Name _____ Date_____

Study Guide 7.8: Mutations

KEY CONCEPT
Mutations are changes in DNA that may or may not affect phenotype.

VOCABULARY		
	mutation	frameshift mutation
	point mutation	mutagen

MAIN IDEA:
Some mutations affect a single gene, while others affect an entire chromosome.

1. From the following list, select the two types of mutations that are gene mutations and select the two types that are chromosomal mutations.
   a. frameshift mutation
   b. gene duplication
   c. point mutation (substitution)
   d. translocation

   Gene mutations: _____ Chromosomal mutations: _____

2. Which type of mutation affects more genes, a gene mutation or a chromosomal mutation?
   _____

Circle the word or phrase that best completes the statement.

3. Gene duplication happens when there is ***equal / unequal*** cross-over event.

4. A translocation happens when a piece of one chromosome ***attaches to / detaches*** *from* a non-homologous chromosome.

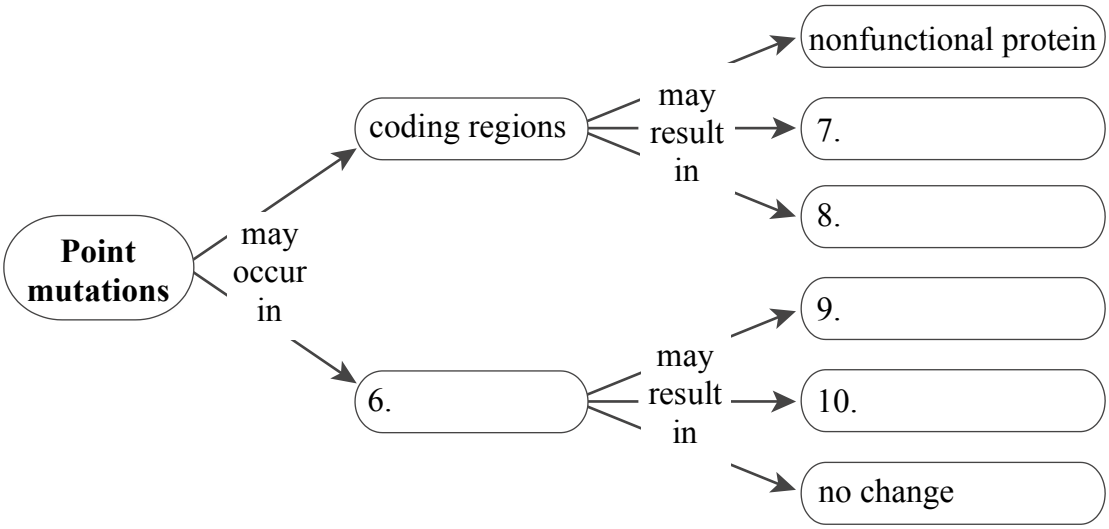
5. In the boxes below is a string of nucleotides.
   a. Use brackets to indicate the reading frame of the nucleotide sequence.
   b. Make a point mutation. Circle the mutation.
   c. Make a frameshift mutation. Use brackets to indicate how the reading frame would be altered by the mutation.

a. A T G C G T C C A T G A
b. A T G C G T C C A T G A
c. A T G C G T C C A T G A

MAIN IDEA: Mutations may or may not affect phenotype.

Fill in the Cause-and-Effect Diagram using the phrases listed below to explain how a point mutation may or may not affect phenotype.

a. altered splice site
b. lack of regulation
c. no change
d. noncoding regions
e. premature stop codon



11. For a mutation to be passed to offspring, it must occur in the ***autosomal / germ*** cells.

MAIN IDEA: Mutations can be caused by several factors.

Fill in the blank with the word or phrase that best completes the sentence.

12. Can DNA polymerase catch and correct every replication error? _____

13. An agent in the environment that can change DNA is called a _____.

14. UV light damages a DNA strand by causing neighboring _____ nucleotides to break their hydrogen bonds to adenine and bond with each other instead.

Vocabulary Check

Fill in the blank with the word or phrase that best completes the sentence.

15. A mutation is a change in an organism's _____.

16. If a nucleotide is deleted from a strand of DNA, what type of mutation has occurred?

a. frameshift mutation
b. gene duplication
c. point mutation (substitution)
d. translocation

Section Quiz 7.8: MUTATION

Choose the letter of the best answer.

____ 1. Generally, mutations that affect a single gene occur during
   a. transcription.
   b. replication.
   c. translation.
   d. operation.

____ 2. Cystic fibrosis is an example of a genetic disease caused by the deletion of a nucleotide. What is the term for this type of mutation?
   a. translocation
   b. chromosomal
   c. single-gene
   d. frameshift

____ 3. Which type of mutation has no effect on phenotype?
   a. silent
   b. frameshift
   c. point
   d. chromosomal

____ 4. Mutations that can affect the offspring of an organism occur in what cell type?
   a. body
   b. germ
   c. blood
   d. brain

____ 5. Which of the following is an example of a mutagen?
   a. repair enzyme
   b. triglyceride
   c. UV sunlight
   d. thymine