

DNA Mutations Worksheet

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Name KEY
 Hour _____
 Date _____

There are two main types of mutations: point mutations and frameshift mutations. In each of the following DNA sequences, you will use the mRNA and amino acid sequences to identify the type of mutation that occurred and the effects of each on, if any. Look and analyze carefully! Use mRNA codon / Amino Acid chart

Original DNA Sequence: T A C A C C T T G G C G A C G A C T 18 letters
mRNA Sequence: A U G U G G A A C C G C U G C U G A
Amino Acid Sequence: Start Met Trp Asn Arg Cys Stop

Mutated DNA Sequence #1: T A C A C C T T G G C G A C G A C T 18 letters
 What's the mRNA sequence? (Circle the change) A U G U A G A A C C G C U G C U G A
 What will be the amino acid sequence? Start Met Stop Asn Arg Cys Stop
 Will there likely be effects? Yes, because second amino acid changed from Trp to stop
 What kind of mutation is this? Point mutation (substitution)

Mutated DNA Sequence #2: T A C G A C C T T G G C G A C G A C T 19 letters
 What's the mRNA sequence? (Circle the change) A U G C U G G A A C C G C U G C U G A
 What will be the amino acid sequence? Start Met Leu Glu Pro Leu Leu ...
 Will there likely be effects? Yes, the 2nd through 6th amino acids changed
 What kind of mutation is this? frameshift mutation (addition)

Mutated DNA Sequence #3: T A C A C C T T A G C G A C G A C T 18 letters
 What's the mRNA sequence? (Circle the change) A U G U G G A A U C G C U G C U G A
 What will be the amino acid sequence? Start Met Trp Asn Arg Cys Stop
 Will there likely be effects? No, the amino acid sequence stayed the same
 What kind of mutation is this? Point mutation (substitution)

Mutated DNA Sequence #4: T A C A C C T T G G G A C G A C T 17 letters
 What will be the corresponding mRNA sequence? A U G U G G A A C C C U G C U G A
 What will be the amino acid sequence? Start Met Trp Asn Pro Ala ...
 Will there likely be effects? Yes, the 4th through 6th amino acids changed
 What kind of mutation is this? frameshift mutation (deletion)

- Which type of mutation is responsible for new variations of a trait? Point mutations
- Which type of mutation results in abnormal amino acid sequence? Both (frameshift & Point) can
often sometimes
- Which type of mutation stops the translation of the mRNA? Both (frameshift & Point) can
often sometimes
 Stop the translation of mRNA