

DNA Mutations Worksheet

Name _____

Hour _____

Date _____

There are two main types of mutations: ^① point mutations and ^② 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: _____

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 18 letters

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 19 letters

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 18 letters

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 G A | C G A | C T 17 letters

What will be the corresponding mRNA sequence? _____

What will be the amino acid sequence? _____

Will there likely be effects? _____

What kind of mutation is this? _____

1. Which type of mutation is responsible for new variations of a trait? _____
2. Which type of mutation results in abnormal amino acid sequence? _____
3. Which type of mutation stops the translation of the mRNA? _____

mRNA Codon/Amino Acid Chart

First Base	Second Base			Third Base
	U	C	A	
U	UUU } Phenylalanine (Phe) UUC }	UCU } Serine (Ser) UCC } UCA } UCG }	UAU } Tyrosine (Tyr) UAC } UAA } Stop UAG }	UGU } Cysteine (Cys) UGC } UGA } Stop UGG } Tryptophan (Trp)
	CUU } Leucine (Leu) CUC } CUA } CUG }	CCU } Proline (Pro) CCC } CCA } CCG }	CAU } Histidine (His) CAC } CAA } Glutamine (Gln) CAG }	CGU } Arginine (Arg) CGC } CGA } CGG }
	AUU } Isoleucine (Ile) AUC } AUA } AUG } Start Methionine (Met)	ACU } Threonine (Thr) ACC } ACA } ACG }	AAU } Asparagine (Asn) AAC } AAA } Lysine (Lys) AAG }	AGU } Serine (Ser) AGC } AGA } Arginine (Arg) AGG }
	GUU } Valine (Val) GUC } GUA } GUG }	GCU } Alanine (Ala) GCC } GCA } GCG }	GAU } Aspartic Acid (Asp) GAC } GAA } Glutamic Acid (Glu) GAG }	GGU } Glycine (Gly) GGC } GGA } GGG }