

NAME: _____ DATE: _____ Pd: _____

Evidence 4: Homeostasis

Option 4: manipulative

Part I: Building a cell membrane.

Directions: Obtain a bag with your supplies needed to build your plasma membrane. YOU WILL NOT USE THE POKER CHIPS FOR THIS PORTION. Go to a lab table and construct a plasma membrane with the following components: phospholipid, transport protein, and glycolipid. Fill in the table and answer the questions below over your plasma membrane model.

Model Part Name	What part of the membrane did it represent?	Why did you choose this part to represent that portion of the membrane?
Q-Tip		
Straw		
Pipe Cleaners		

1. Draw your plasma membrane below. Draw it large because question 2 requires you to label some parts of your membrane.

2. Use the letters next to the description to label the different parts of your diagram above.

- A. Hydrophilic region of the membrane
- B. Hydrophobic region of the membrane
- C. Polar head
- D. Non-polar fatty acid tails.
- E. Structure needed for glucose to pass into the cell.
- F. Cell Recognition

Part II: Construct different environments using your model.

The poker chips in your bags represents water molecules (BLUE) and sugar molecules (RED). Using the chalk label one side of the membrane as inside the cell and the other side as outside the cell. Model the different scenarios using the poker chips. Draw your initial model in the space provided using color, then move the water until equilibrium has been reached on your model, draw this model in the space provided and use arrows on the paper to show the movement of water and answer the questions.

TIPS: You will always use 10 poker chips per side so the percentages are easy to calculate how many of each color you will need. For example if the scenario read – “inside the cell 70% water and 30% sugar and outside the cell 60% water and 40% sugar” You would set it up so inside the cell were 7 blue chips and 3 red chips while outside the cell were 6 blue chips and 4 red chips. You will always have 10 total chips both inside the cell and outside the cell.

Scenario 1: A cell contains 80% water and 20% sugar. The solution the cell is in contains 70% water and 30% sugar.

Initial Set-up	After Homeostasis
Type of solution cell is in _____	What direction did the water move? _____ What happened to the cell? _____

Scenario 2: A cell contains 60% water and 40% sugar. The solution the cell is in contains 60% water and 40% sugar.

Initial Set-up	After Homeostasis
Type of solution cell is in _____	What direction did the water move? _____ What happened to the cell? _____

Scenario 3: A plant cell has plasmolyzed. You will need to set up the initial set up with the correct number of chips. Remember that you always want to use 10 total chips inside and outside of the cell. TAKE A PICTURE OF THIS SET-UP.

Initial Set-up	Plasmolyzed Plant Cell
Concentration of water inside the cell _____ Concentration of water outside the cell _____ Type of solution cell is in _____	What direction did the water move? _____ What happened to the cell? _____

Scenario 4: An animal cell has lysed. You will need to set up the initial set up with the correct number of chips. Remember that you always want to use 10 total chips inside and outside of the cell.

Initial Set-up	Lysed Animal Cell
Concentration of water inside the cell _____ Concentration of water outside the cell _____ Type of solution cell is in _____	What direction did the water move? _____ What happened to the cell? _____