

Reconstructing the evolution of laughter in great apes and humans

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In this 2005 photo provided by the University of Portsmouth, England, baby orangutan Enero laughs while being tickled in Sabah, Malaysian Borneo. It took a lot of tickling of chimps and other apes, but scientists say they've traced the origin of laughter well back into humankind's evolutionary past. (University of Portsmouth, Dr. Marina Davila Ross)

Like human infants, young apes are known to hoot and holler when you tickle them. But is it fair to say that those playful calls are really laughter? The answer to that question is yes, say researchers reporting online on June 4th in *Current Biology*.

"This study is the first phylogenetic test of the evolutionary continuity of a [human](#) emotional expression," said Marina Davila Ross of the University of Portsmouth in the United Kingdom. "It supports the idea that there is [laughter](#) in apes."

The researchers analyzed the recorded sounds of tickle-induced vocalizations produced by infant and juvenile orangutans, chimpanzees, gorillas, and bonobos, as well as those of human infants. A quantitative phylogenetic analysis of those acoustic data found that the best "tree" to represent the evolutionary relationships among those sounds matched the known evolutionary relationships among the five species based on genetics. The researchers said that the findings support a common evolutionary origin for the

human and ape tickle-induced expressions.

They also show that laughter evolved gradually over the last 10 to 16 million years of primate [evolutionary history](#). But human laughter is nonetheless acoustically distinct from that of great apes and reached that state through an evident exaggeration of pre-existing acoustic features after the hominin separation from ancestors shared with bonobos and chimps, about 4.5 to 6 million years ago, Davila Ross says. For instance, humans make laughter sounds on the exhale. While chimps do that too, they can also laugh with an alternating flow of air, both in and out. Humans also use more regular voicing in comparison to apes, meaning that the vocal cords regularly vibrate.

Davila Ross said they were surprised to find that gorillas and bonobos can sustain exhalations during vocalization that are three to four times longer than a normal breath cycle -- an ability that had been thought to be a uniquely human adaptation, important to our capacity to speak.

"Taken together," the researchers wrote, "the acoustic and phylogenetic results provide clear evidence of a common evolutionary origin for tickling-induced laughter in humans and tickling-induced vocalizations in great apes. While most pronounced acoustic differences were found between humans and great apes, interspecific differences in vocal acoustics nonetheless supported a quantitatively derived phylogenetic tree that coincides with the well-established, genetically based relationship among these species. At a minimum, one can conclude that it is appropriate to consider 'laughter' to be a cross-species phenomenon, and that it is therefore not anthropomorphic to use this term for tickling-induced vocalizations produced by the great apes."

Source: Cell Press ([news](#) : [web](#))

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