Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_Period: \_\_\_\_\_\_\_

**DNA Webquest**

Go to: <http://learn.genetics.utah.edu/content/basics/oldtour/>

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| [**What is DNA?**](http://learn.genetics.utah.edu/content/begin/tour/)  (look at the navigation bar and click on “What is DNA?”)  1)  What is DNA? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 2) What does DNA stand for? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 3) Why is DNA called a blueprint? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  4)  The "twisted ladder" shape of the DNA molecule is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.  5)  Name the four bases found in a DNA molecule. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 6)  A DNA strand is made of  \_\_\_\_\_\_\_\_\_ which make up \_\_\_\_\_\_\_\_\_\_ which make up sentences.   7)  These "sentences" are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.   [**What is a Gene?**](http://learn.genetics.utah.edu/content/begin/tour/)   (look at the navigation bar and you'll see “What is a Gene?” )   8)  What is a gene? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 9)  Blood cells use a protein called \_\_\_\_\_\_\_\_\_\_\_\_\_ to capture and carry oxygen.  10) When a gene is changed, it is said to be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.  11)  A mutation in the hemoglobin gene causes what disorder? \_\_\_\_\_\_\_\_\_ \_\_\_\_\_   [**What is a Chromosome?**](http://learn.genetics.utah.edu/content/begin/tour/)  (look at the navigation bar and you'll see “What is a Chromosome?” )  12)  If you stretched the DNA from a cell out, how long would it be? \_\_\_\_\_\_\_\_\_ 13)  How many chromosomes are in a human?\_\_\_\_\_\_  A mosquito? \_\_\_\_\_\_   A carp? \_\_\_\_\_\_   [**What is a Protein?**](http://learn.genetics.utah.edu/content/begin/tour/) (look at the navigation bar and you'll see “What is a Protein?” )   14)  How is a protein like a car engine? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  15)  Receptor proteins are responsible for picking up \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.  16)  Each gene in DNA encodes information on how to make a \_\_\_\_\_\_\_\_\_\_\_\_\_\_.  17)  Once in the cytoplasm, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ reads the message.    **DNA: The Double Helix (from Nobel Prize):** <http://www.nobelprize.org/educational/medicine/dna_double_helix/dnahelix.html>1. What is the shape of DNA?
2. What are the “rungs” of the ladder?
3. Which nitrogenous bases pair together?

Play the game for all three organisms. Record your answers after completing each organism in the chart below. Click on organism #1 and match the base pairs as fast as you can! It is hard. Click Next and then click on each organism until you identify the one that belongs to chromosome #1 by matching the chromosomes, base pairs, or genes; when you think you are correct click “the DNA belongs to this organism” to see if you are correct and then write the name of the organism under the correct #. Continue playing the game with the other two chromosomes, filling in the chart below. Be careful, other teams may get different results.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Chromosome #** | **How many chromosomes?** | **How many base pairs?** | **How many genes?** | **What is the organism?** |
| **1** |  |  |  |  |
| **2** |  |  |  |  |
| **3** |  |  |  |  |

**DNA Replication Simulation:**<http://www.johnkyrk.com/DNAreplication.html>1. DNA must be replicated prior to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. Errors during DNA replication are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. Describe a hydrogen bond. How many hydrogen bonds form between A and T? G and C?
4. Does DNA replication start at only one place in the DNA or in many places at once?
5. In the chart below, describe what each enzyme does during the replication process.

|  |  |
| --- | --- |
| **Name of Enzyme:** | **Function during DNA replication:** |
| Helicase |  |
| RNA primase |  |
| DNA polymerase |  |
| Exonuclease |  |
| Ligase |  |

1. The two types of cell division are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
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