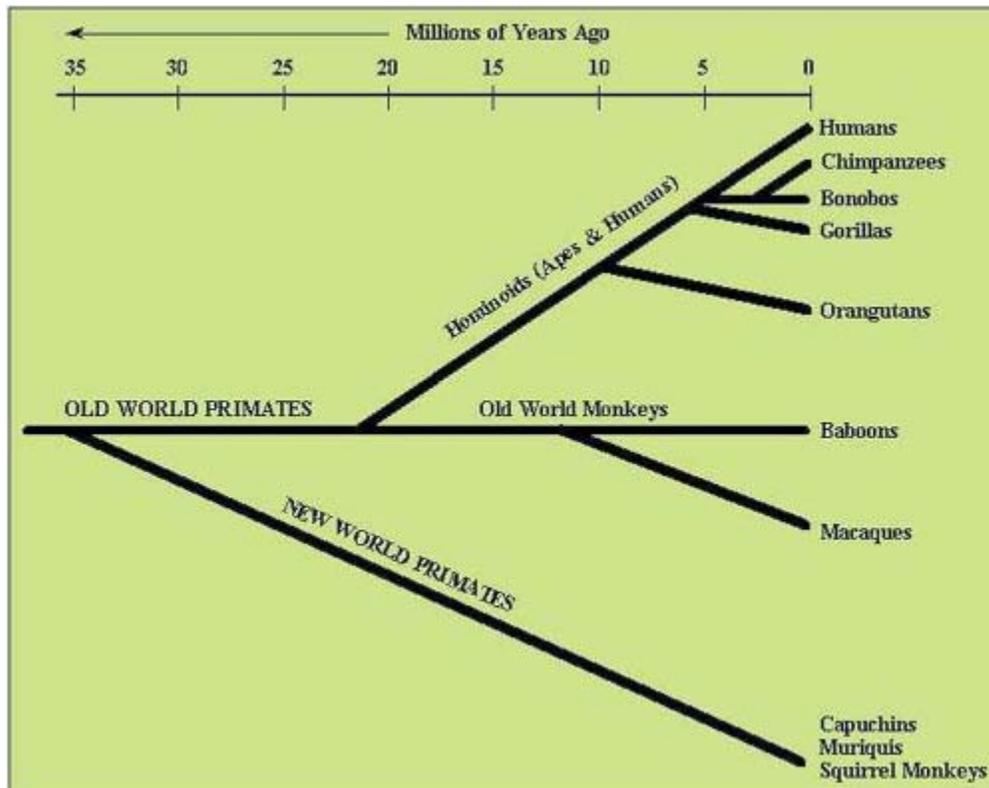


PRIMATE TAXONOMY

Apes are no monkeys! The best way to insult a scientist working on chimpanzees is to say he/she is working with monkeys. We, humans, belong to the same family as the anthropoid (human-like) apes, also known as the "great" apes. No other animals are as close to us: at the DNA level we are 98.4 % identical to chimpanzees and bonobos.



Here is a diagram of a primate evolutionary tree based on DNA comparisons. Humans (*Homo sapiens sapiens*) are classified as Hominoidae. Other members of this family are the four great apes: chimpanzee (*Pan troglodytes*), bonobo (*Pan paniscus*), gorilla (*Gorilla gorilla*), and orangutan (*Pongo pygmaeus*). The Hominoid family also includes the "lesser" apes: gibbons and siamangs. No other primates are called apes: they are monkeys and prosimians. The Hominoids split off from the other primates (Old World monkeys, New World monkeys, and prosimians) an estimated 23 million years ago.

The latest discoveries in paleontology make early hominids look ever more ape-like thus confirming the validity of comparisons of *Homo sapiens* with its "living links," the extant anthropoid apes. The split between them and us is now estimated to have occurred a "mere" 6 million years ago. Whereas paleontologists tend to focus on the last 3-4 million years marked by

bipedality, brain expansion, and cultural progress, the living links approach reaches back further in time so as to include the evolution of all Hominoids.

A Quick Taxonomy of the Primate Order
(See University of Manitoba for an excellent and very thorough primate taxonomy)

There are approximately 240 primate species. Primates range in size from the 160 kg male mountain gorilla to the less than 100 gram pygmy marmoset. Primates evolved from insectivores (tree shrews, or tupaias, were once classified as the most primitive primates; now they are considered a separate order). The general evolutionary trend within the order is towards stereoscopic color vision (i.e. foreshortening of the muzzle; flattening of the face; decline in the importance of smell) and refinement of hands and feet as grasping organs (flat nails instead of claws, sensitive pads for gripping). This evolution has culminated in the versatile human hand with its completely opposable thumb. Other trends are an increase in brain size; a reduced reproductive rate (many primates give birth to singletons), and an increase in social complexity.

SUBORDER I - PROSIMII



The prosimians retain many primitive mammalian characteristics, and are closer to the ancestral insectivores than are the SIMIANS. The most important group are the LEMURS, now confined to the (very large) island of Madagascar, i.e. lemurs (genus: *Lemur*), sifakas, indris, and the aye-aye (a nocturnal insectivore). On the African continent itself we find pottos, bush babies, and lorises.

SUBORDER II - ANTHROPOIDEA

Simians differ from the prosimians in their greater reliance on sight (over sound and smell); larger brains, and greater flexibility of locomotion. The main taxonomic (and geographic) division within the anthropoid primates is between the NEW WORLD MONKEYS with wide open nostrils that are far apart (*Platyrrhini*; groups 1a and 1b) and the OLD WORLD MONKEYS, APES, AND HUMANS with narrow nostrils that are closer together (*Catarrhini*; groups 1c and 2). Other differences: the larger New World species have evolved prehensile tails, and many Old World primates have hard sitting callosities on their buttocks.

II.1 - MONKEYS

Family 1 - CEBIDAE (CAPUCHIN-LIKE MONKEYS)



Distribution: Neo-tropics and -subtropics. Mostly arboreal, many species with prehensile tails. Genera include: *Cebus* (capuchins), *Saimiri* (squirrel monkeys), *Callicebus* (titi monkeys), *Ateles* (spider monkeys), *Alouatta* (howlers), and *Brachyteles* (muriquis; with over 12 kg, the largest Neotropical primate).

Family 2 - CALLITRICHIDAE (MARMOSETS & TAMARINS)



Distribution: Neotropics. Characterized by small (squirrel-like) size, claws rather than nails, bird-like chirping vocalizations, and monogamous family units.

Family 3 - CERCOPITHECIDAE (OLD WORLD MONKEYS)

Distribution: Africa and Asia, from the north of Japan to South-Africa.



Subfamily 3a: Cercopithecinae (GUENONS, MACAQUES, BABOONS). Tough, gregarious, highly adaptable "generalists." The only group with cheek pouches for food storage. Many species are terrestrial or semi-terrestrial. The most important genera are *Macaca* (nearly twenty species of macaques, including the rhesus, the stump-tail, and the snow monkey); *Papio* (savanna baboons, hamadryas baboons, drills, mandrills); *Cercopithecus* (guenons, incl. vervet monkeys), and *Cercocebus* (mangabeys).



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Subfamily 3b: Colobinae (COLOBUS & LEAF MONKEYS)

Characterized by a complex stomach (for the processing of foliage), absence of cheekpouches, and slender built. Many species are largely arboreal. This subfamily includes: Proboscis monkeys, golden monkeys, langurs, colobus monkeys, and guereza's.

II.2 - APES & HUMANS (HOMINOIDEA)

Tail-less primates, with wide chests, and great rotational ability in the shoulders.

Family 4 - HYLOBATIDAE (GIBBONS & SIAMANGS)



Distribution: South-East Asia. Also known as the lesser apes, the hylobatidae are adapted to brachiation, and almost entirely arboreal. They live in territorial, small, often monogamous family units. These are the only primates which really can be said to sing: they have beautiful, complex calls, usually given as male-female duets. Like the howlers of South-America, some species have special throat sacs to enhance the carrying capacity of their calls.

Family 5 - PONGIDAE (GREAT or ANTHROPOID APES)



Distribution: Africa and Asia. The nearest relatives of humans, pongids are characterized by large brains, great intelligence, and large body size. The African apes are so-called knuckle-walkers; the orangutan, which is more arboreal, relies on quadrumanual locomotion. The four extant species are divided into three genera: 1) Pan: the chimpanzee (3 subspecies) and bonobo; 2) Gorilla: the gorilla (3 subspecies), and 3) Pongo: the orangutan (2 subspecies).

Family 6 - HOMINIDAE (HUMANS)



Homo sapiens sapiens is the primate with the largest geographic distribution, by far the largest brain, and the least hair on its body.

Table: Progressive indices of the neocortex (i.e. index comparing the size of the neocortex with that of a typical insectivore of the same body weight); the gestation length in days, and life span in years.

Genus	Brain index	Gestation length	Life span
<i>Homo</i>	156	266	>70
<i>Cebus</i>	60	165	40-50
<i>Pan</i>	59	228	40-50
<i>Macaca</i>	46	165	20-30
<i>Ateles</i>	43	225	N/A
<i>Gorilla</i>	33	258	40-50

Further Reading:

MacDonald, D. (1984). *The Encyclopedia of Mammals*. Facts on File Publications, New York.

Napier, J. and Napier, P. (1985). *The Natural History of the Primates*. MIT, Cambridge, MA.

Related Links:

[Primate Fact Sheet](#) (Primate Info Net at University of Wisconsin) - An excellent resource for all primate species

[Primate Taxonomy](#) (University of Manitoba) - Great taxonomy charts, extremely thorough.