

## **Immunology – Bio 104, Fall 2011**

Instructor: Harry Bernheim

Office Hours: Tuesday & Thursday 10:00-11:00 AM., and by appointment, Office Barnum 105

Text: *Immunology* by Kuby. 6th edition

Class Meets: Block J+: Tuesday and Thursday, 3:00-4:15 Barnum 104

**Exams: Midterms: First Exam Tuesday October 11<sup>th</sup>; Second Exam Thursday November 10 ; Final Exam: Monday December 19 3:30-5:30 PM Barnum 104**

(Exams 1 & 2 = 100 points each; Final = 100 points)

### **Core Competencies Covered in Bio 104**

Be able to interpret data presented in figures and tables, and to evaluate conclusions based on the data presented

Be able to understand techniques and methods from original literature described in lecture

Be able to understand how to pursue scientific inquiry through formulating hypotheses, designing controlled experiments or studies and analyzing and evaluating results

Be able to make connections between concepts in biology and the foundations of physical sciences and computational methods

Be mindful of ethical considerations and societal outcomes in research and in technological advancement

### **Knowledge Base Competencies Covered in Bio 104**

An understanding of the major paradigms in biology, including evolution, cell theory, genetic inheritance and the central dogma

An understanding of the relationship between genotype and phenotype

An understanding of the information flow between DNA, RNA, and proteins, and a basic knowledge of the processes that govern cellular function

Recognition that biological processes are based on chemical and physical principles, and that biology informs medicine and community health

### **Course Specific Competencies Covered in Bio 104**

A firm understanding of the differences between innate and adaptive immunity

An understanding of how the immune system recognizes self from non-self and generates memory to a particular immunogen

A sophisticated understanding of flow cytometry analysis and other techniques used in immunology research laboratories

An understanding of how a fairly limited number of genes can code for an almost limitless number of antibodies and T Cell Receptors

An understanding of ligand-receptor induced cell signaling

<b>Date</b>	<b>Topic</b>	<b>Readings (Chapters)</b>
9/6	Introduction/Microbial Overview	
9/8	Innate and Adaptive Immunity	1 +3
9/13	Immune Cells and Organs/Antigens	2+4
9/15	Antigens/Antibody Structure	4
9/20	Antigens/Antibody Structure	4
9/22	Antibody Interactions/Complement	6 + 7
9/27	Antibody Diversity	5
9/29	Antibody Diversity/MHC	5+ 8
10/4	MHC	8
<b>10/6</b>	<b>First Exam</b>	
10/11	MHC	8
10/13	Antigen Processing + T Cell Receptor	8 + 9
10/18	T Cell Receptor	9
10/20	T Cell Activation	9
10/25	T Cell Activation	9
10/27	T Cell Maturation and Development	10
11/1	B cell activation	11
11/3	B cell activation	11
<b>11/8</b>	<b>No Class- Tufts Friday</b>	
<b>11/10</b>	<b>Second Exam</b>	
11/15	Cytokine Networks	12
11/17	Inflammation- Putting it all together	13 + 14
11/22	Inflammation- Putting it all together	13,14
<b>11/24</b>	<b>No Class- Thanksgiving Recess</b>	
11/29	Transplantation	17
12/1	Cancer	21
12/6	Cancer + HIV	21, 20 (504-521)
12/8	HIV	20 (504-521)

