**DNA Structure Notes**

* DNA is often called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of life.
* DNA contains the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for making \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ within the cell.
* DNA is like the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for a computer.



**The Shape of the Molecule**

* DNA is a very long *polymer*. (chain of nucleotides)
* Basic shape is like a twisted ladder or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. (See the picture 🡪 )
* Called a *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.*

**The Double Helix Molecule**

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

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**Nucleotides**

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

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**One Strand of DNA**

* The backbone of the molecule is alternating *phosphates* and *deoxyribose sugar.*
* The teeth are nitrogenous bases.
* One strand of DNA is a polymer of nucleotides.
* One strand of DNA has many \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of nucleotides.

**Four nitrogenous bases**

* Cytosine C
* Thymine T
* Adenine A
* Guanine G

**Two Stranded DNA**

* Remember, DNA has \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ strands that fit together something like a zipper.
* The teeth are the nitrogenous bases but why do they stick together?

**Hydrogen Bonds**

* Hydrogen bonds are weak but there are millions and millions of them in a single molecule of DNA.

**Important: (draw the arrows)**

* Adenine and Thymine always join together A T
* Cytosine and Guanine always join together C G

**DNA by the Numbers**

* Each cell has about \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ meters 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 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of only 0.000000002 meters.

**Analysis Questions:**

**1.** What are the three main parts of a nucleotide?

**2.** What is the basic shape of DNA?

**3.** DNA has the instructions for making what in a cell?

**4.** Why is DNA important?

**5.** Cytosine always bonds (matches up) with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**6.** Adenine always bonds (matches up) with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**7.** If you had the following sequence, what would be the matching strand?

 ATTGCCGATAGCGATACA

**8.** How can DNA be used for solving a crime?

**Conclusion:** Don’t break the bank—Each word costs 10 cents and you have $3 to spend. Write a summary of what you learned about DNA today. (**Hint:** at 10 cents per word, if you have $3 you can write 30 words. Remember—you can’t spend more or less than $3)