

IMUN 601 Molecular Immunology – Syllabus – Fall 2023

Course Directors: Will Bailis: bailisw@chop.edu

David Hill: hilld3@chop.edu

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 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 recovering 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 arrangements for virtual participation.

IMUN 601 Molecular Immunology 2023

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

COURSE DIRECTORS

Will Bailis

1211B Abramson Research Center
267-590-9396
bailisw@chop.edu

David Hill

1208B Abramson Research Center
267-425-2124
hilld3@chop.edu

FACULTY

David Allman

230 John Morgan Building
215-746-5547
dallman@mail.med.upenn.edu

Scott Gordon

1106F Abramson Research Center
503-807-7980
gordons1@chop.edu

Caroline Bartman

9-177 Smilow
202-255-5139
cbartman@penncmedicine.upenn.edu

Sarah Henrickson

1216H Abramson Research Center
215-300-7986
henricksons@chop.edu

Janis Burkhardt

816D Abramson Research Center
267-426-5410
jburkhar@penncmedicine.upenn.edu

Michael May

200E Old Vet Building
215-573-0940
maym@penncmedicine.upenn.edu

Scott Canna

1110A Abramson Research Center
267-425-5387
cannas@chop.edu

Paula Oliver

816F Abramson Research Center
267-426-2839
paulao@penncmedicine.upenn.edu

Laurence Eisenlohr

1107B Abramson Research Center
215-590-0952
eisenlc@penncmedicine.upenn.edu

Manolis Roulis

505A Stellar Chance
203-550-7704
Manolis.Roulis@Penncmedicine.upenn.edu

Bruce Freedman

389E Old Vet Building
215-573-8218
bruce@vet.upenn.edu

Evan Weber

10018 Colket Translational Research Building
267-425-5589
weberew@chop.edu

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DATE	FACULTY	TOPIC	PAPER	STUDENTS
8/31	May	NFkB: Gateway to cell signaling	Sen, Cell, 1986	Shuaitong Liu/ Reid Banciella
9/7	Roulis	Inflammatory signaling in the mesenchyme	Wu, Nature, 2021	Natasha Puzon/ Katie Premo
9/14	Henrickson	STAT Signaling	Lyons, J Exp Med, 2017	Abbie Lustig/ Josetta Adams
9/21	Oliver	Ubiquitin regulation of T cell persistence	Onizawa, Nat Imm, 2015	James Chang/Kathya Arana Fernandez Garrido
9/28	Weber	Antigen receptor signaling in CAR design	Tousley, Nature, 2023	Ashlin Cowger/ Jacob Fischman
10/5	Allman	Plasma cells and the UPR	Iwakoshi, Nat Imm, 2003	Chloe Adrienna Talana/ Nathan Swanbery
10/12	Bailis	Mitochondria biogenesis and adaptive immunity	Buck, Cell, 2016	Christian Howard/ Sophie Gray-Gaillard
10/19	Eisenlohr	Endosome trafficking and antigen presentation	Blander, Nature, 2006	Francine Baker/ Hannah Dobson
10/26	Burkhardt	Immune cell motility	Vargas, Nat Cell Biol, 2015	Erin Maule/ Adam Kramer
11/2	Burkhardt	Actin control of T cell activation	Tamzalit, PNAS, 2020	Samantha Provost/ Caitlin McCabe
11/9	Gordon	Asymmetric cell division	Chang, Science, 2007	Chloe Wang/ Lufti Huq
11/16	No class	IGG Retreat	-	
11/23	No class	Thanksgiving week	-	
11/30	Freedman	Calcium ion channels	Berry, Cell Rep, 2020	Nathan Swanbery/ James Chang
12/7	Canna	Cell death and inflammation	Medina, Nature, 2020	Sophie Gray-Gaillard/ Francine Baker
12/14	Bartman	Metabolism and immune cells	Reinfeld, Nature, 2021	Oishi Bardhan/ Natasha Puzon