In & Out of the Cell: Web Quest Name:

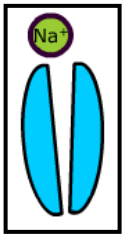
Period:

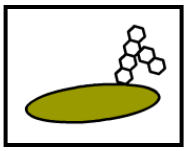
Part 1 - Construction of a Cell Membrane

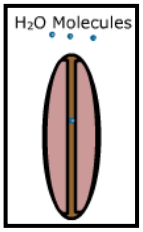
http://www.wisc-online.com/objects/index_tj.asp?objID=ap1101

Click through to page 5:

1. Identify the following **proteins** that make up the cell membrane.







_____ _____ _____

2. Most of the cell membrane is made up of _____

Draw one:

The "tails" are _____ and therefore face inward and away from water.

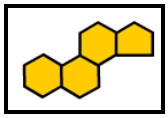
The "heads" are _____ and face toward the watery surfaces.

3. What is the purpose of fibrous proteins?

4. Globular protein pores (called aquaporins) allow _____ to pass through, while other integral proteins selectively transport _____.

5. What are glycoproteins?

   Why are they said to be <u>peripheral</u>?

6. What is this molecule?  _____ In what type of cells is it found? What is the function of this molecule?

7. Construct a Cell Membrane by answering questions one through ten in the computer based activity.

Part 2 - Membranes & Transport

http://www.wiley.com/legacy/college/boyer/0470003790/animations/membrane_transport/membrane_transport.htm

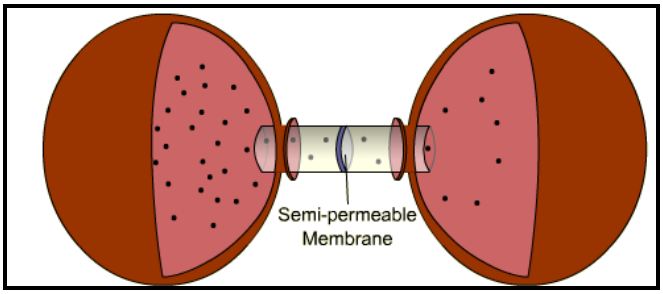
1. Read the "Overview" of a cell membrane. Click on "Continue" to observe the animation. **Draw** a cell membrane and **label all the parts** as you step through the animation.

What are the two general characteristics of a molecule that will prevent it from passing through the membrane?

2. Click "Continue" again to observe "**Osmosis and Diffusion**".

The net movement of molecules occurs from regions of _____ to _____ concentration.

Osmosis



What is the "aim" of osmosis?

Explain why the balloon on the left would get larger?

3. Click on "**Passive Transport**".

NOTE: Osmosis and diffusion are forms of passive transport. This animation describes another special case of passive transport called facilitated diffusion.

Facilitated diffusion requires _____ _____ called transporters to facilitate the passage of molecules across membranes.
What are the two general types of transporters? How are they different?

What type of molecule do you think glucose perme***ase*** is?

Sketch how glucose molecules can pass through a cell membrane.

1.	**2.**	**3.**

4. Continue on "**Active Transport**":
   a. In contrast to passive transporters, active transporters can move molecules from _____ to _____ concentration.
   b. What form of chemical energy is consumed for active transport to take place? _____
   c. What ion is moved into the cell? _____
   d. What ion is moved out of the cell? _____
   e. How many sodium ions are move out of the cell during each cycle? _____
   f. How many potassium ions are moved into the cell during each cycle? _____

g. Does the cell become more positively charged or does the surrounding solution become more positively charged? Explain!

h. Where in animals is this "sodium-potassium pump" commonly found? _____

Part 3 - Solutions
http://www.chem4kids.com/files/matter_solution.html

1. What is a solution?

2. Explain the difference between the solute and solvent.

Part 4 - Diffusion and Osmosis
Go to google to define the following terms:

1. Define all the terms:

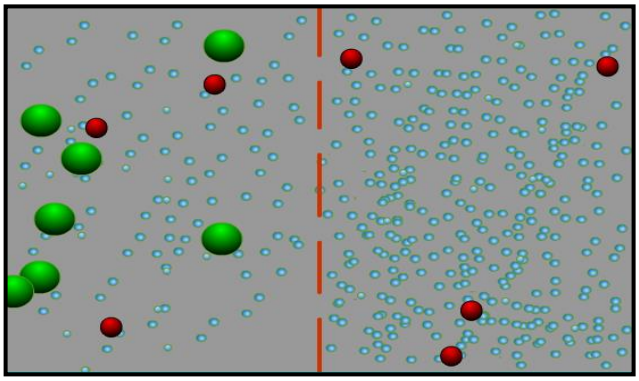
- Diffusion -
- Osmosis -
- Passive Transport -
- Thermal (Brownian) Motion -
- Concentration -
- Concentration Gradient -

Part 5 - Passive Transport
http://www.wisc-online.com/Objects/ViewObject.aspx?ID=AP1903

1. Molecules move randomly using _____.
2. Net diffusion moves molecules _____ the concentration gradient from areas of _____ _____ to _____ _____until _____ is reached.
3. Describe the different results of raising or lowering the temperature. (Click on both at the same time.)

Part 6 - Osmosis & Diffusion
http://zoology.okstate.edu/zoo_lrc/bio11114/tutorials/Flash/Osmosis_Animation.htm

Observe the animation for a few minutes.



1. What do the blue molecules represent?
2. What are the green and red molecules?
3. Which side is hypotonic? **[** left **OR** right **]**
4. In which direction will water move? **[** left **OR** right **]**
5. Towards which side are the red molecules moving? **[** left **OR** right **]** *Why?*
6. Are the green molecules crossing the membrane? *Why OR Why not*?

Part 9 - Phagocytosis
http://academic.brooklyn.cuny.edu/biology/bio4fv/page/phago.htm

Run the animation of phagocytosis.

1. Phagocytosis involves bringing a large particle into the cell. Rerun the animation and describe the process? Draw a diagram to help with your explanation.

_____
_____
_____
_____

2. Do you think this activity would require energy? _____

3. From your knowledge of the cells and mitochondria, what is the energy molecule called that would be needed to carry out phagocytosis? _____

4. What organelle do you think digests the incoming particle? _____

Part 10 -Quiz
http://www.biologycorner.com/quiz/qz_diffusion.html

Score: _____

Extension- Study Guide:
http://www.biologycorner.com/worksheets/diffusion_osmosis_review.html

Complete the chapter review & study guide questions on a separate sheet of paper for B O N U S P O I N T S ! 😊