**Modeling DNA with Candy**

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Classroom Teacher\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Activity #1 - Model the Double Helix**

**Directions:**

\_\_\_\_\_Obtain two pieces of craft wire. This will be the backbone of your DNA molecule.

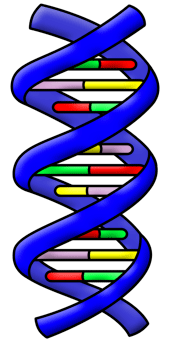
\_\_\_\_\_Get 9 toothpicks. This will be the “pretend” bond between the bases.

\_\_\_\_\_Decide on a candy color(flavor) for your bases.

Adenine(color)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Thymine(color)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Cytosine(color)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Guanine(color)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Your DNA model needs to have 9 complementary base pairs(rungs on the ladder). To help save candy (and money) please tear the tootsie rolls in half.

\_\_\_\_\_Have a teacher check your model before working on the follow up questions. Models need to be placed on a large piece of paper with the names of your group members and class period.

**Activity #1 Follow Up Questions:**

1. What makes up a nucleotide?

2. What makes up a codon?

3. What is the sequence of your DNA molecule’s first codon?

4. What is the sequence of your DNA molecule’s second codon?

5. What is the sequence of your DNA molecule’s third codon?

6. What does a codon translate into?

7. How are proteins formed?

8. What is wrong with this model?

**Activity #2 - Modeling Replication**

**Directions:**

**\_\_\_\_\_\_\_**Carefully, separate your DNA molecule to symbolize replication.

\_\_\_\_\_\_Now, that your DNA molecule is separated, add complementary bases to each separated side. You may need to get more toothpicks.

\_\_\_\_\_\_\_Have a teacher check your two DNA molecules before working on the follow up questions.

**Activity #2 Follow Up Questions:**

1. What happens during replication?

2. When replication is complete, how many DNA molecules do you end up with?

3. When does replication happen during the cell cycle?

**Activity #3 - Modeling Mutations**

**Directions:**

**\_\_\_\_\_**Read page 519 in our science book about **Mutations.**

\_\_\_\_\_Choose one of your DNA molecules to make an example of an **insertion**. Have a teacher place a check mark once you have accomplished this.

\_\_\_\_\_Using the same DNA molecule to make an example of a **substitution**. Have a teacher check your work.

\_\_\_\_\_Using the same DNA molecule make an example of a **deletion**. Have a teacher check your work.

**Activity #3 Follow Up Questions:**

1. What is a mutation?

2. What are the three types of mutations?

3. Mutations can be beneficial, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, or harmful.

4. What are mutagens?