

Podium Presentation at 94th Annual Meeting, Baltimore, Maryland (2025)

What deciduous molars can tell us: human variability from the past to the present.

Marina Martínez de Pinillos^{1,2}, Mario Modesto-Mata^{1,3}, Arthur Thiebaut¹, Raquel Hernando¹, Leslea J. Hlusko¹

1 - Centro Nacional de Investigación sobre la Evolución Humana (CENIEH), Burgos, Spain

2 - Universidad de Burgos, Burgos, Spain

3 - Universidad Internacional de La Rioja (UNIR), Logroño, Spain

Abstract:

The evolution of tooth size and shape offers an essential window into our evolution, adaptations (dietary and otherwise), and ontogeny. For the symposium "*Little teeth, big picture: contributions of deciduous dentitions across biological anthropology*" we discuss variation in the deciduous molars, providing an overview of the fossil record and then conducting a comparative analysis with modern human deciduous teeth from the *Ratón Pérez* collection.

Fossil evidence suggests that in early hominins, especially in *Paranthropus* species, deciduous molars were generally larger and more robust, likely due to dietary adaptations and survival strategies. However, over time, the size and robustness of deciduous molars decreased. We compare these evolutionary trends to the variation observed in one modern human population, the *Ratón Pérez* collection. We present size data from 342 maxillary and mandibular first and second deciduous molars. A subset of these data are paired, in that the dm1 and dm2 data are from the same individual (n = 59), enabling us to run a series of pairwise comparisons and correlation analyses. We find that data from a sample size equivalent to that available for Neanderthals (approximately 40 unrelated individuals) reflects almost the same values as we obtained from the 59 related individuals, indicating that fossil samples can, under ideal circumstances accurately reflect species variation in the size of deciduous teeth. Our study of the variation within the *Ratón Pérez* collection offers cautionary, as well as hopeful tales for the conclusions reached from small samples of fossil data.

Funding:

This research was funded by the European Research Council (ERC-2021-ADG, Tied2Teeth, Project 101054659), and funding from the Ministerio de Ciencia e Innovación Project PID2021-122355NB-C33 financed by MCIN/AEI/10.13039/501100011033/ FEDER, UE.