Genetic Mutation Worksheet

Name_____Date_____ Per_____

1. There are several types of genetic mutations. List two. What do they have in common? How are they different? Give an example of each.

2. A geneticist found that a particular mutation had no effect on the protein coded by a gene. What do you think is the most likely type of mutation in this gene? Why?

3. Name one amino acid that has more than one codon. Name an amino acid that has <u>only</u> one codon

4.   Look at the following sequence: THE FAT CAT ATE THE RAT. Delete the first H and regroup the letters in groups of three- write out the new groups of three. Does the sentence still make sense? What type of mutation is this an example of?

5. You have a DNA sequence that codes for a protein and is 105 nucleotides long. A frameshift mutation occurs at the 85th base- how many amino acids will be correct in this protein?

6. Given the following three mRNA sequences, 2 code for the same protein. Which two?

#1. AGU UUA GCA ACG AGA UCA

#2   UCG CUA GCG ACC AGU UCA

#3   AGC CUC GCC ACU CGU AGU

7.   Below is the base sequence for the normal protein for normal hemoglobin and the base sequence for the sickle cell hemoglobin.

Normal GGG CTT CTT TTT
Sickle   GGG CAT CTT TTT

A. Transcribed and translate the normal and sickle cell DNA.

B. Identify this as a point or frameshift mutation. Explain.

C. If the base sequence read GGG CTT CTT AAA instead, would this result in sickle cell hemoglobin? Explain