

There are several types of mutation:

**DELETION** (a base is lost)

**INSERTION** (an extra base is inserted)

Deletion and insertion may cause what's called a **FRAMESHIFT**, meaning the reading "frame" changes, changing the amino acid sequence.

**SUBSTITUTION** (one base is substituted for another)

If a substitution *changes* the amino acid, it's called a **MISSENSE** mutation.

If a substitution *does not change* the amino acid, it's called a **SILENT** mutation.

If a substitution *changes the amino acid to a "stop,"* it's called a **NONSENSE** mutation.

➔ Complete the boxes below. Classify each as either Deletion, Insertion, or Substitution **AND** as either frameshift, missense, silent or nonsense (hint: deletion or insertion will always be frameshift).

Original DNA Sequence: **T A C A C C T T G G C G A C G A C T**

mRNA Sequence: \_\_\_\_\_

Amino Acid Sequence: \_\_\_\_\_

Mutated DNA Sequence #1: **T A C A T C T T G G C G A C G A C T**

What's the mRNA sequence? \_\_\_\_\_ (Circle the change)

What will be the amino acid sequence? \_\_\_\_\_

Will there likely be effects? \_\_\_\_\_ What kind of mutation is this?

Mutated DNA Sequence #2: **T A C G A C C T T G G C G A C G A C T**

What's the mRNA sequence? \_\_\_\_\_ (Circle the change)

What will be the amino acid sequence? \_\_\_\_\_

Will there likely be effects? \_\_\_\_\_ What kind of mutation is this?

Mutated DNA Sequence #3: **T A C A C C T T A G C G A C G A C T**

What's the mRNA sequence? \_\_\_\_\_ (Circle the change)

What will be the amino acid sequence? \_\_\_\_\_

Will there likely be effects? \_\_\_\_\_ What kind of mutation is this?

Mutated DNA Sequence #4: **T A C A C C T T G G C G A C T A C T**

What's the mRNA sequence? \_\_\_\_\_ (Circle the change)

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What's the mRNA sequence? \_\_\_\_\_ (Circle the change)

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Mutated DNA Sequence #2: **T A C G A C C T T G G C G A C G A C T**

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