**Assignment Number\_\_\_\_\_\_**

**Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Hour:\_\_\_\_\_\_**

**Why do we have DNA?**

It is a set of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that tells our cells/bodies how to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**How does DNA create action?**

It contains information on how to make \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (proteins do the actual \_\_\_\_\_\_\_\_\_\_\_\_ in a cell)

**How does protein come from DNA?**

The process of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
**BIG IDEA**

**Protein Synthesis: From Gene to Protein**

Key Players



Key Processes



Key Players in RNA

* Nucleic Acid
* Structure –similar to DNA
* Made up of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Sugar ( \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
  + Phosphate Group
  + Base ( \_\_\_\_ , \_\_\_\_ , \_\_\_\_ or \_\_\_\_)
* Bases attach to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Compare and Contrast DNA vs RNA**

**DNA**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (T)
* \_\_\_\_\_ strands
* 4 oxygens per sugar (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
* Must STAY in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**RNA**

* Uracil (\_\_\_\_)
* \_\_\_\_ strand
* 5 oxygens per sugar (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
* Can \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the nucleus

Three Types of RNA

1. mRNA - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - takes genetic information out of the nucleus
2. tRNA - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - carries amino acids to mRNA
3. rRNA - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - makes up ribosomes

**Protein Synthesis**

**Transcription** – making an \_\_\_\_\_\_ copy from \_\_\_\_\_\_\_

**Remember: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (U) replaces \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (T)**

1. DNA unzips in small portions and is read by \_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. RNA \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ attach in a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ sequence to make a chain of RNA
3. The termination site on the \_\_\_\_\_\_\_ tells the \_\_\_\_\_\_ polymerase to detach from the DNA
4. The new chain of \_\_\_\_\_\_\_ nucleotides is called \_\_\_\_\_\_\_\_\_\_\_\_ and can now leave the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

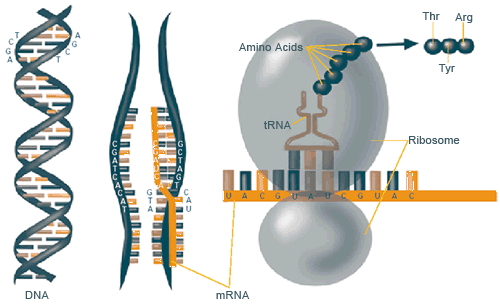
**Translation –** three types of RNA working together to make \_\_\_\_\_\_\_\_\_\_\_\_\_ using \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_

**Important Terms**  
 Codon – set of \_\_\_\_\_ bases on mRNA  
 Anti-codon – set of \_\_\_\_ bases on \_\_\_\_\_\_\_\_ (complimentary to a codon)

1. \_\_\_\_\_\_\_\_\_\_ leaves the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and attaches to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (ribosomes are in 2 parts)
2. Ribosomes read \_\_\_\_\_\_\_\_ one \_\_\_\_\_\_\_\_\_\_\_\_\_ at a time
3. \_\_\_\_\_\_\_\_\_\_ with the matching anti-codon attaches, bringing with it an \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_
4. \_\_\_\_\_\_\_\_\_\_\_\_\_ attaches its \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ to the previous amino acid and then \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. Long chains of amino acids are made. A long chain of amino acids is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. The \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ends protein synthesis and the new protein leaves the ribosome
7. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ determine our traits and also do all the \_\_\_\_\_\_\_\_\_\_\_\_ in our cells

**Important Terms:**

**Stop Codon** – tells tRNA to \_\_\_\_\_\_\_\_\_ making the \_\_\_\_\_\_\_\_\_\_\_\_\_. Signals the end of a chain of amino acids.

**Initiator** – the \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in a sequence of mRNA. Tells tRNA where to \_\_\_\_\_\_\_\_\_\_\_ making a protein

**Secret Code Practice:**

Original Strand –

mRNA Strand -



**Practice:**

**Transcribe this strand of DNA: ATTACGATCTGCACAAGATCCT**

**Translate the mRNA you made above:**