

## **Homo Sapiens – of the genus Homo**

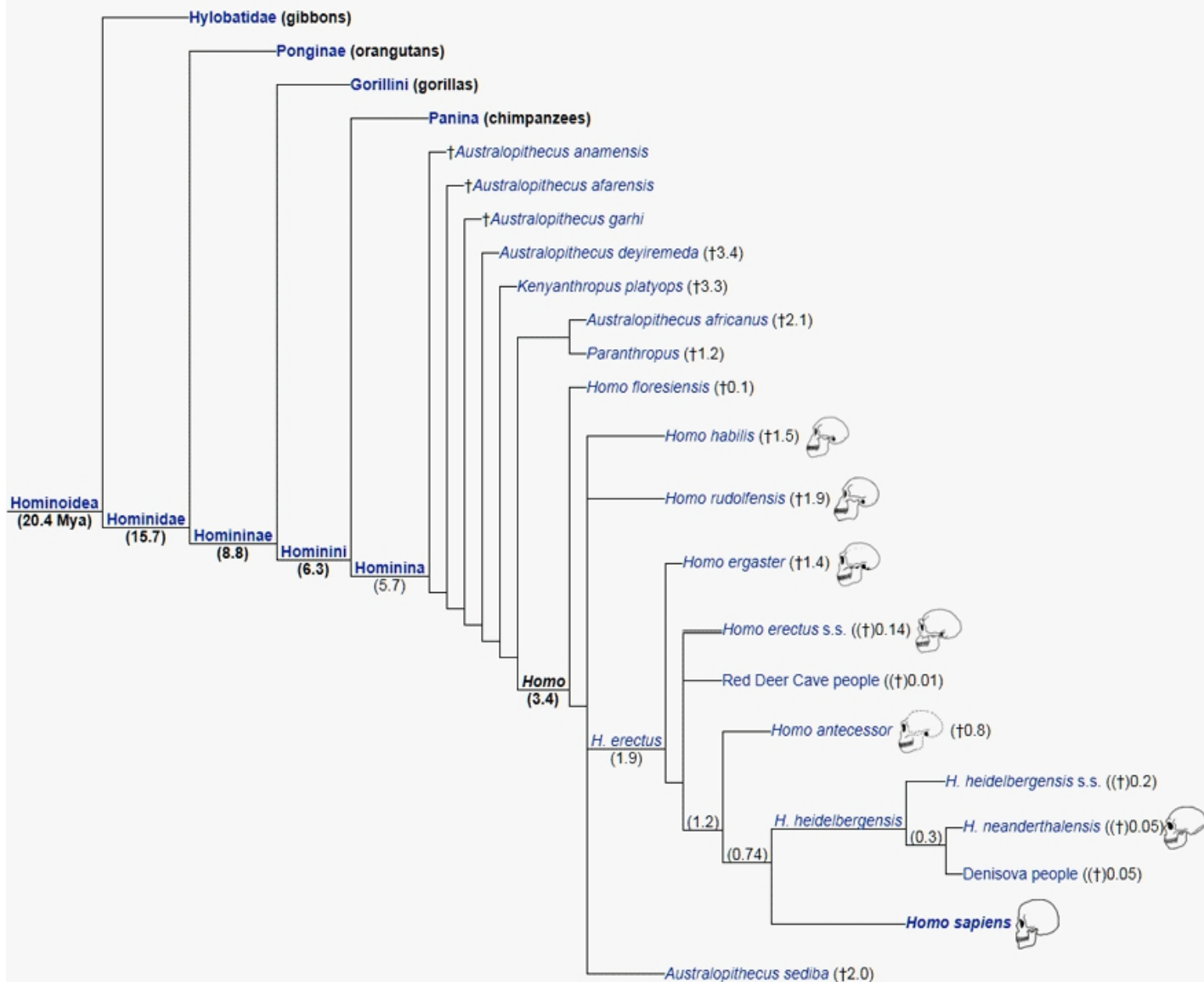
From Wikipedia and other sources from Astrophysics, mainly Neil DeGrasse Tyson

Homo (Latin: homō, "human being") is the genus which emerged in the otherwise extinct genus Australopithecus that encompasses the extant species Homo sapiens (modern humans), plus several extinct species classified as either ancestral to or closely related to modern humans (depending on a species), most notably Homo erectus and Homo neanderthalensis. The genus is taken to emerge with the appearance of Homo habilis, just over two million years ago. Genus Homo, together with the genus Paranthropus is probably sister to A. africanus in the genus Australopithecus, which itself had previously split from the lineage of Pan, the chimpanzees.

Homo erectus appeared about two million years ago and, in several early migrations, it spread throughout Africa (where it is dubbed Homo ergaster) and Eurasia. It was likely the first human species to live in a hunter-gatherer society and to control fire. An adaptive and successful species, Homo erectus persisted for more than a million years, and gradually diverged into new species by around 500,000 years ago.

Homo sapiens (anatomically modern humans) emerges close to 300,000 to 200,000 years ago, most likely in Africa, and Homo neanderthalensis emerged at around the same time in Europe and Western Asia. H. sapiens dispersed from Africa in several waves, from possibly as early as 250,000 years ago, and certainly by 130,000 years ago, the so-called Southern Dispersal beginning about 70,000 years ago leading to the lasting colonization of Eurasia and Oceania by 50,000 years ago. Both in Africa and Eurasia, H. sapiens met with and interbred with archaic humans. Separate archaic (non-sapiens) human species are thought to have survived until around 40,000 years ago (Neanderthal extinction), with possible late survival of hybrid species as late as 12,000 years ago (Red Deer Cave people).

A taxonomy of the Homo within the great apes is assessed as follows, with Paranthropus and Homo emerging within Australopithecus (shown here cladistically granting Paranthropus, Kenyanthropus, and Homo). The exact phylogeny within Australopithecus is still highly controversial. Approximate radiation dates of daughter clades are shown in Millions of years ago (Mya). Sahelanthropus, Orrorin, and Ardipithecus, possibly sisters to Australopithecus, are not shown here. Note that the naming of groupings is sometimes muddled as often certain groupings are presumed before a cladistic analysis is performed.



And so we have historical reality that immediately forces the question: Why are so many humans allowing their inflated and unjustified egos to feed the false cultural assumptions that human beings are more important than everything else in the universe? There is no denying that powerful forces in society leave most of us susceptible to a flawed and self-serving model of humans.

Perhaps the masses could overcome their delusions by understanding what any biology 101 student soon learns that more bacteria live and work in one centimeter of the human colon than the number of people who have ever existed in the world.

People are not masters of space and time but, in reality, participants in a great cosmic chain of being, with a distinct genetic link across species both living and extinct, extending back nearly four billion years to the earliest single-celled organism on Earth.

Yes, but we're smarter than bacteria! No doubt about it, we're smarter than every other living creature that ever ran, crawled or slithered on Earth. But how smart is that? We cook our food. We compose poetry and music. We do art and science. We're good at math. Even if you're bad at math, you're probably smarter than the smartest chimpanzee, whose genetic identity varies in only trifling ways from ours. Try as they might, primatologists will never get a chimpanzee to do long division, or trigonometry.

If small genetic differences between us and our fellow apes account for what appears to be a vast difference in intelligence, then maybe that difference in intelligence is not so vast after all.

**Imagine** a life form whose brainpower is to our as ours is to a chimpanzee's. To such a species, our highest mental achievements would be trivial. Their toddlers, instead of learning their ABCs on Sesame Street, would learn multivariable calculus on Boolean Boulevard. Our most complex theorems, our deepest philosophies, the cherished works of our most creative artists would be projects their schoolkids bring home for Mom and Dad to display on the refrigerator door with a magnet. These creatures would study Stephen Hawking because he's slightly cleverer than other humans. Why? He can do theoretical astrophysics and other rudimentary calculations in his head like their little Timmy who just came from alien preschool.

If a huge genetic gap separated us from our closest relative in the animal kingdom, we could justifiably celebrate our brilliance. We might be entitled to walk around thinking we're distant and distinct from our fellow creatures. But no such gap exists. Instead, we are one with the rest of nature, fitting neither above nor below, but within.

Need more ego softeners? Simple comparisons of quantity, size, and scale do the job well.

Take water. It's common and vital. There are more molecules of water in an eight-ounce cup of the stuff than there are cups of water in all the world's oceans. Every cup that passes through a single person and eventually rejoins the world's water supply holds enough molecules to mix 1,500 of them into every other cup of water in the world. No way around it: some of the water you just drank passed through the kidneys of Socrates, Genghis Khan, and Joan of Arc.

How about air? Also vital. A single breathful draws in more air molecules than there are breathfuls of air in Earth's entire atmosphere. That means some of the air you just breathed passed through the lungs of Napoleon, Beethoven, Lincoln, and Bill the Kid.

**Time to get cosmic.** There are more stars in the universe than grains of sand on any beach, more stars than seconds have passed since Earth formed, more stars than words and sounds uttered by all the humans who have ever existed.

**Want to know what we're made of?** The chemical elements of the universe are forged in the fires of high-mass stars that end their lives in titanic explosions, enriching their host galaxies with the chemical arsenal of life as we know it. The result? The four most common chemically active elements in the universe – hydrogen, oxygen, carbon, and nitrogen – are the four most elements of life on Earth with carbon serving as the foundation of biochemistry.

**We do not simply live in this universe. The universe lives within us.**