

Names: _____ Period: _____ Date: _____

Biology
Mr. Croft

Microscope #: _____

Osmosis Lab

50 Points

Background Information:

Mr. Croft received a goldfish as a gift and he accidentally placed it into a tank full of salt water. Unfortunately, the fish did not live very long! After disposing of the fish, Mr. Croft went to the pet store and purchased a new goldfish. He asked for advice from the pet store worker. The worker told Mr. Croft that goldfish required a freshwater tank. So, Mr. Croft hurried home and placed the goldfish in a tank full of distilled water. Once again, the fish died! Why did Mr. Croft's goldfish die both times?

Obviously, we cannot use living goldfish cells for this experiment. So, we will use the cells from an *Elodea* Plant. This will allow you to observe the effects of both salt water and distilled water on cells. Your job is to design and carry out an experiment that will explain why the goldfish died in both solutions. Make sure that the experiment has a control!

- I. Problem: What happens to cells that are placed in hypotonic and hypertonic solutions?
- II. Hypothesis: Write your hypothesis before you begin writing your procedure.

III. Materials:

- | | | |
|------------------------|--------------------|----------------|
| 1. Microscope | 5. Aquarium Water | 9. Paper Towel |
| 2. 2 Slides | 6. Salt Water | |
| 3. 2 Cover Slips | 7. Distilled Water | |
| 4. <i>Elodea</i> Plant | 8. Pipettes | |

- IV. Procedure: Write a step-by-step procedure for this lab. Make sure that your experiment has a control. Once your procedure is written, we will discuss the correct procedure as a class.

V. Results: On a piece of drawing paper-
Draw a detailed picture of each slide that you observe (high power). Be sure to note the magnification for each picture. Also, take notes on the appearance of each slide.

VI. Conclusion (summary of experiment, analysis of data, discussion of error):

VII. Questions:

1. What cell structures do you see in your *Elodea* specimen?
2. Describe the position of the cell membrane and chloroplasts in each drawing.
3. Classify the three solutions as isotonic, hypotonic, or hypertonic. EXPLAIN!
4. If this experiment were done with living animal cells, what would you observe for each solution?
5. How can you explain the occurrence of “streaming” chloroplasts?