Candy DNA

Intro: 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 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: A always pairs with T and C always pairs with G. We say that A & T are complimentary pairs while C & G are complimentary pairs. In this lab will construct a model of DNA using twizzlers as the backbone, marshmallows as the bases, and toothpicks as the bonds that hold it all together.

Purpose: I can construct a model of DNA applying the base pairing rules (A=T, G=C).

Materials: Twizzlers, marshmallows, toothpicks

Figure 1

Method:

1 – Use the twizzlers as the backbone of DNA and the marshmallows as the bases of DNA.

2 – Stick a marshmallow (base) onto the end of a toothpick and then into the twizzlers (backbone). (see Figure 1)

3 – Using the base pairing rules, color code the bases and stick their complimentary pair onto the other side of the toothpick. (see Figure 2)

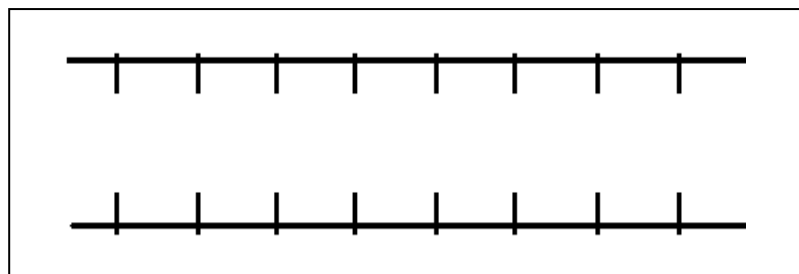The base pairing rules are color coded as shown in Table 1.

Table 1

Figure 2

Adenine (A) = Green

Thymine (T) = Pink

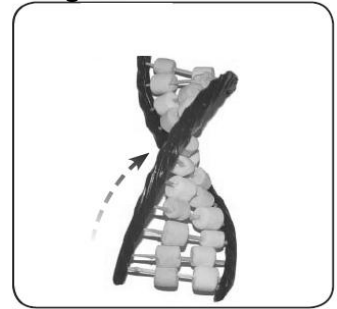Cytosine (C) = Yellow

Guanine (G) = Orange
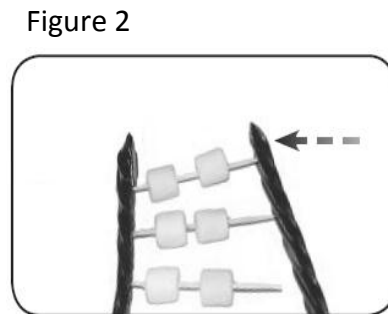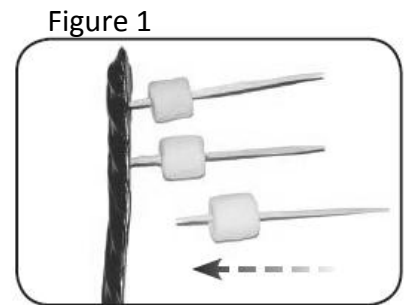
Complete the diagram below by writing your created DNA sequence and its compliment.

Figure 3

4 – Attach the second twizzler (backbone). (see Figure 2)

5 –Twist the DNA molecule so that it looks like a double helix. (see Figure 3)

6 – **To receive full credit you must verify with your teacher your model is correct.** Then you can eat it!

Analysis Questions: (to answer, use this lab, notes and/or textbook) **WRITE IN COMPLETE SENTENCES!!!!!!!!!!!**

1. TEACHER CHECK: _____
2. In your model, what represents the backbone of DNA? _____
   _____
   _____
3. What is the purpose of the backbone? _____
   _____
   _____
4. In your model, what represents the different bases of DNA? _____
   _____
   _____
5. What are the base pairing rules? _____
   _____
   _____
   _____
6. How did you illustrate the base pairing rules in this model? _____
   _____
   _____
   _____
7. What was the purpose of step 5? That is, why were you twisting the model? _____
   _____
   _____
   _____
8. In your model, what are the toothpicks representing? _____
   _____
   _____
   _____