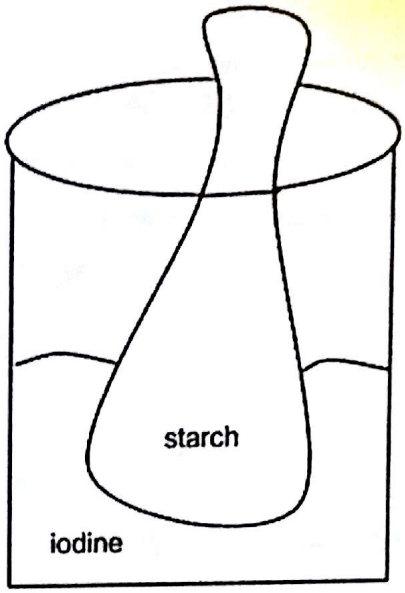
Name KEY

Diffusion Lab



Introduction: In this lab you will observe the diffusion of a substance across a semi permeable membrane. Iodine is a known indicator for starch. An indicator is a substance that chances color in the presence of the substance it indicates. Watch as your teacher demonstrates how iodine changes in the presence of starch.

Prelab Observations: Describe what happened when iodine came into contact with starch.

Procedure:

1. Fill a plastic baggie with a teaspoon of corn starch and a half a cup of water tie bag. (This may already have been done for you)
2. Fill a beaker halfway with water and add ten drops of iodine.
3. Place the baggie in the cup so that the cornstarch mixture is submerged in the iodine water mixture.
4. Wait fifteen minutes and record your observations in the data table
5. While you are waiting, answer the questions.

Questions:

1. Define diffusion. movement from a high conc. to a low conc.
2. Define osmosis diffusion of H_2O
3. What is the main difference between osmosis and diffusion osmosis is only H_2O, diffusion is all else
4. Why is iodine called an indicator? It indicates the presence of starch.
5. Molecules tend to move from areas of high concentration to areas of low concentration.

What's In the Bag?

We're going to think about concentrations now, which substances are more or less concentrated depends on *which one has the most stuff in it.*

1. Is the baggie or beaker more concentrated in starch? baggie
2. Is the baggie or beaker more concentrated in iodine? beaker
3. Iodine solution: is the baggie or the beaker hypertonic? beaker
4. Starch solution: is the baggie or the beaker hypertonic? baggie
5. Which one is hypotonic in relation to starch, baggie or beaker? beaker.

Make Some Predictions

1. If the baggie was permeable to starch, which way would the starch move, into the bag or out of the bag?
out of bag

2. If the baggie was permeable to iodine, which way would the iodine move, into or out of the bag? into bag

3. If the baggie was permeable to iodine, what color would you expect the solution in the baggie to turn? Purple What about the solution in the beaker? rust

4. If the baggie was permeable to starch, what color would you expect the solution in the baggie to turn? White What about the solution in the beaker? purple.

5. Make a prediction about what you think will happen: _____

6. Write your observations in the table below:

	Starting Color	Color after 15 minutes
Solution in Beaker	Rust ~~orange~~	Rust orange
Solution in Bag	white	Purple.

Post Lab Analysis

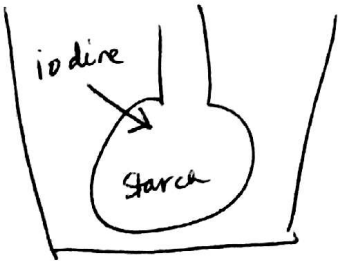
1. Based on your observations, which substance moved, the iodine or the starch?

2. How did you determine this?
only the baggie changed color

3. The plastic baggie was permeable to which substance?
iodine

4. Is the plastic baggie selectively permeable?
yes.

5. Sketch the cup and baggie in the space below. Use arrows to illustrate how diffusion occurred in this lab.



6. What would happen if you did an experiment in which the iodine solution was placed in the baggie, and the starch solution was in the beaker?
Be detailed in your description.
The beaker would be purple after 15 min.

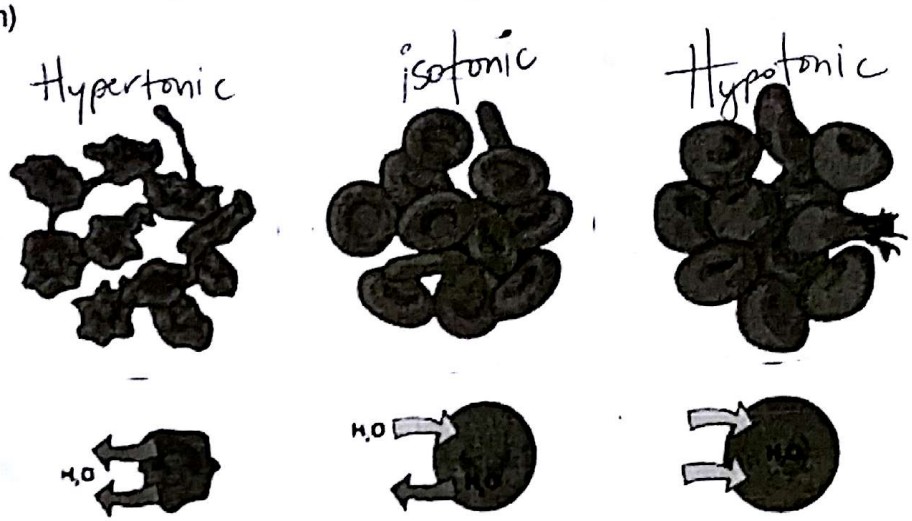
7. Why is it not a good idea to store iodine in a plastic bag? Related Documents:
The baggie is permeable to iodine so it can leave the bag.

Name:_____

Chapter Review; Diffusion and Osmosis

What do you Know?

1. Label the three images below as isotonic/ hypertonic/ hypotonic (with regard to the solution the cell is placed in)



2. Movement across the cell membrane that does not require energy is called [active / passive] transport.

3. The difference in the concentration of a substance across a space is called a concentration [equilibrium / gradient].

4. If there is a concentration gradient, substances will move from an area of high concentration to an area of [equal / low] concentration.

5. The cell membrane is [selectively permeable / impermeable].

6. [Equilibrium / Diffusion] is the simplest type of passive transport.

7. The diffusion of water through a selectively permeable membrane is called [osmosis / diffusion].

8. The direction of water movement across the cell membrane depends on the concentration of free water[molecules / solutions].

9. A solution that causes a cell to swell is called a [hypertonic / hypotonic] solution.

10. Organelles that collect excess water inside the cell and force water out are called [diffusion organelles / contractile vacuoles]

11. The process of taking material into the cell by infolding the cell membrane is called [endocytosis / *exocytosis*]

12. In [facilitated / molecular] diffusion, membrane proteins help molecules across the membrane.

13. In diffusion, molecules [spread out / condense]

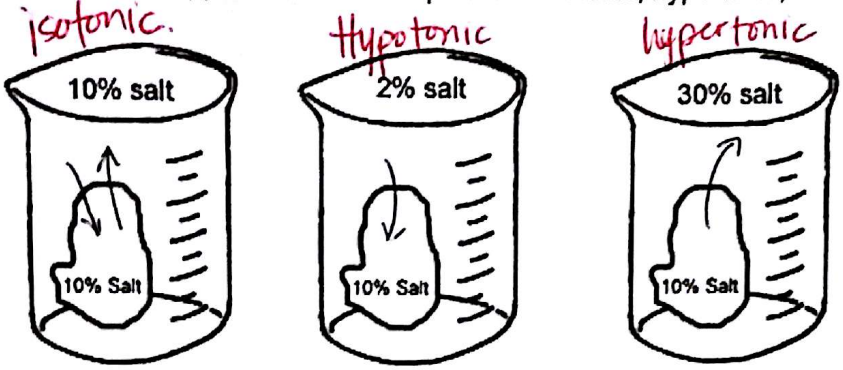
14. The lipid bilayer describes [a type of transport / the cell membrane]

15. Facilitated diffusion moves substances down their concentration gradient [with / without] using the cell's energy.

STUDY GUIDE

1. Know the parts of a solution (Solvent and solute) solvent = does dissolving solute = dissolved.
2. Label a cell membrane (bilayer, proteins)

3. Explain what will happen to cells when placed in isotonic, hypertonic, and hypotonic solutions.



4. Know the definition of:

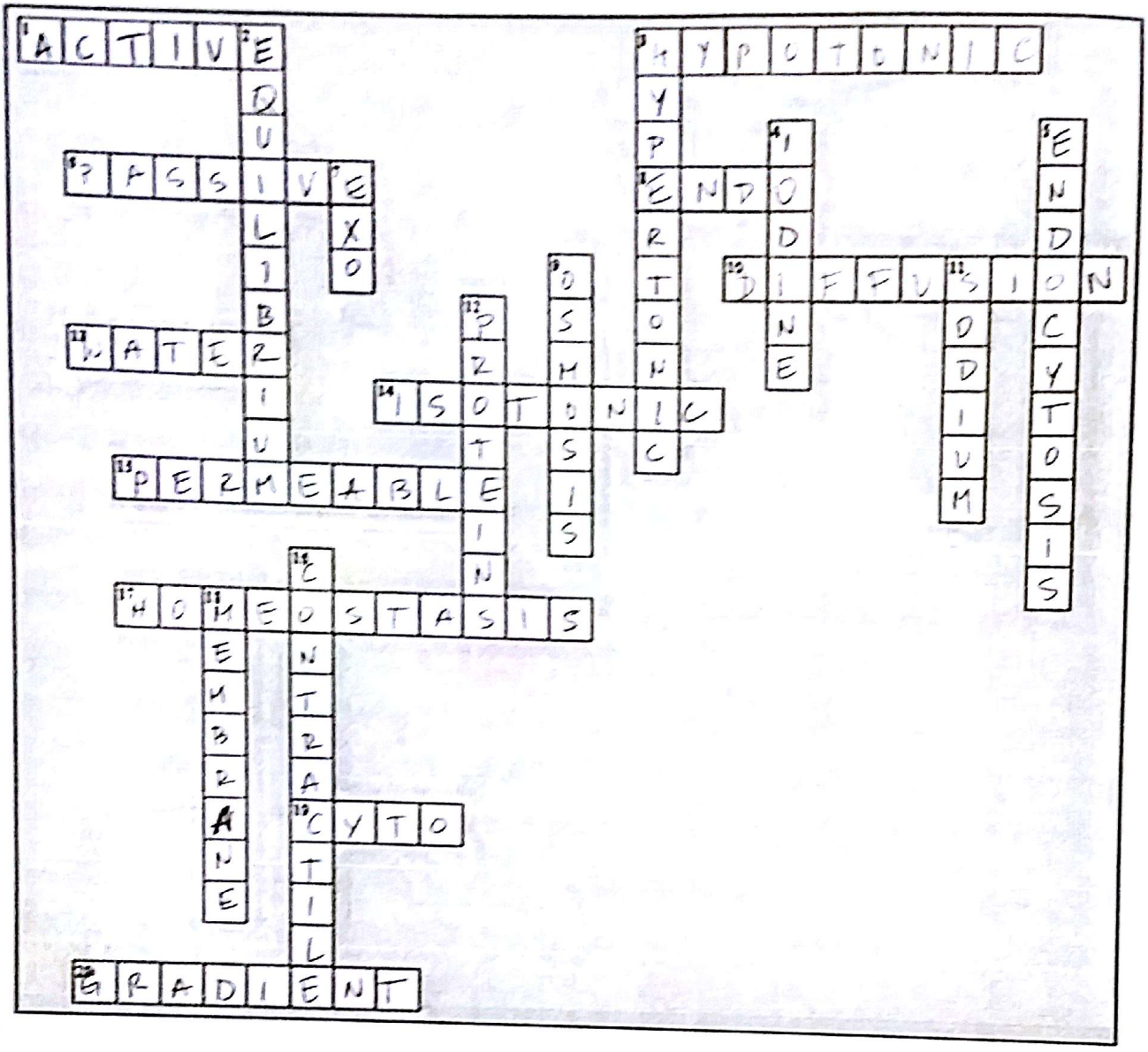
Diffusion = movement from high to low conc.
Equilibrium = movement in equal directions; same conc.
Osmosis = diffusion of H_2O
Isotonic = same concentration
Hypertonic = a very concentrated solution. low H_2O
Hypotonic = low concentrated solution; high H_2O
Facilitated diffusion = ~~diffusion~~ diffusion w/ the help of proteins, no ATP/E required
Endocytosis = folding in of cell mb to bring food in
Phagocytosis = "eating"
Pinocytosis = "drinking"
Exocytosis = "spitting" out of food

5. Explain what happens when you place a bag full of starch (solution) into a solution of iodine.

iodine enters the bag turning purple.

Name: _____

Diffusion and Osmosis



Across

1. type of transport that requires energy
3. when a solution has a lesser concentration of particles
6. type of transport that does not require energy
8. prefix that means "inside"
10. movement of molecules from high to low concentration
13. a molecule composed of two hydrogens and one oxygen
14. a solution that has an equal amount of

Down

2. condition achieved when molecules are evenly spread in an area
3. when a solution as a greater concentration of particles
4. turns color in the presence of starch
5. the engulfing of large particles
7. prefix that means "outside"
9. the diffusion of water
11. active transport will remove ___ ions, while taking in potassium ions
12. channel ___ can help move things across the membrane

particles
15. membranes that let some things through, called selectively _____
17. the maintaining of an internal balance
19. word that means 'cell'
20. a difference in concentration creates a concentration _

16. organelle that helps remove excess water: _____ vacuole
18. the outer boundary of the cell

Name _____ Date _____ Hour _____

Diffusion and Osmosis Worksheet

Below are semi-permeable bags filled with various concentrations of solutions placed in beakers with various concentrations of solutions. Use this information to help answer the questions below for each set-up.

- The solutions are prepared with distilled water.
- The semi-permeable membrane bag is permeable to glucose, a very small sugar molecule.
- The semi-permeable membrane bag is NOT permeable to sucrose, a larger sugar molecule.

For each set-up, you must:

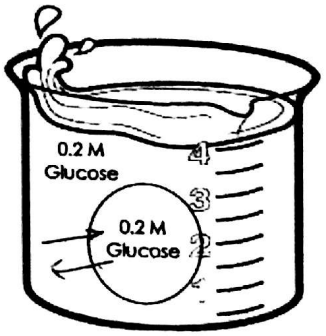
1. Indicate whether the solution in the bag is isotonic, hypertonic, or hypotonic to the solution in the beaker.
2. Draw a ~~blue~~ arrow for the net movement of water by osmosis (do not draw any arrow if there would be no net movement of water).
3. Draw a ~~green~~ arrow for the net movement of solute by diffusion (do not draw any arrow if there would be no net movement of solute).
4. Explain why you drew the arrows you did in terms of the properties of diffusion, osmosis, and semi-permeable membranes. Be sure to include concentrations of solutions in your explanation.

The solution in the bag is hypotonic compared to the solution in the beaker

Explain your arrows:

H_2O moves ~~into the~~ out of the bag.

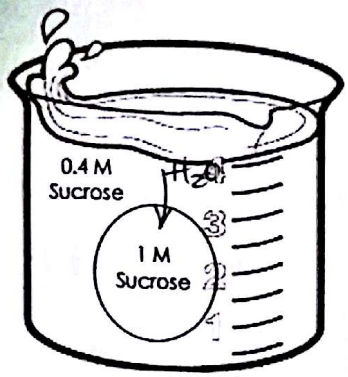
Sucrose does not move



The solution in the bag is isotonic compared to the solution in the beaker

Explain your arrows:

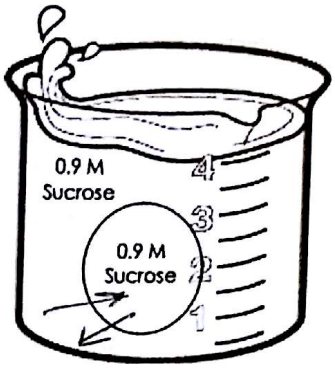
No net movement of ~~either~~ both H_2O and glucose.



The solution in the bag is
hypertonic
compared to the solution in the beaker

Explain your arrows:

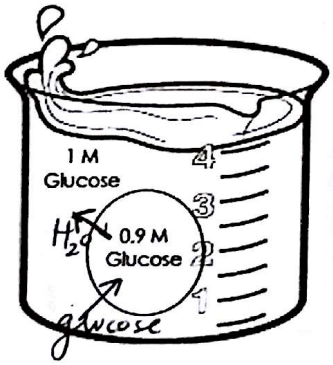
H_2O moves into the bag.



The solution in the bag is
isotonic
compared to the solution in the beaker

Explain your arrows:

No net movement of H_2O

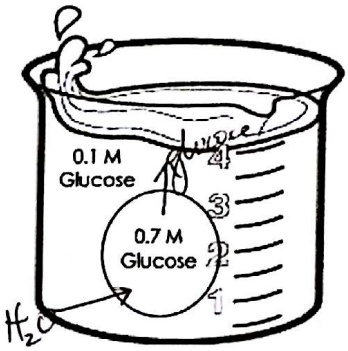


The solution in the bag is
hypotonic
compared to the solution in the beaker

Explain your arrows:

H_2O moves out of the bag

glucose move into the bag.

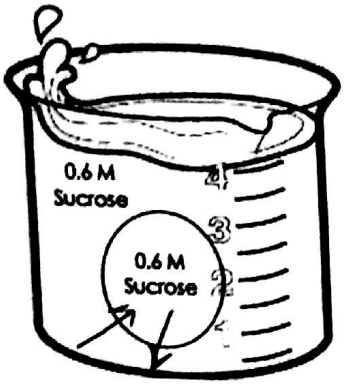


The solution in the bag is
hypertonic
compared to the solution in the beaker

Explain your arrows:

H_2O moves into the bag

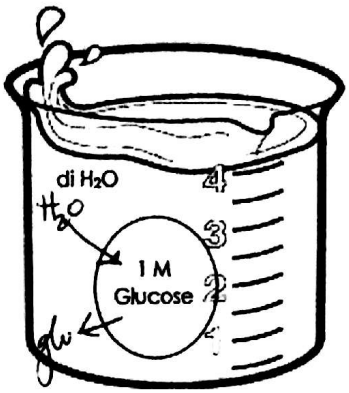
glucose moves out of the bag



The solution in the bag is
isotonic
compared to the solution in the beaker

Explain your arrows:

No net movement of H_2O

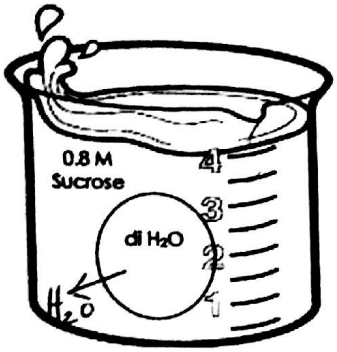


The solution in the bag is
hypertonic
compared to the solution in the beaker

Explain your arrows:

H_2O moves into the bag

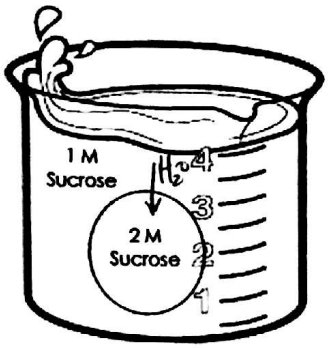
glucose move out of the bag.



The solution in the bag is
hypotonic
compared to the solution in the beaker

Explain your arrows:

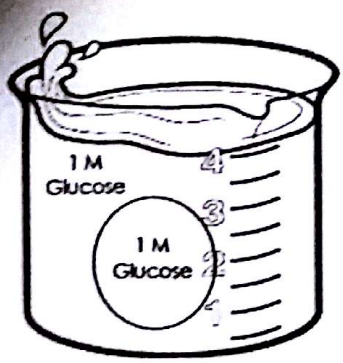
H_2O moves out of the bag.



The solution in the bag is
hypertonic
compared to the solution in the beaker

Explain your arrows:

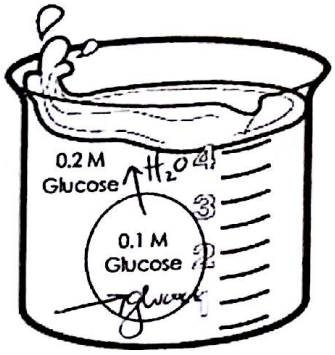
H_2O moves into the bag.



The solution in the bag is isotonic compared to the solution in the beaker

Explain your arrows:

No net movement of H_2O or glucose

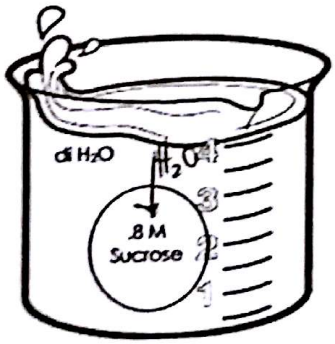


The solution in the bag is hypotonic compared to the solution in the beaker

Explain your arrows:

H_2O moves out of the bag.

glucose moves into the bag.



The solution in the bag is hypertonic compared to the solution in the beaker

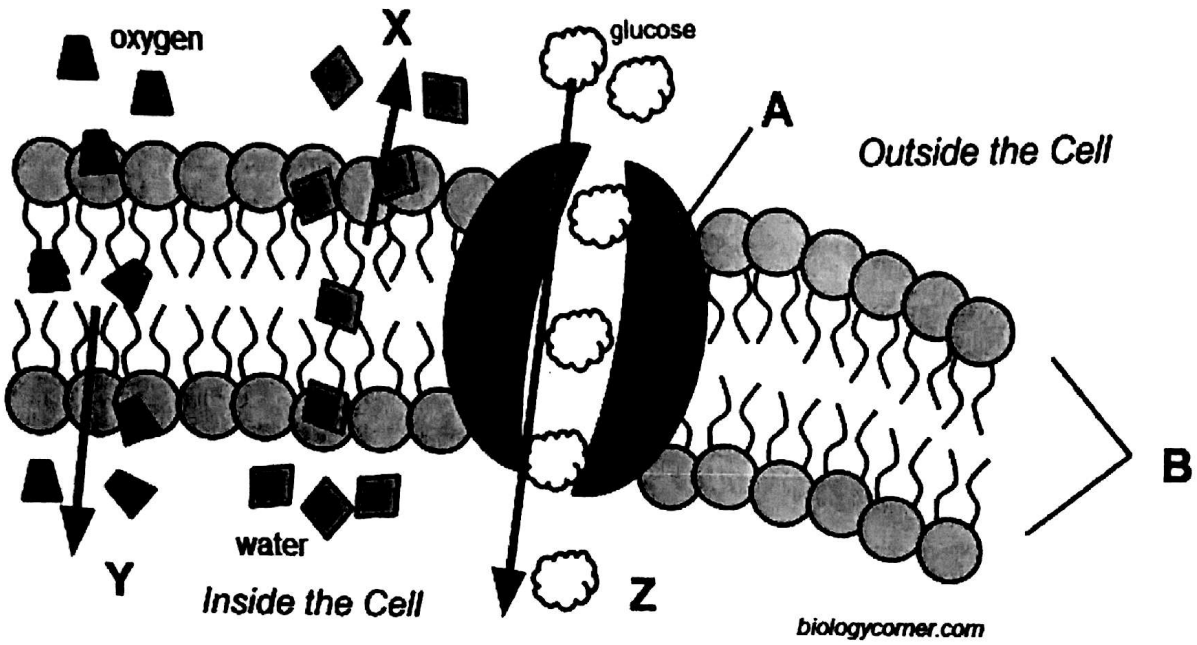
Explain your arrows:

H_2O moves into the bag.

Using the set-up to the left, explain how you would test your explanation. Make sure to include what you would use to produce quantitative data.

Name:_____

Cell Membrane and Transport



Match the structure/process to the letter:

1. Phospholipid bilayer B
2. Osmosis X
3. Simple Diffusion Y
4. Facilitated Diffusion Z
5. Channel protein A

6. This cell would be in a [hypertonic / hypotonic / isotonic] solution.
7. All of the processes in the image are examples of [active / passive] transport.
8. The cell membrane can be described as [semi-permeable / impermeable]
9. There is more glucose [inside / outside] the cell. (Hint: Look at the direction it is moving)
10. Over time, this cell will [shrink / swell] ? H_2O leaving?