# Immunology Laboratory
# Bio 160L
# Summer 2011

MW 1:00-5:00 #90460
BME 2.310

**Instructor**: Dr. Emin Ulug
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Office hours: M, W 11:30-12:30 or by appointment

**Course description:**

This class is designed to introduce students to the practical aspects of Immunology. Exercises are relevant to both research and clinical investigation. Prerequisites include BIO360 or current enrollment in BIO360.

**Grading:**

| | |
|---|---|
| Lab reports and problems<br>(labs 6 and 9 count double!) | 50% |
| Exams (2) | 40% |
| Technique (incl. pop quizzes) | 10% |

**Required Items:**

Students will need to purchase a lab manual ("Exercises in Immunology," available at Speedway Printing in Dobie Mall) and a wax or permanent marker (i.e. Sharpie). Lab coats will be provided, but students can use their own if they prefer.

**General policies:**

Lab protocols *must* be read before class. Unannounced (pop) quizzes can be given at any time at the discretion of the TA or instructor.

Please do not disturb the TAs or the instructor at home or when they are conducting their research. Also, avoid asking questions just prior to the day's exercise. Instead, direct your questions during the discussion period or during office hours.

It is not possible to make up labs. If you are unable to attend the lab, be sure to get the raw data from another student in the class and turn it in *on time*. Late reports will be penalized severely: 1 day: -20%; 2-7 days: -50%; > 7 days: no credit.

Lab reports are graded as individual efforts. Plagiarism or cheating on reports (or exams) **is not** tolerated and **will be** reported to Student Judicial Services.

This lab facility is used for agents that require Biosafety level-2 (BSL-2) containment. Appropriate microbiological practices must be observed at all times in the laboratory.

**Immunology Laboratory**
**Schedule of Exercises, Summer 2011**

| Date | Laboratory | Reference |
|---|---|---|
| July 11 | **Techniques Lab & Dilutions** Introduction to tissue culture, pipetting, dilutions, and microscopy. Note: dilution problems count as a report grade & are due July 13! | pp 6-14, Appendix 1,4 |
| July 13 | **Lab 1** Blood cell morphology | pp 15-23, Appendix 2 |
| July 18 | **Lab 2** T cell rosettes | pp 24-29, Appendix 3 |
| July 20 | **Lab 3** Mouse work & *In vitro* phagocytosis (demo) | pp 30-37, Appendix 4 |
| July 22 | Feed LPS-treated culture | |
| July 25 | Harvest ConA culture,<br>**Lab 4** Fluorescent staining of B-cell culture | pp. 38-43, Appendix 3 |
| July 27 | **Lab 5** ELISA | pp 44-50, Appendix 5 |
| Aug. 1 | **Midterm Exam**<br>**Lab 6 part 1** IgG purification: precipitation with sodium sulfate and dialysis | pp 51-55 |
| Aug. 3 | **Lab 6 part 2** Ion-exchange chromatography; quantitation of protein by the Buiret assay<br>**Lab 7** Immunoelectrophoresis | pp 56-60<br>pp 61-63 |
| Aug. 8 | **Lab 8** Immunodiffusion<br>**Lab 9 part 1** Immunoblot analysis of HIV proteins (SDS-PAGE,transfer) | pp 64-68<br>pp 69-75 |
| Aug. 10 | **Lab 9 part 2** Develop HIV Western blot<br>Complete immunoelectrophoresis lab | pp 69-76 |
| Aug. 15? | **Final exam** (time & date to be confirmed) | |

## Immunology Lab Rules

Students (and instructors) must practice safe laboratory technique in this lab at all times. This laboratory facility **is used** for the study of pathogenic organisms. Agents used in this room can cause infections in humans or domesticated/laboratory animals. Human blood used in this laboratory is considered a Class II biohazard and must be handled with appropriate safety precautions. Finally, animal cell cultures also represent potential hazards since they may harbor endogenous viruses. Anyone who has tested positive for HIV (or is otherwise immunocompromised) must discuss the matter with the instructor.

The following general safety practices must be observed at all times in this facility:

1. No eating, drinking, smoking, gum chewing, or applying of cosmetics is permitted in the laboratory. Also, avoid touching eyes, nose, mouth, or face when working in the lab.

2. Unauthorized persons, especially children and infants, are **not** permitted in the lab.

3. Do not enter the lab when another class is meeting. The schedule is posted on the door.

4. Keep your workspace clear and uncluttered. Store coats, backpacks, and unneeded items in the hall lockers or at the front of the room.

5. Avoid mouth pipetting entirely. Use automatic pipettor pumps or bulbs instead.

6. Hands should be washed before and after working in the laboratory.

7. When used, gloves should be worn only for specific tasks. Do not touch doorknobs or other common surfaces with contaminated gloves. Dispose of contaminated gloves in the appropriate waste bin. Remember to wash hands after removing gloves!

8. Laboratory coats or smocks should be worn while in the lab. They can be stored in the hall lockers. Do not wear them outside the lab, especially when eating or smoking. Lab coats should be disinfected (autoclaved) before leaving the facility. Also, avoid wearing of open shoes or sandals in the laboratory.

9. Clearly identify materials by labeling with the user's name and contents, but please don't write on glassware with permanent marking pens.

10. Dispose of contaminated items in the appropriate bins. All materials contaminated with infectious materials must be discarded in the Biohazard waste containers, so they can be sterilized prior to disposal. **DO NOT** discard these materials in the sink or trash cans! Special waste containers are also used for disposal of broken glassware, radioactive compounds, organic solvents, and needles ("sharps"). Note that needles (with or without syringes) should be placed directly in the sharps container without recapping or disassembling!

11. Keep your workstation clean. Always wipe your work surface with disinfectant before and after use. Discard your waste before leaving the laboratory.

12. Never take biological samples out of the laboratory.

**Remember: technique accounts for 10% of your grade!**