

MICR 5027 Immunology

Spring 2022

CLASS DAYS and TIME: Feb 23 – Apr 8, Tues, Thurs, 8:30-10:00 am

CLASSROOM: Teams meetings

COURSE FACULTY:

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READ THIS DOCUMENT CAREFULLY - YOU ARE RESPONSIBLE FOR ITS CONTENTS.

CoVID-19 Disclaimer: In light of expectations from the University designed to keep us safe during the CoVID-19 pandemic, many of our usual activities have been transformed into remote learning strategies. It will be necessary for each student to have access to a computer with Internet/WiFi and audio/video capability. The following describes the expectations and mechanics of the 2020 MICR 5051 course during the current circumstances. Additional addenda to this syllabus will be provided as needed.

COURSE DESCRIPTION AND OBJECTIVES

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MICR5027 is designed to build on the immunological concepts covered in MICR 5051 given in the Fall semester and to put those concepts to use as we focus on understanding the world of the mammalian host response to infection and on applying fundamental immunological concepts to the understanding of current immunological research questions in a student-presentation and in-class discussion format.

Pre-requisite – MICR 5051

Semester credit hours – 1.0

By the end of this course, each student should be able to define and discuss:

- identify important gaps in our current knowledge in the field of immunology from the primary literature
- identify current trends/fundamental concepts in immunology and effectively present those current topics to fellow students and faculty in an oral presentation format
- constructively evaluate oral presentations of the primary scientific literature by fellow students
- demonstrate mastery of current concepts in immunological research
- describe and discuss key concepts underlying innate lymphoid cells and their roles in mucosal immunity and autoimmune diseases
- describe and discuss key concepts in the study of NKT cells in innate and adaptive immunity
- describe and discuss key concepts related to T cells, the thymus and aging
- describe and discuss key current concepts related to B lymphocytes in health and disease
- describe and discuss key concepts in the study of effector and memory T cells during Infections
- describe and discuss key concepts about Humoral immune responses in COVID-19 patients

COURSE ORGANIZATION

- Students will be randomly assigned to teams of 3-6 students each. These teams will stay together for the entire 6 weeks. **Each week the teams will choose a different member to be leader for the week.** This will ensure that each student will serve as a team leader at least once.
- Each week will focus on a particular overarching immunological topic, theme or concept as shown on the schedule below. The references to the papers to be presented each week will be provided to the students the week before the beginning of Module 2.
- The leader of each team will be responsible for organizing the team's presentation in whatever manner the team decides, but the presentation must contain at a minimum the following components:
 - An oral introduction by the leader – (1-2 min) – include important relevant background for the paper and describe the rationale for this study, what hypothesis is being tested NS why the paper is significant and/or innovative
 - 15 -20 min overall oral presentation of the key points of the paper– oral presentations can be divided among team members in any way the team decides
 - A **ONE-PAGE** executive summary handout for each member of the class and for the faculty
 - Two exam questions and answers covering the material presented by the team
- Any other creative presentation mechanism decided upon by the team to stimulate discussion and retention of the topic information is also encouraged

Students will be responsible for a significant amount of reading and preparation outside of the classroom so that class time can be most productively used for the student presentations discussions.

Lectures – Some weeks may begin with a lecture by faculty to introduce the topic, theme or concept to be covered that week. Students will be provided copies of the PowerPoint slides or PDF-converted PowerPoint slide files presented during those lectures. Students are responsible for all information included in the lecture materials. However, students should not assume that all testable lecture material is found only in the posted materials. That is, lectures may be expanded and enhanced during in-class presentations. So, students should **take good notes because any information discussed in class is considered testable.**

Schedule

See class schedule on last page of syllabus

Attendance

In order to achieve the expected level of competency, students must be fully engaged. **Therefore, attendance when appropriate and full participation is expected.** It is recognized that a student may occasionally arrive late for a session due to unexpected problems. However, chronic lateness is considered an unprofessional behavior that disrupts the learning environment for everyone else in the class.

Textbooks

Recommended text book:

Parham, P. (2014). *The Immune System, 4th edition*. New York: Garland Science. Note that many of the slides used in class are derived from this book.

Grading Policies and Examination Procedures

Grading System –the final letter grade will be determined entirely from your presentation and team grades during the 6 weeks of the course.

Grading is based on the following scale:

A = 90-100% B = 80-89% C = 70-79% F = < 70%

Note: Fractions of grades are rounded to the nearest whole number for your final course grade. For example, 89.45 is an A, but 89.44 is a B.

The grading will be determined by the quality of oral presentations, and on the quantity and quality of discussion by all team members. Each week, the team leaders will be given a leadership grade, each oral presenter will be given an oral presentation grade, and all team members will be given a team grade by the faculty. Final grade (100 possible) = Oral presentation grade average (0.5) + Team grade average (0.2) + Team leader grade average (0.3).

The class may be given a final exam, based in part on the team-generated questions (see above). Whether an exam is given will depend on the overall quality and quantity of discussion during the 6 weeks of these presentations. This exam, if given, would be worth 33.3% of your grade.

Examination Protocol – Exams may be composed of multiple choice, short answer, and essay questions. Certain questions may be accompanied by images, so it is imperative that you study images (particularly those presented in class).

No electronic devices, extra paper, books, backpacks, etc. are permitted in the testing area. Hats must be removed.

Grading Procedures – Exam results will be provided to students as quickly as possible. No “challenges” are allowed. However, a time will be scheduled outside of class so that students may review concepts of concern to them.

Make-up Presentations or Examinations – A student who must miss a presentation or a scheduled exam for a serious reason must request an excused absence from the Course Director. Acceptable “serious reasons” usually involve serious illness or injury to the student (doctor’s excuse may be required) or the student’s family member. Examples of unacceptable reasons include: Not prepared or incomplete studying, over-sleeping, hangover, heavy traffic or any travel delays, other appointments or scheduled professional or personal commitments.

If it is determined that missing an exam is justified, a make-up presentation or examination will be scheduled. The make-up will be scheduled as soon as possible at a time designated by the Course Director. Any student who misses a presentation or exam and does not receive an excused absence **will receive a grade of zero for that presentation or exam.**

Requests for Accommodations for Disabilities

Information regarding accommodations for disabilities is available in the UTHSCSA Catalog. A student who wishes to request accommodation for a disability should contact the Associate Dean for Students, Graduate

School of Biomedical Sciences. The Student Request for Accommodations under Americans with Disabilities Act form and additional information may be obtained at <http://www.uthscsa.edu/eo/request.html>.

Scientific Integrity / Professional Conduct

The expectation is that all students will exhibit the highest standards of scholastic and scientific integrity as elaborated on page 99 of the current UTHSCSA Student Catalog. Any student who commits an act of academic dishonesty is subject to discipline as prescribed by the UT System Rules and Regulations of the Board of Regents. Academic dishonesty includes, but is not limited to, cheating on exams, plagiarism, tampering with reference materials or files, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person (e.g. copying material from the web without proper attribution), and any act designed to give unfair advantage to a student or the attempt to commit such an act. Failure to abide by these rules of professional conduct will result in a grade of zero for the exam in question and, depending on the nature of the infraction, the consequences may include dismissal from the program.

If you suspect another student of professional misconduct, please bring your suspicions directly to the Course Director. Confidentiality will be maintained at every level during any ongoing investigation of suspected academic or scientific misconduct.

Email Policy

Every student is issued a University e-mail address and account at the time of enrollment. As a matter of University Policy, communications between students and faculty that occur using the student's University e-mail address are considered official business. Therefore, **students are expected to check their university email inboxes on a regular basis** so that any announcements, instructions, or information regarding this course will be received in a timely way. Missed communications due to inadequate monitoring of incoming emails on the University's email server will never be a valid excuse for unsatisfactory academic progress.

Electronic Devices

Cell phones or other potentially disruptive devices must be muted during all live virtual class meetings and exams.

MICR5027
2022 CLASS SCHEDULE
Tues 8:30-10:00 AM
Thurs 8:30-10:00 AM

Date	Time	Weekly Topic, Theme or Concept	Faculty	Room
22-Feb	8:30-10:00 AM	B cells in Health and Disease	Xu	ALTC 1.105
24-Feb	8:30-10:00 AM	B cells in Health and Disease	Xu	ALTC 1.105
1-Mar	8:30-10:00 AM	T cells, the thymus and aging	Griffith	ALTC 1.105
3-Mar	8:30-10:00 AM	T cells, the thymus and aging	Griffith	ALTC 1.105
8-Mar	8:30-10:00 AM	Effector and Memory T cells	Zhang	ALTC 1.105
10-Mar	8:30-10:00 AM	Effector and Memory T cells	Zhang	ALTC 1.105
14-Mar		SPRING BREAK		
22-Mar	8:30-10:00 AM	iNKT cells: multi-functional regulatory and effector cells	Leadbetter	ALTC 1.105
24-Mar	8:30-10:00 AM	iNKT cells: multi-functional regulatory and effector cells	Leadbetter	ALTC 1.105
29-Mar	8:30-10:00 AM	Innate lymphoid cells in mucosal immunity and autoimmune diseases	Tumanov	ALTC 1.105
31-Mar	8:30-10:00 AM	Innate lymphoid cells in mucosal immunity and autoimmune diseases	Tumanov	ALTC 1.105
5-Apr	8:30-10:00 AM	B cell responses after SARS-CoV-2 infection and vaccination	Bunnik	ALTC 1.105
7-Apr	8:30-10:00 AM	B cell responses after SARS-CoV-2 infection and vaccination	Bunnik	ALTC 1.105
TBA	TBA	EXAM??	Berton	

Student Presentation Sub-topics and Team Assignments:

Each team will present 5 times over the six weeks.

Week 1 - B cells in health and disease – Dr. Xu

- Team 1 – Fink et al PNAS 115: 12477, 2018 www.pnas.org/cgi/doi/10.1073/pnas.1805268115
- Team 3 – Wei et al Nature Immunology 12: 264, 2011 <https://www.nature.com/articles/ni.1991>
- Team 4 – Allei et al Nature 20: 97, 2019 <https://www.nature.com/articles/s41590-018-0260-6>
- Team 5 – Tellier et al Nature Immunology 17: 323, 2016 <https://www.nature.com/articles/ni.3348>

Week 2 - T cells, the thymus and aging – Dr. Griffith

- Team 2 - <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1482512/>
- Team 4 - [https://www.cell.com/immunity/fulltext/S1074-7613\(15\)00211-3](https://www.cell.com/immunity/fulltext/S1074-7613(15)00211-3)
- Team 5 - <https://www.ncbi.nlm.nih.gov/pubmed/19564355>
- Team 1 - <https://www.ncbi.nlm.nih.gov/pubmed/12376594>

Week 3 - Effector and Memory T cells – Dr. Zhang

- Team 3 – Pais Ferreira et al., 2020, Immunity 53, 985–1000. <https://doi.org/10.1016/j.immuni.2020.09.005>
- Team 5 – Behr et al *Nat Immunol* 21, 1070–1081 (2020). <https://doi.org/10.1038/s41590-020-0723-4>
- Team 1 – Akondy et al Nature 552:362-367, 2017. <https://www.nature.com/articles/nature24633>
- Team 2 – Im et al *Nature* 537, 417–421 (2016). <https://doi.org/10.1038/nature19330>

Week 4 - NKT cells: multi-functional regulatory and effector cells – Dr. Leadbetter

TBA

Week 5 - Innate lymphoid cells in mucosal immunity and autoimmune diseases – Dr. Tumanov

TBA

Week 6 - B cell responses after SARS-CoV-2 infection and vaccination – Dr. Bunnik

- Team 5 – Cohen et al., 2021, Cell Reports Medicine 2, 100354 <https://doi.org/10.1016/j.xcrm.2021.100354> - The team should only present and discuss Figures 1-4 and NOT Figures 5 and 6.
- Team 2 – Goel et al., Sci. Immunol. 6, eabi6950 (2021). <https://www.science.org/doi/10.1126/sciimmunol.abi6950>
- Team 3 - Kaneko et al., 2020, Cell 183, 143–157. <https://doi.org/10.1016/j.cell.2020.08.025>
- Team 4 – Woodruff et al. *Nature Immunology* | VOL 21 | December 2020 | 1506–1516. <https://doi.org/10.1038/s41590-020-00814-z>

	Team Members	Topic Assignments					
		Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Team 1	Barre Brinson Aldis Bautista Determann	The blue team presents first					
Team 2	Garcia Garza ElHashim Eskridge						
Team 3	Jackson Li Friesenhahn Nguyen						
Team 4	Sauls Simper Roberts Thorndyke						
Team 5	Wedemeyer Varughese Weinstein Winner						