



Have Your DNA & Eat It Too!



Understanding DNA Structure & Base Pairing

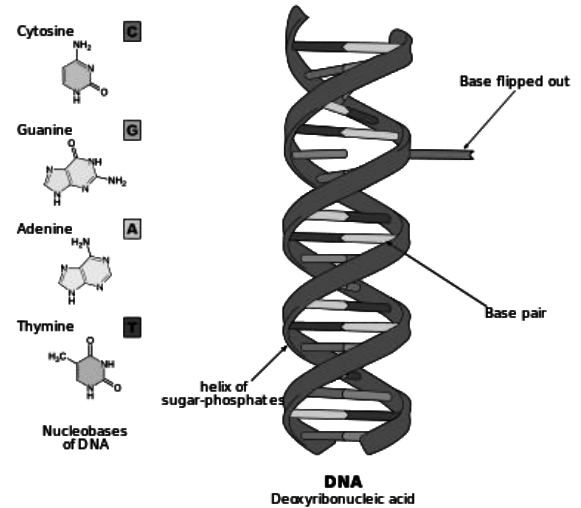
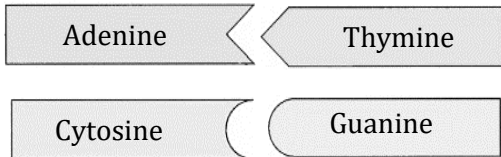
Name: _____ Date: _____ Block: _____

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:

1. **Adenine (A)**
2. **Cytosine (C)**
3. **Thymine (T)**
4. **Guanine (G)**

They form pairs in a very specific way:



Your Task:

Your task is to use the following materials and procedure to construct an edible model of DNA. When you are finished, use toothpicks and tape to label one of each of the chemical bases and structures. Call your teacher over to check your work before labeling.

The DNA Sequences:

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

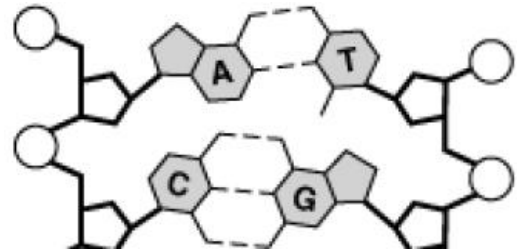
Sequence 2: T G G T T T A G A A T T

Analysis Questions:

1. What is the full name of **DNA**? _____
2. What do the following structures represent?
 - **Licorice:** _____
 - **Toothpicks:** _____
 - **Marshmallows (as a whole):** _____
 - **The individual colors of marshmallows [list them]:** _____

3. Label the diagram to the right with the following:

Phosphate, deoxyribose sugar, hydrogen bond, nitrogenous base.



4. Bases such as Cytosine, Uracil and Thymine are called: **PURINES** or **PYRIMIDINES**

5. Bases such as Adenine and Guanine are called: **PURINES** or **PYRIMIDINES**

6. **Guanine** (orange) ALWAYS bonds with _____

7. **Adenine** (green) ALWAYS bonds with _____

8. How many **strands** does a DNA molecule have? _____

9. What is the shape of DNA called? _____

10. DNA in **eukaryotes** can be found in the _____ of cells.

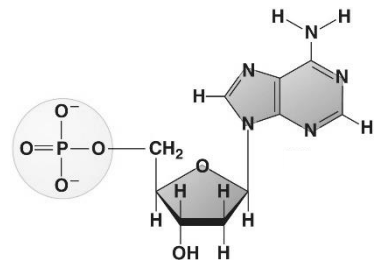
11. DNA in **prokaryotes** (bacteria) can be found in the _____ of cells.

12. What are the three parts of a **nucleotide**?

a. _____

b. _____

c. _____



13. If one strand of DNA has the code **GATTACA** and the code for the other side reads **CTAATGT** the two strands are said to be what?

14. If all organisms contain DNA, what do you think makes one organism different from another?

