

MANDIBULAR GROWTH AND DEVELOPMENT IN AUSTRALOPITHECUS ROBUSTUS

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INTRODUCTION.

Australopithecus robustus has a distinct mandibular anatomy, with a broad and deep corpus and a tall, relatively upright ramus. How this anatomy arose through development is unknown, as gross mandibular size and shape change across subadult growth have yet to be examined quantitatively in this species.

MATERIALS AND METHODS.

Here, I investigate *A. robustus* mandibular growth by comparing its ontogenetic series with a sample of recent humans, examining age-related size variation in 28 linear measurements (Fig. 1).



Figure 1. The *A. robustus* sample ($n=13$, top) and a subset of the comparative human series (full sample $n=122$, bottom).

A null hypothesis, that these species follow equivalent patterns of proportional size change, is tested using a computationally intense resampling method to compare the fragmentary *A. robustus* sample with a more complete human skeletal population.

RESULTS.

Nearly all measurements experience greater average increase in *A. robustus* than in humans. Most notably, *A. robustus* corpus breadth undergoes a spurt of growth prior to eruption of M_1 , likely due in part to delayed resorption of the ramus root on the lateral corpus. Between the occlusion of M_1 and M_2 , nearly all dimensions experience greater proportional size change in *A. robustus*. Nested resampling analysis affirms that this pattern of growth differences between species is biologically significant, and not merely a byproduct of the fossil sample size.

DISCUSSION.

Some species differences are likely a function of postcanine megadontia in *A. robustus*, although the causes of other differences are less clear. While some aspects of *A. robustus* mandibular shape are surely present at young ages, this study demonstrates an important role for the postnatal period in developing this species' mandibular shape.

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