



Supplementary Figure 2
Comparative dental morphology of *Ardipithecus ramidus* and early *Australopithecus* maxillary dentitions.

Occlusal and mesial comparisons of the *Ar. ramidus* holotype with ASI maxillary specimens and *Au. afarensis*.

- a. ARA-VP-6/1 holotype maxillary dentition (I1, C and P3 reversed; C in lingual view)
- b. ASI-VP-2/2 maxillary dentition (M2 reversed)
- c. ASI-VP-2/334 maxillary dentition
- d. A.L. 200-1a maxillary dentition (reversed)
- e. Mesial views of casts of the second molars from (left to right) specimens a, c, and d above. Pencil line denotes cervicoenamel junction.

Morphological comparisons:

- 1) Relative canine size:

The ASI specimens show intermediacy between the *Ar. ramidus* and *Au. afarensis* conditions. See text Figure 3 and supplementary metrics for numerical assessment.

- 2) Upper canine morphology:

Additional distinctive features reported for the Kenyan *Au. anamensis* upper canines⁸ are the distinct basal tubercle, and symmetric and low shoulder heights of KNM-KP 35839. The distinct basal tubercle bounded by a cingular groove seen in KNM-KP 35839 is better expressed in ASI-VP-2/367 and appears to be approximated by the ASI-VP-2/2 canine (obscured by wear). In ASI-VP-2/334 this region is dominated by finger-like projections of the distolingual fossa, as seen in the L.H. 3 *Au. afarensis* upper canine. We are wary of considerable idiosyncratic variation, especially in the latter feature, likely cutting across taxonomic boundaries. Shoulder height is probably of

evolutionary significance, judging from the clear morphocline polarity seen from ape to, for example, the Au. afarensis condition. Both ASI canines likely had shoulder heights slightly higher than seen in KNM-KP 35839, as was the case with the Au. afarensis and some of the known Ar. ramidus examples² (ARA-VP-1/300, 6/1). We interpret this to indicate that both Ar. ramidus and Au. anamensis canines most likely had broad overlapping ranges of variation in shoulder height.

3) Upper molar crown flare:

The ASI molar is larger, but shares with ARA-VP-6/1 a low crown with flaring crown face profiles relative to the A.L.200-1 condition.

4) Occlusal morphology:

The ASI upper P3 is intermediate between ARA-VP-6/1 and A.L.200-1 in asymmetry of crown and dominance of the buccal cusp.

The ASI upper molars exhibit weakly expressed Carabelli's complex as described for the Kenyan Au. anamensis series⁸.

The upper molars of Kenyan Au. anamensis were initially described to be characterized by a crown broader mesially than distally⁵. The ASI molars weakly exhibit this feature. The larger sample of Kenyan Au. anamensis now available⁸ shows considerable variation in this feature, encompassing the ASI condition.