

**Medical Immunology Laboratory Syllabus(practical)
(3 hours) Fall 2020
Second stage (M.Shukur Wasman Smail +M.Safin Tahsin Hayass)**

Instructor	Phone #	e-mail	Office Hours
Shukur Wamsn, MSc	07504491092	Shukur.smail@su.edu.krd	Th3-4:30pm, Sun 9:10-12:40am

Required Materials:

Lab Manual: Immunology Laboratory Manual (Available at the Bookstore)
Lab Notebook

Textbook: At the Bench . 2005. Kathy Barker, Cold Spring Harbor Press.

Course Description

Laboratory course integrating principles of immunology. Techniques employed include, but are not limited, ELISAs and microscopy. Course is designed for students interested in molecular methods and who aim to do research or gain jobs in fields of cell and molecular biology, microbiology, medicine and medical technology. (Fall)

The goals of this laboratory

1. To learn the scientific approach to critical thinking, solving problems, and data analysis.
2. To develop essential traits used in science such as curiosity, creativity, and perseverance via designing and carrying out independent projects.
3. To gain experience in molecular biology techniques and concepts in order to ask and answer questions in cell biology.
4. To develop the essential writing and oral presentation skills essential in science today.

Student Survey

The first day of the laboratory, all students will be required to fill out an entrance survey. This survey will allow the instructors to form groups and to assign weekly jobs.

Week	Techniques to be Learned/Experimentation	Date
1	In	Sept. 8
2	Blood typing	Sept. 15
3	Agglutination and Precipitation	Sept. 22
	Double immunodiffusion (Ouchterlony Double Diffusion) and Radial Immunodiffusion (Mancini Technique)	
4	Determination of ESR and CRP	Sept. 29
5	ASO test	Oct. 6
6	RF and P.T test	Oct. 13
7	Determination of Helicobacter Pylori	Oct. 20
8	Widal test and Rose Bengal test	Oct. 27
9	sexually transmitted diseases and their tests	Nov. 3
10	Autoimmune Diseases and their respective diagnostic tests Mantoux Test	Nov. 10
11	ELISA and Intro to Statistics	Nov. 17
12	Chemiluminescent Assays (COBAS) and Nephelometry for the estimation of serum complements (C3, C4) and immunoglobulins (IgG, IgM, IgA, IgE)	Dec. 1
13	Immunostaining and Flow Cytometry	Dec. 10
13		
14	Peer Review: Oral Presentations	Dec. 15

Independent Investigations

Students will design a series of experiments to focus on testing an hypothesis on interest. These are open-ended laboratories and many types of questions may be pursued with the consent of the laboratory instructors. In the schedule, this is the Experimental Phase.

Laboratory notebooks

EACH STUDENT is required to keep a laboratory notebook containing a record of everything covered or done during the lab session. The laboratory notebook should be detailed enough to serve as a guide for someone else doing the experiment who wants to reproduce your results.

It must include the lab protocol! Either re-write or paste in the protocol from Immunology Laboratory Manual and write in any modifications or notes with the procedure. Students should record everything they do in the lab exercise (including any deviations from the protocol e.g. “I dropped my gel on the floor” or “I forgot to add ___ to my reaction”). Everything observed (results) and any conclusions should also be recorded. **READ CHAPTER 5 LABORATORY NOTEBOOKS** in At the Bench: A laboratory Navigator by Kathy Barker. Pay particular attention to p. 92 (note the contents of a lab notebook e.g. **TABLE OF CONTENTS, Dates, Title of Experiments, Purpose/Hypothesis, Methods, Results and Discussion of experimental aberrations etc.**)

Grading laboratory notebooks

Notebooks will be collected SPONTANEOUSLY on 2 separate occasions and at the end of the semester for grading. Keep up with it! Peers will evaluate the lab notebooks for 2 of 3 of the collections. Instructors will evaluate the notebooks at the end of the semester.

Peers will be given 10 pts. to critically evaluate notebooks. Lab notebooks will be graded for 1) detail (reproducibility) 2) organization 3) analysis and interpretation of results. The first two collections will be peer-graded. Each peer must date and initialize their name next to the score of the notebook. It should include why points were subtracted (e.g. -4 for a missing Table of Contents etc.). At the end of the semester the instructors will evaluate the entire notebook. They will re-check peer-graded sections. If an instructor's evaluation of a peer-evaluated portion differs by more than +/-10%, the peer-grader will be penalized accordingly. Lab notebooks are critical in the experimentation environment. **Today, notebooks in the private industry and academic settings are often audited.** They serve as the basis for publication, invention, and patenting. Good record keeping is of major importance.

Students must attend laboratory sessions. This is a lab skills course. Each unexcused absence will lower your grade by one full letter grade.

Time outside of the scheduled laboratory.

Students are expected to work outside of the lab. The lab will be open at appropriate times so you can complete all exercises or projects.