

MB 402 – Immunology Lab Syllabus

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Course Description

Immunology can be defined as the study of the reactions of a host when foreign substances are introduced into the body. Foreign substances that produce such an immune response are called antigens. Antigens are usually thought of as harmful infectious agents, but they may also be harmless environmental substances, such as pollen that can trigger a response in some individuals. As knowledge of the field developed, the scope of immunology was significantly broadened to include the study of the molecular mechanisms of the immune response, the development of testing for disease in the laboratory, the recognition that the body can respond to self-antigens in what is known as autoimmune disease and the manipulation of the system for treatment of diseases. The history of laboratory testing and serologic investigations closely follows the developments in the field of immunology.

In this course, the following topics will be covered: cellular and soluble immune components of blood, agglutination, precipitation, complement, T cell enumeration, Flow Cytometry, Western blots, ELISA/EIA and Immunofluorescence. Additionally immunological testing for immune disorders such as hypersensitivity, autoimmunity, immunoproliferative diseases, immunodeficiency, transplantation immunology and tumor immunology will be addressed.

Course Objectives: The student will develop a basic knowledge of the following concepts:

1. Understanding of antigen-antibody reactions
2. Understand the history of serology and serological testing
2. Agglutination reactions
3. Precipitation reactions
4. Complement system and complement activity assays
5. Flow cytometry
6. Labeled immunoassays including western blots, immunofluorescence assay (IFA), and enzyme-linked immunosorbent assays (ELISA)
7. Understanding of the difference between polyclonal and monoclonal antibodies
8. Knowledge of the testing for the following immune disorders: hypersensitivity, autoimmunity, immunoproliferative diseases, primary and acquired immunodeficiency, transplantation immunology and tumor immunology

Required Materials: The lab manual, "Immunology (MB 402) Laboratory Manual" is available in the MSU bookstore. Additionally, a powerpoint presentation for each lab, learning objectives, lab exercises, and study guides will be posted on the course website.

Supplemental Text: Stevens, Christine Dorresteyn. "Clinical Immunology and Serology: A laboratory Perspective"; F.A. Davis Co.; Philadelphia 2nd Edition, 2003.

Course Website: <http://www.homepage.montana.edu/~shalonen> (click on MB 402 link)