

monkeys. However, our results also indicate that color vision status is variable across lemur populations and this variability likely reflects extensive local adaptation.

Important variations in dental trait expression at the EDJ throughout an *Australopithecus africanus* entire postcanine dentition.

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Advances in micro-computed tomography (micro-ct) and computer-aided tools for three-dimensional (3D) analyses recently allowed studies of morphological variations of the 3D enamel-dentine junction (3D-EDJ) in primate lower molars. However, the elucidation of the taxonomic value of the 3D-EDJ in early hominids is still bristled with difficulties because inter-specific differences among early hominids are investigated in specimens which do not preserve diagnostic craniofacial features or in isolated teeth which position along the molar row is questionable.

In order to contribute to the identification of taxonomically relevant 3D-EDJ data in early hominid, we examine through micro-CT, the postcanine morphological features of the 3D-EDJ throughout all four quadrants of one of the most complete *Australopithecus africanus* specimen ever found (Sts 52, Sterkfontein, South Africa). We investigate (i) the differences in expression of traits between teeth of the same type (molars or premolars) and within each postcanine row (intra-individual metamerism variations); (ii) the differences between antimeres (iii) the intra-individual inter-trait associations. When necessary, differences are

quantified by using rigid registration methods.

Results show important intra-individual metamerism variations within each four quadrants, for both premolars and molars. Stability in trait expression is higher in the upper dental arcade. Moreover, the morphology of an EDJ on one side of a postcanine row is not necessarily matched by its equivalent on the other side. We discuss the genetic or functional basis of these observed variations and the potential implications of our results for the identification of inter-specific differences among early hominids.

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Slow bone turnover rates in prehistoric skeletal samples: supporting evidence for the impact of pellagra on maize-dependent populations.

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In previous reports we discussed our findings related to rib microanatomy and age-at-death of individuals known to have died from pellagra. This was based on South African skeletal samples taken from the Raymond Dart Autopsy Collection. We detailed the fact that 100% of this sample showed extremely slow bone turnover rates associated with pellagra, represented by low Osteon Population Density (OPD) for known age-at-death. With this established relationship we offer alternative explanations that connect dietary deficiencies to low OPD rates in past populations.

Compelling data to support our position is derived from two archaeological collections from the lower Illinois Valley region; the Middle Woodland Gibson Site and

the terminal Late Woodland Ledders Site. There is considerable evidence for slow bone turnover rates in these archaeological samples that can reasonably be linked to dietary stress. Eighty-six percent of the individuals from the Gibson site sample exhibited less OPD than expected for their osteological age [mean OPD = 19.94, n = 22], while 66.7% of the individuals from the Ledders site sample exhibited less OPD than expected for their osteological age [mean OPD = 20.28, n = 15].

This paper will also address critiques made recently by Stout (2008) concerning the need for having a comparative sample of healthy individuals from the Dart Collection to support our findings. Overall, we argue against long-held interpretations for various metabolic disorders (secondary hyperparathyroidism, porotic hyperostosis, etc.) and suggest that the overall synthesis of our findings offers new insights into skeletal-based interpretations linking pellagra to maize-dependent populations.

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Socio-culturally mediated disease: rickets and scurvy.

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