

The effect of admixture on pelvic morphology

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Interpreting the effects of hybridisation is critical for understanding context and processes across human evolution [1]. Yet, despite methodological advances in aDNA analysis, we are still far from understanding the importance of gene flow between different hominin lineages in determining anatomical shape, and from being able to recognise hybrids in the fossil record [2]. The effects of admixture on pelvic form are of particular interest, due to the interaction of the functional and physiological constraints of locomotion and successful parturition. The pelvis is also a region of divergent shape in *Homo sapiens* and *H. neanderthalensis*, which combined with the differently shaped crania of their foetuses, could have implications for the viability of hybrid offspring [3]. Here we use a non-human primate proxy to investigate the role of hybridisation in the evolution of the hominin pelvis. We employ a large, multigenerational sample of admixed Chinese and Indian rhesus macaques (*Macaca mulatta*) and geometric morphometric methods to investigate the morphological consequences of admixture in the pelvis. Unlike many non-human hybrid studies which focus on the first one or two generations after hybridisation [4, 5], our sample has a distribution from purebred Indian and Chinese animals to admixed individuals with very low percentages of Chinese ancestry (< 10%). This range of admixture is a better representation of what we expect in hybrid zones and in the fossil record. Our initial results show a small admixture signal in pelvic form, with sexual dimorphism as the strongest determinant of morphology. We discuss the potential effects of functional constraints on the expression of hybrid morphology in different skeletal regions and the implications of these results for ascertaining hybrid status in the human fossil record. We also provide further details about the macaque sample, from which open-source data will become available to the scientific community over the next several years.

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