

## ANSWER KEY CONTINUED

### Reinforcement

1. hypotonic, isotonic, hypertonic
2. Side A. The sugar cannot cross, but the water can diffuse. The water has a higher concentration on side A and a lower concentration on side B, so it diffuses from A to B.

### Section 3.5

#### Study Guide

1. Active transport is the movement of molecules against a concentration gradient, whereas any type of diffusion is the movement of molecules down a concentration gradient.
2. Both involve the movement of molecules through selective membrane proteins.
3. All transport proteins span the membrane, and most change shape when they bind to a target molecule or molecules.
4. Active transport proteins use chemical energy to move a substance against its concentration gradient.
5. Refer to Figure 3.25 for visual answer.
6. ATP
7. vesicles
8. lysosomal enzymes

#### Y diagram:

*Endocytosis*—uses energy, takes substances into a cell, moves substances in

vesicles; *Exocytosis*—uses energy, releases substances outside a cell, moves substances in vesicles; *Both*—use energy, move substances in vesicles.

9. phagocytosis
10. Exocytosis is a process that releases substances outside a cell. Endocytosis is a process that takes substances into a cell.
11. active transport

#### Power Notes

The figure should look similar to Figure 3.25.

*Active transport:* drives molecules across a membrane from lower to higher concentration (against a concentration gradient)

*Endocytosis:* process of taking in liquids or larger molecules into a cell by engulfing in a vesicle; requires energy

The diagram (1., 2. 3.) should look similar to the diagram on page 90 of the text.

*Exocytosis:* process of releasing substances out of a cell by fusion of a vesicle with the membrane

The diagram (1., 2. 3.) should look similar to the diagram on page 91 of the text.

#### Reinforcement

1. They all require energy and can move substances regardless of a concentration gradient.

2. In active transport, a material is moved through a transport protein. Endocytosis and exocytosis can move large materials in vesicles. The material does not actually cross the membrane.
3. releases hormones and digestive enzymes; transmits nerve impulses

### Chapter 3

#### Data Analysis Practice

1. The time, in minutes, it takes for equilibrium to be reached between the two sides of the aquarium.
2. The greater the concentration of solutes, the faster diffusion occurs.
3. Higher. Some of the water would diffuse from the side with 5% NaCl into the side with 30% NaCl, because the concentration of water molecules is higher in the side with 5% NaCl than in the side with 30% NaCl.

#### Pre-AP Activity

#### EXPERIMENT WITH OSMOSIS

1. Water molecules entered the potato cells because there was a higher concentration of solute in the potato than in the solution.
2. Water molecules moved out of the potato cells because there was a lower concentration of solute in the potato than in the solution.

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**Pre-AP Activity****EXPERIMENT WITH OSMOSIS**

1. Water molecules entered the potato cells because there was a higher concentration of solute in the potato than in the solution.
2. Water molecules moved out of the potato cells because there was a lower concentration of solute in the potato than in the solution.

3. Students should find that one of the potato pieces (in 1% salt solution) did not change in mass. Water molecules moved in and out of this potato piece's cells at an equal rate because the concentrations of solute in both solutions were equal.
4. The distilled water and 0.5% salt solution were hypotonic, and the 5% and 10% salt solutions were hypertonic.
5. The concentration of solutes in potato cells is about 1%, because in the 1% salt solution the concentrations of solutes inside and outside the potato were the same (isotonic).
9. the jellylike substance composed of water and dissolved molecules and ions that fills much of a cell
10. the skeleton of a cell; an interconnected network of proteins that gives a cell strength, the ability to move, and the ability to transport organelles

**B. Analogies**

1. ribosomes
2. cell wall
3. selective permeability
4. passive transport
5. active transport
6. exocytosis
7. concentration gradient
8. Golgi apparatus
9. nucleus

10. Sample answer: The cytoskeleton is sort of like the underlying structure of a building that holds everything else up and provides a structure for elevators to run up and down.
11. Sample answer: Phagocytosis is sort of like a person who hovers over the food, shoveling in huge bites.

**C. Vector Vocabulary**

1. the movement of molecules across a membrane through a transport protein requiring energy input from a cell
2. the movement of molecules across a membrane without energy input from a cell
3. the diffusion of molecules across the cell membrane is a type of passive transport
4. the movement of molecules from a region of higher

- concentration to a region of lower concentration
5. the movement of water molecules from a region of higher water concentration to a region of lower water concentration
6. osmosis is the diffusion of water molecules
7. the relative concentrations of two solutions separated by a semipermeable membrane will determine the direction of osmosis across the membrane
8. having an equal amount of solutes compared to another solution
9. having fewer solutes compared to another solution
10. have more solutes compared to another solution

**D. Who Am I?**

1. organelles
2. cell theory
3. phospholipids
4. fluid mosaic model
5. eukaryotic cell
6. prokaryotic cell
7. facilitated diffusion
8. endoplasmic reticulum
9. lysosomes
10. mitochondrion
11. centriole
12. cell membrane
13. receptor
14. vacuole
15. vesicle

**Section 4.1****Study Guide**

1. adenosine triphosphate (ATP)