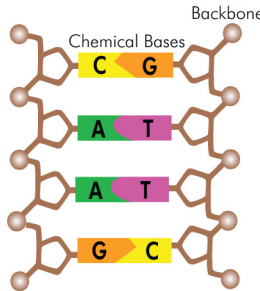


A Taste of Genetics: Build Your Own DNA!

When DNA is taken out of the cell and stretched out, it 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)
Thymine (T)



DNA bases form pairs in specific ways. Adenine (A) always pairs with Thymine (T). Guanine (G) always pairs with Cytosine (C).

Use colored marshmallows, Twizzler and toothpicks to construct a DNA Double Helix. The Twizzler will be the **Backbones**. The marshmallows will be the **Bases**.

Materials:



- 2 pieces of Twizzler
- 20 to 26 marshmallows
- 10 to 13 toothpicks

Final Product:



DNA provides the instructions for building and operating all living things. The DNA instructions are formed through the specific arrangement of **Bases**. A sequence of **Bases** that encode a function inside the cell is called a **Gene**. One strand of DNA contains many genes.

Use the sequence below:

T A C G T A T G A A

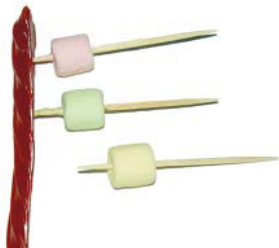
 **A - Adenine (Green)**

 **T - Thymine (Pink)**

 **C - Cytosine (Yellow)**

 **G - Guanine (Orange)**

Step 1.



Put together one side of your DNA Double Helix (ladder) using the sequence above. Place a marshmallow that matches the correct base (using the color code chart above) on the end of a toothpick and then anchor the toothpick onto the Twizzler.

Step 2.



Match the chemical base pairs. Place the colored marshmallow for the matching chemical base on the other end of each toothpick. Remember A (green) always pairs with T (pink) and C (yellow) always pairs with G (orange)!

Step 3.



Complete your DNA double helix. Attach the other backbone (Twizzler) so your model looks like a ladder.

Step 4.



Twist your DNA model. Carefully twist your DNA so that it looks like a double helix (twisted ladder).

This activity and handout were adapted from the University of Arizona's Genetics Science Learning Center's online "Have Your DNA and Eat It Too" lesson plan.