

Biology

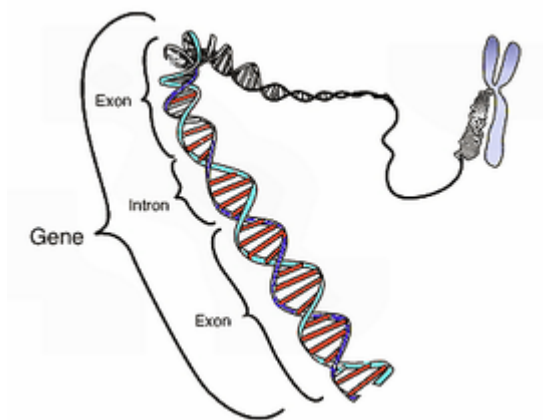
What are Genes?

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Gene – The Hereditary 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.



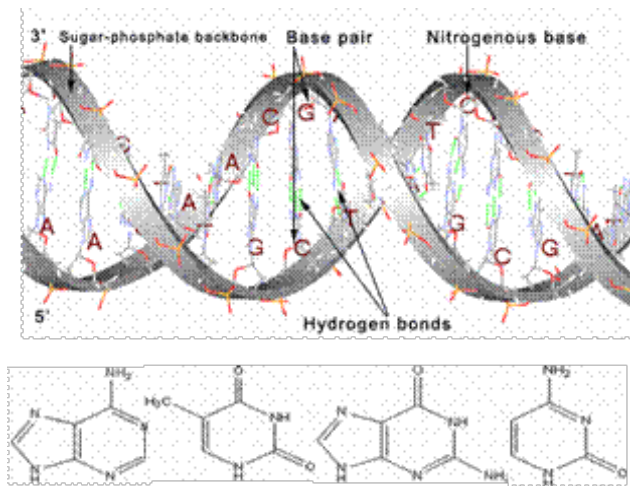
The gene coding determines what the gene produces. The informations

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 polynucleotides. Each nucleotide made up of a base group, a sugar and one or phosphate groups.

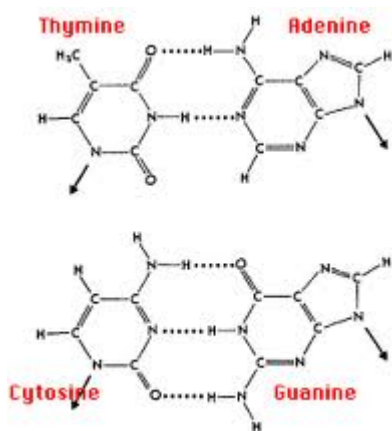
1. Adenine(A)
2. Thymine (T)
3. Guanine (G)
4. Cytosine (C).



- 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 hold each other with the help of complementary bases. Adenine is complementary to Thymine while Guanine is complementary 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"

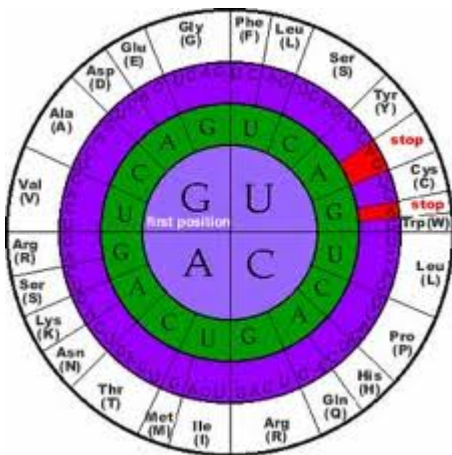
Gene may refer to an allele:

- 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 language and it is almost the same for all organisms.

Want to know more about Genes? Click [here](#) to schedule a live help with an eTutor!

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