

Genes and DNA



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DNA or deoxyribonucleic acid

DNA is a very long molecule inside a cell nucleus which usually appears as long threads.

If looked at closely we see that the strand is made up of two chains linked by pairs of tiny molecules called bases.

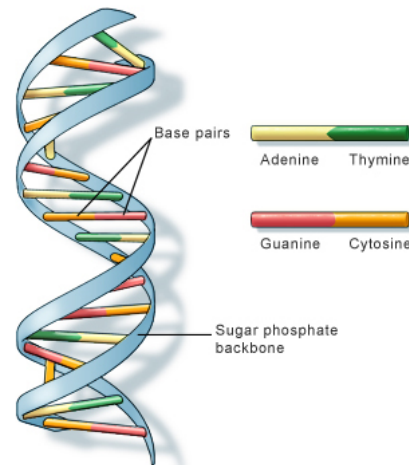


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There are four bases; adenine, cytosine, guanine, and thymine.

Adenine and Thymine always bond together.

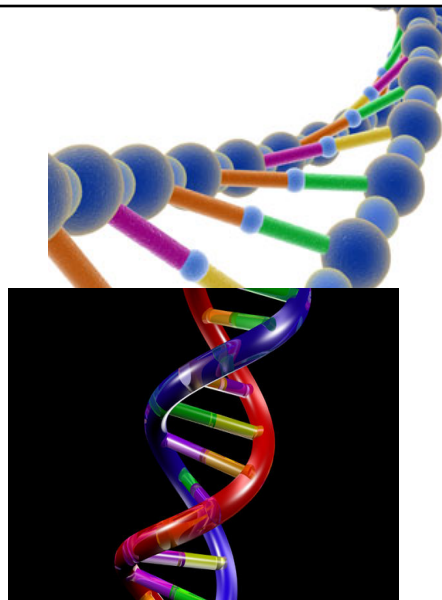
Cytosine and Guanine always bond together.



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The whole structure of the DNA molecule looks like a ladder and each rung is formed by a single base pair.

DNA is often described as a double helix because of the way it twists into a spiral staircase like structure.



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DNA contains genetic information in its base-pair sequence.

Genes

DNA is divided into segments called genes that contains the necessary information to manufacture proteins, such as enzymes, hormones, and so on. Each of these types of protein has a specific job to carry out, from digesting nutrients and repairing wounds to making hair grow, giving eyes their colour and sending messages to other cells.

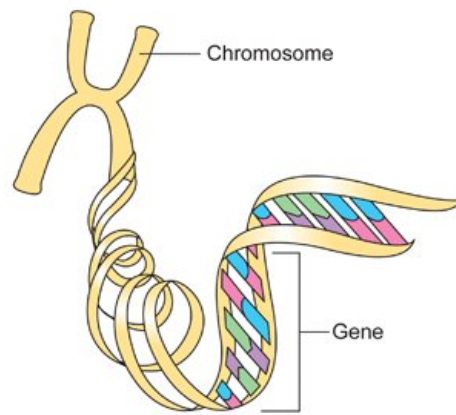


Diagram of a gene on a chromosome
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DNA contains genetic information in its base-pair sequence.

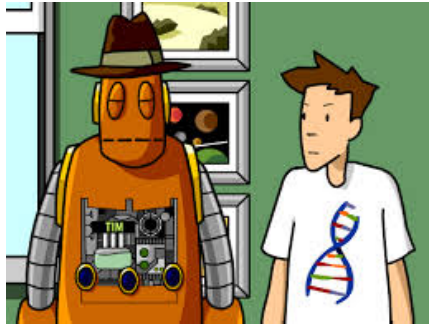
Genome

The entire base pair sequencing in an individual or species constitutes the individual's or species' genome.

In humans, the genome is made up of approximately three billion base pairs.



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<http://www.brainpop.com/science/cellularlifeandgenetics/dna/>



<http://www.brainpop.com/science/cellularlifeandgenetics/genetics/>



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Genetic Diversity

We are all unique because our DNA is unique.

Every gene can exist in different variations and forms.



For example, genes that are responsible for eye colour can render the eyes blue, green, brown and so on.

Because there are about 25000 genes in each person, each with its own genetic variation, it is virtually impossible for two individuals to possess the same genetic information with one exception: identical twins.

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Genetic Diversity

Let's check out the amount of genetic diversity in our class...



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Genetic Diversity

Sexual reproduction increases the genetic diversity of a species. Each birth is a new opportunity to combine the genes of two parents, allowing for new variations within a population.

For example, the presence of a green-eyed person in a population of previously blue and brown eyed people enriches that population's genetic diversity. The greater the number of individuals in a population, the greater the genetic diversity.



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Genetic Diversity

A small or isolated population is more likely to be less genetically diverse, as are populations in which related individuals breed with one another.



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