

Chimpanzee

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(Redirected from Chimpanzee intelligence)

Chimpanzees, sometimes colloquially **chimps**, are two extant hominid species of apes in the genus *Pan*. The Congo River divides the native habitats of the two species:^[2]

- Common chimpanzee, *Pan troglodytes* (West and Central Africa)
- Bonobo, *Pan paniscus* (forests of the Democratic Republic of the Congo)

Chimpanzees are members of the family Hominidae, along with gorillas, humans, and orangutans. Chimpanzees split from the human branch of the family about four to six million years ago. Chimpanzees are the closest living relatives to humans, being members of the tribe Hominini (along with extinct species of subtribe Hominina). Chimpanzees are the only known members of the subtribe **Panina**. The two *Pan* species split only about one million years ago.

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Chimpanzees^[1]

Temporal range: 4–0Ma

PreЄ Є OS D C P T J K PgN



Common chimpanzee (*Pan troglodytes*)

Scientific classification

Kingdom:	Animalia
Phylum:	Chordata
Class:	Mammalia
Order:	Primates
Family:	Hominidae
Subfamily:	Homininae
Tribe:	Panini
Genus:	<i>Pan</i>
	Oken, 1816

Type species

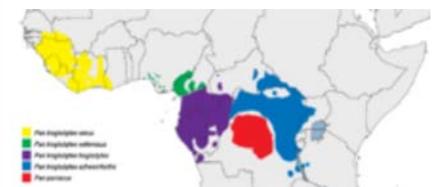
Pan troglodytes

Blumenbach, 1775

Species

Pan troglodytes

Pan paniscus



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Distribution of *Pan troglodytes* (common chimpanzee) and *Pan paniscus* (bonobo, in red)

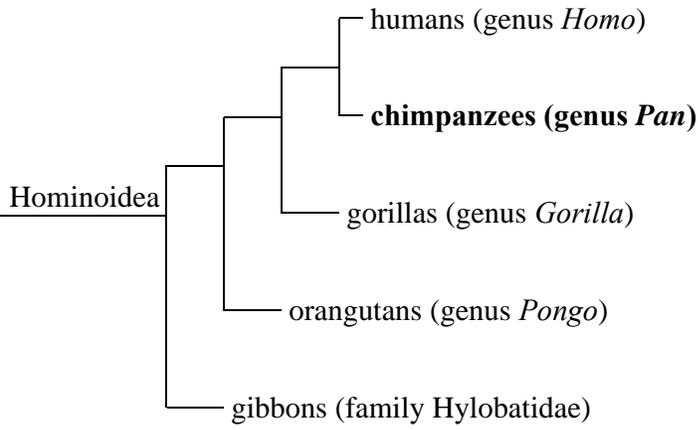
Synonyms

Troglodytes E. Geoffroy, 1812 (preoccupied)
Mimetes Leach, 1820 (preoccupied)
Theranthropus Brookes, 1828
Chimpansee Voight, 1831
Anthropithecus Blainville, 1838
Hylanthropus Gloger, 1841
Pseudanthropus Reichenbach, 1862
Engeco Haeckel, 1866
Fsihego DePauw, 1905

Evolutionary history

Evolutionary relationship

The genus *Pan* is part of the subfamily Homininae, to which humans also belong. These two species are the closest living evolutionary relatives to humans, sharing a common ancestor with humans about four to six million years ago.^[3] Research by Mary-Claire King in 1973 found 99% identical DNA between human beings and chimpanzees,^[4] although research since has modified that finding to about 94%^[5] commonality, with some of the difference occurring in noncoding DNA. *P. troglodytes* and *P. paniscus* have been proposed to belong with *H. sapiens* in the genus *Homo*, rather than in *Pan*; e.g., by J. Diamond in his book, wherein he refers to man as *The Third Chimpanzee*. Among the arguments in favor of this reclassification is that other species have been reclassified to belong to the same genus because of less genetic similarity than that between humans and chimpanzees.

Taxonomy of genus <i>Pan</i> ^[1]	Phylogeny of superfamily Hominoidea ^[6] (Fig. 4)
<ul style="list-style-type: none"> ■ Genus <i>Pan</i> <ul style="list-style-type: none"> ■ Common chimpanzee (<i>P. troglodytes</i>) <ul style="list-style-type: none"> ■ Central chimpanzee (<i>P. t. troglodytes</i>) ■ Western chimpanzee (<i>P. t. verus</i>) ■ Nigeria-Cameroon chimpanzee (<i>P. t. ellioti</i>) ■ Eastern chimpanzee (<i>P. t. schweinfurthii</i>) ■ Bonobo (<i>P. paniscus</i>) 	 <p>The phylogenetic tree shows the superfamily Hominoidea. The root splits into gibbons (family Hylobatidae) and a clade containing humans, chimpanzees, gorillas, and orangutans. Within this clade, gibbons are the outgroup. The next node splits into orangutans (genus <i>Pongo</i>) and a clade containing humans and chimpanzees. The final node splits into humans (genus <i>Homo</i>) and chimpanzees (genus <i>Pan</i>).</p>

Fossils

Though many human fossils have been found, chimpanzee fossils were not described until 2005. Existing chimpanzee populations in West and Central Africa are separate from the major human fossil sites in East Africa; however, chimpanzee fossils have been reported from Kenya, indicating that both humans and members of the *Pan* clade were present in the East African Rift Valley during the Middle Pleistocene.^[7]

Anatomy and physiology

The male common chimp stands up to 1.7 m (5.6 ft) high and weighs as much as 70 kg (150 lb); the female is somewhat smaller. The common chimp's long arms, when extended, span one and a half times the body's height. A chimpanzee's arms are longer than its legs.^[9] The bonobo is slightly shorter and thinner than the common chimpanzee but has longer limbs. In trees, both species climb with their long, powerful arms; on the ground, chimpanzees usually knuckle-walk, or walk on all fours, clenching their fists and supporting themselves on the knuckles thereof. Chimpanzee feet are better suited for walking than are those of the orangutan because the chimp has broader soles and shorter toes.

Both the common chimpanzee and bonobo can walk upright on two legs when carrying objects with their hands and arms. The bonobo has proportionately longer upper limbs and more often walks upright than does the common chimpanzee. The coat is dark; the face, fingers, palms of the hands, and soles of the feet, hairless; the chimp, tailless. The exposed skin of the face, hands and feet varies from pink to very dark in both species but is generally lighter in younger individuals, darkening as maturity is reached. A University of Chicago Medical Centre study has found significant genetic differences between chimpanzee populations.^[10] A bony shelf over the eyes gives the forehead a receding appearance, and the nose is flat. Although the jaws protrude, the lips are thrust out only when a chimp pouts.

The brain of a chimpanzee has been measured at ~337 cc,^{[11][12]} ~393 cc,^[13] with a general range of 282–500 cc.^[14] Human brains, in contrast, have been measured as being three times larger, variously reported volumes include ~1,299 cc,^{[11][12]} ~1,158 cc,^[13] and averages of ~1330 cc.^{[15][16][17][18][19][20][21][22]}

Chimpanzee testicles are unusually large for their body size, with a combined weight of about 4 oz (110 g) compared to a gorilla's 1 oz (28 g) or a human's 1.5 ounces (43 g). This relatively great size is generally attributed to sperm competition due to the polyandrous nature of chimpanzee mating behavior.^[23] Chimpanzees reach puberty at an age of between eight and 10 years and rarely live past age 40 in the wild, but some have lived longer than 60 years in captivity.

Neoteny

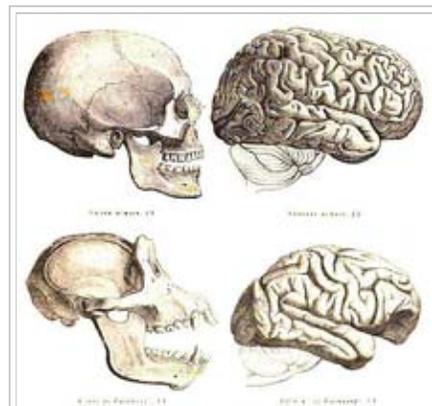
Bonobos are claimed to be more neotenized than the common chimpanzees because of such features as the proportionately long torso length of the bonobo.^[24]

Behavior

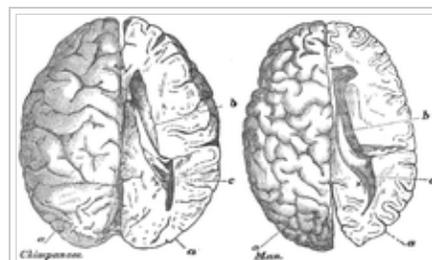
Anatomical differences between the common chimpanzee and the bonobo are slight, but sexual and social behaviors are markedly different. The common chimpanzee has an omnivorous diet, a troop hunting culture based on beta males led by an alpha male, and highly complex social relationships. The bonobo, on the other hand, has a mostly



(video) Female Chimpanzee at Tobu Zoo in Saitama, Japan



Human and chimp skulls and brains (not to scale), as illustrated in Gervais' *Histoire naturelle des mammifères*



The chimpanzee's brain on the left and the man's brain on the right have been scaled to the same size to show the relative proportions of their parts. These drawings were in a book made in 1904 by Thomas Henry Huxley.^[8]



Bonobo

frugivorous diet and an egalitarian, nonviolent, matriarchal, sexually receptive behavior.^[25] Bonobos frequently have sex, sometimes to help prevent and resolve conflicts. Different groups of chimpanzees also have different cultural behavior with preferences for types of tools.^[26] The common chimpanzee tends to display greater aggression than does the bonobo.^[27] The average, captive chimpanzee sleeps 9.7 hours per day.^[28]

Social structure

Chimpanzees live in large multi-male and multi-female social groups, which are called communities. Within a community, the position of an individual and the influence the individual has on others dictates a definite social hierarchy. Chimpanzees live in a leaner hierarchy wherein more than one individual may be dominant enough to dominate other members of lower rank. Typically, a dominant male is referred to as the alpha male. The alpha male is the highest-ranking male that controls the group and maintains order during disputes. In chimpanzee society, the 'dominant male' sometimes is not the largest or strongest male but rather the most manipulative and political male that can influence the goings on within a group. Male chimpanzees typically attain dominance by cultivating allies who will support that individual during future ambitions for power. The alpha male regularly displays by puffing his normally slim coat up to increase view size and charge to seem as threatening and as powerful as possible; this behavior serves to intimidate other members and thereby maintain power and authority, and it may be fundamental to the alpha male's holding on to his status. Lower-ranking chimpanzees will show respect by submissively gesturing in body language or reaching out their hands while grunting. Female chimpanzees will show deference to the alpha male by presenting their hindquarters.

Female chimpanzees also have a hierarchy, which is influenced by the position of a female individual within a group. In some chimpanzee communities, the young females may inherit high status from a high-ranking mother. Dominant females will also ally to dominate lower-ranking females: whereas males mainly seek dominant status for its associated mating privileges and sometimes violent domination of subordinates, females seek dominant status to acquire such resources as food. High-ranking females often have first access. Both genders acquire dominant status to improve social standing within a group.

Community female acceptance is necessary for alpha male status; females must ensure that their group visits places that supply them with enough food. A group of dominant females will sometimes oust an alpha male which is not to their preference and back another male, in whom they see potential for leading the group as a successful alpha male.

Intelligence

Chimpanzees make tools and use them to acquire foods and for social displays; they have sophisticated hunting strategies requiring cooperation, influence and rank; they are status conscious, manipulative and capable of deception; they can learn to use symbols and understand aspects of human language including some relational syntax, concepts of number and numerical sequence;^[29] and they are capable of spontaneous planning for a future state or event.^[30]

Tool use

In October 1960, Jane Goodall observed the use of tools among chimpanzees. Recent research indicates chimpanzee stone tool use dates to at least 4,300 years ago.^[31] Chimpanzee tool usage includes digging into termite mounds with a large stick tool, and then using a small stick that has been altered to "fish" the termites out.^[32] There have been occasional unsubstantiated or controversial reports of Chimpanzees using rocks or sticks as weapons.^[33] A recent study claimed to reveal the use of spears, which common chimpanzees in Senegal sharpen with their teeth and use to

stab and pry Senegal bushbabies out of small holes in trees.^{[34][35]} Before the discovery of tool use in chimps, humans were believed to be the only species to make and use tools, but several other tool-using species are now known.^{[36][37]}

Nest-building

Nest-building, sometimes considered as tool use, is seen in chimpanzees which construct arboreal night nests by lacing together branches from one or more trees. It forms an important part of behavior, especially in the case of mothers who teach this trait to infants. Nests consist of a mattress, supported on a strong foundation, and lined above with soft leaves and twigs, and are built in trees with a minimum diameter of 5 metres (16 ft) and may be located at a height of 3 to 45 metres (9.8 to 147.6 ft). Both day and night nests are built; they may be located in groups.^[38] A study in 2014 found that the Muhimbi tree is favoured for nest building by chimpanzees in Uganda due to its physical properties, such as bending strength, inter-node distance, and leaf surface area.^[39]

Altruism and emotivity



Chimpanzee mother and baby

Studies have shown chimpanzees engage in apparently altruistic behavior within groups.^{[40][41]} Some researchers have said chimpanzees are indifferent to the welfare of unrelated group members,^[42] but a more recent study of wild chimpanzees found that both male and female adults would adopt orphaned young of their group. Also, different groups sometimes share food, form coalitions, and cooperate in hunting and border patrolling.^[43] Sometimes chimpanzees have adopted young that come from unrelated groups. And in some rare cases, even male chimps have been shown to take care of abandoned infant chimps of an unrelated group, though in most cases they would kill the infant.

According to James W. Harrod, evidence for chimpanzee emotivity includes display of mourning, "incipient romantic love", rain dances, appreciation of natural beauty such as a sunset over a lake, curiosity and respect towards wildlife (such as the python, which is neither a threat nor a food source to chimpanzees), altruism toward other species (such as feeding turtles) and animism, or "pretend play", in chimps cradling and grooming rocks or sticks.^[44]

Communication

Chimps communicate in a manner similar to human nonverbal communication, using vocalizations, hand gestures, and facial expressions. Research into the chimpanzee brain has revealed chimp communication activates an area of the chimp brain in the same position as Broca's area, a language center in the human brain.^[45]

There is some debate as to whether chimpanzees have the ability to express hierarchical ideas in language. Studies have found that chimps are capable of learning a limited set of sign language symbols, which they can use to communicate with human trainers. However, it is clear that there are distinct limits to the complexity of knowledge structures with which chimps are capable of dealing. The sentences that they can express are limited to specific

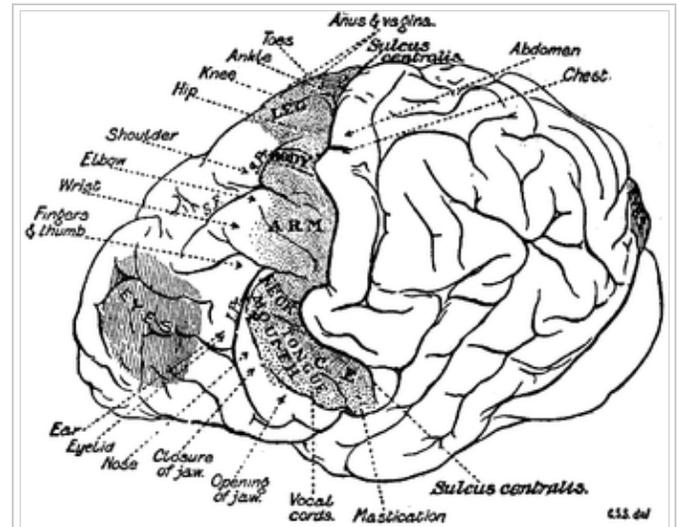


Diagram of brain – topography of the main groups of foci in the motor field of chimpanzee

simple noun-verb sequences and are not capable of the indefinite expansion of complexity characteristic of humans.

Aggression

Adult common chimpanzees, particularly males, can be very aggressive. They are highly territorial and are known to kill other chimps.^[46]

Hunting

Chimpanzees also engage in targeted hunting of lower-order primates such as the red colobus^[47] and bush babies,^{[48][49]} and use the meat from these kills as a "social tool" within their community.^[50]

Puzzle solving

In February 2013, a study found chimpanzees solve puzzles for entertainment.^[51]

Interactions with humans

History

Africans have had contact with chimpanzees for millennia. Chimpanzees have been kept as pets for centuries in a few African villages, especially in the Democratic Republic of Congo. In Virunga National Park in the east of the country, the park authorities regularly confiscate chimpanzees from people keeping them as pets.^[52] The first recorded contact of Europeans with chimps took place in present-day Angola during the 17th century. The diary of Portuguese explorer Duarte Pacheco Pereira (1506), preserved in the Portuguese National Archive (*Torre do Tombo*), is probably the first European document to acknowledge chimpanzees built their own rudimentary tools.

The first use of the name "chimpanzee", however, did not occur until 1738.

The name is derived from a Tshiluba language term *kivili-chimpenze*, which is the local name for the animal and translates loosely as "mockman" or possibly just "ape". The colloquialism "chimp" was most likely coined some time in the late 1870s.^[53] Biologists applied *Pan* as the genus name of the animal. Chimps, as well as other apes, had also been purported to have been known to Western writers in ancient times, but mainly as myths and legends on the edge of European and Arab societal consciousness, mainly through fragmented and sketchy accounts of European adventurers. Apes are mentioned variously by Aristotle, as well as the English Bible, where they are described as having been collected by Solomon. (1 Kings 10:22. However the Hebrew word, *qōf*, may mean a monkey.) Apes are mentioned in the Qur'an (7:166), where God tells Israelites who transgressed *Shabbat* "Be ye apes". The first of these early transcontinental chimpanzees came from Angola and were presented as a gift to Frederick Henry, Prince of Orange in 1640, and were followed by a few of its brethren over the next several years. Scientists described these first chimpanzees as "pygmies", and noted the animals' distinct similarities to humans. The next two decades, a number of the creatures were imported into Europe, mainly acquired by various zoological gardens as entertainment for visitors.

Darwin's theory of natural selection (published in 1859) spurred scientific interest in chimpanzees, as in much of life science, leading eventually to numerous studies of the animals in the wild and captivity. The observers of chimpanzees at the time were mainly interested in behavior as it related to that of humans. This was less strictly and disinterestedly scientific than it might sound, with much attention being focused on whether or not the animals had traits that could be considered 'good'; the intelligence of chimpanzees was often significantly exaggerated, as



Gregoire: 62-year-old chimpanzee



Hugo Rheinhold's *Affe mit Schädel* ("Ape with skull") is an example of how chimps were viewed at the end of the 19th century.

immortalized in Hugo Rheinhold's *Affe mit Schädel* (see image, left). By the end of the 19th century, chimpanzees remained very much a mystery to humans, with very little factual scientific information available.

In the 20th century, a new age of scientific research into chimpanzee behavior began. Before 1960, almost nothing was known about chimpanzee behavior in their natural habitats. In July of that year, Jane Goodall set out to Tanzania's Gombe forest to live among the chimpanzees, where she primarily studied the members of the Kasakela chimpanzee community. Her discovery that chimpanzees made and used tools was groundbreaking, as humans were previously believed to be the only species to do so. The most progressive early studies on chimpanzees were spearheaded primarily by Wolfgang Köhler and Robert Yerkes, both of whom were renowned psychologists. Both men and their colleagues established laboratory studies of chimpanzees focused specifically on learning about the intellectual abilities of chimpanzees, particularly problem-solving. This typically involved basic, practical tests on laboratory chimpanzees, which required a fairly high intellectual capacity (such as how to solve the problem of acquiring an out-of-reach banana). Notably, Yerkes also made extensive observations of chimpanzees in the wild which added tremendously to the scientific understanding of chimpanzees and their behavior. Yerkes studied

chimpanzees until World War II, while Köhler concluded five years of study and published his famous *Mentality of Apes* in 1925 (which is coincidentally when Yerkes began his analyses), eventually concluding, "chimpanzees manifest intelligent behaviour of the general kind familiar in human beings ... a type of behaviour which counts as specifically human" (1925).^[54]

The August 2008 issue of the *American Journal of Primatology* reported results of a year-long study of chimpanzees in Tanzania's Mahale Mountains National Park, which produced evidence of chimpanzees becoming sick from viral infectious diseases they have likely contracted from humans. Molecular, microscopic and epidemiological investigations demonstrated the chimpanzees living at Mahale Mountains National Park have been suffering from a respiratory disease that is likely caused by a variant of a human paramyxovirus.^[55]



Chimpanzee at the Los Angeles Zoo

Animal research

As of November 2007, about 1,300 chimpanzees were housed in 10 U.S. laboratories (out of 3,000 great apes living in captivity there), either wild-caught, or acquired from circuses, animal trainers, or zoos.^[56] Most of the labs either conduct or make the chimps available for invasive research,^[57] defined as "inoculation with an infectious agent, surgery or biopsy conducted for the sake of research and not for the sake of the chimpanzee, and/or drug testing".^[58] Two federally funded laboratories use chimps: the Yerkes National Primate Research Center at Emory University in Atlanta, Georgia, and the Southwest National Primate Center in San Antonio, Texas.^[59] Five hundred chimps have been retired from laboratory use in the U.S. and live in animal sanctuaries in the U.S. or Canada.^[57]

Chimpanzees used in biomedical research tend to be used repeatedly over decades, rather than used and killed as with most laboratory animals. Some individual chimps currently in U.S. laboratories have been used in experiments for over 40 years.^[60] According to Project R&R, a campaign to release chimps held in U.S. labs—run by the New England Anti-Vivisection Society in conjunction with Jane Goodall and other primate researchers—the oldest known chimp in a U.S. lab is Wenka, which was born in a laboratory in Florida on May 21, 1954.^[61] She was removed from her mother on the day of birth to be used in a vision experiment that lasted 17 months, then sold as a pet to a family in North Carolina. She was returned to the Yerkes National Primate Research Center in 1957 when she became too



Ham the Astrochimp before being inserted into the Mercury-Redstone 2 capsule in 1961

big to handle. Since then, she has given birth six times, and has been the subject of research into alcohol use, oral contraceptives, aging, and cognitive studies.^[62]

With the publication of the chimpanzee genome, plans to increase the use of chimps in labs are reportedly increasing, with some scientists arguing the federal moratorium on breeding chimps for research should be lifted.^{[59][63]} A five-year moratorium was imposed by the U.S. National Institutes of Health in 1996, because too many chimps had been bred for HIV research, and it has been extended annually since 2001.^[59]

Other researchers argue chimps are unique animals and either should not be used in research, or should be treated differently. Pascal Gagneux, an evolutionary biologist and primate expert at the University of California, San

Diego, argues, given chimpanzees' sense of self, tool use, and genetic similarity to human beings, studies using chimps should follow the ethical guidelines used for human subjects unable to give consent.^[59] Also, a recent study suggests chimpanzees which are retired from labs exhibit a form of posttraumatic stress disorder.^[64] Stuart Zola, director of the Yerkes National Primate Research Laboratory, disagrees. He told *National Geographic*: "I don't think we should make a distinction between our obligation to treat humanely any species, whether it's a rat or a monkey or a chimpanzee. No matter how much we may wish it, chimps are not human."^[59]

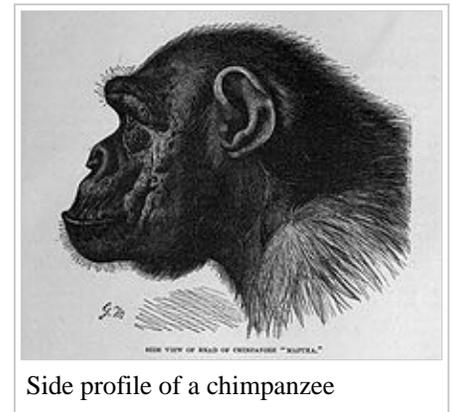
An increasing number of governments are enacting a great ape research ban forbidding the use of chimpanzees and other great apes in research or toxicology testing.^[65] As of 2006, Austria, New Zealand, the Netherlands, Sweden, and the UK had introduced such bans.^[66]

Studies of language

Scientists have long been fascinated with the studies of language, believing it to be a unique human cognitive ability. To test this hypothesis, scientists have attempted to teach human language to several species of great apes. One early attempt by Allen and Beatrix Gardner in the 1960s involved spending 51 months teaching American Sign Language (ASL) to a chimpanzee named Washoe. The Gardners reported Washoe learned 151 signs, and she had spontaneously taught them to other chimpanzees.^[67] Over a longer period of time, Washoe learned over 800 signs.^[68]

Debate is ongoing among some scientists (such as David Premack), about nonhuman great apes' ability to learn language. Since the early reports on Washoe, numerous other studies have been conducted, with varying levels of

success,^[69] including one involving a chimpanzee named, in parody, Nim Chimpsky, trained by Herbert Terrace of Columbia University. Although his initial reports were quite positive, in November 1979, Terrace and his team (including psycholinguist Thomas Bever) re-evaluated the videotapes of Nim with his trainers, analyzing them frame by frame for signs, as well as for exact context (what was happening both before and after Nim's signs). In the reanalysis, Terrace and Bever concluded Nim's utterances could be explained merely as prompting on the part of the experimenters, as well as mistakes in reporting the data. "Much of the apes' behavior is pure drill," he said. "Language still stands as an important definition of the human species." In this reversal, Terrace now argued Nim's use of ASL was not like human language acquisition. Nim never initiated conversations himself, rarely introduced new words, and simply imitated what the humans did. More importantly, Nim's word strings varied in their ordering, suggesting that he was incapable of syntax. Nim's sentences also did not



Side profile of a chimpanzee

grow in length, unlike human children whose vocabulary and sentence length show a strong positive correlation.^[70]

Memory

A 30-year study at Kyoto University's Primate Research Institute has shown chimps are able to learn to recognize the numbers 1 through 9 and their values. The chimps further show an aptitude for photographic memory, demonstrated in experiments in which the jumbled digits are flashed onto a computer screen for less than a quarter of a second, after which the chimp, Ayumu, is able to correctly and quickly point to the positions where they appeared in ascending order. The same experiment was failed by human world memory champion Ben Pridmore on most attempts.^[71]

Laughter in apes

Laughter might not be confined or unique to humans. The differences between chimpanzee and human laughter may be the result of adaptations that have evolved to enable human speech. Self-awareness of one's situation as seen in the mirror test, or the ability to identify with another's predicament (see mirror neurons), are prerequisites for laughter, so animals may be laughing in the same way as humans do.

Chimpanzees, gorillas, and orangutans show laughter-like vocalizations in response to physical contact, such as wrestling, play-chasing, or tickling. This is documented in wild and captive chimpanzees. Common chimpanzee laughter is not readily recognizable to humans as such, because it is generated by alternating inhalations and exhalations that sound more like breathing and panting. Instances in which nonhuman primates have expressed joy have been reported. One study analyzed and recorded sounds made by human babies and bonobos when tickled. Although the bonobo's laugh was a higher frequency, the laugh followed a pattern similar to that of human babies and included similar facial expressions. Humans and chimpanzees share similar ticklish areas of the body, such as the armpits and belly. The enjoyment of tickling in chimpanzees does not diminish with age.^[72]



Young chimpanzees playing

In popular culture

Chimpanzees have been commonly stereotyped in popular culture, where they are most often cast in standardized roles as childlike companions, sidekicks or clowns.^[73] They are especially suited for the latter role on account of their prominent facial features, long limbs and fast movements, which humans often find amusing. Accordingly, entertainment acts featuring chimpanzees dressed up as humans have been traditional staples of circuses and stage shows.^[73]

In the age of television, a new genre of chimp act emerged in the United States: series whose cast consisted entirely of chimpanzees dressed as humans and "speaking" lines dubbed by human actors.^[73] These shows, examples of which include *Lancelot Link, Secret Chimp* in the 1970s or *The Chimp Channel* in the 1990s, relied on the novelty of their ape cast to make their timeworn, low comedy gags funny.^[73] Their chimpanzee "actors" were as interchangeable as the apes in a circus act, being amusing as chimpanzees and not as individuals.^[73] Animal rights groups have urged a stop to this practice, considering it animal abuse.^[74]

When chimpanzees appear in other TV shows, they generally do so as comic relief sidekicks to humans. In that role, for instance, J. Fred Muggs appeared with *Today Show* host Dave Garroway in the 1950s, Judy on *Daktari* in the 1960s or Darwin on *The Wild Thornberrys* in the 1990s.^[73] In contrast to the fictional depictions of other animals,

such as dogs (as in *Lassie*), dolphins (*Flipper*), horses (*The Black Stallion*) or even other great apes (*King Kong*), chimpanzee characters and actions are rarely relevant to the plot.^[73]

Portrayals in science fiction

The rare depictions of chimpanzees as individuals rather than stock characters, and as central rather than incidental to the plot^[73] are generally found in works of science fiction. Robert A. Heinlein's short story "Jerry Was a Man" (1947) centers on a genetically enhanced chimpanzee suing for better treatment. The 1972 film *Conquest of the Planet of the Apes*, the third sequel of *Planet of the Apes*, portrays a futuristic revolt of enslaved apes led by the only talking chimpanzee, Caesar, against their human masters.^[73] This concept was revisited in the 2011 film *Rise of the Planet of the Apes*, again with a chimpanzee protagonist named Caesar. Another short story, "The Pope of the Chimps" by Robert Silverberg, set in the present day, shows the development of the first signs of religiosity in a group of chimpanzees, much to the surprise of the humans observing them. David Brin's Uplift novels present a future in which humans have "uplifted" chimpanzees (and certain other species) with human-level sapience.

See also

- Prostitution among animals#Chimpanzees
- Chimp Haven
- Chimpanzee genome project
- Dian Fossey
- Great ape personhood
- Jane Goodall
- List of apes
- Bili ape

Notes

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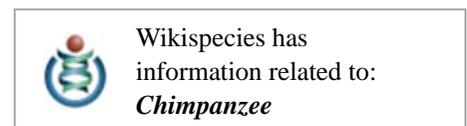
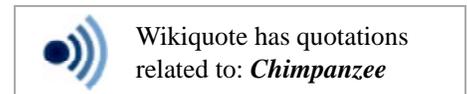
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