

ABSTRACTS

a Y chromosome contributes to differences in the development of each sex, expression of genes and hormones that contribute to dimorphic phenotypes. There is consensus that the androgen receptor gene, on the X chromosome, regulates gene expression differently in males and females. Experimental studies show that androgen receptor gene expression can be modified by DNA methylation. Beyond sex chromosomes, recent research also indicates that autosomal loci play a role in sexual dimorphism, particularly with respect to gene expression.

The impact of changing religious practices on orangutan fieldwork and conservation in West Kalimantan (Borneo), Indonesia

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Primate field projects are often under the direction of foreign researchers, who live and work alongside members of local communities. Here we discuss the impact of religion on orangutan research and conservation in Gunung Palung National Park, Indonesia over the past 25 years. We demonstrate how our local staff integrates orangutan conservation with religious practices. This includes sharing Islamic prayers on the responsibility of humans to safeguard nature, and the breaking of the fast during Ramadan with villages that are our conservation partners. Islam prohibits the eating of orangutans (as well as forest pigs). In contrast, the indigenous Dayak communities of Borneo historically do hunt and eat orangutans. This impacts the current orangutan distribution. At the Cabang Panti Research Site we have been recording the presence of hunters within our trail system, as well as the number of gunshots heard, since 2008. We find that there is a significant association between these occurrences and the end of the fasting month of Ramadan. We discuss changing religious values and how increasingly conservative practices affect foreign researchers, particularly women. We also detail how social media can help researchers become better informed about important local issues. For example, through our data collection we became aware that local people may be consuming wild pig meat around religious holidays, potentially unknowingly. Social media made us aware that local communities were concerned about this issue, which also impacts wildlife conservation, and thus we can tailor our outreach efforts to meet this intersection between religion and conservation.

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Learning to Live Together: Social Tolerance and violence at Neolithic Çatalhöyük (7100-6000 cal BC)

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The Neolithic of the Near East is characterized by innovations in subsistence strategies, expanded social networks, long distance exchange, and increased population densities. Greater cooperation and increased social tolerance between individuals and communities is required to sustain these socio-cultural changes. Less often addressed are those social mechanisms by which aggressive behavior is mediated. One factor is the advent of a social dynamic regulating intolerant behavior, including discrimination, marginalization, and violence.

Here, we explore the subtle equilibrium between social tolerance and violence in the densely populated Neolithic community of Çatalhöyük, Central Anatolia, Turkey. A total of 34 individuals (18 females, 10 males, 6 indeterminate) exhibit 54 cranial injuries with the majority due to blunt force trauma. Those areas of the cranium showing the greatest number of injuries include the occipital and parietals towards the posterior of the cranium, as well as the frontal. Most of the individuals date to occupation levels of showing high fertility and the greatest population densities. There are also three individuals who are found in midden or infill after abandonment of buildings, locations that stand in contrast to the much more common subfloor or platform burials at the site. By means of a joint analysis (N = 152) of age and sex ratios, cranial trauma, and funerary practices, this study documents the multifaceted expression of social tolerance at the site, and demonstrates the increasing relevance of violence as a mediating social mechanism during human biocultural evolution.

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Reanalysis of the Trotter Collection for a Study on Variation in Human Hair

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Human scalp hair is a visible trait that varies both within and between populations, and is a potential source of forensic information. Mildred Trotter's early twentieth century studies of hair form, growth, somatic distribution, racial characteristics, and sex differences provide a foundation for understanding differences in hair forms among

humans. Her studies documented variation in hair (color, shape, and size) among human populations, but needs to be updated in regards to her use of racialized terminology and to focus on intraindividual variation. Here we report on new morphological research of intra-individual, intra-group, and inter-group variation in human scalp hair form and microstructure using hairs from the Trotter Collection. Using current microscopical and image-analysis methods we were able to update the quantitative measurements Trotter made from hair cross-sections. We examined variation in hair size and shape, and the distribution of pigment-containing melanosomes using oil immersion microscopy (1000x magnification), ImageJ, and QGIS. 60 hair samples representing 25 populations were cross-sectioned and area and ellipticity calculations were compared to Trotter's data. Mapping the distribution of melanosomes revealed variability in distribution and percent of area occupied by the organelles. Variation in these parameters was greater within single individuals than between individuals or groups. Hair shape did not distinguish hairs well by geographic ancestry, and was found to be more continuously distributed across populations. These findings support the elimination of typological racial identifiers in classificatory and forensic contexts, and supports the need for additional research on the effects of genetic admixture on hair traits.

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Morphological integration in macaque limb development: implications for understanding human development

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Primate limbs perform a variety of functions, and normal development of their functional components is necessary for their function. Genetic and environmental developmental factors influence limb form, the coordination of dimensions between serial limb elements, and coordination of homologous components between upper and lower limbs. Morphological integration, or the association between functionally or developmentally related structures, provides insights into limb development and evolution. This study examines morphological integration within- and between limb elements in rhesus macaques (*Macaca mulatta*) through the growth period and in adult limb. We expect that traits influenced by common functional or developmental factors will be more