

Unit 6 DNA & Protein Synthesis

DNA & Protein Synthesis (Ch. 12 pgs 324-351)

Online Textbook <http://www.glencoe.com/ose> Access Code: DAD47D351D

Learning Targets

- I can diagram and label the structural components of DNA.
- I can differentiate between DNA and RNA.
- I can explain how DNA replicates.
- I can summarize the importance of DNA replication.
- I can identify the base pairing rules for DNA.
- I can describe the structure and function of the three types of RNA molecules.
- I can describe a codon and anti-codon.
- I can transcribe DNA into mRNA.
- I can identify the base pairing rules for DNA to mRNA and mRNA to tRNA anti-codons.
- I can translate mRNA to amino acid sequence.
- I can summarize protein synthesis.
- I can identify where transcription and translation take place in the cell.
- I can identify causes of mutations.
- I can analyze how mutations can affect protein synthesis.
- I can summarize how mutations affect gene expression.

Unit 6 Vocabulary <https://quizlet.com/iaiyj>

1. **Anti-codon:** Set of 3 nitrogen bases/nucleotides found on the tRNA that base pairs with the mRNA codon.
2. **Chromosomal Mutations:** Mutation that occurs at the chromosome level resulting in changes in the gene distribution to gametes during meiosis; caused when parts of chromosomes break off or rejoin incorrectly
3. **Codon:** A set of three nucleotides and the nitrogen bases. There are both RNA and DNA codons.
4. **DNA Replication:** The process in which DNA is copied, occurs during Interphase
5. **Double Helix:** The shape of DNA composed of two strands twisted together, discovered by Watson & Crick
6. **Frameshift Mutation:** A mutation in which a single nitrogen base is added to or deleted from the DNA codon
7. **Messenger RNA:** A type of RNA that gets instructions from DNA in the nucleus and takes the message to the cytoplasm
8. **Mutagen:** any agent (physical or environmental) that can cause a mutation or can increase the rate of mutation
9. **Mutation:** change in a DNA sequence
10. **Nitrogenous base:** Adenine, Thymine, Cytosine, or Guanine found in a DNA nucleotide, A, C, G, and Uracil found in an RNA nucleotide
11. **Nucleotide:** The subunit for both DNA and RNA. Consists of 3 parts: phosphate, sugar, and nitrogen base.

12. **Point Mutation:** A change in a single nitrogen base pair in a DNA codon
13. **Ribosomal RNA:** A type of RNA that provides the site of protein synthesis
14. **Transcription:** A process where the DNA sequence/gene is copied into mRNA, occurs in the nucleus
15. **Transfer RNA:** A type of RNA that delivers amino acids to the ribosome to be assembled into protein.
16. **Translation:** The process of converting the messenger RNA into a sequence of amino acids to make a protein

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B4.2A Show that when mutations occur in sex cells, they can be passed on to offspring (inherited mutations), but if they occur in other cells, they can be passed on to descendant cells only (noninherited mutations).

B4.2B Recognize that every species has its own characteristic DNA sequence.

B4.2C Describe the structure and function of DNA.

B4.2D Predict the consequences that changes in the DNA composition of particular genes may have on an organism (e.g., sickle cell anemia, other).

B4.2E Propose possible effects (on the genes) of exposing an organism to radiation and toxic chemicals.

B4.2f Demonstrate how the genetic information in DNA molecules provides instructions for assembling protein molecules and that this is virtually the same mechanism for all life forms.

B4.2g Describe the processes of replication, transcription, and translation and how they relate to each other in molecular biology