Name _____ Class_____Date_____

Skills Worksheet

Active Reading

Section: Regulating Gene Expression

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

Similar to prokaryotic cells, eukaryotic cells have proteins that regulate transcription. However, many more proteins are involved, and the interactions are more complex.

Most often in eukaryotes, there is a genetic switch involved in the first step of transcription when RNA polymerase binds to the promoter region. The proteins involved in this kind of genetic switch are called **transcription factors.** Transcription factors interact with RNA polymerases around promoter regions of DNA. A given gene can be influenced by many transcription factors. Some transcription factors act as *activators*, turning on genes, and some act as *repressors*, turning off genes.

One kind of DNA sequence that can be bound by an activator is called an *enhancer*. Enhancers are often located thousands of bases away from the promoter. A loop in the DNA forms as the transcription factor interacts with the enhancer as well as with RNA polymerase at the promoter site. Each factor may also affect other factors before transcription begins.

SKILL: READING EFFECTIVELY

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

1. What is a transcription factor?

_____

_____

2. A certain transcription factor leads to the expression of a gene. What does this indicate about the type of transcription factor?

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3. What is the relationship between the terms *genetic switch* and *transcription factor*?

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Active Reading *continued*

4. What is an enhancer?

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5. Why is transcription considered to be complex in eukaryotes?

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An analogy is a comparison. In the space provided, write the letter of the term that best completes the analogy.

_____ 6. A activator is to the enhancer as RNA polymerase is to the
   a. gene region.
   b. genetic switch.
   c. DNA sequence.
   d. promoter site.