

Mutations Worksheet

Activities One and Two

Activity One: What is a Mutation?

1. Go to learn.genetics.utah.edu/archive/mutations/index.html
2. Read this page.
3. Click on the "Mutate a DNA Sequence Activity" (yellow box; upper right)
4. Read the yellow boxes to the right and define the following terms:

Point mutation:

Missense Mutation:

Nonsense Mutation:

Silent Mutation:

Frameshift mutation (insertion/deletion):

5. Transcribe and translate the gene below. Use the genetic code I gave you. **DO NOT USE THE GENETIC CODE ON THE WEBSITE!** Use the definitions above to help you with the questions below.

DNA SEQUENCE → GCATACGCTGCGAAAGTTTGGCTGACTGGGCAATTG

RNA TRANSCRIPT → _____

- a. What is the amino acid sequence encoded by the DNA sequence? (*assume this is in the middle of a gene*)
 _____ - _____ - _____ - _____ - _____ - _____ - _____
- b. What does a missense mutation look like? How does it change the amino acid sequence?

c. What does a nonsense mutation look like? How does it change the amino acid sequence? _____
 _____ What kind of mutation is this?

Will there likely be a change in the protein?

Sequence #2: T A C G A C C T T G G C G A C G A C T

 Amino acid sequence? _____ (Circle the change)

 Effects? _____ What kind of mutation is this?

Mutated DNA Sequence
 What's the mRNA sequence?
 What will be the amino acid sequence?
 Will there likely be a change in the protein?