



MICRO 733: Experimental Immunochemistry and Immunobiology

Course Description: This course is based on theoretical and experimental applications of immunochemistry and immunobiology .

Credit Hours: 3 semester hours

Course Prerequisites: MICRO 701, BIOCH 710, or approval of the course director.

Course Dates: Spring Semester 2010

Course Times: TBA

Course Location: TBA

Instructor: M Wilson, Course Director, R522; E. Bengten, C. Lobb

Required Text and Other Learning Resources: Janeway's Immunobiology 7th ed. (2008) by Kenneth Murphy, Paul Travers and Mark Walport; Garland Science New York

Course Overview: The course consists of a mixture of in depth discussions of primary research papers, and student presentations. The major emphasis of this course centers upon in vitro and in vivo techniques used in investigating innate immunity and the various aspects of humoral and cell mediated immune responses.

Course Objectives: Upon completion of this course, students will be able to:

1. Understand the theory behind contemporary immunological and molecular techniques.
2. Understand the conceptual framework of experiments that have led to the development of key immunological paradigm.
3. Follow the scientific literature and be a critical reader/reviewer of published and submitted manuscripts.
4. Design molecular and cellular experiments that address their scientific questions and hypotheses.

Grading Policy and Rubric. Grades will be assigned based on the following format:

Test #1 - 25%

Test #2 - 25%

Student Presentation (oral) - 10%

In Class Quizzes - 10%

Class Participation - 15%

Final Exam (oral) - 15%

Course Policies:

Students are expected to attend class and actively participate in class discussions; make-up tests will be given for reason of illness, etc., instructors are available for additional help.

University Policies:

Students with disabilities (ADA) statement Refer to UMC policy

Academic honesty statement Refer to UMC policy

**TOPICS – MIC 733 - 2010**  
**Experimental Immunochemistry and Immunobiology**

Class

1. Organization meeting /Take Home review (Micro 701)
2. Historical Basis for Immunochemistry/How the Study of Immunology Began
3. Quantitative Precipitations/Ouchterlony Analyses
4. Antibody Structure and Specificity
5. Immunochemistry Techniques and Flow Cytometry
6. Clonal Selection/Antigen Binding Receptors on B and T Lymphocytes
7. Immune Tissues and Cellular Cooperation
8. MHC and Genetic Restriction of Immune Responses
9. Dual Recognition of both MHC class II and Antigen by TCR
10. Processing and Presentation of Antigen by Macrophages and B Cells
11. Association of Processed Antigen with MHC class II
12. Differences between MHC Class I and Class II Antigen Presentation
13. NK Cell Inhibitory Receptors Specific for Self-MHC Class I Molecules  
EXAM #1
14. Immunoglobulin Gene Superfamily: Genetic Organization
15. Immunoglobulin Gene Superfamily: Models of Recombination
16. Hybridomas and Evolving Receptor Binding Techniques in Immunology
17. IgA and Secretory Immune Systems
18. Antigen Receptor (TCR and BCR) Complexes and Signaling
19. Antigen Receptor (TCR and BCR) Complexes and Signaling (continued)
20. B and T Cell Activation
21. Toll receptors  
EXAM #2
22. Student Presentations  
ORAL FINAL EXAM