

Name: \_\_\_\_\_

Period: \_\_\_\_\_

Date: \_\_\_\_\_

**LABORATORY EXERCISE  
PLASMOLYSIS & TURGOR**

**4B investigate** and **explain** cellular processes, including homeostasis, energy conversions, transport of molecules, and synthesis of new molecules.

**I. Purpose** – to examine the effects of turgor pressure and plasmolysis on plant cells.

**II. Materials** – Microscope, slide, cover slip, red onion, and potato slices, water, salt, Petri dishes, and paper towels

**II. Procedures and Observations -**

A. Potato slices

1. Weigh your potato slice and place it in a Petri dish labeled A. Cover with tap water and leave for 30 minutes. Record the initial weight in the table below.
2. After 30 minutes, blot the potato and weigh it. Record the final weight in the table below. Feel the texture of the potato. Has is changed?
3. Weigh your potato slice and place it in a Petri dish labeled B. Cover with salt water and leave for 30 minutes. Record the initial weight in the table below.
4. After 30 minutes, blot the potato and weigh it. Record the final weight in the table below. Feel the texture of potato. Has is changed?
5. Fill in Table 1 to compare and analyze your data.
6. Fill in Table 2 and calculate the percent change in mass using the formula below.

**Table 1**

Condition of the Potato	Type of water
Cells gained water?	
Soft texture?	
Firm texture?	
Cells lost water?	

**Table 2 Percent change in mass**

Potato	Initial (g)	Final (g)	% change in mass
A			
B			

$$\% \text{ change in mass} = \frac{\text{final-initial}}{\text{Initial}} \times 100$$

7. In which container was the solution hypertonic? \_\_\_\_\_  
What is your evidence? \_\_\_\_\_
8. In which container was the solution hypotonic? \_\_\_\_\_  
What is your evidence? \_\_\_\_\_
9. Using your knowledge of osmosis and the cell membrane, draw a diagram to explain what happened to the cells of the potatoes in this experiment.

Potato A	Potato B

B. Red onion

1. Carefully remove the colored tissue from the slice of a red onion.
2. Mount the tissue in a drop of water and add a cover slip.
3. Examine the cells under low power. Draw what you see in Fig 1. Don't forget the magnification.
4. Place a small amount of piece of paper toweling at the edge of the cover slip while at the same time adding, a drop at a time, salt water to the opposite edge of the cover slip. Be careful not to add too much water at one time.
5. Watch the plant cells as you add the salt water. Observe changes that occur within the cytoplasm. Draw what you see in Fig 2. Don't forget the magnification.
6. Describe any changes you might see. \_\_\_\_\_  
\_\_\_\_\_

7. Account for this change in terms of osmosis. Be sure to tell where there was a greater concentration of water molecules and a lesser concentration.  
\_\_\_\_\_  
\_\_\_\_\_

8. Repeat the procedure of #4, this time using pure water instead of salt water instead of salt water. Be sure not to add too much water at one time. See if you can reverse the change which happened in the plant cell.

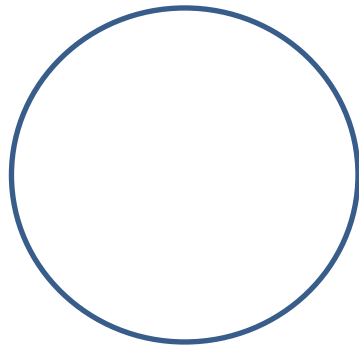


Fig 1: Red onion in tap water  
Mag \_\_\_\_\_

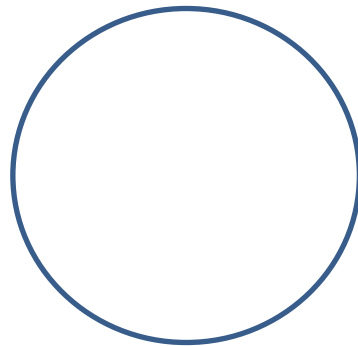


Fig 2: Red onion in salt water  
Mag \_\_\_\_\_

9. A good way to prevent a sad salad is to always keep vegetables covered with plastic wrap rather than exposing them to the air. Use your knowledge of osmosis to explain why this method works.  
\_\_\_\_\_  
\_\_\_\_\_

10. Supermarket workers spray fruits and vegetables with water to make more desirable to consumers. Why does spraying vegetables with water to prevent them from drying out?  
\_\_\_\_\_  
\_\_\_\_\_