

Name: _____

Date: _____

Notes: Mutations

What do all living things contain? _____

What is the DNA of ALL living things made from? _____

What carries the information for ALL living things? _____

How is information written into a molecule of DNA? _____

How large is a **codon**? _____

What is each codon translated into? _____

What is another name for a codon? _____

If the codons change, what else could change? _____

Define **mutation**: _____

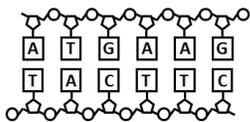
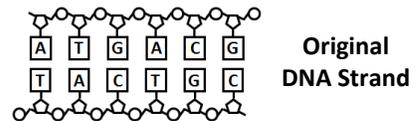
When do mutations naturally occur? _____

What can induce mutations? _____

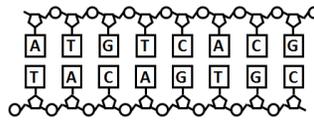
What do you call anything that induces mutations? _____

Which forms of high energy radiation can be harmful to an organism's DNA?

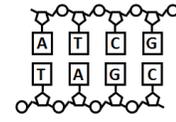
Decide which strand is the **insertion**, which is the **deletion** and which is the **substitution**.



Mutant 1: _____



Mutant 2: _____



Mutant 3: _____

What do you have to do to determine how a mutation will affect a protein?

What must be true of a gene in order for a mutation to significantly affect the cell?

What is the *reading frame* of a gene? _____

What are the *nucleotide triplets* also called? _____

Describe a *frame shift mutation*: _____

What else are substitution mutations called? _____

Describe the key characteristic of each mutation below caused by a point mutation.

Missense mutation: _____

Nonsense mutation: _____

Silent mutation: _____

Using your CODON CHART, determine how the following mutations would affect the resulting protein.



1. The chain above represents three codons. Which of the following changes would be expected in the amino acid chain if the mutation shown above occurred?

- A The amino acid sequence would be shorter than expected.
- B The identity of one amino acid would change.
- C The amino acid sequence would remain unchanged.
- D The identities of more than one amino acid would change.

2. What type of mutation is illustrated in question 1?

- A frame shift mutation
- B nonsense mutation
- C silent mutation
- D missense mutation



3. The chain above represents three codons. Which of the following changes would be expected in the amino acid chain if the mutation shown above occurred?

- A The amino acid sequence would be shorter than expected.
- B The identity of one amino acid would change.
- C The amino acid sequence would remain unchanged.
- D The identities of more than one amino acid would change.

4. What type of mutation is illustrated in question 3?

- A frame shift mutation
- B nonsense mutation
- C silent mutation
- D missense mutation