



Faculty of Eng. & Natural Sci.

BIO452-202001

Immunology

Instructor(s)

Name	Email	Office	Phone	Web	Office Hours
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Course Content

This is an introductory undergraduate course which surveys most areas of immunology. Immunology is the study of how higher organisms deal with infectious agents. The course is designed to provide a basic understanding of molecular mechanisms underlying the development of immune response. Topics will include molecular mechanisms of innate immunity, the structure of antibodies and T cell receptors, antigen- antibody interactions, the major histocompatibility complex, generation of diversity, antigen presentation, signaling through immune system receptors, the molecular basis of immune attack, immunological tolerance, and immune memory. There will be topics from medical or bench-side immunology in last few weeks, depends on the conditions and time availability.

Objectives

To teach the history and modern molecular, cellular and organismal concepts of immunology so that each student can begin to think like an immunologist.

Recommend or Required Reading

Textbook

Janeway's Immunobiology
Edition: 8th Author(s):Kenneth Murphy ISBN: 9780815342434

Assessment Methods and Criteria

	Percentage(%)	Number of assessment methods
Final	50	
Midterm	30	1
Exam		0
Participation	20	

Course Outline

Week 1 Introduction, The Clonal Selection Theory Chap 1
Week 2 Innate Immunity Chap 2/3
Week 3-4 BCR and TCR Chap 4
Week 5 VDJ Recombination Chap 5
Week 6 Midterm 1
Week 7-8 MHC Chap 6
Week 9-10 Signaling from Ag Receptors Chap 7
Week 11-12 T and B Lymphocyte Development Chap 8
Week 12 Midterm 2
Week 13 Peripheral Lymphoid System Chap 9/10
Week 14 Disease

Learning Outcomes

Understand the evolutionary principles controlling the development and function of the immune system
Know the identity of different types of immune system cells, their functions and interactions
Understand the molecular biological mechanisms controlling antibody generation, the mechanisms of somatic VDJ recombination and somatic hypermutation
Differentiate between the function of the antibody isotypes produced by the mammalian immune system and the significance of the major histocompatibility complex
Detail the signal transduction events that govern cellular communication in the immune system
Understand the methods used in immunological research such as ELISA, Western blot, FLOW cytometry, bone marrow transplantation, mouse transgenesis and how to generate a knockout mouse.

Course Policies

Attendance to lectures are mandatory. Student's participation in class is evaluated as 20% of final grade.

Academic Dishonesty

Cheating is absolutely subject to disciplinary action and a failing grade.

Missed exams

Make-up for midterm exams is possible, however in fairness to other students who take the normal exam, make-up exams will be more comprehensive than normal exams.