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Objectives for Freshman Biology Exam: DNA & RNA

1. Recall the DNA structure and identify the main components that make up the backbone and ladder of the DNA molecule.
2. State the overall appearance, structure, and location of DNA in a cell.
3. Classify the difference between purines and pyrimidines.
4. Implement each of the 4 base pairs in a template DNA sequence and illustrate correct pairing of A-T; C-G.
5. Name the function of the histone in the supercoiling of DNA.
6. Determine transcription outcomes by matching the appropriate RNA bases to the given DNA bases.
7. Discuss DNA replication and be able to summarize when this process occurs in the central dogma of gene expression.
8. Recall the differences between DNA and RNA.
9. Recite the complimentary bases in mRNA and attach correct substitutions of T in DNA for U in RNA.
10. Differentiate between mRNA, rRNA, and tRNA while understanding both function and structure.
11. Match corresponding codons with given amino acids.
12. Break down the entire central dogma method by establishing the complimentary bases from DNA to RNA to Amino acids using correct base pair matching and Amino acid accuracy.
13. Point out different types of mutations such as missense, nonsense, and silent mutations to a DNA or RNA sequence.
14. Explain what RNA editing is and be able to discuss the differences between introns and exons.