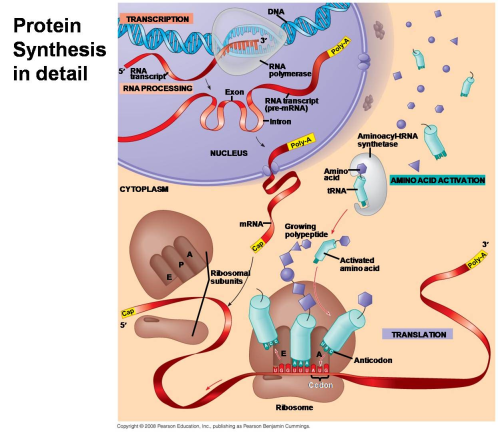
Honors Biology Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
NDSH Per: \_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_

**Polypeptide Synthesis**



DNA controls the cell by directing the manufacture of .

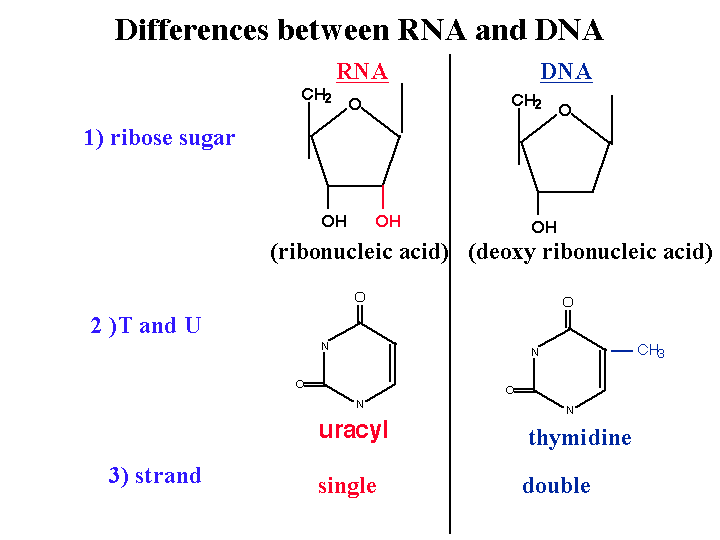
Proteins are  made up of  **.**

Amino acids are held together by chemical bonds called  **.** Thus a long chain of amino acids is also called a .   
 (Remember: Proteins are digested in the stomach by the enzyme PEPSIN.)

**Three Main Steps of Polypeptide (Protein) Synthesis**

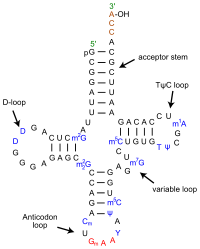
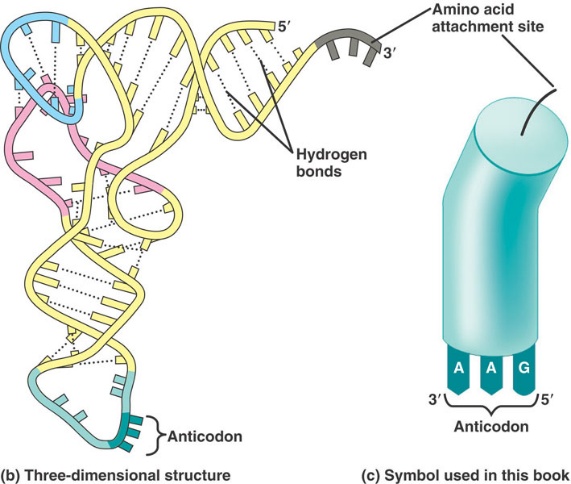
1. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  
   Three types of RNA are made:
   1. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
   2. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
   3. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
2. is altered to its final form = **\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
3. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**BACKGROUND**:  
**RNA Structure**:  
 - **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  
 - **\_\_\_\_\_\_\_\_\_\_\_\_\_** instead of **\_\_\_\_\_\_\_\_\_\_\_\_\_**  
 - **\_\_\_\_\_\_\_\_\_\_\_\_\_** instead of **\_\_\_\_\_\_\_\_\_\_\_\_\_**

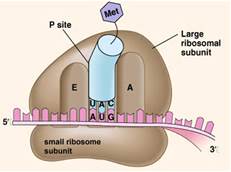


**mRNA Structure:** - **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  
 - **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  
 - **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** of nucleotides long  
 - 5’ end gets capped with a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  
 - 3’ end gets a long tail of **\_\_\_\_\_\_\_\_\_\_\_\_\_**

**tRNA Structure**:  
 - about **\_\_\_\_\_** nucleotides long  
 - attaches to itself and forms \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ sections and then   
 - 3’ end is where the  for the process of translation  
 - in the middle of the tRNA is a three segment nucleotide sequence called the   
 - this  nucleotide sequences which are called the

**rRNA Structure:** - rRNA combines with proteins in the nucleolus to form two ribosomal structures: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   
 - small subunit holds the   
 - large subunit holds the  to make the amino acid chain (protein)  
 - the where the

[](http://www.bing.com/images/search?q=ribosome+structure&qs=n&form=QBIR&pq=ribosome+structure&sc=5-18&sp=-1&sk=#view=detail&id=5497FEC0954A424CADD67D66458F95D0C98E636E&selectedIndex=16)

**Polypeptide Synthesis**: The Details

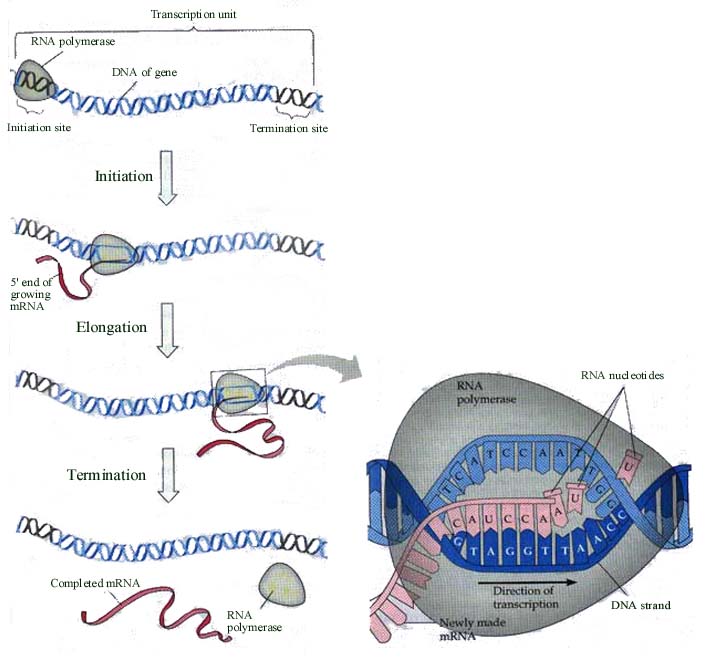
1. **Transcription**:  
   WHERE:

WHAT:

HOW:

1. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
2. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
3. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**



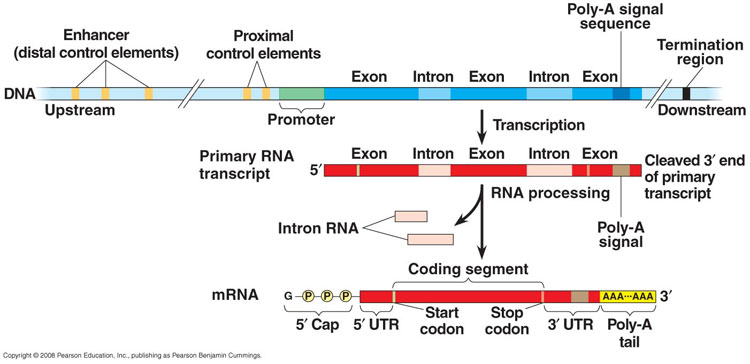
1. **RNA Processing**:  
   WHERE:   
   WHAT:

HOW:  
tRNA folds into its correct shape  
rRNA goes to nucleolus to become the ribosome

mRNA undergoes three main changes

1. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** – this is called the **\_\_\_\_\_\_\_\_\_\_**
2. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** – lots of adenines are added – helps **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
3. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  
   DNA contains two types of nucleic acid sequences in a gene.   
    **\_\_\_\_\_\_\_\_**: nucleotides that will be **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**\_\_\_\_\_\_\_\_**: nucleotides that .  
 **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**



1. **Translation**:

WHERE:   
WHAT:

HOW:

The whole system is based on the .  
 DNA is called the .  
 Three nucleotide sequences in mRNA are called .  
 Three nucleotide sequences in tRNA are called \_\_\_\_\_\_\_\_\_\_ – the anti-codon is complementary to the codon, which is complementary to the code.

1. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

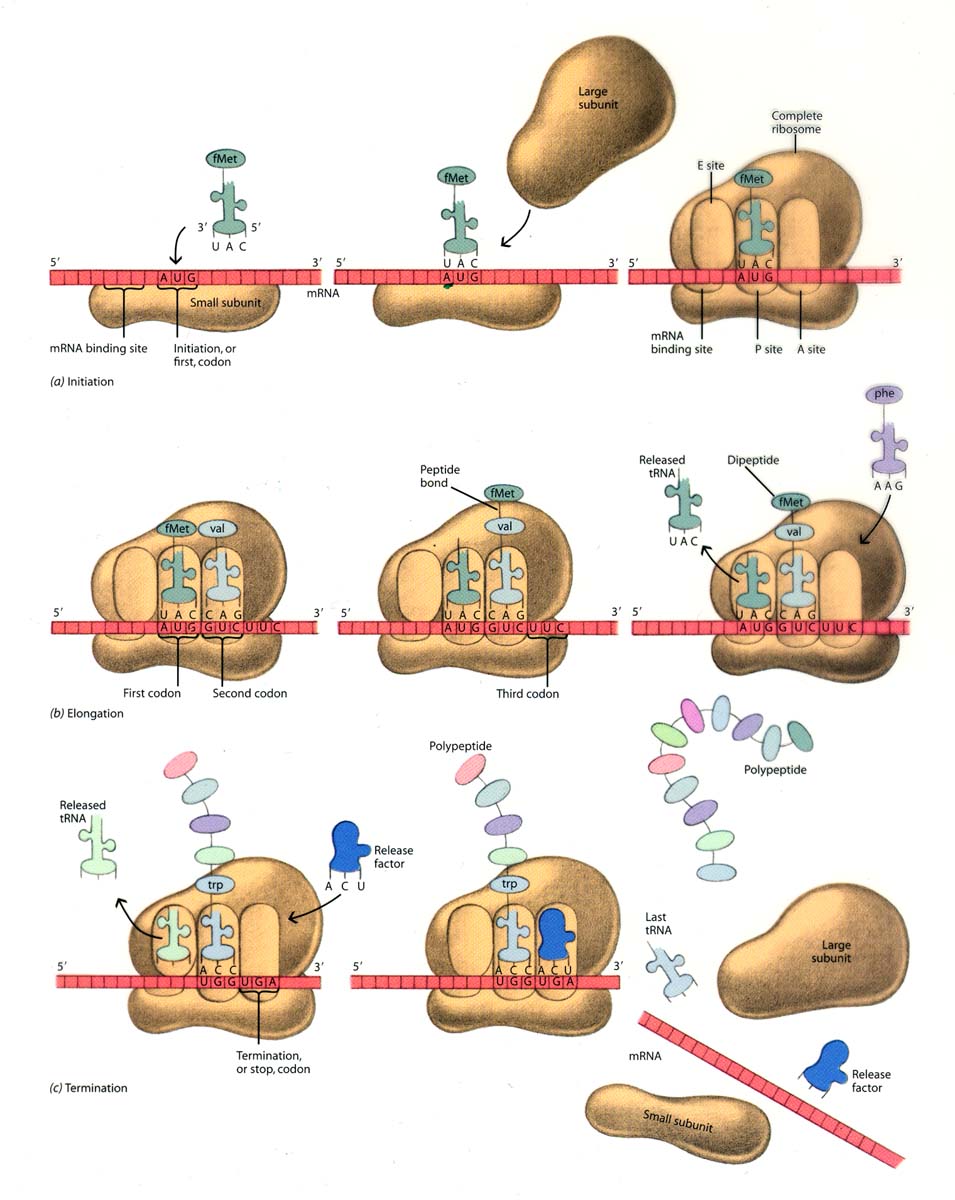
– directed by enzymes

1. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
2. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**The first three nucleotides of every . This codes for the amino acid **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
3. The
4. The .

* Determine the  – use mRNA codon chart.

1. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
2. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.  
   - the tRNA in the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

- the tRNA in **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. This process (steps 5 – 7) repeats over and over building the amino acid chain **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.   
    - STOP codons = **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  
    - bring in a protein called a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** and this causes the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** and the ribosome to detach from the mRNA.

Determining the Amino Acid Sequence Based on the mRNA Codon

Step 1: Transcribe the DNA into RNA  
Step 2: Use Codon Chart to determine the amino acid brought in by tRNA

DNA CODE: TAC GAA CTG TGC GGG CCA ATC

mRNA CODON: \_\_\_\_\_\_ \_\_\_\_\_\_ \_\_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_

AMINO ACID: \_\_\_\_\_\_ \_\_\_\_\_\_ \_\_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_

