

### Gene Mutation Activity – Point and Frameshift

#### Procedure:

1. The following is a piece of DNA that a protein will be made from. Write the complementary mRNA in the spaces below it.
2. G – A – C – G – C – C – A – T – G – G – A – A – G – T – C
3. \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_
4. Draw a vertical line between each codon. Look up the amino acid for each codon on the codon chart and write them in the spaces below. Be sure to do this in order. This is the “normal protein.”
5. \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_
6. The following is the same piece of DNA but with a deletion mutation in the second codon. Write the complementary mRNA in the spaces below it.
7. G – A – C – G – C – A – T – G – G – A – A – G – T – C
8. \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_
9. Draw a vertical line between each codon. Do you see any differences between the codons on this mutated strand and the normal strand? \_\_\_\_\_ Describe them.  
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10. Look up the amino acid for each codon on the codon chart and write them in the spaces below.
11. \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_
12. Was the number of amino acids the same as the original strand? \_\_\_\_\_
13. How many of the amino acids were the same as the original strand? \_\_\_\_\_
14. How many of the amino acids were different from the original strand? \_\_\_\_\_
15. Do you believe that this mutated DNA strand would create the same protein or a different protein as the original? \_\_\_\_\_ Why? \_\_\_\_\_  
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\_\_\_\_\_
16. The following is the same piece of DNA but with an insertion mutation in the third codon. Write the complementary mRNA bases below it.