

MUTATIONS & GENETIC VARIATION

FLORIDA NGSSS | SC.912.L.16.9

BIOLOGY 1 | EOC PREP | READING PASSAGE + QUESTIONS

Name: _____ Date: _____

Mutations & Genetic Variation

Mutations: How Changes in DNA Affect Life

DNA holds the instructions for building living things. But sometimes, small changes happen to DNA. These changes are called **mutations**. Some mutations have no effect at all. Others can cause changes to proteins and things - for better, worse, or not at all.

What Causes Mutations?

Mutations can happen for several reasons:

- Mistakes during DNA replication (when a cell copies its DNA)
- Environmental factors, like UV radiation, chemicals, or viruses
- Spontaneous changes that happen naturally over time

Mutations can happen in any part of the DNA sequence.

Some affect just one base (called a **point mutation**), while others can insert or delete sections of DNA (insertion or deletion mutations).

Types of Mutations

- **Substitution (Point Mutation):** One base is swapped for another. Example: A-T becomes G-T.
- **Insertion:** One or more bases are added to the DNA sequence. Example: A new base slips into the middle of the sequence.
- **Deletion:** One or more bases are removed. Example: A missing base shifts the reading frame.

Some mutations change the proteins made by a gene. Others don't affect the protein at all, because of the redundancy in the genetic code.



Name: _____ Date: _____

Comprehension Questions

1. Multiple Choice

What is a mutation?

- (A) A type of protein
- (B) A change in DNA
- (C) A change in the cell membrane
- (D) A type of sugar

2. Short Answer

What are two ways a mutation can happen?

3. True or False

All mutations cause harmful effects.

4. Multiple Choice

Which type of mutation causes a shift in the reading frame?

- (A) Substitution
- (B) Deletion
- (C) Silent mutation
- (D) Missense mutation

5. Short Answer

Explain the difference between a silent mutation and a missense mutation.

6. Multiple Choice

Which of the following would most likely cause a protein to stop being made early?

- (A) Missense mutation
- (B) Silent mutation
- (C) Frameshift mutation
- (D) Premature mutation

7. Short Answer

Why are some mutations important for a species over time?



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Mike Jess

A red circular graphic with a gradient, appearing as a semi-circle or a partial circle, located to the right of the name bar.

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