

## ABSTRACTS

infant health, disease prevalence and general food availability. Its study therefore has the potential to inform bioarchaeologists about numerous aspects of early-life experience in the past. In this study we present results from the first incremental isotopic study to be conducted in the northern Atacama Desert in Chile. This type of analysis has allowed us to reconstruct detailed individual life-histories, giving unprecedented insight into the weaning transition. Using deciduous dentition ( $n=30$ ) from the pre-agricultural (<3500BP), incipient agricultural (3500-1500BP) and fully agricultural (1500-400BP) periods we aim to tease apart the factors affecting weaning decision-making in this extremely harsh environment. We examine isotopic profiles of children, identifying patterns relating to both weaning and environmental stress. We show that, despite the presence of cultures with reported proscribed weaning behaviour, the decision of when to wean remained deeply individual. In almost all individuals analysed we find isotopic patterns indicative of physiological stress, probably reflecting the difficult reality of life in the desert. We highlight the interconnected nature of physiological stress and weaning decisions, and their potential impact on the children of the Atacama.

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### Correlates of fecal androgens in wild female white-faced capuchins (*Cebus capucinus imitator*)

GILLIAN KING-BAILEY and KATHARINE M. JACK  
Anthropology, Tulane University

Androgens are conventionally considered 'male' hormones, however they play a crucial role in regulating the female reproductive system. Few studies have compared female androgen levels across life stages, when animals have differing survival and reproductive strategies. Further, social factors may influence androgens. This study investigates mean fecal androgen levels in female *Cebus capucinus imitator* at Sector Santa Rosa, Área de Conservación Guanacaste, Costa Rica. We collected fecal samples from July to September 2015 from 24 individuals in three long-term study groups. Hormones were quantified and validated at the Laboratory for the Evolutionary Endocrinology of Primates at the University of Arizona using enzyme immunoassay. Based on age-class we found no significant difference between females (t-test,  $df = 23$ ,  $P > 0.05$ ). Based on reproductive state, we found no significant difference between adult females (ANOVA,  $df = 19$ ,  $P > 0.05$ ). Based on these findings we suggest that androgens play a more nuanced role in female reproductive biology than in males in our study species, though potentially no less important. There was no significant

correlation between androgens and rank (correlation,  $N = 19$ ,  $P > 0.05$ ). Our smallest study group (8 monkeys) exhibited significantly higher androgens than larger groups (19 and 26 monkeys) (correlation,  $N = 19$ ,  $P = 0.017$ ). We suggest between group competition functions to prime individuals in smaller groups for a fight or flight response. Future directions include increasing our sample size, both in number of samples and individuals, and examining and controlling for potential confounding variables.

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### Morphological Correlates of Locomotor Mode in the Volar Pads of Strepsirrhine Primates

AMANDA K. KINGSTON  
Department of Basic Medical Sciences, University of Arizona College of Medicine

Primates are unique among arboreal mammals in their exclusive use of friction grasps during arboreal locomotion. Mediolaterally compressed claws—used to interlock with substrates—are absent, and the ability to maintain a secure attachment during vertical and oblique locomotion is determined entirely by the integrity of the grasp. The frictional characteristics of the volar surfaces are influenced by the size and shape of the volar fat pads, however, it remains unclear how different pad morphologies are associated with various modes of locomotion. This study addresses this question through gross morphological evidence. The manual and pedal volar surfaces of 104 individuals representing 19 species of strepsirrhine primates and 5 locomotor groups were molded, digitized via  $\mu$ CT. Dimensions of the individual volar pads were digitally quantified and standardized by body size. Discriminant function analysis was employed to identify shared traits specific to broad locomotor groups and narrow phylogenetic comparisons between locomotor groups were conducted at the family level to identify features shared by closely related taxa that may have been obscured in the broader analysis. Results of these comparisons indicate that significant differences in volar pad morphology are present between locomotor groups and correlate well with known osteological and behavioral data. These differences in morphology become more stark when narrow phylogenetic groups are considered; in particular, lemurid and galagid taxa exhibit numerous differences between quadrupedal and vertical clinging and leaping groups, but only when narrowly considered.

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### Possible idiopathic scoliosis in a bonobo

CLAIRE A. KIRCHHOFF<sup>1,2</sup> and HALLIE M. S. LLOYD<sup>3</sup>  
<sup>1</sup>Biomedical Sciences, Marquette University, <sup>2</sup>Center for Anatomical Sciences, University of North Texas Health Science Center, <sup>3</sup>Unaffiliated

Spine researchers have hypothesized that only humans experience idiopathic scoliosis, and that the condition is related to human obligate bipedalism. Published cases support this idea, as they involve captive primates and are likely to document congenital rather than idiopathic scoliosis. In contrast, recent work on animal models for scoliosis questions the relationship between bipedality and idiopathic scoliosis. We present the case of a wild-shot adult male bonobo (*Pan paniscus*) with several skeletal symptoms consistent with idiopathic scoliosis – the first report of this condition in a wild primate. The complete skeleton is housed at the Royal Museum for Central Africa (Tervuren, Belgium), was evaluated for skeletal trauma and pathology, and compared with two asymptomatic skeletons. Visual assessment of the vertebrae included evaluating the presence of morphologic features associated with scoliosis. Directional asymmetry of lateral vertebral body heights was also calculated. The complete vertebral column was available for inspection, and no morphological abnormalities suggestive of congenital scoliosis (e.g., hemivertebrae) were observed. The first and second lumbar vertebrae exhibit lateral wedging and horizontal torsion of the vertebral body, as well as an asymmetric neural arch, articular facets, and transverse processes. Directional asymmetry was an order of magnitude higher in the symptomatic animal compared to the asymptomatic skeletons. The possible presence of this condition in a wild bonobo provides more evidence to challenge the hypothesis that idiopathic scoliosis may be a cost of bipedalism. Further study of scoliosis in our closest relatives may elucidate the etiology of this complex condition in humans.

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### Something To Chew On: Comparing Dentin Exposure in Ancient Egyptians and Dental Age Estimation Standards

CASEY L. KIRKPATRICK  
Anthropology, University of Western Ontario

Biological age estimation is central to every study of human remains, modern and ancient. Dental age estimates can be: influential in the identification and individuation of human remains and the reconstruction of osteobiographies, important to the differential diagnosis of paleopathology, necessary to the study of paleo-demography, and relevant to age determination in living individuals for legal purposes or sociocultural studies. Consequently, the accuracy and specificity with which we can produce age estimates is of supreme importance.