

# Mutations Worksheet

Activities One and Two

## Activity One: What is a Mutation?

1. Go to [learn.genetics.utah.edu/archive/mutations/index.html](http://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?
- d. How do frameshift mutations change the amino acid sequence?