

Name:

Period:

CELL MEMBRANE & CELL TRANSPORT (PASSIVE and ACTIVE) Webquest

PART I: CELL MEMBRANES

WEBSITE #1:

http://www.wisc-online.com/objects/index_tj.asp?objID=AP1101

1. What is the BASIC UNIT of LIFE?
2. What are the TWO MAIN COMPONENTS that make up the CELL MEMBRANE?
A. _____ B. _____
3. What types of molecules can EASILY go through your cell membrane or are PERMEABLE to the cell membrane?
A. _____ B. _____ C. _____
4. What types of molecules CANNOT easily go through your cell membrane?
A. _____ B. _____ C. _____
6. DRAW THE PHOSPHOLIPID BILAYER of the CELL MEMBRANE, labeling the HYDROPHILIC HEADS and HYDROPHOBIC TAILS.

7. TRUE OR FALSE: CARBOHYDRATES also make up part of the cell membrane...What is their FUNCTION?

WEBSITE #2

http://www.wiley.com/college/pratt/0471393878/student/animations/membrane_transport/index.html

1. TRUE or FALSE: Some of the metabolically important molecules your body needs in order to survive CANNOT pass through the lipid bilayer of the cell membrane.
2. The TAILS or INTERIOR of the cell membrane is made of a WATER LOVING (hydrophilic) or WATER HATING (hydrophobic) molecule. _____

What is the name of this molecule? _____

3. Which part of the membrane might function to transport hydrophilic or WATER LOVING substances into the cell? _____

4. What are TWO REASONS why a substance cannot make through the LIPID BILAYER?

A.

B.

5. What is facilitated transport?

6. Facilitated Transport ALWAYS involves what part of the CELL MEMBRANE?

7. In terms of energy, what is the difference between ACTIVE TRANSPORT vs. PASSIVE TRANSPORT?

8. ACTIVE TRANSPORT is like moving _____ because it requires the input of _____.

9. What is the energy used to facilitate ACTIVE TRANSPORT? _____

STOP AT SECTION #8

PART II: PASSIVE TRANSPORT

WEBSITE #1:

<http://programs.northlandcollege.edu/biology/Biology1111/animations/transport1.html>

PART ONE: Choose PASSIVE TRANSPORT FIRST

1. Define **PASSIVE TRANSPORT**:

2. What are **three types of PASSIVE TRANSPORT**?

A.

B.

C.

PRESS "NEXT"

PARTS of a CELL MEMBRANE:

3. Draw what a CELL MEMBRANE looks like and label the TWO COMPONENTS of the CELL MEMBRANE below:

4. What is the function of INTEGRAL PROTEINS?

5. Cell Membranes are said to be **SEMIPERMEABLE**, what does that mean?

DIFFUSION

1. Define simple diffusion and ILLUSTRATE a “before” and “after” example:

2. Define a **CONCENTRATION GRADIENT**:

3. Identify **THREE** factors that can have an affect on the **RATE** of **DIFFUSION**:

a.

b.

c.

4. What is meant by the term **EQUILIBRIUM**?

5. **DRAW** a **PICTURE** showing a **CELL** that is **IN EQUILIBRIUM**:

FACILITATED DIFFUSION

1. Define facilitated diffusion:

2. Does facilitated diffusion take energy for the cell? _____
3. What molecules within the cell membrane play a VITAL ROLE in FACILITATED DIFFUSION? _____
4. What does the word "FACILITATE" mean?

OSMOSIS

1. Define osmosis:
2. Explain how osmosis is a UNIQUE form of diffusion.
3. Draw a situation in which a cell is in a HYPOTONIC solution...DRAW a BEFORE and AFTER PICTURE to show the change in size of the cell.

BEFORE

AFTER

4. Draw a situation in which a cell is in a HYPOTONIC solution...DRAW a BEFORE and AFTER PICTURE to show the change in size of the cell.

BEFORE

AFTER

WEBSITE #2:

<http://www.vivo.colostate.edu/hbooks/cmb/cells/pmemb/osmosis.html>

Scroll down "The classic demonstration of osmosis and osmotic pressure is to immerse red blood cells in solutions of varying osmolarity and watch what happens"

1. **What does a Red Blood Cell look like in an ISOTONIC SOLUTION? Draw it below and explain why it would look this way.**

2. What does a Red Blood Cell look like in a HYPERTONIC SOLUTION? Draw it below and explain why it would look this way.

3. What does a Red Blood Cell look like in a HYPOTONIC SOLUTION? Draw it below and explain why it would look this way.

WEBSITE #3: Diffusion through Membrane

<http://www.indiana.edu/~phys215/lecture/lecnotes/diff.html>

1. Diffusion ALWAYS goes from _____ concentration to _____ concentration and (does or does not) require energy (ATP).
2. At the beginning of the animation, where are there more particles? On which side of the membrane? _____
3. Are the particles moving in only one direction, or are they moving in both directions?
4. Watch the animation for 2 minutes, or until it reaches NO NET FLOW. How many particles are on each side of the membrane? _____
5. When there is NO NET FLOW the cell is said to reach what?
6. What is meant by the website author when he states, “diffusion goes from the higher concentration side to the lower concentration side? DRAW A PICTURE TO ILLUSTRATE YOUR POINT!

WEBSITE #4: Osmosis effects on the cell

<http://www.tvdsb.on.ca/westmin/science/sbi3a1/Cells/Osmosis.htm>

1. What happens to the cell in a hypertonic solution?
2. What happens to the cell in a hypotonic solution?
3. What happens to the cell in an isotonic solution?

WEBSITE #5: Diffusion, Dialysis and Osmosis Tutorial

<http://nhscience.lonestar.edu/biol/osotutor.html>

1. EXPLAIN why food coloring particles are FIRST condensed into a single drop, but after revisiting the cup of water several minutes later, the entire cup of water is colored.

CLICK ON ANIMAL CELL MEMBRANE TUTORIAL

Animal Cell Membrane Tutorial - Page 1 of 3

The following image shows a normal functioning red blood cell as it would appear when in plasma. Select the correct answers to the following questions.

1. The plasma is a(an) _____ solution to the solution in the red blood cell.
2. The diffusion of water(osmosis) into the cell is _____ the diffusion of water(osmosis)out of the cell.
3. The turgor pressure of the RBC is _____ zero.
4. The pressure on the inside of the cell is _____ the pressure on the outside.

NOW, CLICK ON “NEXT” at the BOTTOM of the page.

Animal Cell Membrane Tutorial - Page 2 of 3

Below are images showing what happens to a normal red blood cell when placed in a 1.3% salt solution. Select the correct answers to the following questions.

1. This red blood cell can now be described as being _____.
2. The % concentration of water in the cell was _____ the % concentration of water in the salt solution.
3. Thus the net direction of osmosis was _____ the red blood cell.
4. The salt solution was _____ relative to the red blood cell.

NOW, CLICK ON “NEXT” at the BOTTOM of the page.

Animal Cell Membrane Tutorial - Page 3 of 3

Below are images showing what happens to a normal red blood cell when in distilled water. Select the correct answers to the following questions.

1. This red blood cell can now be described as being _____.

2. The distilled water was_____relative to the cell.
3. The cell was_____relative to the distilled water.
4. The direction of net osmosis was_____the cell.

PART TWO: ACTIVE TRANSPORT

WEBSITE #1:

<http://programs.northlandcollege.edu/biology/Biology1111/animations/transport1.html>

CLICK on "ACTIVE TRANSPORT"

1. Define ACTIVE TRANSPORT.
2. Why might a cell go through active transport?
3. What are THREE TYPES of ACTIVE TRANSPORT?
 - A.
 - B.
 - C.
4. What is ATP? What does ATP turn into after it is used? (You will have to watch the animation on ion pumps first to answer this question)
5. What is an ion pump? Explain using the words CONCENTRATION GRADIENT, PROTEIN, and CHARGE. DRAW A PICTURE in addition to your explanation!
6. What is COTRANSPORT? EXPLAIN in terms of steps using an example.

STEP ONE:

STEP TWO:

STEP THREE:

ENDOCYTOSIS:

7. What is ENDOCYTOSIS?

8. What are the THREE TYPES of ENDOCYTOSIS?

A.

B.

C.

9. What is PHAGOCYTOSIS?

10. What are PSEUDOPODS?

11. What is PINOCYTOSIS?

WEBSITE #2

http://highered.mcgraw-hill.com/sites/0072437316/student_view0/chapter6/animations.html

CLICK on ENDOCYTOSIS/EXOCYTOSIS

1. WHY does a cell go through ENDOCYTOSIS?

2. The website states that “SINGLE CELLED EUKARYOTIC ORGANISMS” go through ENDOCYTOSIS. To what KINGDOM do these organisms belong to? _____ (Will have to RESEARCH THIS)

3. What is the difference between PHAGOCYTOSIS and PINOCYTOSIS?