Name: _____ Date: _____ Period: _____

How Do Mutations Affect a Protein?

Fill in the mRNA codons that read the DNA. Next, use your codon chart to get the amino acids then use the color key below to fill in the colors and assemble each protein with your locking cubes. As you build each protein, compare it to the original strand you built (the first protein you synthesize).

Amino Acid (AA)	Color
Ala	Red
Arg	Orange
Asp (asn)	Dark Green
Leu	Pink
Lys	Purple
His	White
Iso (ile)	Dark brown
Gly	Yellow
Met	Black
Pro	Blue
Try (trp)	Light green
Val	Light brown

Original Protein (DNA is correct)

DNA: T A C G G T C G T T T C C G T A A C

mRNA: _____ _____ _____ _____ _____ _____

AA: _____ _____ _____ _____ _____ _____

Color: | | | | | | |

Use blocks to build your protein to match.

Protein result #1

DNA: T A C G G T C G T T T C C G A A A C

mRNA: _____ _____ _____ _____ _____ _____

AA: _____ _____ _____ _____ _____ _____

Color: | | | | | | |

Use blocks to build your protein to match.

Circle where the mutation occurred in the DNA strand.

Type of mutation that occurred: _____

Result of the mutation (what happened to the protein?): _____

_____

Original Protein for comparison (DNA is correct)

DNA: T A C G G T C G T T T C C G T A A C

Protein result #2

DNA: T A C G G T C G T T T G C G T A A C

mRNA: _____ _____ _____ _____ _____ _____

AA: _____ _____ _____ _____ _____ _____

Color: | | | | | | |

Use blocks to build your protein to match.

Circle where the mutation occurred in the DNA strand.

Type of mutation that occurred: _____

Result of the mutation (what happened to the protein?): _____

_____

Original Protein for comparison (DNA is correct)

DNA: T A C G G T C G T T T C C G T A A C

Protein result #3

DNA: T A C G G T C G T T C C G T A A C

mRNA: _____ _____ _____ _____ _____ _____

AA: _____ _____ _____ _____ _____ _____

Color: | | | | | | |

Use blocks to build your protein to match.

Circle where the mutation occurred in the DNA strand.

Type of mutation that occurred: _____

Result of the mutation (what happened to the protein?): _____

_____

Original Protein for comparison (DNA is correct)

DNA: T A C G G T C G T T T C C G T A A C

Protein result #4

DNA: T A C G G T C A G T T T C C G T A A C

mRNA: _____ _____ _____ _____ _____ _____

AA: _____ _____ _____ _____ _____ _____

Color: | | | | | | |

Use blocks to build your protein to match.

Circle where the mutation occurred in the DNA strand.

Type of mutation that occurred: _____

Result of the mutation (what happened to the protein?): _____

_____

Analysis Questions:

1. Which type of mutations can be the most serious? _____ Why?

2. Which type of mutation could cause NO change to the protein? _____ Why?

Watch the following TedEd video:

https://tinyurl.com/z3l756p or

https://tinyurl.com/y3jckn8x