

📖 Topic Page: [genome](#)

Definition: **GENOME** from *A Dictionary of Entomology*

Noun. (Greek, *genos* = offspring. PL, Genomes.) 1. All of genes carried by an individual; complete set of genes in an organism. 2. Total genetic characteristics of a cell.

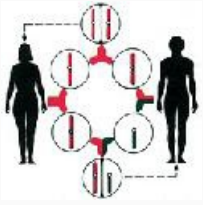


Image from: [The 46 chromosomes in somatic \(non-reproductive\)... in Philip's Encyclopedia](#)

Summary Article: **genome**

From *The Hutchinson Unabridged Encyclopedia with Atlas and Weather Guide*

Full complement of genes carried by a single (haploid) set of chromosomes. The term may be applied to the genetic information carried by an individual or to the range of genes found in a given species.

The human genome is made up of around 3 billion basepairs, most of which were reported in draft genome sequences obtained in 2003 by the Human Genome Project and by a commercial sequencing initiative launched by Craig Venter. Complete and final sequences for individual chromosomes have been reported since then, but the total number of human genes, now estimated to be close to 20,000, remains uncertain.

The first genomes of cellular organisms to be sequenced in full were those of the bacteria *Haemophilus influenzae* and *Mycoplasma genitalium*, in 1995. *Methanococcus jannaschii* was the first representative of the Archaea (one of the three domains of cellular life, along with bacteria and the eukaryotes, which have complex cells with a nucleus) to be sequenced in full, in 1996, followed by the baker's yeast *Saccharomyces cerevisiae*, the first eukaryote, in 1997. Dozens of other microbial genome sequences followed during the second half of the 1990s.

Landmark genome sequences of higher organisms included fruit fly (2000), mouse (2002), dog (2003), rat (2004), bee (2004), and chimpanzee (2005). The latter has proven a particularly useful reference for the study of human evolution, and as a reference point for the investigation of human population genetics. By 2009, farm animals including cattle and pig also had their genomes sequenced. In 2010, researchers reported the draft sequence of the Neanderthal genome, a remarkable achievement given the minute quantities and poor condition of DNA samples retrieved from hominid remains.

While the first sequencing of the human genome used traditional sequencing technologies at a cost of several hundred million dollars, new sequencing technologies have brought down the price of a genome dramatically between 2000 and 2010. By 2009, 'second generation' sequencing enabled researchers to decode the complete genome of an individual (given the generic human genome as a reference) for less than \$50,000. It is expected that the third generation, based on the read-out of single molecules of DNA, will drastically reduce the cost even further (to around \$1000) and make genome sequencing accessible as a diagnostic and therapeutic tool in routine medical care, for example in cancer treatment.

As of 2010, genome sequences of several hundred individual human beings have been completed. Initial attempts to compare and contrast tumour genomes to those of the healthy cells from the same patient were also reported.

Animal species can have drastically different sized genomes even when the species are roughly the same size. In 2000, UK researchers in Scotland noted a correlation between bird genome size and lifespan, finding that birds with larger genomes lived for longer.

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genome. (2018). In Helicon (Ed.), *The Hutchinson unabridged encyclopedia with atlas and weather guide*. Abington, UK: Helicon. Retrieved from <https://search.credoreference.com/content/topic/genome>



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