

## ABSTRACTS

hormones change as males transition into parenthood, first in response to his partner's pregnancy, then in response to interacting with the newborn. Estradiol increases in expectant men and tamarin fathers, and is higher in fathers than non-fathers. But, it is unknown whether short-term changes are associated with individual behavioral variation. Pair-living red-bellied lemurs have facultative paternal care. We predicted 1) estradiol metabolites (E2) elevate in expectant fathers, and 2) E2 varies with paternal behavior. We collected fecal samples and behavioral data from 9 fathers from conception-weaning, and ran generalized linear mixed-effect models in R (lme4 package) including E2 as the dependent variable, individual nested within year as random effects, and infant age and measures of paternal care as fixed factors. We ran models with five paternal care behaviors, and with a composite measure (Total Care). E2 increased four-fold in expectant fathers. Paternal care did not predict E2; only infant age did (with care behaviors:  $\beta=-89.15$ ,  $SE(\beta)=29.45$ ,  $z=3.03$ ,  $p<0.001$ ; with Total Care:  $\beta=-82.49$ ,  $SE(\beta)=32.74$ ,  $z=2.159$ ,  $p=0.011$ ), reflecting a decrease in E2 once infants were born. Red-bellied lemur fathers respond to their mate's pregnancy with E2 elevations which begin returning to baseline after parturition. These changes could prepare males for fatherhood, but short-term changes are not associated with behavior. Because adipose tissue produces estradiol, weight gain associated with Couvade Syndrome (as in humans and tamarins) might mediate these changes.

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### Hominin introgression in Island Southeast Asia and Sahul

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As the ancestors of modern non-African human populations left Africa around 65-50ka and dispersed across the world, they met and interbred with multiple hominin groups. The signatures of these events are preserved in the genomes of modern populations, and provide an eloquent record of the sequence and timing of these early migrations, with Asia proving a particularly complex area. In this study, we perform the most comprehensive genomic survey of modern-day human populations across Island South East Asia (ISEA) and Sahul, and provide a detailed picture of the admixture events taking place when so-called anatomically modern humans arrived in the area. At least three different Asian hominin groups appear to have been involved, including Denisovans. Several interbreeding events are inferred east of Wallace's Line, the

major biogeographical barrier in ISEA. Our results are consistent with archaeological evidence of widespread and early hominin presence in the area and suggest that isolated Denisovan groups inhabited different islands across ISEA, likely as a result of sea-level fluctuations during interglacial periods. Interestingly, of the currently known hominin fossils in the area, none has been associated with the Denisovans, who remain the most elusive member of the recent human family.

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### The human stress response, deep homology, and paleoanthropology: opportunities to study context, plasticity, and constraint in the ancient past

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Concepts of ancestor-descendent relationships and the recognition of new species is of great interest to paleoanthropologists charged with reconstructing the human evolutionary lineage. Even studies of life history in hominines privilege matters of phylogeny over questions of plasticity, context, and constraint. This approach removes the process-oriented paradigms that stemmed forth from the New Physical Anthropology and Modern Synthesis in evolutionary biology. Teeth provide one solution to this problem. Teeth are a plentiful component of paleoanthropological research and provide a faithful record of development including, diet, climate, and stress experiences, while estimations of age-at-death in fossil remains provide a semblance of information regarding demography in the past. Building on research done with prehistoric hunter-gatherers, this study provides an outline for reconstructing survival of stress events in the past, placing these events in a life history framework. This work focuses specifically on prehistoric hunter-gatherers from Japan and Siberia, where age-at-defect formation, infant dietary behavior, and age-at-death all demonstrate the ways in which humans survive stress events through adaptive plasticity, while future responses to environmental challenges may be inhibited through physiological constraint and exacerbated through local contexts including socioecological systems. These findings include elevated frequencies of accentuated striae during the cessation of breastfeeding, reconstruction of stress experiences during changes in local climates, and diminished capacity for survival in response to surviving early life stress events. Building on these findings, this

study discusses how early life environment may be of great interest to paleoanthropologists, particularly when parred with high resolution data from fossil sites.

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### Violent Death: paleo-forensic study of a case of multiple sharp-force trauma from medieval Lombardy (Italy)

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Skeletal remains occasionally provide traces of traumatic injuries, shedding light on the degree of interpersonal violence in a past society. Putting together the pieces of a violent act, through the analysis of the marks left on bones, physical anthropologists can challenge history in the reconstruction of certain episodes and dynamics of violence from the past. Here we describe a case of traumatic perimortem injuries observed in the skeleton of an individual recovered during archaeological excavation at the medieval cemetery of San Biagio in Cittiglio (Varese, northern Italy). Evidence of multiple sharp-force trauma was observed in the skull of a young adult (T.13), which constitutes a unique case of raw violence in the past within this rural population, as it represents the only case of violent death ascertained in the entire skeletal sample investigated so far. The analysis of multiple lesions displayed on the skull required a systematic multi-analytical approach, combining classical macroscopic examination, computer tomography, photographic three-dimensional modelling and three-dimensional digital microscopy, in order to study in-depth the marks and verify their nature and aspect. The principal aim is to reconstruct the dynamics of this event, biologically archived on bones, applying a modern scientific approach such as digital microscopic methodology, not frequently used in the osteoarchaeological field, but which has been revealed by previous studies able to provide computable data and to overcome many technical limitations of macroscopic assessment.

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