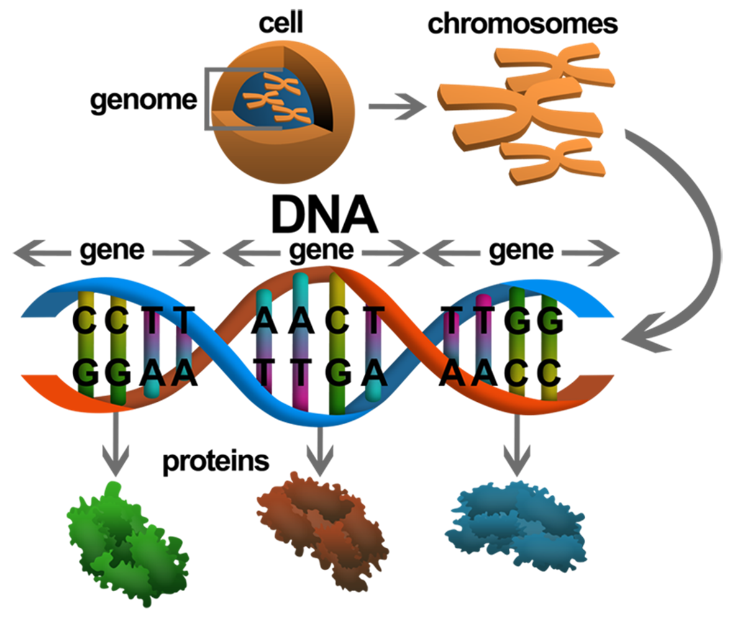
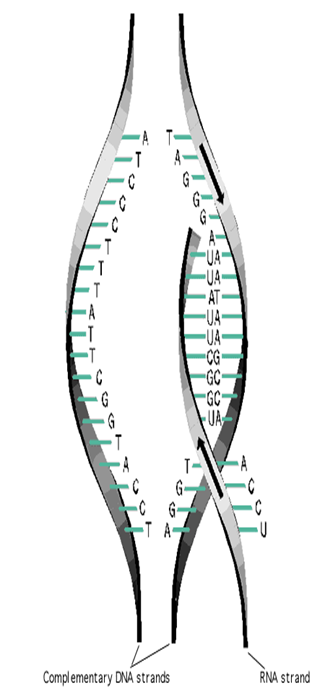
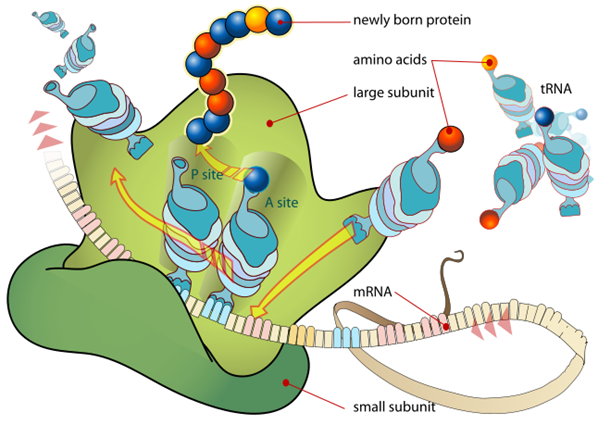
## **Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Doc # 30**

**Protein Synthesis: Transcription & Translation Notes**

The overall goal of protein synthesis is to make proteins, which are needed everywhere in our body in order to function.



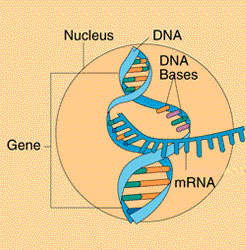
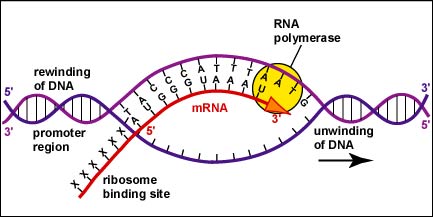
There are two parts to protein synthesis 1) 2) .

DNA is a blueprint that makes you who you are.

More specifically, it is the blueprint to make RNA or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

|  |  |
| --- | --- |
| **DNA** | **RNA** |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ stranded | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ stranded |
| Adenine – Thymine | Adenine - \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (Thymine is replaced) |
| Cytosine – Guanine | Cytosine – Guanine |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ sugar | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ sugar |

**Transcription**: The copying (writing) of DNA to form \_\_\_\_\_\_\_.

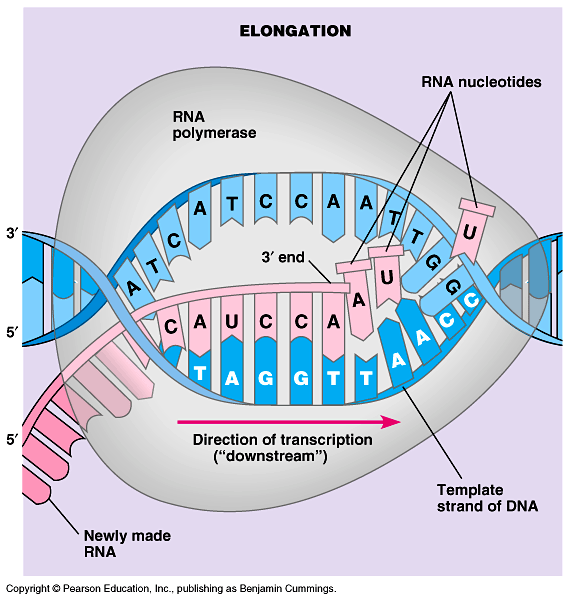
* mRNA-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ RNA, carries the DNA code for the protein to the ribosome.
* ****tRNA – \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ RNA, carries amino acids to ribosome to construct the protein.
* rRNA - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ RNA, makes up ribosomes.

* Transcription occurs in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of Eukaryotic cells.
* DNA cannot leave \_\_\_\_\_\_\_\_\_\_\_\_\_ because of its size, therefore genetic information must be copied into smaller pieces
* These small sections of DNA are called genes and are copied into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Steps in Transcription**

1. **Helicase:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ DNA helix
2. **RNA Polymerase:** \_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ free floating RNA nucleotides to DNA. These free nucleotides once put in order forms the RNA. When it reaches the stop sequence, polymerase detaches and RNA is free.

3.  **Ligase:** \_\_\_\_\_\_\_ back the bases in the DNA Helix with hydrogen bonds

4. The RNA strand, now called mRNA, leaves the DNA molecule and the nucleus.

5. **Gyrase:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_ up the DNA strand.

Transcribing rules: **DNA to mRNA**

A to \_\_\_ T to \_\_\_

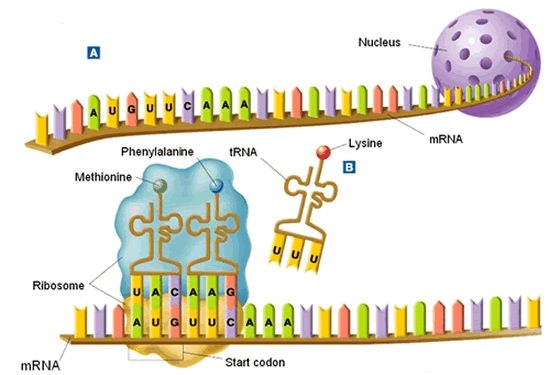
C to \_\_\_ G to \_\_\_

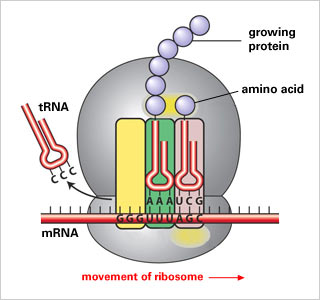
**Let’s Practice:**

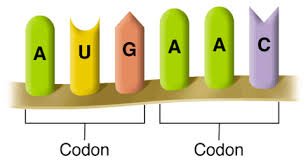
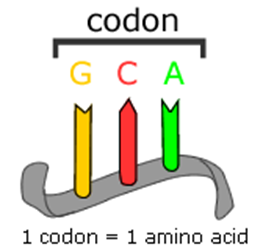
**DNA:** A A T C C G G C G T A T

**mRNA:**

* Now that the RNA strands are written (transcribed) they are sent out of the nucleus and into the cytoplasm of the cell.
* Once in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_, the mRNA finds a \_\_\_\_\_\_\_\_\_\_\_\_- our protein making factories.

**Translation**: \_\_\_\_\_\_\_ is used as a written code to form \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

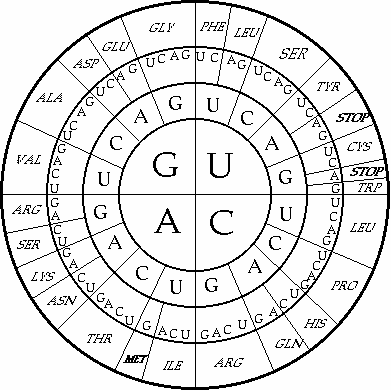


* During translation mRNA works with other types of RNA to build \_\_\_\_\_\_\_\_\_\_\_\_\_ by joining \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* The genetic code is the connection between nucleotide triplets in \_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Every \_\_\_\_\_\_\_\_\_\_ nucleotide bases in mRNA specify a particular \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* This nucleotide triplet is called a \_\_\_\_\_\_\_\_\_\_\_.

**9 bases**= \_\_\_ codons= 3 Amino Acids **15 bases**=\_\_\_ codons= 5 Amino Acids **3 bases**= \_\_\_\_ codon= 1 Amino Acid

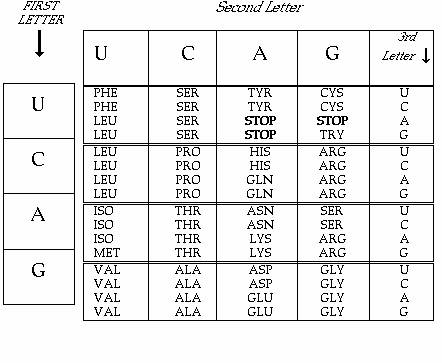
* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in a codon determines an amino acid.
* The specific order of amino acids in the amino acid chain will determine the \_\_\_\_\_\_\_\_\_\_\_\_\_.
* There are \_\_\_\_\_\_\_\_ possible codons but only \_\_\_\_\_\_different amino acids.
* More than one codon may specify an amino acid. “STOP” codons specify the end.

Circular Codon Chart Rectangular Codon Chart



ISO

TRY





Translating rules: **mRNA to tRNA**

**Let’s Practice**

**DNA:** T A C A A T C C G G C G T A T A C T

**mRNA:**

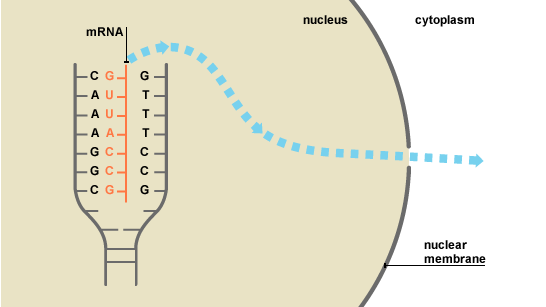
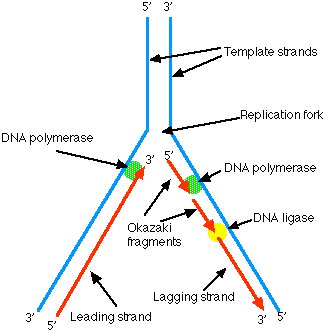
**Amino Acid:**

**tRNA:**

**U to \_\_\_ A to \_\_\_**

**C to \_\_\_ G to \_\_\_**

* 

Label the following processes:

