Commentary: Hominin fossil evidence in the Turkana Basin in Kenya from ca. 4.1 to 1.4 Ma has two archaic early hominin genera and also records some of the early evolutionary history of *Paranthropus* (“Nutcracker Man”) and *Homo*. Stable carbon isotopes in fossil tooth enamel are used to estimate the fraction of diet derived from C$_3$ or C$_4$ resources in these hominin taxa. The earliest hominin species in the Turkana Basin, *Australopithecus anamensis*, derived nearly all of its diet from C$_3$ resources. Subsequently, by ca. 3.3 Ma, the later *Kenyanthropus platyops* had a very wide dietary range—from virtually a purely C$_3$ resource-based diet to one dominated by C$_4$ resources. By ca. 2 Ma, hominins in the Turkana Basin had split into two distinct groups: specimens attributable to the genus *Homo* provide evidence for a diet with subequal amounts of C$_3$- and C$_4$-based resources, whereas *Paranthropus boisei* had a higher fraction of C$_4$-based diet (75 percent or higher). *Homo* sp. slightly increased the fraction of C$_4$-based resources in the diet through in the next half-million years, and *Paranthropus boisei* maintained its high dependency on C$_4$-derived resources. Overall, this suggests that there was not dietary competition between *Homo* and *Paranthropus*.

Cover image: This image is one of many of the important hominin fossils discovered in the Turkana Basin. Pictured are hominin fossils from sites within the Turkana Basin in Kenya. Four articles in the Early Hominin Diet Special Feature illustrate how stable carbon isotopes present in the dental enamel of such fossils can reveal the diets of hominins that lived in Africa between roughly 4.1 and 1.3 million years ago. The papers found evidence of a shift from a diet dominated by leaves and fruits from trees, shrubs, and bushes to one that featured an increased proportion derived from grasses or sedges. Clockwise beginning at the top left are crania from *Paranthropus boisei*, Homo sapiens from the Holocene, *Homo ergaster*, *Homo rudolfensis*, *Kenyanthropus platyops*, and *Paranthropus aethiopicus*. At the bottom is a single mandible from *Australopithecus anamensis*. See the Commentary by Richard G. Klein on pages 10470–10472. Images courtesy of Mike Hettwer and Yang Deming (Copyright of the National Museums of Kenya, Nairobi, Kenya).
Abstract: Hominin fossil evidence in the Turkana Basin in Kenya from ca. 4.1 to 1.4 Ma samples two archaic early hominin genera and records some of the early evolutionary history of Paranthropus and Homo. Stable carbon isotopes in fossil tooth enamel are used to estimate the fraction of diet derived from C₃ or C₄ resources in these hominin taxa. The earliest hominin species in the Turkana Basin, Australopithecus anamensis, derived nearly all of its diet from C₃ resources. Subsequently, by ca. 3.3 Ma, the later Kenyanthropus platyops had a very wide dietary range—from virtually a purely C₃ resource-based diet to one dominated by C₄ resources. By ca. 2 Ma, hominins in the Turkana Basin had split into two distinct groups: specimens attributable to the genus Homo provide evidence for a diet with a ca. 65/35 ratio of C₃- to C₄-based resources, whereas P. boisei had a higher fraction of C₄-based diet (ca. 25/75 ratio). Homo sp. increased the fraction of C₄-based resources in the diet through ca. 1.5 Ma, whereas P. boisei maintained its high dependency on C₄-derived resources.

Access Article: https://doi.org/10.1073/pnas.1222568110