Faculty of Eng. & Natural Sci.

BIO452-202001
Immunology

Instructor(s)

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<tr>
<th>Name</th>
<th>Email</th>
<th>Office</th>
<th>Phone</th>
<th>Web</th>
<th>Office Hours</th>
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<tr>
<td>Batu Erman</td>
<td>batu@sabanciuni</td>
<td>FENS-2062</td>
<td>9530</td>
<td><a href="http://people.sabanciuniv.edu/~batu/">http://people.sabanciuniv.edu/~batu/</a></td>
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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

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<th>Percentage(%)</th>
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<td>Midterm</td>
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<td>Participation</td>
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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.