

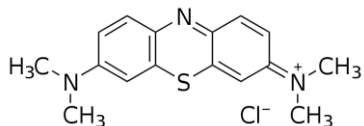
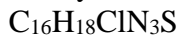
Simulated Cell Lab

Names _____

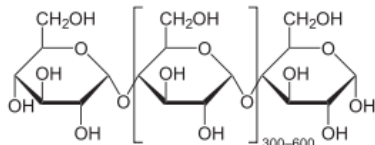
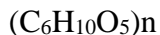
Background: Dialysis tubing is used in hospitals to treat patients with kidney failure. Blood is passed through a "dialysis machine" which separates waste substances in solution by means of their unequal diffusion through the semi-permeable membrane.

Purposes: 1) To determine which substances (glucose, iodine, methyl blue, starch) can move across dialysis tubing (a semi-permeable membrane). 2) To observe diffusion.

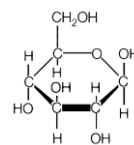
Methylene Blue



Starch



Glucose



Iodine



Hypothesis: Circle the substances you think will be able to pass through the pores of the dialysis tubing.
(glucose iodine methylene blue starch)

Test for starch: When iodine and starch come in contact with one another the starch turns dark purple.

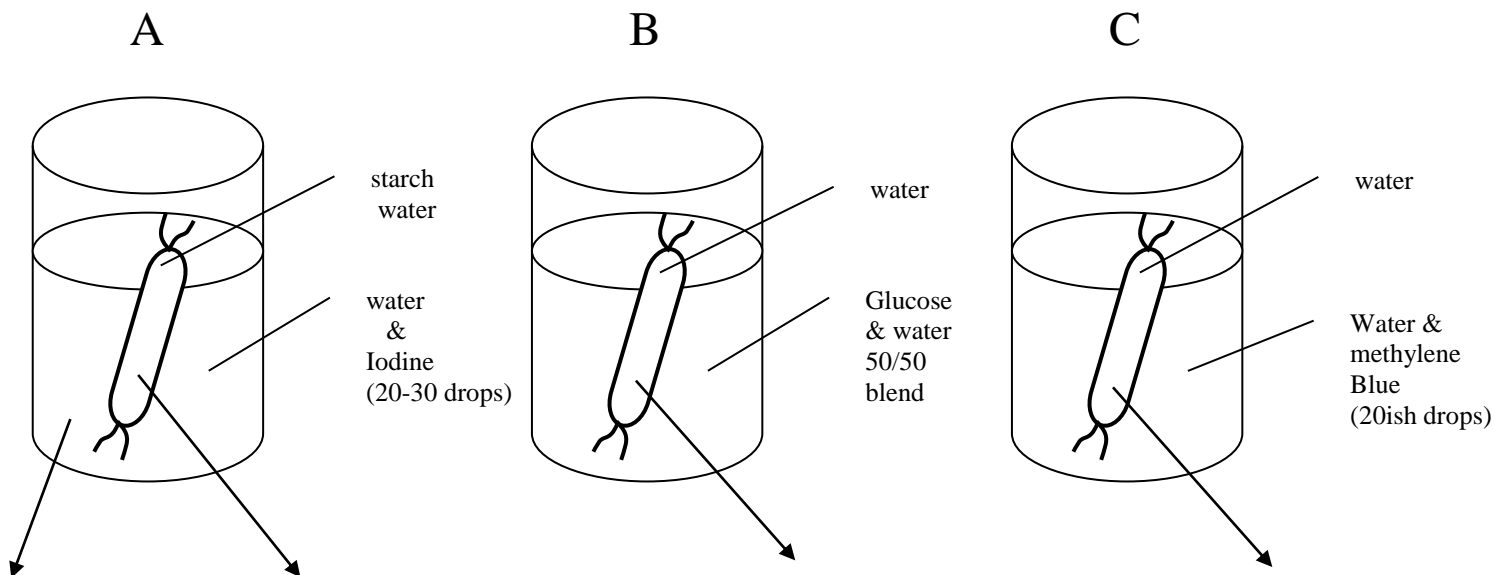
Test for glucose: When a glucose test strip is dipped into a solution containing glucose the test paper turns from yellow to a shade of green.

Procedure: Set up three beakers as diagrammed below and let sit for 24 hours.

Hints: 1) Be sure to tie all your "cells" up tight so they don't leak.

2) Wash each cell thoroughly under clean running water before placing into the beaker.

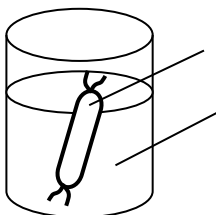
3) Take a "before selfie" of you and your 3 beakers ☺



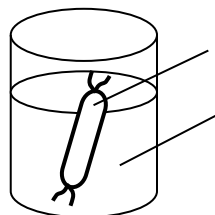
For your observations pour the contents of A and C into a test tube and compare to a test tube of pure water. Describe your results beside each of the four arrows. You may want to compare your before and after pictures.

Questions

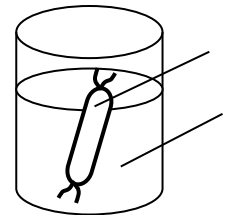
1. Did starch pass through the membrane in beaker A? Explain how you know.
2. Did iodine pass through the membrane in beaker A? Explain how you know.
3. Suggest a reason why for questions 1 and 2 one substance moved through the membrane and the other did not.
4. Did glucose pass through the membrane in beaker B? Explain how you know.
5. Did methyl blue pass through the membrane in beaker C? Explain how you know.
6. Based on your results, which of the following can pass through the dialysis tubing (glucose, iodine, methyl blue, starch)? Why?
7. What one word describes the movement of these molecules across the membrane?
8. Is the type of movement seen here an example of active transport or passive transport? How do you know? Suggest 2 reasons.
9. In what ways does the dialysis tubing **resemble** an actual cell membrane?
10. Explain a possible experimental error for this lab. Why might one find starch in the water surrounding the cell in Beaker A.
11. a) Write percentages beside each of the 6 line segments indicating how you would set up a lab that would demonstrate osmosis in a hypotonic, isotonic and hypertonic **salt solution**.
b) Write a hypothesis below each beaker.
c) Explain **two** ways you could measure **quantifiably** that osmosis took place.



Hypotonic



Isotonic



Hypertonic

Conclusion: (answer the purpose) _____