

Title: Models of Movement

name _____

Introduction: In a living cell, the cell membrane acts as a gatekeeper, allowing some substances inside the cell and moving others out. This is called active transport and it allows some large molecules in and keeps some small ones out. In this activity you will use a non-living membrane to model both diffusion and osmosis. The membrane is called “dialysis tubing” and it has very tiny holes in it that allows small molecules through and not large ones. Dialysis tubing is not able to perform active transport so particle size is the only thing that allows substances to move in or out.

Materials: 2 beakers, starch solution, sugar solution, dialysis tubing, rubber bands, iodine solution

Procedure:

#1 bag

1. Tie the end of a wet piece of dialysis tubing. Pour in some starch solution inside and tie off the other end with a rubber band.
2. Weigh the bag on a balance. Draw it in the “before” column.
3. Place the bag in an iodine solution and wait.
4. Dry the bag and reweigh. Draw it in the “after” column.
5. Find the change in mass by subtracting the “after” mass from the “before”.

#2 bag

1. Tie the end of a wet piece of dialysis tubing. Pour in some sugar solution so that the bag is only HALF full and tie off the other end with a rubber band.
2. Weigh the bag on a balance.
3. Place in a beaker with water and wait a few minutes. Reweigh the bag after drying it on a paper towel.
4. Record your results in the data.

Data: Draw the bags in the squares provided:

Bag	Before	After	Change in Mass
#1	Mass _____	Mass _____	
#2	Mass _____	Mass _____	

Analysis:

1. What color does iodine turn in starch?
2. Did the iodine or starch move through the membrane in bag #1?
3. What evidence do you have to prove that?
4. Is iodine moving through a membrane osmosis or diffusion?
Why?
4. Did the water or sugar move through the membrane in bag #2?
5. What is your evidence?
6. Is the movement of water osmosis or diffusion? Why/
7. What do you assume about the size of sugar and starch molecules?

Conclusion: 2 things you learned