

Name _____

Date _____

Build a DNA Ladder

Purpose: To better understand the way in which the DNA ladder is constructed.

Materials: 2 pieces of licorice, 12 toothpicks, 9 pink marshmallows, 9 yellow marshmallows, 9 orange marshmallows, 9 green orange marshmallows, 4 paper clips, and masking tape, worksheet with procedures

Procedure:

1. Follow this for the duration of the lab:

G = green

A = green

T = pink

C = yellow

2. Choose from one of the following sequences below.

Sequence 1: **T A C G T A T G A A A C**

OR

Sequence 2: **T G G T T T A G A A T T**

- 3. Assemble one side of your DNA molecule.** A piece of licorice will form the backbone and marshmallows will be the chemical bases. Place a marshmallow on the end of a toothpick so that the point of the toothpick goes all the way through. Anchor the toothpick into the licorice backbone. Refer to the table above to choose the correct color marshmallow to represent the chemical bases in your sequence.
- 4. Label the backbone.**
- 5. Match the chemical base pairs according to the key above.** Remember: A always pairs with T and C always pairs with G!
- 6. Complete your DNA model**
- 7. Twist your DNA model.**

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8. Label the remainder of your model.

Using the following information, answer the analysis questions.

Licorice represents a backbone.

T represents _____.

G represents _____.

A represents _____.

C represents _____.

Analysis:

1. Cytosine is always joined to _____ and a _____.
2. Thymine is always joined to _____ and a _____.
3. Guanine is always joined to _____ and a _____.
4. Adenine is always joined to _____ and a _____.
5. Sugars are joined to _____.
6. The rungs of the ladder are represented by which letters? **(Circle all that apply.)**

Licorice T G A C Toothpicks

7. Which letters represent the sides of the ladder? **(Circle all that apply.)**

Licorice T G A C Toothpicks

8. Explain what you have constructed. _____
