

Name \_\_\_\_\_ Date \_\_\_\_\_

### Mutations in DNA and RNA

1. What is a mutation? \_\_\_\_\_

2. List the 4 types of mutations in the spaces below.

a).
b).
c).
d).

3. List 3 causes of mutations. \_\_\_\_\_

\_\_\_\_\_

Directions: Examine the following DNA molecules and answer the questions that follow.

**THE ORIGINAL MOLECULE: ATTCCGGTTATTGGGCTG**

4. Create a m-RNA molecule and write it in the space below.

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5. Mark off the codons and determine their number \_\_\_\_\_.

6. Using your codon chart, determine the amino acids for each codon.

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7. Create an inversion mutation using codons 4 thru 6 and write the results in the space below.

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8. Determine the amino acids and answer the questions that follow.

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9. What was the effect of this mutation on the type of amino acids in the protein?

\_\_\_\_\_

\_\_\_\_\_

10. Using the original m-RNA, create a substitution mutation in codons 1,3 and 5 that have no effect on the final amino acids.

11. Using your codon chart list all the codons for the following amino acids:

a). Leucine : \_\_\_\_\_

b). Glycine: \_\_\_\_\_

c). Stop: \_\_\_\_\_

12. What is the main advantage for an amino acid having several codons to code for it?

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13. Determine the DNA strand from the following amino acids:

Meth   Lysine   Valine   Proline   Lysine   Isoleucine   Stop

Codons: \_\_\_\_\_

DNA: \_\_\_\_\_

14. Show a deletion mutation in this piece of DNA:

AATGGCCCATTA

15. How many codons does the original DNA contain? \_\_\_\_\_

16. How many codons does the mutated DNA contain? \_\_\_\_\_