 

**Background:**

One of the functions of the cell membrane is to control the flow of materials into and out of the cell. In this investigation, you will observe the effects of placing plant cells in solutions of various concentrations.

**Pre Lab Questions:**

Define hypotonic solution-

Define hypertonic solution–

Define isotonic solution–

**Hypothesis**

Come up with a hypothesis that explains what will happen when you place a plant cell in a 2.5% salt solution, a saturated salt solution and a pure water solution.

**Materials:**

* 1 microscope per lab group
* 1 sample of aquatic plant
* 1 microscope slide
* 1 cover slip
* 3 beakers with distilled water, 5% salt solution and saturated salt solution
* Paper towels

**Procedure:**

\*Before you start this lab, be sure you are comfortable handling, preparing, using and working with a microscope. If you have any questions **DO NOT HESITATE TO ASK**.

1. Set up a wet mount of one leaf of your plant cell using 2.5% salt solution. Use your cover slip and make sure that the leaf is flat.

2. Observe your leaf under low and high power. Sketch what you see below in color.

Table 1

|  |  |
| --- | --- |
| Plant Leaf Low Power | Plant Leaf High Power |
| Zoom – x\_\_\_\_\_\_\_\_\_\_ | Zoom – x\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |

3. Now introduce a saturated salt solution to your plant cell like I showed you in the demonstration. Allow your plant cell thirty seconds to adjust to the new environmental conditions

4. When the thirty seconds are complete, observe your plant cell under low and high power below. Sketch with color your findings.

Table 2

|  |  |
| --- | --- |
| Plant Leaf Low Power | Plant Leaf High Power |
| Zoom – x\_\_\_\_\_\_\_\_\_\_ | Zoom – x\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |

5. Now introduce a pure distilled water solution to your plant cell like I showed you in the demonstration. Allow your plant cell thirty seconds to adjust to the new environmental conditions.

6. When the thirty seconds are complete, observe your plant cell under low and high power below. Sketch with color your findings.

Table 3

|  |  |
| --- | --- |
| Plant Leaf Low Power | Plant Leaf High Power |
| Zoom – x\_\_\_\_\_\_\_\_\_\_ | Zoom – x\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |

**Conclusion**

Discuss what you discovered in this experiment. How can you prove it? Was your hypothesis falsified or verified?

Discussion Questions:

1. Which solution was isotonic? Why?
2. Which solution was hypertonic? Why?
3. Which solution was hypotonic? Why?
4. What did the hypertonic solution do to the plant cell? What direction did the water flow?
5. What did the hypotonic solution do to the plant cell? What direction did the water flow?
6. What did the isotonic solution do to the plant cell? What direction did the water flow?