

Active Reading**Section: Gene Regulation and Structure**

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

A change in the DNA of a gene is called a mutation. The effects of a mutation vary, depending on whether it occurs in a gamete or in a body cell. Mutations in gametes can be passed on to offspring of the affected individual, but mutations in body cells affect only the individual in which they occur.

Mutations that move an entire gene to a new location are called *gene rearrangements*. Changes in a gene's position often disrupt the gene's function because the gene is exposed to new regulatory controls in its new location. This is something like moving to France and not being able to speak French.

Mutations that change a gene are called *gene alterations*. Gene alterations usually result in the placement of the wrong amino acid during protein assembly. This error can disrupt the protein's function. In a **point mutation**, a single nucleotide changes. In an *insertion* mutation, a sizable length of DNA is inserted into a gene. Insertions often result when mobile segments of DNA, called transposons, move randomly from one position to another on chromosomes. In a *deletion* mutation, segments of a gene are lost, often during meiosis.

SKILL: READING EFFECTIVELY

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

1. What is a mutation?

2. A certain mutation is passed to offspring of the affected individual. What does this indicate about the type of cell in which the mutation originally occurred?

3. What is the difference between a gene rearrangement and a gene alteration?

Active Reading continued

4. What is an insertion?

5. Why can a deletion have potentially catastrophic results?

In the space provided, write the letter of the phrase that best completes the statement.

6. A mutation in a body cell is similar to a mutation in a gamete in that both involve
 - a. offspring of the affected individual.
 - b. a change in the DNA of a gene.
 - c. addition of nucleotides.
 - d. deletion of nucleotides.