



Molecular phylogenetic analyses indicate extensive morphological convergence between the “yeti” and primates[☆]

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1. Introduction

It is generally considered that most of our planet has been so extensively explored that very few, if any, living species of large vertebrate still remain to be discovered and described. Hence, the stir created by the recent description of ungulate species from Asia (Amato et al., 1998; Dung et al., 1993) is quite understandable. One large, probably mammalian, species that has been repeatedly sighted in Nepal—but for which no definitive remains or observable data has been collected so far—is the “ye-the,” better known under the name “yeti” or “*Abominable Snowman*.” Very little is known about the morphology of this enigmatic creature. The famous writer Peter Matthiessen notes that “The yeti is described most often as a hairy, reddish-brown creature with a rigid crown that gives it a pointed-head appearance; in size, despite the outsized foot [...] it has been likened to an adolescent boy, though much larger individuals have been reported” (Matthiessen, 1979, p. 119). This is perfectly consistent with the description given earlier by Haddock: “*A sort of enormous monkey . . . with a huge head like a coconut*” (Hergé, 1960, p. 37). Behavioural data on the yeti is also very scarce but it probably can walk upright on its hind legs and it has been recorded stealing bottles of whisky from camp sites—a behaviour that has made it called “*the pithec-*

anthropic pickpocket” (Hergé, 1960, p. 37). It is usually assumed that the yeti is a primate while its exact phylogenetic position within that mammalian order is controversial. For example, a theory holds that “the yeti is a relict species of early man, driven long ago into dense forests by the surge of *Homo sapiens* that presumably eliminated more primitive hominids [...] its strange bestial foot [...] would seem to place it closer to a sub-hominid such as *Gigantopithecus* or even to apes . . .” (Matthiessen, 1979, pp. 120–121).

“In 1992, Peter Matthiessen and photographer Thomas Laird were the first Westerners in over three decades to visit a remote region in the northernmost Himalaya. Located close to the boarder of Tibet, Sao Kohla is a mysterious valley outside of the main city of Lo Monthang. Here Matthiessen, Laird, and their Nepalese colleagues came upon some unusual foot prints in the snow, and were informed by locals that they were the prints of the Mehti (the local name for Yeti). Near a river at the bottom of the gorge, samples of twisted hair were recovered which were clearly identified as Mehti hair by their local guides (Matthiessen, 1995, p. 75–80). We were asked to analyze these samples, but first had to agree that any identification of a “new species” would have to be reported to the government of Nepal before publication. Using modified oligonucleotide primers L1091 and H1478 (Kocher et al., 1989), we successfully amplified and directly sequenced a fragment of the mitochondrial 12S ribosomal RNA gene (12S rRNA) from that sample. Surprisingly, comparison of the yeti sequence against all available 12S rRNA sequences identified a higher degree of similarity with a specific group of ungulates than with primates. We therefore aligned, using SOAP (Löytynoja and Milinkovitch, 2001), 12S rRNA sequences from representatives of that

[☆] The study reported here represents a scientifically rigorous assessment of conflict between the published morphological characters and newly obtained molecular characters for a species of questionable validity. More significantly, however, this study indicates that evolutionary biologists need to retain a sense of humor in their efforts to reconstruct phylogenetic relationships. Happy April Fool's Day!

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and primates. It is quite remarkable that Haddock already identified 44 years ago the correct phylogenetic position of the yeti (despite he had seen only footprints in the snow) when he yelled at it “You odd-toed ungulate!” (Hergé, 1960, p. 26).

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