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Biology

What are Genes?

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Gene – The Hereditory Material



Gene is a nucleic acid segment which contains the genetic information necessary to produce a protein. Genes have a long strand of DNA with a promoter. This promoter controls the gene activity and a coding sequence.

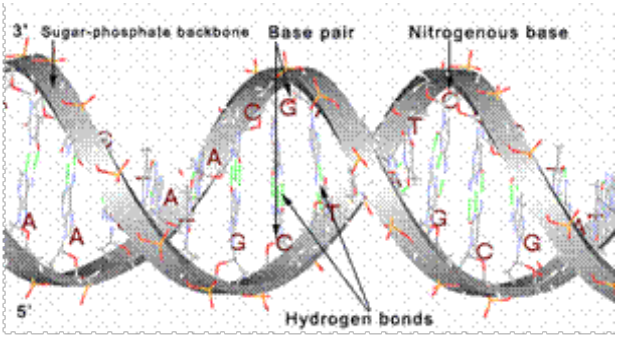


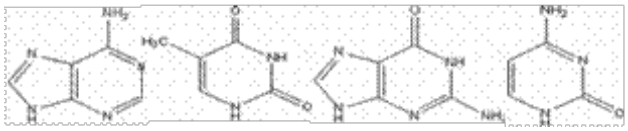
The gene coding determines what the gene produces. The informations present in the genes pass on to next generation. The organelle mitochondria self-replicate and they are not coded for by the organism's DNA.

Genes and its Bases

The genes are having 4 nucleotide bases and hence named as polynucletides. Each nucleotide made up of a base group, a sugar and one ore phosphate groups.

1. Adenine(A)
2. Thymine (T)
3. Guanine (G)
4. Cytosine (C).

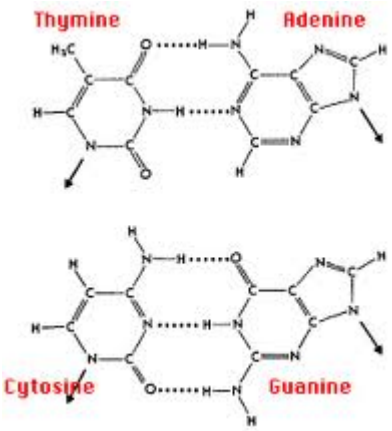




- The bases Adenine(A) and Guanine(G) are Purines
- Thymine (T) and Cytosine (C) are Pyrimidines.

Base Pairs

The sugar group is the backbone of DNA. The phosphate group links one nucleotide to another. The nitrogenous bases holds each other with the help of complimentary bases. Adenine is complimentary to Thymine while Guanine is complimentary to Cytosine. A forms 2 hydrogen bonds with T while G forms 3 hydrogen bonds with C.



So the G?C bond is more stable than an A=T bond.

Definition of Gene

The gene is a "A locatable region of genomic sequence, corresponding to a unit of inheritance, which is associated with regulatory regions, transcribed regions, and or other functional sequence regions"

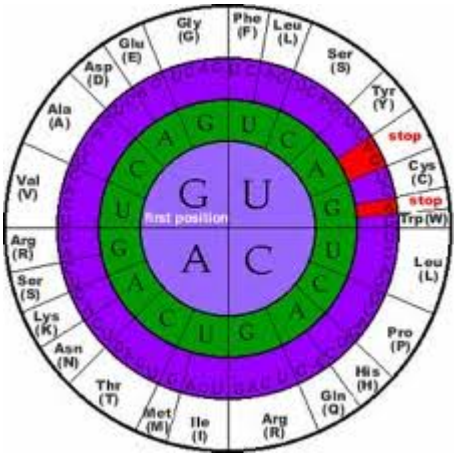
Gene may refer to an allele:

- A gene is the basic instruction, a sequence of nucleic acid
- An allele is one variant of that gene.

The genetic changes can be observed in the single letter of the genetic code and this change is termed as ‘ a single nucleotide polymorphism’.

The expression of genes

The gene expressions encoded in DNA. It begins by the transcription process into RNA. RNA contains the nitrogenous base – uracil in place of thymine of DNA. RNA molecules are single stranded and thus they are less stable than DNA.



Genetic Code

Genes that encode proteins are composed of codons. The codons are the series of three-nucleotide sequences. For example AUG, AGG etc.This is the gene lanugauge and it is alomost same for all organisms.

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