

Section 6.1: The Molecular Basis of Inheritance

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1. Genes are the coding regions of DNA, which contain the instructions for building the proteins that are responsible for each inherited trait. Alleles are different versions of the same gene that code for different traits associated with the particular gene.
3. The following terms are in order from smallest to largest: gene, chromosome, genome, nucleus
4. **(a)** A factor as described by Mendel is a specific trait inherited by an organism. An allele is a variant of a gene that codes for a specific trait. Mendel's factor had no physical molecule associated with it, unlike an allele.
(b) A protein is a polypeptide sequence composed of amino acids. A ribosome is composed of protein and RNA subunits and is the site of protein production.
(c) DNA is a polymer that is used to code for hereditary factors in life. A chromosome is the main functional unit of DNA found within a cell and contains numerous genes and factors.
6. Yes, there are differences between DNA in eukaryotic and DNA in prokaryotes. In eukaryotic cells, DNA is located in the nucleus. In prokaryotic cells, DNA is located in the cytosol. Many prokaryotes have circular DNA molecules. Prokaryotes may also contain plasmids.