PROGRAM OF THE

88TH ANNUAL MEETING OF THE AMERICAN ASSOCIATION OF PHYSICAL ANTHROPOLOGISTS

MARCH 27 – 30, 2019

To be held at the

Hilton Cleveland Downtown

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of the lingual cusps, in particular the hypocone, giving the teeth a skewed contour; the angles formed at the hypocone and paracone are more acute in these teeth than those that have a positive PC2. *Australopithecus robustus*, *A. africanus*, and *H. habilis* plot mainly in the positive half of PC2 which is due to the more squared crown shape without a skewed contour. While the maxillary teeth in this sample are useful for assessing similarities between taxa, the mandibular teeth appear better for discriminating between groups.

Functional adaptation of trabecular bone in the Human mandibular condyle in relation to diet

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The trabecular structure of the human skeleton develops in relation to mechanical stimuli. Mandibular shape and size variation has been attributed to changes in mechanical loading related to diet, and more specifically, the transition from hunter-gathering to agriculture. This study tests whether variation in diet and loading influences trabecular bone in the mandibular condyle among different human populations that have varied subsistence practices.

We compare semi-nomadic pastoralists and agriculturalist populations from Northern Africa and Britain. Analysis consisted of volumetric measurements of trabecular bone in the condyle, including bone volume fraction (BV/TV), connective density (Conn.D) and degree of anisotropy (DA), which all contribute to the mechanical strength of bone. Data was collected via the Nikon XTH 225 ST HRCT Scanner at the Cambridge Biotomography centre and analysed via BoneJ.

Results showed differences in the degree of anisotropy and connective density between all populations that related to differences in subsistence. There were also site specific differences between the medial and lateral areas of the condyle. A greater degree of anisotropy was noted in the medial side of the condyle compared to the lateral among all populations. This suggests that the direction of loading during mastication follows the same pattern for different diets, but the toughness of the food leads to changes in the density and anisotropy of mandibular trabecular bone. Differences in trabecular bone morphology also correlate with cortical bone shape, suggesting that the interaction between genetic constraint and skeletal plasticity in relation to diet is complex.

This study was funded by the Cambridge AHRC Doctoral Training Partnership and the Isaac Newton Trust.

Orangutan Nesting Behavior in Gunung Palung National Park, West Kalimantan, Indonesia

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Nesting behavior is unique to the great apes among primates and has wide ranging implications for understanding socioecology and conservation. While much is known about nesting in gorillas, chimpanzees, and some orangutan populations living in disturbed forest and peat swamp, the nesting behavior of orangutans living in primary forest is poorly understood. We studied the nesting behavior of Bornean orangutans (*Pongo pygmaeus wurmbii*) in Gunung Palung National Park, West Kalimantan, Indonesia, using observations of 4,526 nesting events collected between October 1994 and September 2018, testing hypotheses about nest height. We found a significant effect of age/sex on nest height ($F(3)=106.1$, $p<0.001$). Post-hoc comparisons (adjusted α-level= 0.008) showed that flanged males nested significantly lower than all other age/sex classes ($p<0.001$) while females nested significantly lower than juveniles and unflanged males ($p<0.001$). Flanged males and females tended to nest lower in the canopy when alone than in the presence of other orangutans (males: $F(3)=24.25$, $p<0.001$; females: $F(3)=5.83$, $p=0.001$). Our results help demonstrate that across forest types, flanged male orangutans prefer to nest lower in the canopy while all other age- and sex-classes prefer higher canopy positions for nesting. Furthermore, our finding that solitary individuals nest lower than individuals near other orangutans suggests that nesting higher in the canopy may allow individuals to space their nests optimally when in proximity of other orangutans. These results have significant conservation implications, as logging and deforestation fundamentally change the forest structure, disrupting the canopy and making preferred nesting locations unavailable.

National Science Foundation (BCS-1638823, BCS-0936199, 1540360, 9414388); National Geographic Society; US Fish and Wildlife (F15AP00812, F12AP00369, 98210-8-G661); Leakey Foundation; Disney Wildlife Conservation; Wenner-Gren Foundation; Nacey-Maggioncalda Foundation; Conservation, Food and Health

The Effect of Polycystic Ovarian Syndrome (PCOS) on Bone Mineral Density

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The effect of Polycystic Ovarian Syndrome (PCOS), a common endocrine disorder, on the human female skeleton is not well known. PCOS is characterized by symptoms, such as excessive sex hormones, insulin resistance, and weight gain, all of which are correlated to increased bone mineral density (BMD). However, common comorbid conditions like menstrual dysfunction and autoimmune hypothyroidism are correlated to decreased BMD. This pilot study compares cranial and total BMD of non-smoking subjects (aged 18-45 years) with PCOS (n = 10) with healthy, age and BMI-matched controls (n =5) using full body, DEXA scans. A significant correlation between age and cranial BMD (r = 0.644; p = 0.009) was detected in the PCOS sample that was not detected in the control sample. Additionally, a correlation between cranial BMD and total BMD was observed in the control sample (r = 0.800; p = 0.050), but not the PCOS sample (r =0.135; p = 0.590). Finally, no significant correlation between cranial BMD and BMI was observed in either sample. The results of this study suggest that women with PCOS may reach peak bone mass at a later age than women without the disorder, that PCOS has a systemic effect on BMD, independent of weight, and that cranial vault BMD is a useful metric for determining illness-related effects on systemic BMD. While an expanded study is necessary to confirm the conclusions of this study, it is useful for understanding the utility of DEXA technology in determining the systemic effects of disease on BMD.

This research was sponsored by the Senior Honors Thesis Award granted by the Eastern Michigan University Honors College.

A cautionary theory: Learning from the origins of allometric scaling

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A central goal in organismal and evolutionary biology is to define the rules that govern all living organisms in order to understand similarities and differences between organisms. One mathematical theory commonly used for this purpose is 'allometric scaling'. Its origins dating back two centuries lie in comparisons of ratios brain size and body size, and these early studies were commonly used to affirm the preconceived superiority of white males. Eventually, these comparisons of ratios per individual developed into linear regressions across multiple individuals, giving rise to the modern form of allometric scaling. Though allometric scaling has been essential in providing deep insights into the evolution of biological form and function, its history is fraught with examples of racist and sexist