

ABSTRACTS

measurement of immune system responses in a free-ranging primate. Neopterin specifically holds promise as a biomarker of degenerative health due to aging and is predictive of death.

This work was supported by the National Institutes of Health (Grant: R01-AG060931).

A quantitative genetic analysis of selection in the non-human hominid cranium over four ontogenetic stages

MARIANNE J. COOPER¹, EVAN A. SIMONS^{1,2} and NOREEN VON CRAMON-TAUBADEL¹

¹Buffalo Human Evolutionary Morphology Lab, Department of Anthropology, University at Buffalo,

²Department of Behavioral Neuroscience, Oregon Health and Science University

Prior studies have found high levels of integration within cranial modules, similar patterns of integration among species throughout ontogeny, and evidence of strong stabilizing selection in the hominid cranium. A direct investigation of selection strength on the cranium and within modules would provide insight into whether stabilizing selection within or between modules contributes to the observed differences in morphology among taxa. This study applies Lande's generalized genetic distance, a framework that can be used to test for selection, to examine selection in non-human hominid crania in an ontogenetic series (from fully erupted deciduous dentition to fully erupted adult dentition) of 252 specimens of *Pongo pygmaeus* ($n = 54$), *Gorilla gorilla* ($n = 59$), *Pan paniscus* ($n = 63$), and *Pan troglodytes* ($n = 76$), using 16 interlandmark distances (traits). First, all 16 traits were analyzed, then traits were analyzed by cranial module. Results from the analysis of all traits indicated that strong stabilizing selection characterizes all evolutionary transitions for all age groups except the transition from the last common ancestor of African apes to *G. gorilla*, for which drift cannot be rejected. Results from module-specific analyses, however, indicated that strong stabilizing selection characterized early age groups, but drift could not be rejected for many of the transitions in adult and late juvenile groups. These results indicate that stabilizing selection between rather than within modules may play a strong role in shaping the morphology of the non-human hominid cranium.

This research was funded by National Science Foundation Grants (BCS-1751885, BCS 1830745)

Associations between baseline central and peripheral oxytocin and vasopressin concentrations and individual social behaviors in baboon species (*Papio hamadryas* and *Papio anubis*)

DANIEL J. COPPETO¹, JORDAN S. MARTIN², PABLO MORALES³, VITTORIO PALMIERI³, GARY WHITE⁴,

ROMAN WOLF⁴, LARRY J. YOUNG^{5,6} and ADRIAN V. JAEGGI²

¹Anthropology, Emory University, ²Institute of Evolutionary Medicine, University of Zurich,

³Veterinary Medicine, The Mannheimer Foundation,

⁴Department of Pathology, Division of Comparative Medicine, University of Oklahoma Health Sciences Center, University of Oklahoma, ⁵Silvio O. Conte

Center for Oxytocin and Social Cognition, Center for

Translational Social Neuroscience, Yerkes National

Primate Research Center, Emory National Primate

Research Center, ⁶Department of Psychiatry and

Behavioral Sciences, Emory University School of Medicine

Individual primates display a wide array of temperaments and behavioral biases. While some frequently engage in intimate affiliative interactions, others are more biased to aggressive responses to social stimuli. Proximate neurobiological mechanisms (such as differing concentrations of cerebrospinal fluid (CSF) serotonin metabolites) have previously been implicated in contributing to these individual differences in temperament and behavior (i.e. "personality"). Given this previous research and the known influence of the neurohormones oxytocin (OT) and arginine vasopressin (AVP) in mediating affiliative and aggressive behaviors, we investigated whether individual differences in personality were associated with baseline levels of AVP in the CSF, and OT in CSF, blood plasma, and urine. We predicted that OT would correlate most strongly with affiliative behaviors, and AVP with aggressive behaviors. Biosamples and behavioral observations were collected from 70 captive baboons and hormones were assayed using ELISA. We used a Bayesian multivariate multilevel model to detect stable individual differences in nine behaviors and test for associations with hormone levels. Interestingly, baseline plasma OT was positively associated with initiation of close proximity and grooming. In contrast, CSF AVP was negatively associated with time spent in close proximity. In addition, both urinary and plasma OT were associated with submissive behaviors, albeit in opposite directions. In sum, it is suggested that these differences in baseline OT and AVP may predispose individuals for certain temperaments.

Funded in part from the National Science Foundation's Doctoral Dissertation Improvement Grant (Award Number 1413395), and the Silvio O. Conte Center for Oxytocin and Social Cognition.

Structural and Physical Violence in Archaic Greece: The Bioarchaeology of the "Distinctly Different" in the Phaleron Cemetery

AVIVA A. CORMIER¹, JANE E. BUIKSTRA² and HANNAH LIEDL³

¹Anthropology, Davidson College, ²School of Human Evolution and Social Change, Arizona State University, ³Anthropology, Durham University

The world's attention was captured by the 7th century BCE finds that emerged from the coastal sands of Faliro, the ancient Port of Athens. Seventy-nine young men had been violently executed and interred in three trenches. They lived and died during the political upheavals that culminated in the foundational democracy of Classical Athens. These, however, are but a fraction (<10%) of those buried at the site of Phaleron, excavated between 2012 and 2017 by Dr. Stella Chrysoulaki of the Ephorate of Antiquities of West Attica, Piraeus, and Islands.

Most of the 1000+ individuals buried nearby fall within an expected range of burial forms, including pits, cists, and jars. We focus here upon 82 additional "atypical" burials, interred collectively in mass graves or buried prone or tightly flexed in single graves, with some bound at the wrists and/or ankles. Those buried in mass graves were exclusively biological males, while females were included in atypical single graves (22%). Adolescents and young adults dominated mass graves, while individual graves included all adolescent and adult age categories. We found a significant difference between the two forms (mass graves and individual burials) in childhood stressors (7% and 31% with linear enamel hypoplasia, respectively) and those of adulthood (13% and 57% with carious lesions and abscesses, respectively). Approximately 1/3 of both groups showed healed, antemortem postcranial fractures. Here we explore these life history factors, emphasizing how their potentially violent life and death experiences may have impacted their identity construction, physical wellbeing, and resulting mortuary treatment.

NSF BCS-1828645, NEH RZ-255623, Wiener Laboratory of the American School of Classical Studies at Athens

Mandibular corpus shape as a taxonomic indicator through ontogeny

CESAR O. CORNEJO OCHOA¹, IRISA ARNEY² and JASON MASSEY³

¹College of Osteopathic Medicine, Western University of Health Sciences, ²Department of Medical Anatomical Sciences, Western University of Health Sciences - College of Osteopathic Medicine, ³Department of Anatomy and Developmental Biology, Centre for Human Anatomy Education, Biomedicine Discovery Institute, Monash University

Mandibular corpus (MC) specimens are prevalent in the hominoid fossil record, making them useful to discern taxonomic relationships among extinct hominoids. 3-dimensional geometric morphometric (3DGM) methods applied to the MC have shown promise in distinguishing modern adult hominoid species, but less is known about the taxonomic reliability of MC morphology through development. In this study, we evaluate shape