DNA Structure, Replication, Transcription and Translation (**HONORS)**

**DNA STRUCTURE**

1. What is the function of DNA? What does it code for? What is the monomer of DNA?
2. What are the parts that make up the structure of DNA (3 parts of a nucleotide)?
3. Which bases bind to each other in DNA?
4. What is the alternating sugar phosphate structure called?
5. What is the twisted structure of DNA referred to as?
6. What DNA stands for and why deoxyribose is in the name?
7. What kind of bonds hold the nitrogen bases together? This is called \_\_\_\_\_\_\_\_\_\_\_\_\_ base pairing?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Adenine** | **Thymine** | **Cytosine** | **Guanine** |
| **Humans** | 30 |  |  |  |

1. A + T + C + G = \_\_\_\_\_\_\_\_\_\_\_\_%
2. Be able to complete a chart like the one above.
3. How do you determine the 5’ and 3’ end of DNA?
4. Who used Xrays to find the structure of DNA and was cheated out of a Nobel Prize?
5. Who were given credit for finding out DNA was a Double Helix?

**REPLICATION**

1. What is the purpose of DNA replication?
2. Replication results in one \_\_\_\_\_\_\_\_\_ strand and one \_\_\_\_\_\_\_\_\_ strand?

**Transcription and Translation**

1. Transcription and translation = DNA \_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_
2. What are the differences between RNA and DNA?
3. Know what the end product of transcription is. Know what the end product of translation is.
4. What does the “M” in mRNA stand for? What is the job of mRNA?
5. Know what tRNA and rRNA stand for and what their jobs are!
6. What nitrogen base replaces Thymine in RNA? What Bases bind in RNA?
7. What is the enzyme that unzips the DNA and adds nucleotides to the growing mRNA strand in transcription?
8. What are the factors called required for the above enzyme to attach to the DNA? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ factors!
9. Where in the cell does transcription take place? Where in the cell does translation take place?
10. Which type of RNA is the codon found on? Which type of RNA is the anticodon found on?
11. How many bases make up a codon or anticodon?
12. A chain of amino acids makes what?
13. What is the only start codon found on mRNA?
14. What is a stop codon?
15. Be able to transcribe and translate something like this:

**DNA: ATG ACT AGC TGG GGG TAA TAC TTT TAG**

**mRNA:**

 **tRNA:**

 **Amino Acid:**

1. Be able to label a picture of transcription and translation:

**Gene Regulation:**

1. How are genes controlled?
2. Explain two ways a gene can be turned on and two ways they can be turned off.
3. Why is gene regulation important in multicellular organisms?