

Active Reading

Section: Cell Communication

Read the passage below. Then answer the questions that follow.

Cell communication occurs when a special molecule called a **signal** binds to a specific protein in a cell membrane called a **receptor protein**. The binding of the signal and the receptor protein triggers changes in the cell. This event generally causes one of the following three types of changes.

A change in the ability of the cell membrane to allow substances to pass through — This is called a change in the permeability of the cell membrane. It occurs because the signal causes one or more types of transport proteins either to open or to close.

The activation of enzymes involved in one or more chemical reactions vital to the cell — Enzymes change the rate at which reactions take place. They make chemical reactions in the cell go fast enough to sustain life. Many enzymes are proteins. Enzyme activation can occur if a signal molecule binds with a receptor protein that also is an enzyme. The binding of the signal with the enzyme can activate the enzyme.

The release of a second messenger inside the cell — In this case, the binding of the signal and the receptor protein causes a second signal molecule to be released inside the cell. The second signal is the **second messenger**. It can cause many types of changes inside the cell. It can activate enzymes, cause changes in the cytoplasm, or cause changes in the nucleus.

SKILL: RECOGNIZING CAUSE AND EFFECT

Read each question, and write your answer in the space provided.

1. What event is the basis for cell communication?

2. Explain how cell communication can cause a change in the permeability of a cell membrane.

Active Reading *continued*

3. What do enzymes do?

4. Explain how cell communication can cause enzymes in a cell to become activated.

5. What is a second messenger, and what causes a second messenger to be sent?

6. What kinds of changes in a cell do second messengers usually cause?

In the space provided, write the letter of the phrase that best answers the question.

_____ 7. What is permeability?

- a. the activation of an enzyme
- b. the binding of a signal to a receptor protein
- c. the ability of a membrane to allow substances to pass through it
- d. All of the above