

CELLULAR & MOLECULAR IMMUNOLOGY 2023 SYLLABUS

Biol UN3073/ GR5073

Monday & Wednesday 11:40am-12:55pmPM // provisionally NWC-501

Instructor: Christian Schindler (cws4@columbia.edu)

Textbook: **Peter Parham's "The Immune System, 5th Edition (2021)**

W. Norton & Company, Inc, New York, NY //ISBN: 978-0-393-53334-7

Summer Assignment/Ice Breaker | due 9/5/23 | – Submit an immunological issue (2-3 sentences, no names) that sparked your interest in immunology.

Week #1

9- 6^w Overview of Immune System (anatomy, cells, Innate vs Adaptive) L#1 Chpt #1

Take home Open Book/Team Effort Quiz #1 (this one is 10-15 minutes of work)

Week #2 | Journal Club [JC]1

11 Finish Overview; Innate Immunity #1 (PRRs & Complement) L#2 Chpt #1/2

13^w Innate Immunity #2 (PMNs & PRRs)/Viral Innate Immunity L#3 Chpt #3

Take home Open Book Quiz #2

Week #3 | JC2

18 Finish Innate /Viral Immunity / Start Antibody Structure L#4 Chpt #3/4

20^w Antibody structure & V-D-J recombination L#5 Chpt #4

In class team based project, ~12:10-12:50/Mandatory Attendance

Take home Open Book Quiz #3

Week #4 |JC3, either this week or next

25 Finish V-D-J & TCR; Maybe some MHC biology & genetics L#5b & #6 Chpt #4/5

27^w Finish MHC biology & genetics / start B-cell Development L#7 &? L#8 Chpt #6

27^w CWS Review Session from ??-?? pm

29 TA Review Session from ??-?? pm

PRACTICE EXAM - Optional

Week #5 | JC3

10-02 **Exam #1** (*through V-D-J recombination & TCR*)

04^w B-cell Development à T-cell Development L#8 Chpt #6

04 Paper Presentation Project will be introduced

Week #6 | JC4

9 Finish T-cell Development à Immune Signaling L#9 Chpt #7

11^w & T-cell immunity (pt. 2 signaling) L#10 (9.5/.75) Chpt #8

Take home Open Book Quiz #4

Week #7 | JC5

16 Finish T-cell immunity; Humoral Immunity in SHM & CSR #9	L#11	Chpt
18 ^w Finish Humoral Immunity-pt.2	L#12	Chpt #9

Take home Open Book Quiz #5

Week #8 | JC6

23 Finish Humoral Immunity à Mucosal Immunity, pt1 #10	L#13	Chpt
25 ^w Mucosal Immunity, pt2 / Some Microbiome #10	L#14	Chpt

In class team based project, 12:15-12:50

Week #9

30 Hygiene Hypothesis & Microbiome	L#15	Chpt #10
30 Review Session from ??-??, Zoom video will be posted		

11-01^w **Exam #2** (*material from Exam #1 through Mucosal Immunity*)

11-03 ***Papers selected for Presentation must be submitted***

Week #10 | JC7

06 **University Holiday**

08 Allergies #10/14	L#16	Chpt
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08 Draft Powerpoints for Paper Presentation must be submitted

Take home Open Book Quiz #6

Week #11 | JC8

13 ^w Immune Memory #14	L#17	Chpt
15 ^w Immune Memory/Vaccination #14/#11	L#18	Chpt

Take home Open Book Quiz #7

Week #12

20 Tumor Immunity	L#19	Chpt #11
23 ^w Thanksgiving Holiday		

Week #13 -JC9

27 Finish Tumor Immunity/Immune Deficiencies #11/13	L#20	Chpt
29 ^w Finish Immune Deficiencies/HIV	L#21	Chpt #13

Take home Open Book Quiz #8

Week #14 -JC10

12-04 Autoimmunity part a	L#22	Chpt #16
06 ^w In class presentations		

Take home Open Book Quiz #9

Week #15

11 Finish Autoimmunity (last class)

L#23

Chpt #16

?Details of time/date pending?
EXAM

FINAL

Teaching Assistants

Karina Magnus – kjm2202@columbia.edu

Claire He - kh3147@columbia.edu

Office Hours & Journal Club

I may likely be available before class (11:00 – 11:35) and definitely after class (1:00 - 1:40). Students are also welcome to contact me or your TA by e-mail. If students are not available during these I'm happy to make special arrangements.

Journal Club (for GR5073): We will need to find a convenient time (Optional for UN3073/ Required for GR5073).

Complement --

<https://www.youtube.com/watch?v=BSypUV6QUNw&feature=youtu.be&t=152>Links to an



[external site.](#)

Bacteria/Epithelial barrier --<https://www.youtube.com/watch?v=zQGOcOUBi6s>Links to an



[external site.](#)

Life of a T-cell --<https://www.youtube.com/watch?v=BIQOgs9fzc4>Links to an external site.



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Course Guidelines & Policies

- Grades will be based on:
 - ~Weekly Open Book Homework/quizzes – 20 % of your Grade

Each quiz will contain about 10 questions. Most questions will be a “Very short answer” format designed to prepare you for the weeks lecture material. A few questions will be a bit more involved (and due later in the week). You are encourage to work in groups, **BUT the text you submit MUST BE YOUR OWN.**

- Three exams (two midterms & a final) – Each exam is worth 20 % of your Grade

Exams typically have three sections: Matching, Very Short Answer & Longer Short Answer (typically there is a choice on these; typically you need to answer 4 of the 6 or 7 questions on the exam). A practice exam will be posted ~ 1 week before each exam.

A few of the shorter format Quiz questions may appear on the exam. For students enrolled in GR5073, 1-2 questions from the Journal club papers may appear on the exam.

Date	Details	Due
Tue Sep 5, 2023	Assignment How has immunology impacted someone you know?	due by 12pm
Thu Sep 14, 2023	Assignment Quiz #1 / Week #2 (Lectures 2 & 3)	due by 11:59pm
Thu Sep 21, 2023	Assignment Quiz #2 / Week #3 (Lectures 4 & 5)	due by 11:30pm
Wed Sep 27, 2023	Assignment Extra Credit on IL-1 & TNF	due by 11:30pm
Thu Sep 28, 2023	Assignment Quiz #3 / Week #4 (Lectures 5b & 6)	due by 11:30pm
Fri Oct 13, 2023	Assignment Quiz #4 / Week #6 (Lectures 6 & 7)	due by 11am
Thu Oct 19, 2023	Assignment Quiz #5 /Week 7 (Lectures 10 & 11)	due by 11:59pm
Thu Oct 26, 2023	Assignment Quiz #6 / Week #8-2023 (Lectures 11 & 12)	due by 11:59pm
Wed Nov 15, 2023	Assignment Quiz #7	due by 11:59pm
Mon Nov 20, 2023	Assignment Journal Club Power Point Project	due by 10pm
Mon Nov 27, 2023	Assignment PowerPoint JC Project - PPTx Submission - NEW ASSIGNMENT	due by 11:59pm
Wed Nov 29, 2023	Assignment Quiz #8 Week #13	due by 11am
Wed Dec 6, 2023	Assignment Quiz #9 Week 14 (last quiz!!!)	due by 10:30pm

Date	Details	Due
	Assignment Exam 1	
	Assignment Exam 2	

- A Powerpoint Project –20 % of your Grade*

Details will be provided, but it basically entails a journal club style presentation of a current paper from the literature. You will be graded on both content and completion of each milestone by the proscribed deadlines. **All topics must be approved**

* For Paper Presentation you must select a current paper from either the journal NATURE, SCIENCE or CELL. Nature Medicine is also acceptable. Please, NO other journals unless you convince me otherwise.

- Two in class team-based projects(9/20 & 10/25) – **Attendance is required** – Each TBL will be graded as a homework assignment.
- There will be several short intermittent extra-credit assignments which are intended to reinforce an important concept.

Course Summary: