in the article. If an uncommon technique is utilized, this should also be briefly reviewed to ensure everyone is at a similar level of knowledge.

The course schedule, the contact information for all course faculty, and the list of students assigned to each paper are detailed below in the syllabus and on the Canvas site. Presenters should contact the faculty member associated with their paper for a discussion prior to the presentation. This discussion should be used by the student to clarify any questions they have about the article (not to review the article for the first time). **It is the responsibility of all student presenters to arrange this meeting in a timely manner.** Please be mindful that faculty may have busy schedules, so it is wise to coordinate well in advance.

After the assigned student introduces the paper, they will lead other students as they take turns presenting figures from the paper. Together with each week's faculty member, the leader will moderate the discussion, clarify key points, address questions, and assist students who might have difficulty with the figure they are presenting. This will be done first in small breakout groups to review each figure, before recovening to discuss as a class.

The discussion of each figure will cover:

1) The question being addressed
2) The techniques being used
3) The results

4) The statistical analysis used to interpret the data
5) The authors' conclusions (and if the data support them)
6) Are there alternative interpretations?
7) Were appropriate controls used?
8) How the figure fit within the overall context of the paper

As a group, we will discuss:

1) Whether the paper is convincing, and why or why not
2) The significance of the work to the fields of immunology and cell biology
3) Unresolved questions for the field going forward

Assessment and Course Grades

The students presentation of their paper, and their participation during other peoples presentations, are basis for the course grade. Students should read articles ahead of time and be prepared to participate in discussion of all figures and all aspects of the papers (not just the figure they are presenting). You need to fully understand everything prior to class – its equally good to discuss what you find confusing or don't know how to interpret.

Grades for this course will be determined by:

1) The quality of the introductory presentation (approximately 33%).
2) Your overall level of participation and intellectual engagement each week throughout the course (approximately 66%)

Accommodations

This is a discussion format course where students can get to know one another and the faculty. It is important to attend and be engaged on a consistent basis. In the case of illness or other hardships, please reach out to Will Bailis and David Hill if you expect to miss a class or need to make arragnements for virtual participation.

IMUN 601 Molecular Immunology 2024

Thursdays, 10:15 – 11:45 am (SCL 0104)

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DATE	FACULTY	TOPIC	PAPER	STUDENTS
8/29	May	NFkB: Gateway to cell signaling	*Sen, Cell, 1986*	*Full class discussion*
9/5	Weber	Antigen receptor signaling in CAR design	*Tousley, Nature, 2023*	Mate Nagy/Marlaine Soliman
9/12	Henrickson	STAT signaling an inborn errors of immunity	*Lyons, J Exp Med, 2017*	Eilene Deng/Justin Shayne
9/19	Oliver	Ubiquitin regulation of T cell persistence	*Onizawa, Nat Imm, 2015*	Adam Kuo/Miyako Noguchi
9/26	Roulis	Inflammatory signaling in the mesenchyme	*Wu, Nature, 2021*	Justin Gabrielski/Ilona Neale
10/3	Allman	Plasma cells and the UPR	*Iwakoshi, Nat Imm, 2003*	Isabella Conway/Bria Fulmer
10/10	Eisenlohr	Endosome trafficking and antigen presentation	*Blander, Nature, 2006*	Nile Bayard/Victoria Skovorodnev
10/17	Bailis	Mitochondria biogenesis and adaptive immunity	*Buck, Cell, 2016*	Mate Nagy/Yiwei Wang
10/24	Gordon	Assymetric division and T cell differentiation	*Chang, Science, 2007*	Amirah Ullah/Lily Zhong
10/31	Burkhardt	Actin cytoskeletal control of T cell activation	*Vargas, Nat Cell Biol, 2015*	Justin Gabrielski/Robbie Patio
11/7	Burkhardt	Microtubule function during cytolysis	*Tamzalit, PNAS, 2020*	Michaella Bono/Arlon Wizzard
11/14	NO CLASS	IGG Retreat		
11/21	Freedman	Calcium ion channels	*Berry, Cell Rep, 2020*	Christian Garliss/Marlaine Soliman
11/28	NO CLASS	Thanksgiving		
12/5	Matute	Metabolism and immune responses	*Rodríguez-Colman, Nature, 2017*	Ilona Neale/Amirah Ullah
12/12	Taabazuing	Cell death and inflammation	*Reinfeld, Nature, 2021*	Nile Bayard/Michaella Bono