Humans (Homo sapiens) are the only extant members of the subtribe Hominina. Together with chimpanzees, gorillas, and orangutans, they are part of the family Hominidae (the great apes, or hominids). A terrestrial animal, humans are characterized by their erect posture and bipedal locomotion; high manual dexterity and heavy tool use compared to other animals; open-ended and complex language use compared to other animal communications; larger, more complex brains than other animals; and highly advanced and organized societies.[3][4]

Early hominins—particularly the australopithecines, whose brains and anatomy are in many ways more similar to ancestral non-human apes—are less often referred to as "human" than hominins of the genus Homo.[5] Several of these hominins used fire, occupied much of Eurasia, and gave rise to anatomically modern Homo sapiens in Africa about 315,000[6] years ago.[7][8] Humans began to exhibit evidence of behavioral modernity around 50,000 years ago, and in several waves of migration, they ventured out of Africa and populated most of the world.[9]

The spread of the large and increasing population of humans has profoundly affected much of the biosphere and millions of species worldwide. Advantages that explain this evolutionary success include a larger brain with a well-developed neocortex, prefrontal cortex and temporal lobes, which enable advanced abstract reasoning, language, problem solving, sociality, and culture through social learning. Humans use tools more frequently and effectively than any other animal; and are the only extant species to build fires, cook food, clothe themselves, and create and use numerous other technologies and arts.

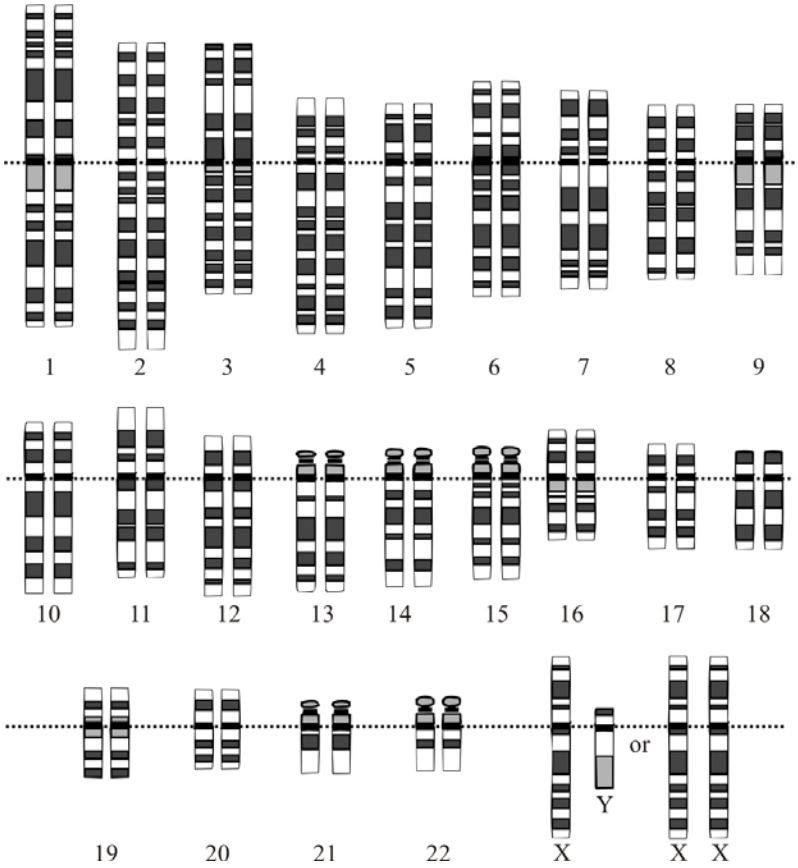
Humans uniquely use such systems of symbolic communication as language and art to express themselves and exchange ideas, and also organize themselves into purposeful groups. Humans create complex social structures composed of many cooperating and competing groups, from families and kinship networks to political states. Social interactions between humans have established an extremely wide variety of values,[10] social norms, and rituals, which together undergird human society. Curiosity and the human desire to understand and influence the environment and to explain and manipulate phenomena (or events) have motivated humanity's development of science, philosophy, mythology, religion, anthropology, and numerous other fields of knowledge.

Though most of human existence has been sustained by hunting and gathering in band societies,[11] increasingly many human societies transitioned to sedentary agriculture approximately some 10,000 years ago,[12] domesticating plants and animals, thus enabling the growth of civilization. These human societies subsequently expanded, establishing various forms of government, religion, and culture around the world, and unifying people within regions to form states and empires. The rapid advancement of scientific and medical understanding in the 19th and 20th centuries permitted the development of fuel-driven technologies and increased lifespans, causing the human population to rise exponentially. The global human population was estimated to be near 7.7 billion in 2015.[13]

Like all mammals, humans are a diploid eukaryotic species. Each somatic cell has two sets of 23 chromosomes, each set received from one parent; gametes have only one set of chromosomes, which is a mixture of the two parental sets. Among the 23 pairs of chromosomes there are 22 pairs of autosomes and one pair of sex chromosomes. Like other mammals, humans have an XY sex-determination system, so that females have the sex chromosomes XX and males have XY.[103]

One human genome was sequenced in full in 2003, and currently efforts are being made to achieve a sample of the genetic diversity of the species (see International HapMap Project). By present estimates, humans have approximately 22,000 genes.[104] The variation in human DNA is very small compared to other species, possibly suggesting a population bottleneck during the Late Pleistocene (around 100,000 years ago), in which the human population was reduced to a small number of breeding pairs.[105][106] Nucleotide diversity is based on single mutations called single nucleotide polymorphisms (SNPs). The nucleotide diversity between humans is about 0.1%, i.e. 1 difference per 1,000 base pairs.[107][108] A difference of 1 in 1,000 nucleotides between two humans chosen at random amounts to about 3 million nucleotide differences, since the human genome has about 3 billion nucleotides. Most of these single nucleotide polymorphisms (SNPs) are neutral but some (about 3 to 5%) are functional and influence phenotypic differences between humans through alleles.[citation needed]

By comparing the parts of the genome that are not under natural selection and which therefore accumulate mutations at a fairly steady rate, it is possible to reconstruct a genetic tree incorporating the entire human species since the last shared ancestor. Each time a certain mutation (SNP) appears in an individual and is passed on to his or her descendants, a haplogroup is formed including all of the descendants of the individual who will also carry that mutation. By



directional selection in the past 15,000 years.[114]

Reference: https://en.wikipedia.org/wiki/Human

comparing mitochondrial DNA, which is inherited only from the mother, geneticists have concluded that the last female common ancestor whose genetic marker is found in all modern humans, the so-called mitochondrial Eve, must have lived around 90,000 to 200,000 years ago.[109][110][111]

Human accelerated regions, first described in August 2006,[112][113] are a set of 49 segments of the human genome that are conserved throughout vertebrate evolution but are strikingly different in humans. They are named according to their degree of difference between humans and their nearest animal relative (chimpanzees) (HAR1 showing the largest degree of human-chimpanzee differences). Found by scanning through genomic databases of multiple species, some of these highly mutated areas may contribute to human-specific traits.[citation needed]

The forces of natural selection have continued to operate on human populations, with evidence that certain regions of the genome display