

Chapter 12 DNA and RNA
GENE EXPRESSION
Section Review 12-5
Reviewing Key Concepts

- Short Answer** *On the lines provided, answer the following questions.*
1. What causes the *lac* genes in *E. coli* to turn off?

 2. What causes the *lac* genes in *E. coli* to turn on?

 3. Are most eukaryotic genes controlled individually or as groups?

Reviewing Key Skills

4. **Comparing and Contrasting** How are the regulatory sequences of prokaryotic and eukaryotic DNA similar? How are they different?

5. **Applying Concepts** Why does the complexity of gene regulation mirror the complexity of the organism in which it is found?

6. **Comparing and Contrasting** How does the DNA possessed by the cells of the different tissues of an organism differ from the DNA expressed by those cells?

7. **Applying Concepts** Explain the role of the *lac* operon in *E. coli*.

8. **Inferring** Explain the function of the TATA box.

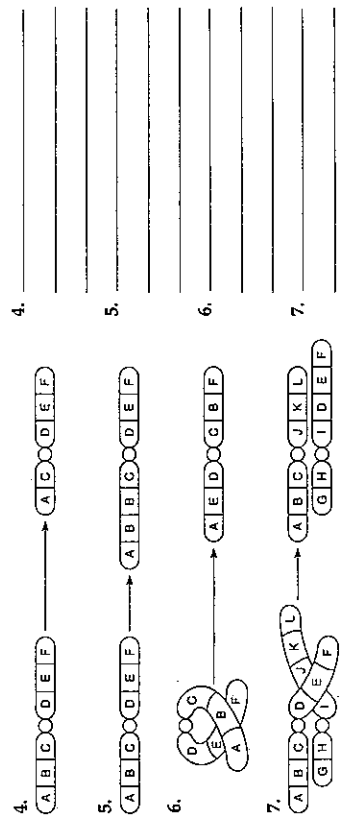
9. **Comparing and Contrasting** Compare the role of *hox* genes in humans and fruit flies.

10. **Inferring** Given that 700 million years after they shared a common ancestor, mice and fruit flies possess developmental genes that are very similar, what can be inferred about the effect of mutation upon these genes?

Chapter 12 DNA and RNA
MUTATION
Section Review 12-4
Reviewing Key Concepts

- Completion** *On the lines provided, complete the following sentences.*
1. Genetic information is altered when changes in the DNA sequence, called _____, occur.
 2. Changes in the DNA sequence of a single gene are called _____.
 3. The DNA sequence of an entire chromosome is affected by a(n) _____.

Identifying Structures *On the lines provided, identify each diagram as one of the following mutations: translocation, inversion, duplication, deletion. Then, describe what happens during each mutation.*



Reviewing Key Skills

8. **Comparing and Contrasting** How are frameshift and substitution mutations similar? How are they different?

9. **Applying Concepts** How can polyploidy in plants benefit humans?

10. **Applying Concepts** Compare the original sequence GCA CCG AGA to the mutant sequence GCA CAC GAG and determine what type of mutation has occurred.

