

## LAB 2 - CELL STRUCTURE AND TRANSPORT

- I. **Cell Structure** - Review p. 30-35 – cell anatomy and components. Note the electron micrographs on the side shelf. These are images obtained on an electron microscope. Examine the various cell structures in these micrographs to get a different perspective on their appearance. You will see similar micrographs on the lab exam!
- II. **Movement of molecules across cell membranes** - Work in groups of three or four, and complete the following experiments. Record your results in a data sheet for later class discussion!! For each experiment below, formulate a hypothesis with your group before you record your results. At the end of the experiments, groups will be asked to **present and explain** their hypothesis and results. Please turn in your hypothesis for each experiment at the end of lab.
- Osmosis - You will perform the activity using molasses described in the attached handout. Leave experiment running for 1 hour. Use the materials provided to set up your experiment. What happened to the water? Why?
  - Dialysis (diffusion through non-living membranes). Follow the experimental procedure on the attached handout. Each group will have a set of solutions. Allow diffusion to occur for 1 hour. Determine what moved through the membrane by using the appropriate tests. What is a semi-permeable membrane?
  - Rate of diffusion -p. 41-42. Complete Activity 2: “Observing diffusion of dye through agar gel”. For Activity 3: “Observing diffusion of dye through water”, record results from the demo set up after formulating your hypothesis.
  - Brownian Motion (p. 41)- will be completed as a class demonstration. Complete Activity 1. Why do the particles “wiggle”?
  - Diffusion through living membranes (p. 45-46). Follow Activity 5, Experiment 2 in your lab manual. Use the sterile ox blood provided by your instructor. Don't make your blood smear too thick. See me for advice. Make sure you UNDERSTAND what is happening here!! Do you understand how they apply---**isotonic, hypertonic, hypotonic,**  
these terms and **hemolysis, crenation**
  - Filtration - (p. 46-47). Prepare a mixture of powdered charcoal, copper sulfate, starch, and water. Mix well. Pour the mixture into the filter cone. Which of the 4

materials filtered through the paper? How did you test this? What was the driving force for filtration in this experiment?  
Where does filtration occur in the body?

(turn to pg 2 for more information for this lab exercise)

**REVIEW EXERCISES:** Complete the exercise questions on p. 525-527 (omit cell division), and p. 529-532 (omit questions 3, 7, and 10)

**TIME MANAGEMENT:** In this lab, you will want to begin with the dialysis experiment (takes 1 hour) and the osmosis experiment (1 hour). You can perform other experiments while you wait or you may work on the demos on side desk.