Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**DNA**

**DNA is often called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**In simple terms, DNA contains the \_\_\_\_\_\_\_\_\_\_\_\_\_ for making \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ within the cell.**

**Watson & Crick’s Model**

* In 1953, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ built the first model of DNA with tin and wire

Why do we study **DNA**?

**We study DNA for many reasons, e.g.,**

* **its central \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on Earth**
* **medical benefits such as cures for \_\_\_\_\_\_\_\_\_\_\_\_\_**
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Chromosomes and DNA**

**Our genes are on our chromosomes.**

Draw Picture: Cells and Chromosomes

**Chromosomes are made up of a chemical called**

**\_\_\_\_\_\_\_\_**

**The Shape of the Molecule**

* **DNA is a very long \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
* **The basic shape is like a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
* **This is called a *\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_***

**The Double Helix Molecule**

**The DNA double helix has \_\_\_\_\_\_\_\_\_\_ strands \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ together.**

**One Strand of DNA=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**The backbone of the molecule is alternating \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ sugar**

**The teeth are nitrogenous \_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Nucleotides**

One deoxyribose together with its phosphate and base make a ***nucleotide****.*

* **One Strand of DNA**
* **One strand of DNA is a polymer of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
* **One strand of DNA has many \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of nucleotides.**

**Four nitrogenous bases**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **C**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **T**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **A**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **G**

**Two Kinds of Bases in DNA**

***\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*are single ring bases**.

***\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* are double ring bases.**

**Thymine and Cytosine are\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Thymine and cytosine each have one ring of carbon and nitrogen atoms.**

**Adenine and Guanine are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Adenine and guanine each have two rings of carbon and nitrogen atoms.**

**Two Stranded DNA**

**Remember, DNA has two strands that fit together something like a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**The teeth are the nitrogenous bases but why do they stick together?**

**Answer = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**The bases attract each other because of hydrogen bonds.**

**Hydrogen Bonds**

**When making hydrogen bonds,\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ always pairs up with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ always pairs up with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Chargraff’s Rule:**

* **Adenine and Thymine always join together** **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
* **Cytosine and Guanine always join together** **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**DNA by the Numbers**

* **Each cell has about \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of DNA.**
* **The average human has \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cells.**
* **The average human has enough DNA to go from the earth to the sun more than \_\_\_\_\_\_\_\_\_\_\_\_\_times.**
* **DNA has a diameter of only 0.000000002 m.**

Remember DNA Replication occurs during the S-phase of interphase in Mitosis

REPLICATE THE FOLLOWING DNA STRAND OF BASES USING CHARGRAFF’S RULE:

ATGGCTATTAACGGA

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_