**DNA Mutation Lab / Standard 3.2**

Not a formal lab report. Work through the activity as a table and write the numbers in **BOLD** in your notebook.

**Purpose:** To model DNA mutations and determine their severity.

**Materials:** 24 cards per table

**Procedure:**

1. Look at the following DNA sequence. Write one nucleotide on each of the 24 cards. One letter should be on each card. Put the cards in order on your table.

**CTT TTA TAG TAG ATA CCA CAA AGG**

1. You just built a part of the gene that can cause cystic fibrosis.

**3.Write the mRNA that would be transcribed from this DNA strand.**

4. Now the cell uses tRNA to bring the correct amino acids into position. You will need to use the mRNA code to determine which amino acids tRNA should bring. The genetic code chart shows which bases code for which amino acids.

**5. Please write the sequence of amino acids on your paper.**

6. Now you will change the original DNA. A mutation! Change the nucleotide in the 15th position (from the left) to cytosine. Flip over the card and write the new nucleotide in RED.

**7. Now follow the steps 3-5 to determine what affect this mutation would have on the**

**protein made by the gene. Please write the sequence of amino acids after the mutation on your paper.**

8. Now you will change your DNA again! A mutation (from the original DNA strand)!

Remove the nucleotides in the 13th, 14th, and 15th position. Shift the rest of the pieces to

close the gap.

**9. Now follow the steps 3-5 to determine what affect this mutation would have on the**

**protein made by the gene. Please write the sequence of amino acids after the mutation on your paper.**

**Questions: Please answer all 4 questions in complete sentences or paragraph form.**

1. Did changing the sequence of DNA always result in a different amino acid sequence?

Are all mutations bad? Explain your answer.

2. If the adenine in the 15th position of the sequence is changed to a guanine, the person

does not have CF. However, if the thymine in the 14th position is changed to cytosine

the person does have CF. What are some reasons this might occur?

3. Where/When might the mutations in the original DNA come from? What causes DNA mutations in “real life”?

4. What do you think would happen if a single nucleotide were added somewhere in the

sequence? Explain your answer.