

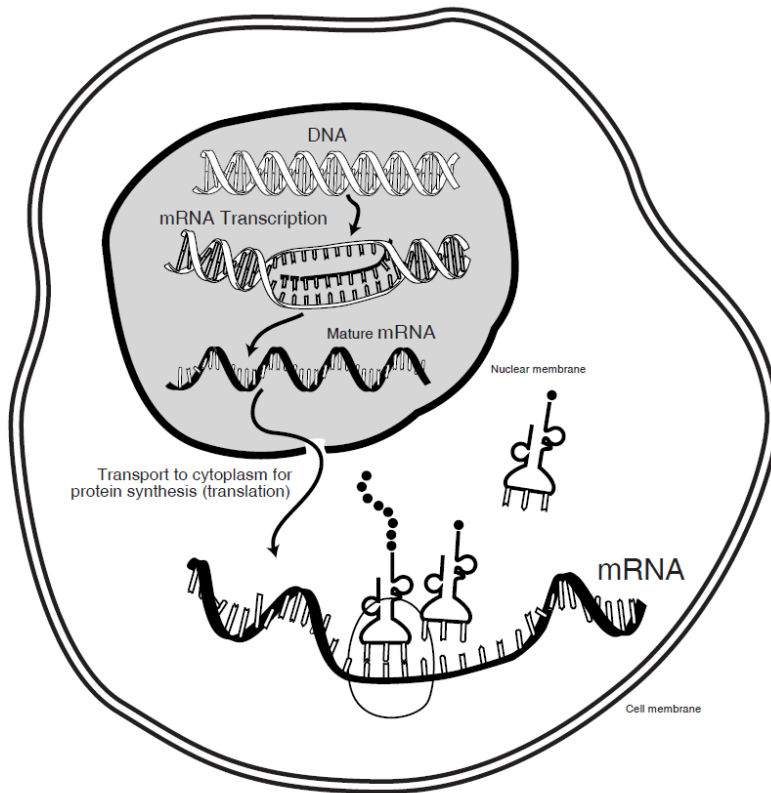
Fundamental life processes depend on the physical structure and the chemical activities of the cell.

- The sequence of amino acids in a protein can be predicted from the sequence of codons in the RNA, by applying universal genetic coding rules.
- Proteins can differ from one another in the number and sequence of amino acids.
- Proteins having different amino acid sequences typically have different shapes and chemical properties.

Key Vocabulary	Assignments	Due Date
<p>Adenine (A) Amino Acids Anticodon Chromosome Codon Cytosine (C) DNA Gene Guanine (G) mRNA Mutation Nitrogen Base Pair Nucleotide Protein Ribosome rRNA Start Codon Thymine (T) Trait Transcription Translation tRNA Uracil (U) Variation</p>	<p>#1 - Read section 8.12 (pages 212 to 214)</p> <p>a. What is the purpose of Transcription? b. What is the purpose of Translation? c. How can you explain that two genes can vary in nucleotide sequence yet code for the exact same polypeptide? (confused? look at the chart on 213)</p> <p>#2 – Read section 8.12 - Look at Figure 8.25 (page 212 to 214)</p> <p>a. What is tRNA? b. What is the relationship of tRNA and mRNA and what does that have to do with all of this codon/ anti codon business? c. Why doesn't translation take place in the nucleus?</p> <p>Bonus question (5 points)</p> <p>Suppose an error occurred during replication so that one extra nucleotide was added. How would that mutation affect the polypeptide coded for by that gene? Show an example.</p>	

RNA & Protein Synthesis

Transcription and Translation



Translation

The process that uses RNA and the ribosomes to synthesize polypeptides (proteins).

mRNA travels to the ribosome where its bases are read in groups of three called **codons** or triplets.

tRNA arrives at the ribosome with matching **anticodons** to bring amino acids to the ribosome where they are bonded to the next amino acid.

The chain of amino acids will continue to grow until the stop codon is reached. Then the chain is released and finished in the ER.

Chromosome

When DNA is condensed around proteins called histones it forms an easy to move structure called a chromosome.

A human has 23 pairs of chromosomes (46 total)

Transcription

The process that creates RNA using the coding strand of DNA as a template. RNA Polymerase assembles the RNA using the following substitution rules:

A → Uracil, T → , C → , G →

RNA

Ribonucleic Acid is a single stranded polymer used to transmit the information from the DNA in the nucleus to the ribosomes in the cytoplasm. It exits the nucleus by way of the nuclear pores.

There are three kinds of RNA

mRNA-

tRNA-

rRNA-

Ribosomes

Polymers are molecules made up of repeating subunits. The order of the subunits determines the meaning of the polymer.

DNA/RNA are polymers made up of Nucleic acids

Proteins are polymers made up of amino acids

DNA Base Pairing Rule

A-T

C-G