

Name:

Date:

Period:

Biology: DNA

Biology Activity: Gene Mutations

Objective: To demonstrate how gene mutations affect the production of proteins.

Procedure:

1. Use the following base sequence of one strand of an imaginary DNA molecule:

TACGACCGTCCAAATGCTATC

2. Write the base sequence for an mRNA strand that would be transcribed from the given DNA sequence. Place your results in the table below.
3. Use the genetic code to determine the sequence of amino acids in the resulting protein. Place your results in the table below.
4. If the fourth base in the original DNA strand was changed from *G* to *C*, how would this affect the resulting protein? Write the new DNA base sequence, mRNA base sequence and the resulting amino acids in the table below.
5. If *G* were added to the original DNA strand after the third base, what would the resulting mRNA look like? How would this affect the protein? Show your results in the table below.

Data:

mRNA from step 2	
Amino acid sequence from step 3	
Base sequence and protein from step 4	
Base sequence and protein sequence from step 5	

Conclusion:

1. Which change in DNA was a point mutation? Which was a frameshift?
2. In what way did the point mutation affect the polypeptide? What type of point mutation was observed?
3. How did the frameshift mutation affect the polypeptide? What type of frameshift mutation occurred?
4. Which type of mutation causes more damage and why?