

Genetic Material: DNA, chromosomes & genes

DNA (Deoxyribonucleic Acid) is the name of the macro molecule that harbours the genetic information of living organisms. It is composed of only four different building blocks (nucleotides) and the specific sequence in which these occur forms the basis of how genetic information is encoded.

Chromosomes are the X-like structures into which huge DNA molecules are packaged in a cell's nucleus. Humans have 23 pairs of chromosomes, where each individual chromosome in a pair originates from a particular parent.

Genes are the functional units (segments) within DNA that contain all the information to make a particular protein. The promoter switches gene expression on and off and also determines how much of a protein is made. The coding region determines the specific characteristics of the protein that is made and the terminator sequence indicates where coding should stop.

The full complement of an organism's genes is called its genome or genotype and is unique for every individual except clones, e.g. plants grown from cuttings. The human genome contains an estimated 20 to 25 thousand protein coding genes.

