The common ancestor of humans, monkeys and apes may have originated in Asia

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(PhysOrg.com) -- The discovery of a new primate fossil in Myanmar (formerly Burma) lends weight to the hypothesis that the common ancestor of humans, monkeys and apes (anthropoid primates) originated in Asia, and not in Africa. To support the hypothesis, an international team of paleontologists, including two French researchers, has shown that these primates, which are 37 million years old and named Ganlea megacanina, had an ability observed today in modern monkeys, but not in lemurs: they pried open and ate seeds in a specific way by using their greatly enlarged canine teeth, like certain South American monkeys today. This ability is one of the reasons that justifies them being placed in the family of anthropoid primates.

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In primates, there exist two major lineages: anthropoid primates (monkeys, apes and humans) and prosimians, considered to be more primitive and whose best-known representatives today are lemurs. Until now, scientists assumed that anthropoid primates originated in Africa However, this hypothesis is now questioned.

Working together with several foreign colleagues, Laurent Marivaux, CNRS researcher at ISEM and Jean-Jacques Jaeger, professor at IPHEP, have for the past 20 years been carrying out paleontological excavations in Asia, specifically in China, Thailand, Pakistan and Myanmar (formerly Burma), where they started exploring in 1999, in close

cooperation with Burmese academics. In November 2005, the researchers discovered several fossils in central Myanmar dating from 37 million years ago and belonging to a new species of primate named Ganlea megacanina. In November 2008, part of the lower jaw of one member of this species was discovered. This find provides the paleontologists with powerful evidence supporting an Asian origin for anthropoid primates.

The new primate has greatly enlarged canine teeth which show heavy abrasion, indicating that Ganlea megacanina used them to pry open the tough exteriors of tropical fruit in order to extract the nutritious seeds contained inside. This is an unusual form of feeding adaptation that has never been observed in prosimian primates such as lemurs. It is, however, characteristic of South American saki monkeys, which are members of the large family of anthropoid primates. "Ganlea megacanina shows that the first anthropoids originated in Asia rather than in Africa," Marivaux and Jaeger explain.

Ganlea and its closest relatives inhabited Myanmar 37 million years ago during the Eocene, in a tropical flood plain that was certainly very similar to the modern Amazon Basin. They belonged to an extinct family of Asian anthropoid primates, the Amphipithecidae. Four other amphipithecids had previously been discovered in Asia: two in Myanmar, one in Thailand and one in Pakistan. A detailed analysis of their evolutionary relationships shows that they are closely related to today's anthropoid primates, and that the Myanmar forms evolved from a single common ancestor.

These Asian anthropoid primates differ radically from adapiform primates such as 'Ida', the complete fossilized skeleton of a primate recently discovered in Germany. "'Ida' is closer to modern lemurs than to anthropoid primates. It hasn't developed the characteristics needed to become a highly specialized seed-eater," Marivaux points out.

More information: A new primate from the Eocene Pondaung Formation of Myanmar and the monophyly of Burmese amphipithecids. K. Christopher Beard, Laurent Marivaux, Yaowalak Chaimanee, Jean-Jacques Jaeger, Bernard Marandat, Paul Tafforeau, Aung Naing Soe, Soe Thura Tun and Aung Aung Kyaw. Proceedings of the Royal Society B. July 2009.

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