

## **Evidence from finger length ratios (2D:4D) of prenatal androgen effects associated with selection for canine size, but not body size in anthropoids.**

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The second to fourth digit length ratio (2D:4D) is a sexually dimorphic biomarker reflecting prenatal androgen effect (PAE) across a number of vertebrate taxa. In humans 2D:4D has been used to investigate programming of sex-linked androgenic traits in a variety of behaviors including sexual selection and competitive ability. We have previously shown that across 39 anthropoid species 2D:4D varies according to grade, social system and intra-sexual competition, with higher levels of sexual selection and competition associated with lower 2D:4D and high PAE. In this study we explore the relationship between 2D:4D and two conventional measures of sexual selection; body size and canine size dimorphism. Controlling for substrate and phylogenetic effects, 2D:4D was significantly related to canine size dimorphism ( $r = 0.412$ ,  $F=5.273$ ,  $p=0.030$ ) with 2D:4D decreasing (and PAE increasing) as dimorphism increased. There was no relationship between 2D:4D and body size dimorphism ( $r=0.191$ ,  $F=1.104$ ,  $p=0.315$ ). Absence of a link between these variables is unsurprising as 2D:4D is set early in prenatal development and does not correlate with human body size measures (i.e. height, weight). Despite close correlations between body and canine size in anthropoids, results from a recent study indicate that, in highly competitive species, selection for male weaponry may be subjected to stronger selection pressure than body size (Thorén *et al.* 2006). Our results support this theory showing that, on the evidence of 2D:4D, canine size in anthropoids appears to be more closely linked to early programming of androgenic traits associated with intra-sexual competition than body size.