

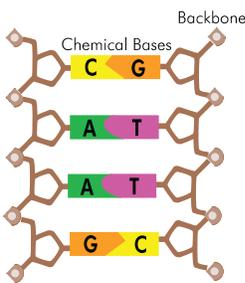
Name: _____

Date: _____

Have Your DNA and Eat It Too!

Lab #: _____

Background:



When isolated from a cell and stretched out, DNA looks like a twisted ladder. This shape is called a double helix. The sides of the DNA ladder are called the backbone and the steps (also called rungs) of the ladder are pairs of small chemicals called bases. There are four types of chemical bases in DNA: Adenine (A), Cytosine (C), Guanine (G), and Thymine (T). They form pairs in very specific ways: Adenine (A) always pairs with Thymine (T) and Cytosine (C) always pairs with Guanine (G).

Task: Using the materials below, you will construct an edible DNA model.

Materials for Each Student:

- 12 Toothpicks

- 2 Twizzlers

- 9 Green Marshmallows

- 9 Pink Marshmallows

- 5 Orange Marshmallows

- 5 Yellow Marshmallows

STEP 1:

A) Write the complimentary strand for both DNA sequences below:

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

Complimentary Strand: _____

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

Complimentary Strand: _____

**STOP! Get a
check!**

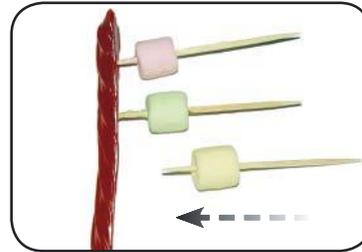
B) Choose EITHER sequence 1 or sequence 2. Draw a CIRCLE around sequence and complementary strand you choose. This will be the DNA molecule you will be modeling.

STEP 2:

A) The twizzlers will form the backbone of the DNA molecule and the marshmallows will be the nitrogenous bases.

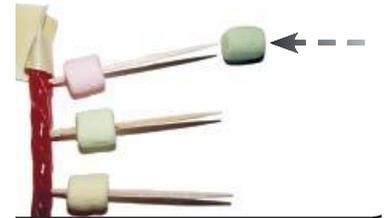
B) Assemble one strand (twizzler) of your DNA molecule.

- a. Refer to the table to the right to choose the correct color marshmallow to represent the chemical bases in your sequence.
- b. Place a marshmallow on the end of a toothpick so that the point of the toothpick goes all the way through. Stick the toothpick into the twizzler as pictured on the right. Do this for each base of your DNA strand.

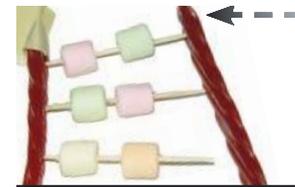


Adenine (A) = Green	
Thymine (T) = Pink	
Cytosine (C) = Yellow	
Guanine (G) = Orange	

C) When you have completed one DNA strand add the complimentary base pairs to the other end of each toothpick. **REMEMBER:** A always pairs with T and G always pairs with C!

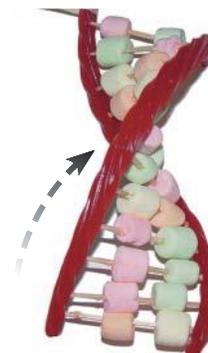


D) Complete your DNA model by attaching the other DNA backbone (twizzler) so your model looks like a ladder



E) CAREFULLY twist your DNA model so it looks like a double helix

STOP! Get a check!



Conclusions Questions:

1. What does the shape of DNA resemble? _____

2. What is the shape of DNA called? _____

3. What are the sides of the DNA molecule called? _____

What was used in this lab to act as the sides of DNA? _____

There are 2 things that the sides of the DNA molecules consist of. What are they? _____ &

4. What acted as the DNA base pairs in this lab _____

5. Name the 4 bases of a DNA molecule:

6. Which DNA bases pair with each other?

7. How many of each base were in your molecule: A _____ T _____ G _____ C _____

8. What makes your DNA different from someone else's?

9. Given the following strand of DNA, write its complimentary base sequence below:

a) DNA Sequence: A G C G C T A T C G C T A A T A G C A T

Complimentary Strand: _____

b) What do you notice about the number of bases in the DNA sequence and the complimentary strand?

c) How many total Adenines (A's) are there in the DNA sequence? (count both strands) _____

Without counting, how many thymines are there? _____ EXPLAIN below how you came up with this number

10. What does DNA stand for? _____

11. Where is DNA found in the cell? _____

12. What are the building blocks of DNA called? _____

Name the 3 parts that make up the building blocks of DNA: _____, _____ & _____