Supplemental Text 1: Protocol for stable isotope analysis of collagen and radiocarbon dating.

In this paper we present the values of carbon (δ13Ccol) and nitrogen (δ15N) isotopes, both obtained from the organic fraction of bone. The analyses were conducted on bone and tooth dentine from samples taken from the individuals under study. The measurements were made at the Graduate School of Frontier Sciences, University of Tokyo by Dr. Mai Takigami. The samples were first cleaned of adhering soil by using a dental drill and subjecting the samples to ultrasonic cleaning. Then, bone and dentine samples were soaked in 0.2M sodium hydroxide for 10 hours to eliminate soil organic acid. After dried samples were powdered to remove inorganic carbonate, they were soaked in 1.2M hydrochloric acid for 12 hours. Lastly, the samples were soaked in ultra-pure water (Milli-Q) and heated at 90 ℃ for 12 hours. Extracted gelatin collagen was then dried using a freeze dryer.

Carbon and nitrogen isotope ratios were measured using elemental analyzer–isotope ratio mass spectrometry (EA-IRMS; Thermo Flash 2000 elemental analyzer, Finnigan ConFlo III interface, and Thermo Delta V mass spectrometer) at The University Museum, University of Tokyo. The standard deviations estimated from running standards were 0.1‰ for δ13Ccol and 0.2‰ for δ15N. Preservation of collagen was estimated with C/N ratios. Collagen with C/N ratios outside the 2.9-3.6 range was eliminated, because those samples were likely exposed to diagenetic alteration. To measure 14C date, samples were subjected to graphitization. Gelatin collagen was burned in a sealed tube. CO2 gas was separated from mixed gases using vacuum glass line. Graphite was produced by the reduction of CO2 gas. Graphited samples were measured for radiocarbon content at the University of Tokyo with a Micro Analysis Laboratory Tandem Accelerator (MALT).

On the other hand, bone and dentine samples having UCI laboratory code were analyzed at KCCAMS/UCI. Collagen extraction and graphitization were conducted following established protocol (Brown et al. 1988; Santos et al. 2004), described in Laguens and colleagues (2009).

**References Cited**

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