

Name: \_\_\_\_\_ Period: \_\_\_\_\_ Date: \_\_\_\_\_

## QUICK LAB: RED ONION CELLS and OSMOSIS

**GOAL:** To examine the behavior of cells in fresh and saltwater, and to visualize the concepts of diffusion, osmosis and turgor pressure.

### Materials:

-Piece of red onion  
-10% salt solution  
-distilled water

-compound microscope  
-glass slides and cover slips  
-paper towel



### Procedure:

- 1) Take a small piece of red (or purple) onion, and peel off a little of its purple skin. The piece should be no larger than a coverslip.
- 2) Make a wet mount of the onion skin with a drop of distilled (pure) water. Add a coverslip.
- 3) View the cells under the microscope using **medium (100X) power**. Find an area where you can clearly see the purple (or reddish) coloration. The cells get their color from a pigment that is stored in the vacuole.
  - Plant cells have large vacuoles, so don't be surprised if the whole cell looks purple. It may not be possible to see cytoplasm, but it's there.
- 4) Draw the cells, using pencil or colored pencil, in the circle titled "Figure 1" on the back of the page. Don't forget to **record the magnification**, and **label** the cell wall and vacuole.
- 5) After drawing the onion cells in pure water, remove the slide from your microscope and set it on top of a paper towel. Carefully take off the cover slip and add several drops of 10% salt water directly on the piece of onion. Do not put the cover slip back on yet.
- 6) Wait 10 minutes, or as long as your teacher directs you.
- 7) While you are waiting, **PREDICT** what the cells are going to look like and **DRAW your PREDICTION** in "Figure 2" on the back of this page. Again, **label** the cell wall and vacuole.
  - HINT: there is water in the cells cytoplasm and vacuole. Which way will the water move?
- 8) **AFTER** the WAIT PERIOD, add a cover slip to the onion skin and observe the cells again. What has happened to the saltwater-soaked cells? **Draw** them in Figure 3 on the back of this page. **Label** the cell wall and vacuole.
- 9) IF YOU HAVE TIME, remove your slide, take off the coverslip, soak the cells in distilled water, wait 10 minutes and observe again. Draw the cells in Figure 4.
- 10) CLEAN UP!

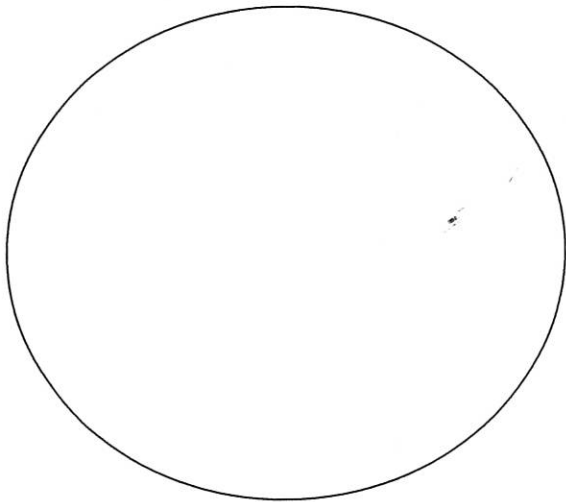
## QUICK LAB: OSMOSIS IN AN ONION CELL

### **RESULTS**

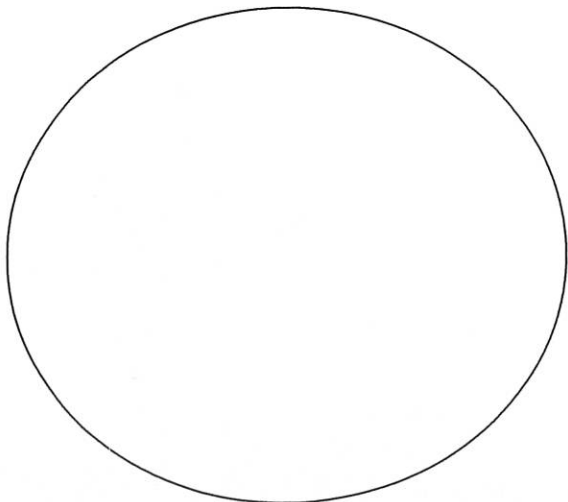
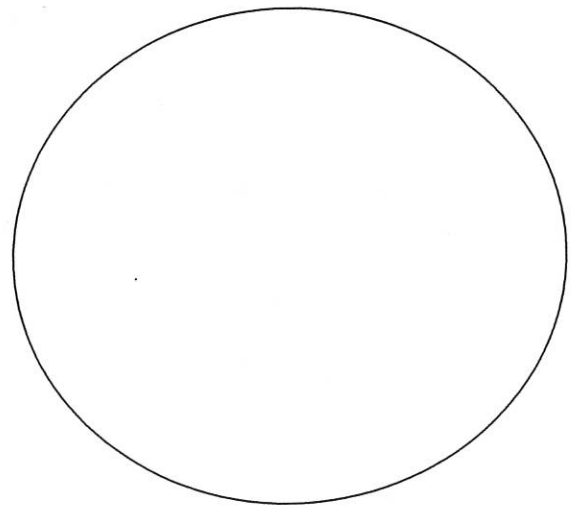
#### Microscope Observations

\*Within the circles below, draw what you see. ***Make sure to give each figure:***

- a number and title (ex: Figure 1: Red Onion Cell in Plain Water)
- magnification (40x, 100x, or 400x)
- your observations and descriptions of what is happening
- labels for all visible cell parts and use a colored pencil to enhance your drawings



Prediction: What do you think will happen to the onion cells when you soak them in salt water?



**POST-LAB QUESTIONS (no formal write-up required)**

1. What type of solution is the salt water?
2. What type of solution is the distilled water?
3. Which cell structure was expanding /shrinking in response to the different solutions?
4. When you soaked the onion cells in saltwater, what happened to them. *Be specific in your explanation.*
5. Which caused greater osmotic pressure (known as **turgor pressure** in plants) inside the cell, the distilled water solution or the saltwater solution?
6. If we watered whole onion plants growing in the field with salt water, how would the plants respond? *Be specific in your explanation; you can use a drawing to help you with your explanation.*
7. What type of passive transport is this lab illustrating?
8. Does passive transport require energy? If no, then what does it require to be present to occur?