

Nucleic Acids

Nucleic acids function as energy molecules, hormones, in heredity, and as cofactors in catalysis. Their best known function is as the heredity molecule DNA. The monomer subunit of the nucleic acid is the nucleotide. Nucleotides are made up of a base (adenine, cytosine, thymine, guanine and uracil), a sugar (deoxyribose or ribose) and a phosphate(s). Nucleic acids differ in the base and sugar used to build the nucleotide. RNA has 4 different nucleotides. The sugar in RNA is ribose and the four bases found in RNA nucleotides are adenine, cytosine, guanine and uracil. DNA also has 4 bases. The sugar in DNA is deoxyribose and the 4 bases are adenine, cytosine, thymine, and guanine.

There are 3 common types nucleic acids found in cells. RNA is a single-stranded molecule that serves as a messenger carrying the information from DNA in the nucleus into the cytoplasm of the cell. RNA is also the primary component of ribosomes which build proteins. DNA is a double stranded molecule that stores the organism's hereditary information. This information allows not only for the day to day operation of the cell, but for the transmission of this information to future generations. Another nucleic acid, ATP (adenosine triphosphate) is the universal energy currency. It is a single nucleotide with 3 attached phosphate groups. Two of the phosphate bonds when broken release energy that can be used to power enzyme action in the cell.