differences in the aging patterns of underrepresented, especially Latino, populations across the U.S. may, therefore, hinder our efforts to produce useful age-at-death estimates. In response to this concern, this study obtained data from individuals of Mexican and Puerto Rican origin to test and update a newly published computational framework for age-at-death estimation from the pubic symphysis for contemporary Hispanic casework. Data for this study consist of laser scans of the pubic symphysis from skeletal collections with known age-at-death at the Universidad Nacional Autónoma de Mexico and the Institute of Forensic Science in Puerto Rico. Each scan was subjected to the Slice and Algee-Hewitt(SAH), Thin Plate Spline/Bending Energy (BE), and Ventral Curvature (VC) methods. Preliminary analyses, using paired t-tests, find no significant differences between known and inferred age-at-death ($0.03 \leq p \leq 0.71$) after Bonferonni correction. Results do suggest a tendency for the VC and BE methods to underestimate age for individuals over 65 years. This study has confirmed that reliable age-at-death estimates can be obtained for Hispanic groups using these computational methods.

Neonatal and postnatal mortality in Roccapelago through the study of human skeletal remains and parish records

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During the restoration of the Conversion of San Paul's church, in Roccapelago (Italy), a hidden crypt was brought to light. Therein, a large amount of human skeletal remains was retrieved, including a considerable amount of disarticulated non-adult specimens, belonging to the inhabitants that lived there from the last decades of the 16th century to the end of the 18th century. Simultaneously, parish registers of birth and death were found and digitized. This is the first study focused on the juvenile post medieval community of Roccapelago, which aims to provide new data about infant mortality and paleopathology during the 16th and 18th centuries, through the comparison of anthropological data to information available in parish records.

Standard anthropological protocols were used to assess the Minimum Number of Individuals, age-at-death and pathologies.

Results showed that at least 161 non-adults were buried into the crypt. The mortality range was high among perinates, especially between the 36th and the 40th weeks (26%), and during the first postnatal year, particularly in the first six months (11%). Then, mortality rates fell within the 5th years (2.4%). Parish records confirmed the high mortality rates at birth and among the first postnatal year, linked to the risks associated to the birth and the peril of the weaning period. The pathological analysis highlighted the presence of metabolic diseases, such as scurvy.

This study provides a unique opportunity to compare anthropological protocols for age estimation to the information registered in the parish records when dealing with commingled juvenile remains.

Proxies of ungulate diet reconstruct the paleoenvironment of *Australopithecus afarensis* at Laetoli, Tanzania

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Inferences about paleoenvironments are critical for modeling the selective pressures that led to adaptive shifts and divergence events in the hominin lineage. Reconstructions of the paleoenvironment of *Australopithecus afarensis* in the Upper Laetolil Beds (~3.85-3.63 Ma) indicate that it was a mosaic of woodland, shrubland, and grassland. Analyses of three independent proxies of ungulate diet (hypsodonty, mesowear, and $\delta^{13}C$ of tooth enamel) show that obligate grazers were rare among the ungulate fauna of the Upper Laetolil Beds. The proportion of browsing to grazing taxa is most comparable to modern African communities that inhabit forests and closed woodlands. A distinctive feature of the ungulate fauna is the predominance of species classified as mixed feeders, which represent a higher proportion of taxa at Laetoli than in any modern-day African habitat. It is unclear whether this indicates that the Laetoli ungulate fauna had a unique composition or is an artifact of the methods used to infer diet. Nevertheless, the results do show that species which incorporated browse into their diets were more common at Laetoli than in modern ungulate communities living in woodland-grassland habitats. This implies that the ecological relationships and the types of woodland mosaic habitats that supported a diverse guild of browsing ungulates in the Pliocene no longer occur today.

Interface distances between osteon cement lines can reveal aspects of bone adaptation that might evade detection when using conventional microstructural characteristics: A study in the chimpanzee femur

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When osteon population density (OPD) is sufficiently high, osteon cement lines (CL) can enhance the bone toughness. CL help deflect microcrack propagation, which helps avoid fracture. We examined potential manifestations of the role of cement lines as "toughening entities" using a novel approach; namely, quantifying the total amount of cement line (tCL) and inter-cement-line interface (CLi) distances between bone regions where such adaptations would be most likely. Measurements were made in 50x circularly polarized light images of thin sections of medial and lateral cortices of upper diaphyses in eight adult chimpanzee femora. In this region: (1) the medial cortex receives prevalent/predominant compression vs. tension in lateral, and (2) compared to loading in compression, bone is weaker, less tough, and less fatigue resistant in tension. In addition to CLi distances and tCL, we quantified OPD, fractional area of secondary bone (FASB), osteon size (On.Ar), osteon shape (elongation index), predominant collagen fiber orientation (CFO), and osteon morphotype score (OMS, indicates compression vs. tension adaptation). Compared to the lateral(tension) cortex, the medial(compression) cortex had enhanced matrix adaptation (CFO and OMS) for compression and less tCL, lower FASB, and smaller/more elongated osteons (all p<0.01). CLi distances and OPD were not different (p>0.1), possibly reflecting optimization for inhibiting microcrack propagation. In contrast, matrix-level differences (e.g., CFO and OMS) might be aimed at inhibiting microdamage formation. These different adaptations might not be detected when considering conventional microstructural characteristics. Though rarely considered, these different goals of microstructural variations are important for understanding how bone toughness is achieved.

Diet and cultural diversity in Neanderthals and modern humans from dental macrowear analyses

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