

Reply to Westaway et al.: Mandibular misrepresentations fail to support the invalid species *Homo floresiensis*

Flawed arguments (1) ignoring our foundational paper (2) and disparaging “another pathology-based alternative” fail to support an invalidly invented hominin species.

Homo floresiensis (Hf) fails scientifically, apart from the biomedical diagnosis of its abnormality (2). Endocranial volume of 380 mL, never duplicated, was >13% too low by identical techniques used to measure 430 mL, ignored until matched by skeptics within 1% (3). Stature of 1.06 m, underestimated by >17% to >27% (2), corrects to within the range of living Rampasasa, affirmed independently (4). Abnormal LB1 craniofacial asymmetry, originally unreported, lacks taphonomic distortion as confirmed even by our critics (3). Given hundreds of disorders producing small brain and short stature and asymmetry (2), Hf is an invalid taxon independent of any particular diagnosis.

LB1 mandibular morphology including absence of an external chin does not obviate diagnosis of Down syndrome (DS), because “that disorder is characterized by extensive phenotypic variability, with most traits occurring in only a fraction of affected individuals” (5). Claiming “absence of chins in the two mandibles recovered at Liang Bua, LB1 and LB6, is a key issue” (1) for taxonomic affinities is false.

Observing the common absence of an external chin in DS, we explicitly stated that we did not believe that this explained LB1’s reduced chin; instead, we noted that a neutral or negative chin structure is a normal feature for many individuals (including LB6) in Australomelanesian populations. Our critics (1) misrepresent this point.

A reference dismissed as “just a conference abstract” (1) was summarized in detail (2). Of 52 Rampasasa individuals, 76.9% of the sample had neutral or negative hard tissue chins (see Rampasasa mandibles, www.liangbuacave.org, accessed December 18, 2014).

Also misleading is reference 4 in ref. 1; however, figure 9 from reference 30 in ref. 2 shows two Palauan mandibles (B:OR-14:8-122 and B:OR-14:8-771) that plainly lack external chins. Harsh criticism does not obviate observable data. As Senator Daniel Patrick Moyihan stated, “You are entitled to your own opinion but you are not entitled to your own facts.”

CT scans of LB1 juxtaposed with Roonka 45 misconstrue our point (2) that nonprojecting bony chins can be widely found in recent Australomelanesians; Roonka 45 is far less different on this point from LB6 (figure 3 from reference 3 in ref. 1), which our critics chose not to show. Their illustration (figure 1 in ref. 1) misrepresents as simple morphology what is functionally and developmentally complex (figure 8 from reference 3 in ref. 1).

“LB1 and LB6 also exhibit a strong extramolar sulcus, a trait found in early hominins but not in *Homo sapiens*.” This is simply wrong. Song Keplek 5, a Holocene human skeleton from Java, shows bilateral extramolar sulci (figure 3.8 in ref. 6).

A different fallacy is inherent in the statement “LB1’s and LB6’s tooth root morphology differs from that seen in *Homo sapiens*.” Wrong again: hominoid primate tooth root numbers are not distributed monomorphically per taxon but rather as transpopulation polymorphisms (7), differing only in relative frequencies.

Matching facts that simply are wrong is the incorrect assertion (1) that mandibular and dental traits refute the inference that LB1 exhibits DS. We clearly stated that both the LB1 and LB6 mandibles exhibit phenotypes “observable in Australomelanesian populations (Flores, Palau, and elsewhere). . .”

For all of these reasons, the inexpert statements made about the Liang Bua mandibles (1) represent yet another attempted diversion from the inability of archaeologists to

establish a valid primitive hominin species on the basis of unfossilized bones found at one site, despite a decade of searches.

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- 1 Westaway MC, Durband AC, Groves CP, Collard M (2015) Mandibular evidence support *Homo floresiensis* as a distinct species. *Proc Natl Acad Sci USA* 112:E604–E605.
- 2 Eckhardt RB, Henneberg M, Weller AS, Hsü KJ (2014) Rare events in earth history include the LB1 human skeleton from Flores, Indonesia, as a developmental singularity, not a unique taxon. *Proc Natl Acad Sci USA* 111(33):11961–11966.
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- 4 De Klerk B (2012) Size variation and body proportions in an isolated Holocene-aged population of hominids from Palau, Micronesia and its impact on our understanding of variation in extinct hominids. PhD dissertation (University of Witwatersrand, Johannesburg).
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- 7 Eckhardt RB (2003) Polymorphisms past and present. *Hum Biol* 75(4):559–575.

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The authors declare no conflict of interest.

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