

# The Cell in Its Environment

(pages 80–85)

## Diffusion (pages 81–82)

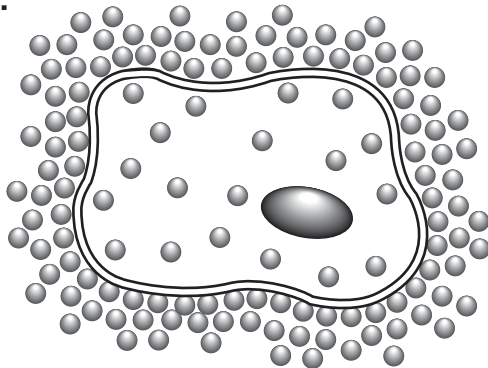
**Key Concept:** Diffusion is the main method by which small molecules move across the cell membrane.

- The cell membrane lets only some substances pass through it. Oxygen, food, waste products, and water are substances that can pass through the cell membrane.
- **Diffusion** (dih FYOO zhun) is when substances move from an area of high concentration to an area of low concentration. It is like when people spread out from a crowded space to a less crowded space.

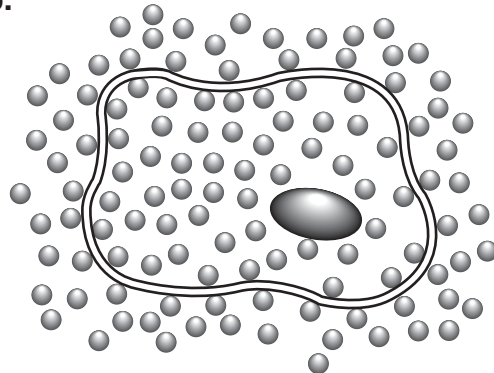
*Answer the following questions. Use your textbook and the ideas above.*

1. Is the following sentence true or false? In diffusion, substances move from areas of high concentration to areas of low concentration. \_\_\_\_\_
2. The pictures show particles of a substance spread inside and outside a cell. Circle the letter of the picture that shows how the particles look before diffusion has taken place.

a.



b.



**Cell Processes and Energy** ▪ *Adapted Reading and Study***Osmosis** (pages 82–83)

**Key Concept:** Because cells cannot function properly without adequate water, many cellular processes depend on osmosis.

- **Osmosis** (ahz MOE sis) is the diffusion of water across a cell membrane.
- In osmosis, water moves by diffusion through the cell membrane to an area of low water concentration.
- Water moves out of the cell if there is more water inside the cell than outside the cell. Cells shrink when water moves out.
- Water moves into the cell if there is more water outside the cell. Cells swell, or get larger, when water moves in.

*Answer the following questions. Use your textbook and the ideas above.*

3. Circle the letter of how water moves in osmosis.
  - a. across a cell membrane
  - b. to areas where there is more water
  - c. downhill
4. Read each word in the box. In each sentence below, fill in the correct word or words.

shrinks	stays the same	swells
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- a. When water moves into a cell, the cell  
\_\_\_\_\_.
- b. When water moves out of a cell, the cell  
\_\_\_\_\_.

**Cell Processes and Energy** ▪ *Adapted Reading and Study***Active Transport** (pages 84–85)

**Key Concept:** Active transport requires the cell to use its own energy, while passive transport does not.

- In **passive transport**, substances move back and forth through the cell membrane without the use of energy. Diffusion and osmosis are examples of passive transport.
- In **active transport**, cells use energy to move substances through the cell membrane. Cells use active transport to take in substances that are already in higher concentrations inside the cell than outside.
- Calcium, potassium, and sodium are some substances that move in and out of cells by active transport.

*Answer the following questions. Use your textbook and the ideas above.*

5. Fill in the table below to compare active transport and passive transport in cells.

Cell Transport		
Type	Needs Energy?	Direction Materials Move
Passive	a. _____	to lower concentration
Active	yes	to b. _____ concentration

6. Cells use energy to move substances through the cell membrane in \_\_\_\_\_ transport.