**DNA Mutation Activity**

NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Class Period: \_\_

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| **PART ONE Directions:**   1. Compare the original DNA sequence to the mutated DNA sequence. 2. Circle or underline the part of the mutated DNA sequence (or original, if the original has more bases than the mutated sequence) that is different from the original DNA sequence. 3. Identify each mutation according to the type of mutation it is, your choices are:    1. ***Simple Point Insertion*** is when a genetic mutation is caused by an amino acid (A,C,T,G) being inserted or added to the sequence, changing the base pair    2. ***Simple Point Substitution*** is when a genetic mutation is caused by an amino acid (A, C, T, G) being substituted in the sequence, changing the base pair    3. ***Frameshift mutation*** is when is a genetic mutation is caused by a deletion in a DNA sequence that shifts the way the sequence is read. |
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| **For example:**  *Original DNA Sequence*: GATGCGATCAGCCTGA  *Mutated DNA Sequence*: GATGCGATCATGA  ***Mutation Type: Simple Insertion*** |

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| **1) Original DNA Sequence:**  AGTCATGGCCATCGCCTAG  **Mutated DNA Sequence:**  AGTCATGGCAATCGCCTAG  Mutation Type: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | **2) Original DNA Sequence:**  ATCATGCGCCAAATACGGTGA  **Mutated DNA Sequence:**  ATCATGCGCCATACGGTGA  Mutation Type: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | **3) Original DNA Sequence:**  GCCATCATGCGCTTTTGA  **Mutated DNA Sequence:**  GCCATCATGCGCTGA  Mutation Type: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **4) Original DNA Sequence:**  AAAATGCGCTTACGATGA  **Mutated DNA Sequence:**  AAAATGCGCTCCCTACGATGA  Mutation Type: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | **5) Original DNA Sequence:**  AGTCATGGCATCGCCTAG  **Mutated DNA Sequence:**  AGTCATGGCAATCGCCTAG  Mutation Type: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | **6) Original DNA Sequence:**  ATCATGCGCCAAATACGGTGA  **Mutated DNA Sequence:**  ATCATGCGCCTACGGTGA  Mutation Type: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **7) Original DNA Sequence:**  GCCATCATGCGCTTTTGA  **Mutated DNA Sequence:**  GCCATCATGCGCTTCTGA  Mutation Type: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | **8) Original DNA Sequence:**  AAAATGCGCTTACGATGA  **Mutated DNA Sequence:**  AAAATGCGCTTACGACGATGA  Mutation Type: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | **9) Original DNA Sequence:**  AGTCATGGCATCGCCTAG  **Mutated DNA Sequence:**  AGTCATGTTCGCCTAG  Mutation Type: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **10) Original DNA Sequence:**  AATGCGCTTTTGA  **Mutated DNA Sequence:**  AATGCGGTTCTGA  Mutation Type: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | **11) Original DNA Sequence:**  AATGCGCTTTTGA  **Mutated DNA Sequence:**  AATGCGCAAGTTCTGA  Mutation Type: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | **12) Original DNA Sequence:**  AAAATGCGCTTACGATGA  **Mutated DNA Sequence:**  AAAATGCGCTAACGATGA  Mutation Type: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

**PART TWO**

1. **Watch the video at:** [**https://www.youtube.com/watch?v=ZtSfFqqhEIY**](https://www.youtube.com/watch?v=ZtSfFqqhEIY)
2. **Then fill in the blanks below:**

Two scientists by the name of (1) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and (2) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ conducted an experiment that confirmed that DNA, not (3) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, contained the genetic material of a cell. In their experiment, they used a small virus called a (4) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that infects bacteria. This virus has a protein outer layer with its genetic material inside. When the virus (5) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ its genetic material into the bacterium, its outer coat remains (6) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. They did (7) \_\_\_\_\_\_\_\_\_\_\_\_\_\_ experiments. In the first experiment, viruses with radioactive (8) \_\_\_\_\_\_\_\_\_\_\_\_ infected the bacteria. In the second experiment, viruses with radioactive (9) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ infected the bacteria. Only bacteria that were infected with (10) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ were radioactive, while bacteria infected with (11) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ were not radioactive. This was evidence that (12) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, contained the genetic material of organisms.

EXEMPLARY OPTION

**PART 4 Directions: Now,** **Answer the following questions about the Hershey Chase experiment.**

1. Why was the Hershey Chase experiment important?
2. In their experiment, the small virus that infects bacteria is called a what?
3. What is the basic structure of this virus (what is it made of)?
4. How did they setup their experiment (summarize the basic procedure they followed)?
5. What was the result of their experiment?
6. Based on their results, what did they conclude?