

Name _____ Date _____ Class _____

Diffusion in Cells

Particles of a substance can move through cell membranes from areas of high concentration to areas of low concentration. This movement is called diffusion. Diffusion rids a cell of wastes and brings nutrients into a cell. Diffusion keeps a cell in a state of balance with its environment. As diffusion continues, particles of a substance become equally distributed on both sides of the membrane. At this point, diffusion can no longer be observed. Diffusion is affected by the size of particles making up a substance. Particles must be smaller than membrane openings in order for diffusion to occur. Osmosis is diffusion of water through membranes. Water diffuses from the side of the membrane where it is more concentrated to the opposite side.

A. Diffusion of Particles

1. Figure 1 shows a glass of water molecules. A student has just added a spoonful of salt molecules to the glass. Show how the salt and water molecules will be distributed in the glass after six hours. Draw the positions of the molecules after six hours in Figure 2.

○ Water
⊛ Salt

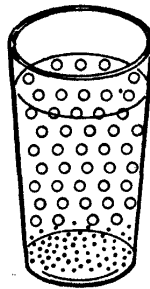


FIGURE 1

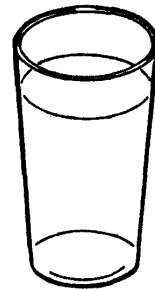
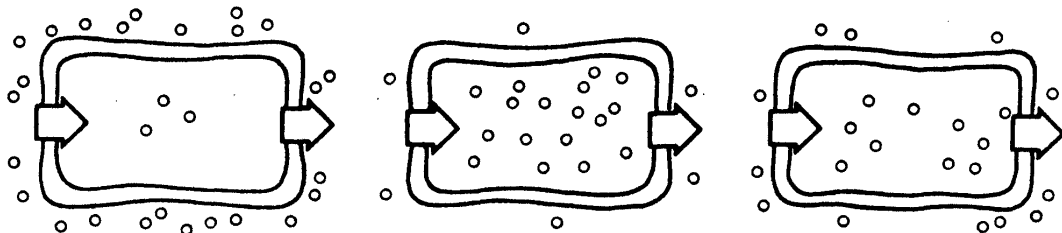


FIGURE 2

2. How do particles move in diffusion?

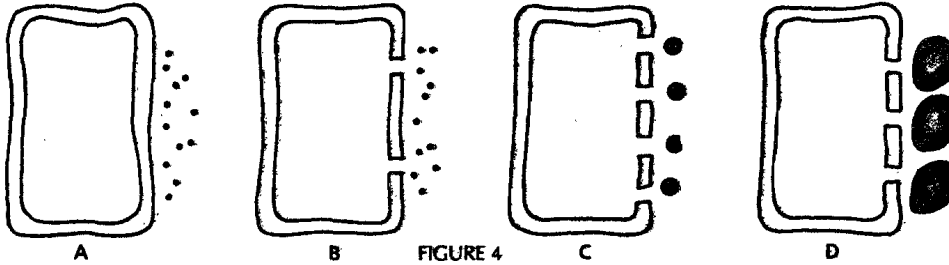
3. The diagrams below show osmosis of water molecules into and out of cells. Shade one arrow in each diagram to indicate the overall direction in which water molecules will move.



○ Water

FIGURE 3

4. The diagrams below represent cell membranes. The openings in the membranes are pores of different sizes. Determine if the particles outside of the membranes will be able to pass through the membranes into the cell. Explain your answers below.



Cell A _____

Cell B _____

Cell C _____

Cell D _____

5. Think of three rules that apply to diffusion. Write the rules here. _____

B. Examples of Osmosis

Explain the movement of substances in each of the following situations.

1. Fresh fruits and vegetables are often sprinkled with water at the market. Explain why. _____

2. Roads are sometimes salted to melt ice. How does the salt affect the plants growing alongside the road? _____

3. If a lawn is fertilized and not watered, the grass often dies. Explain why. _____

