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INSIGHTS FROM THE INSIDE: WHAT TEETH TELL US ABOUT GREAT APE EVOLUTION

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Because teeth are highly mineralized during development, they are common elements in fossil assemblages. Tooth shape and size yield information on diet and body mass, which are important for understanding paleoecology. The internal structure of teeth reveals the speed of growth and development, as well as age at death in juvenile individuals. Studies have suggested that the time to form molar crowns, and the age at which molar teeth erupt, correlate with life history events and related variables such as brain and body mass. It appears that African ape molar formation patterns arose during the Early to Middle Miocene, with modern-like formation times and eruption ages in *Proconsul nyanzae* and *Afropithecus turkanensis*, respectively. In contrast, patterns of orangutan tooth formation and eruption appear to have arisen during the Late Miocene or even more recently. Recent work has suggested prolonged somatic development in orangutans relative to other great apes, including later ages at weaning and sexual maturation, which may be reflected in their long crown formation times and late eruption ages. Despite similarities in internal structure with living orangutans, formation times and first molar eruption age are earlier in *Sivapithecus*. *Lufengpithecus* formation times appear to be variable, and eruption ages may also be earlier than orangutans. Ongoing research on Pleistocene *Pongo* is considered in light of Miocene and extant ape dental development. The prolonged developmental condition of living orangutans may represent a recent adaptation, paralleling the prolonged life history of modern humans. Funded by Harvard University and the Max Planck Society.

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