

2D molar tissue proportions in Early Pleistocene *Homo antecessor* (Atapuerca, Spain)

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Teeth possess a strong genetic expression, which can be useful for taxonomic and phylogenetic inferences in hominins. Despite being widely investigated, the taxonomic signal of enamel thickness in the genus *Homo* remains unclear due to the scarcity and preservation of the fossil remains. Genus *Homo* is known to possess thicker relative enamel compared to living African Great apes. Within the genus *Homo*, different trends in enamel thickness were observed between older and younger taxa as well as among geographic groups. In particular, molar tissue proportions have been useful to distinguish between Neanderthals and modern humans. However, little is known about the polarity of this feature. The dentition and skeletal morphology of *Homo antecessor* presents an admixture of primitive and derived traits shared with Neanderthals and *H. sapiens*. In this study we calculate the 2D molar tissue proportions in *H. antecessor* to: i) characterize the molar enamel thickness in this population; ii) provide new insights about the polarity of the enamel thickness within the genus *Homo*; iii) assess how different is *H. antecessor* population in relation to Neanderthals and modern humans. We applied mCT imaging to Early Pleistocene *H. antecessor* molar collection (n=17), calculated the relative enamel thickness and average enamel thickness, and compared the results with fossil hominins and modern humans. Our results indicate that the relative enamel thickness of *H. antecessor* molars is generally higher than in Neanderthals and closer to *H. sapiens* values, except for the upper first molar. The polarity of the enamel thickness in the genus *Homo* is discussed to the light of these results. Future studies in other Early Pleistocene hominins may shed further light on the evolutionary meaning of this feature.

Keywords: Early Pleistocene, Hominins, *Homo antecessor*, mCT technique, enamel thickness

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