

Summary (30 words):

The IRHUM (isotopic reconstruction of human migration) database provides a reference map of bioavailable strontium isotope ratios for France, allowing us to investigate migration and mobility at different archaeological sites.

Titel

Isotopic reconstruction of ancient human migration (IRHUM): A bioavailable Sr isotope reference database for France and case study at the Bell Beaker site Tumulus de Sables, south-western France

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Abstract (250 Words)

Strontium isotope ratios ($^{87}\text{Sr}/^{86}\text{Sr}$) measured in human and faunal remains can be used to reconstruct mobility and migration. Their application is based on the fact that different geologic regions have distinct Sr isotope signatures that are incorporated into the soils and plants, without isotopic fractionation. Sr isotope ratios measured in skeletal remains reflect the average of dietary Sr that was consumed when the tissue was formed, thus allowing us to investigate mobility across geologically different terrains.

The database IRHUM (isotopic reconstruction of human migration) provides a reference map of bioavailable Sr isotope ratios for France and is available at www.rses.anu.edu.au/research-areas/archaeochem. The current dataset contains 400 sample locations. New results will be added continuously with the aim of creating a database covering all major geologic units of France within the next 2 years.

As a case study we investigated the Bell Beaker (2500-2000 BC) site at Le Tumulus des Sables. Enamel and dentine from 16 adult and 8 juvenile individuals was analysed using LA-ICP-MS. Nine teeth were also analysed using TIMS, which showed a significant offset to the laser ablation results requiring further investigation. Nevertheless, the teeth showed clear differences between enamel and dentine, the former representing the Sr isotope signature acquired during childhood, while the latter is diagenetically overprinted with the local signature. While this indicates mobility it is currently not possible to distinguish between migration from outside of the Médoc region from mobility within the region because the sediment units at the site and in the close vicinity show large variations in their $^{87}\text{Sr}/^{86}\text{Sr}$ ratios.