Supplementary Online Material (SOM):

New hominin dental remains from Olduvai Gorge (Tanzania).

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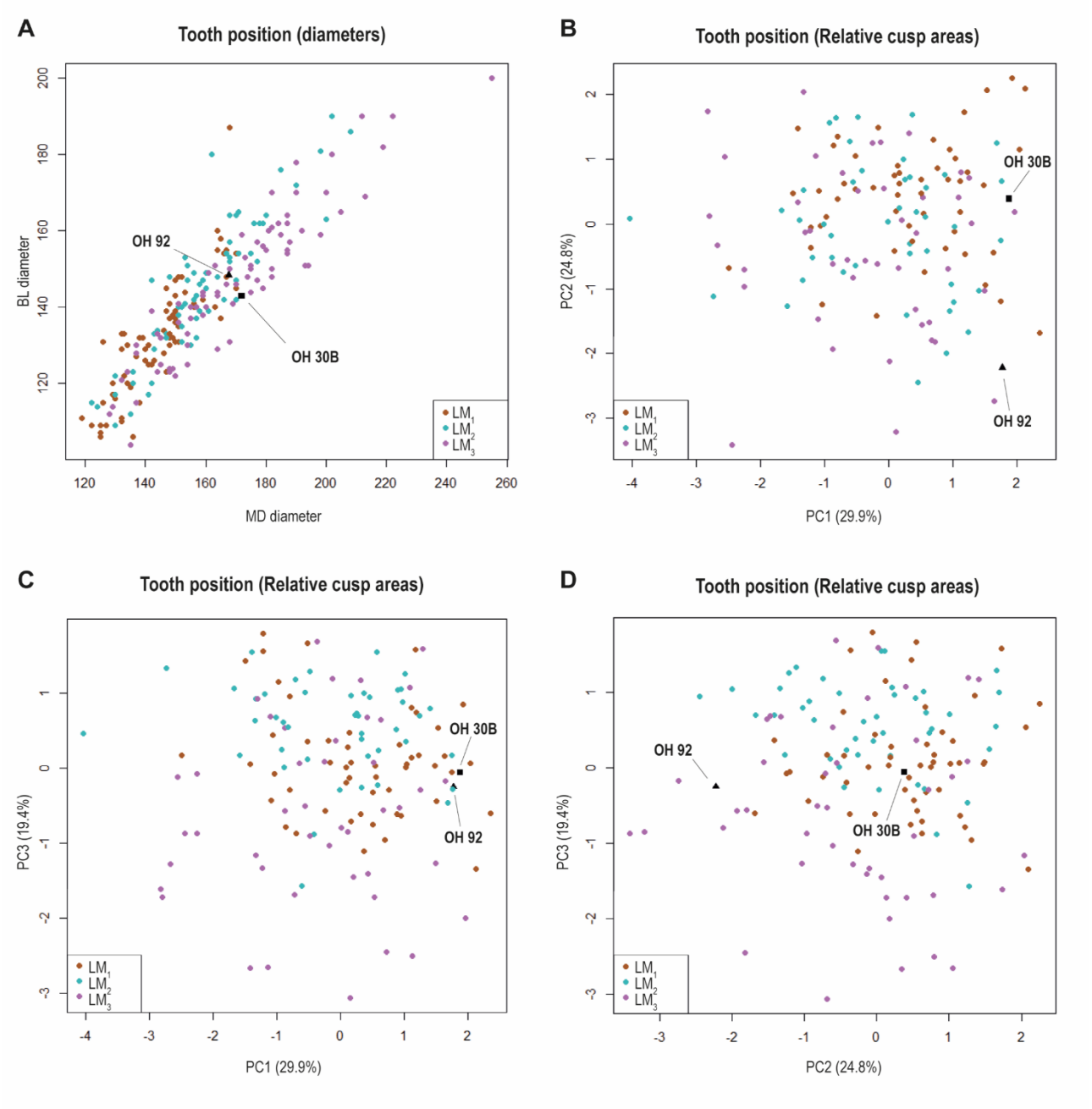
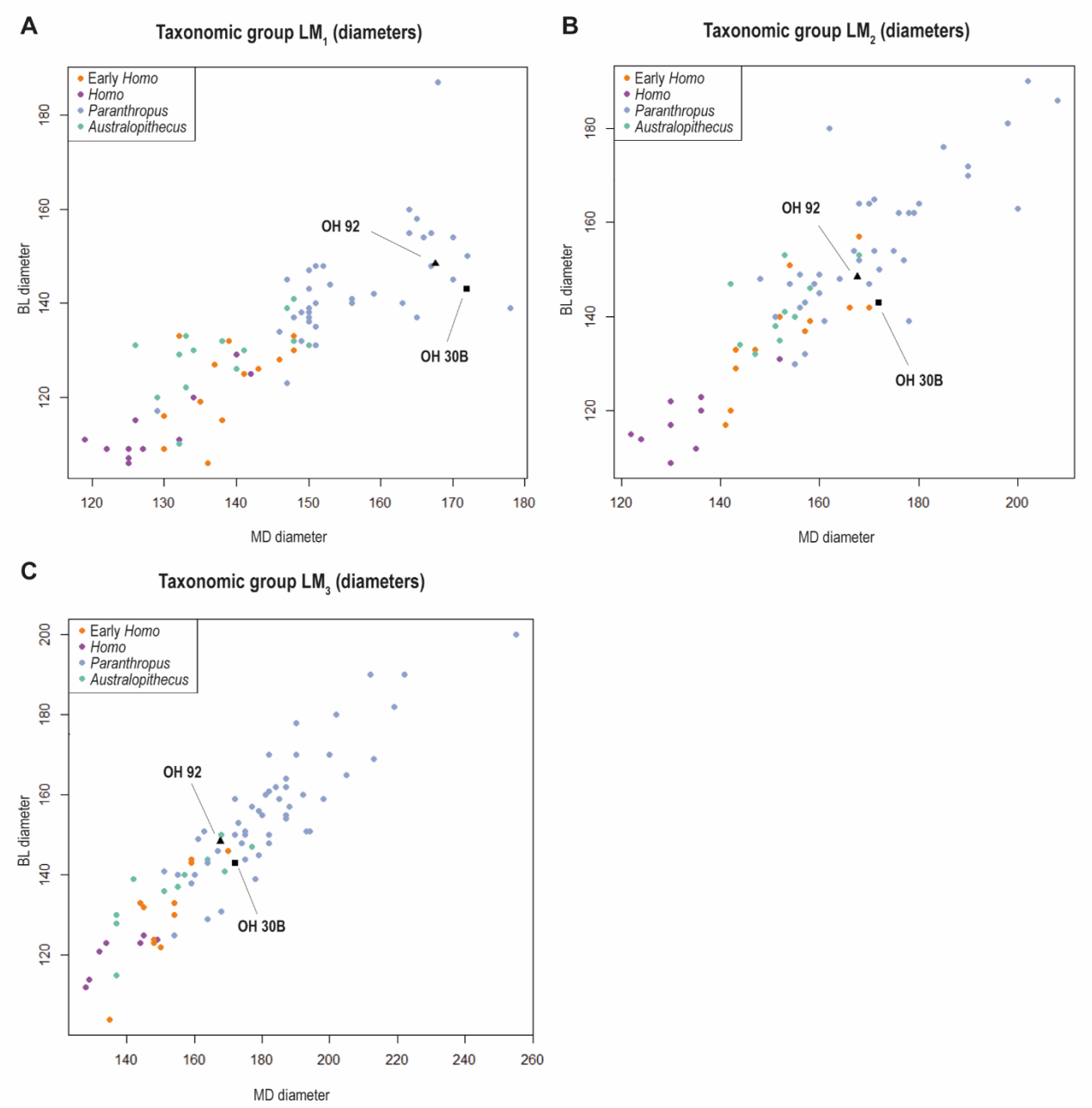
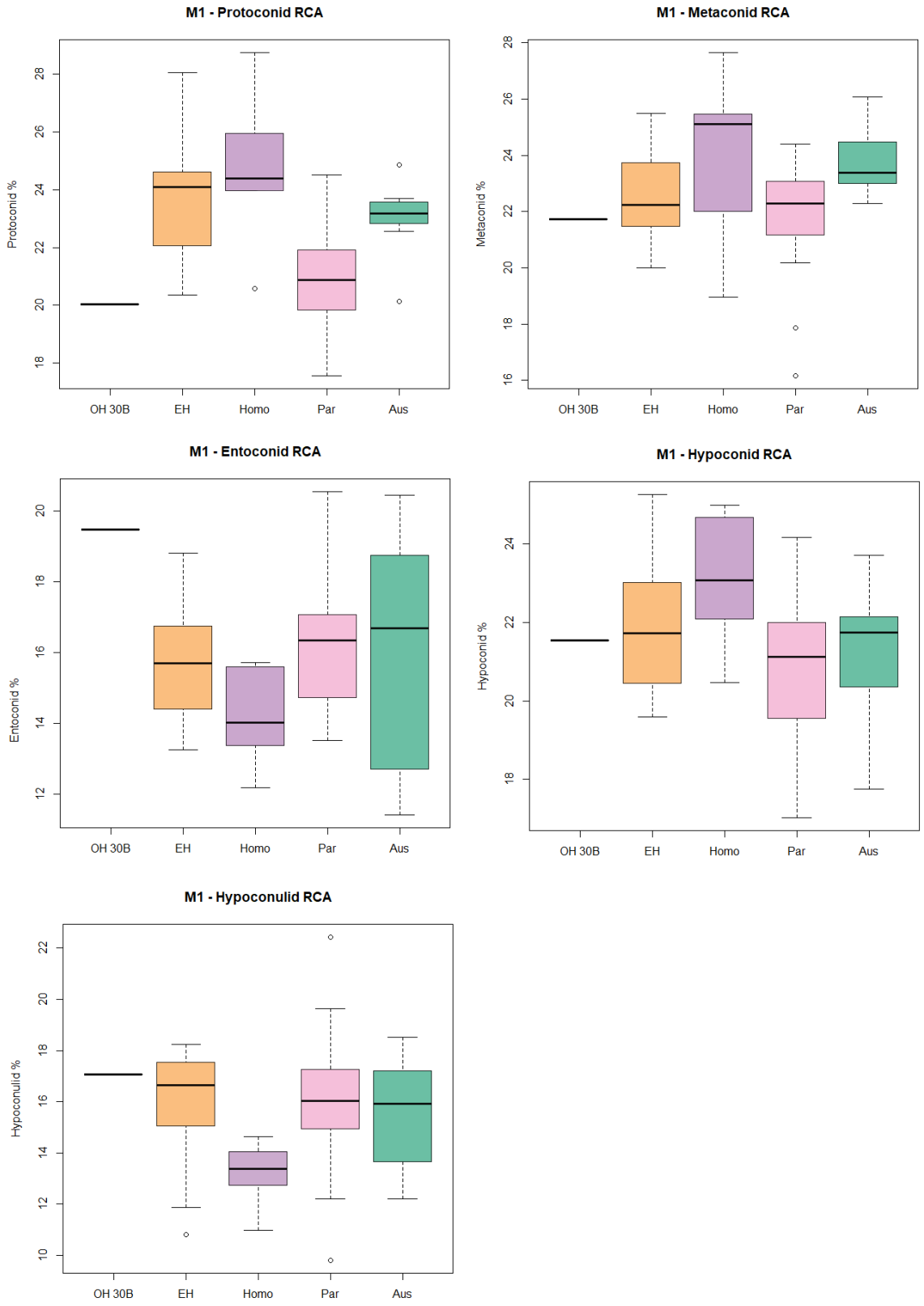


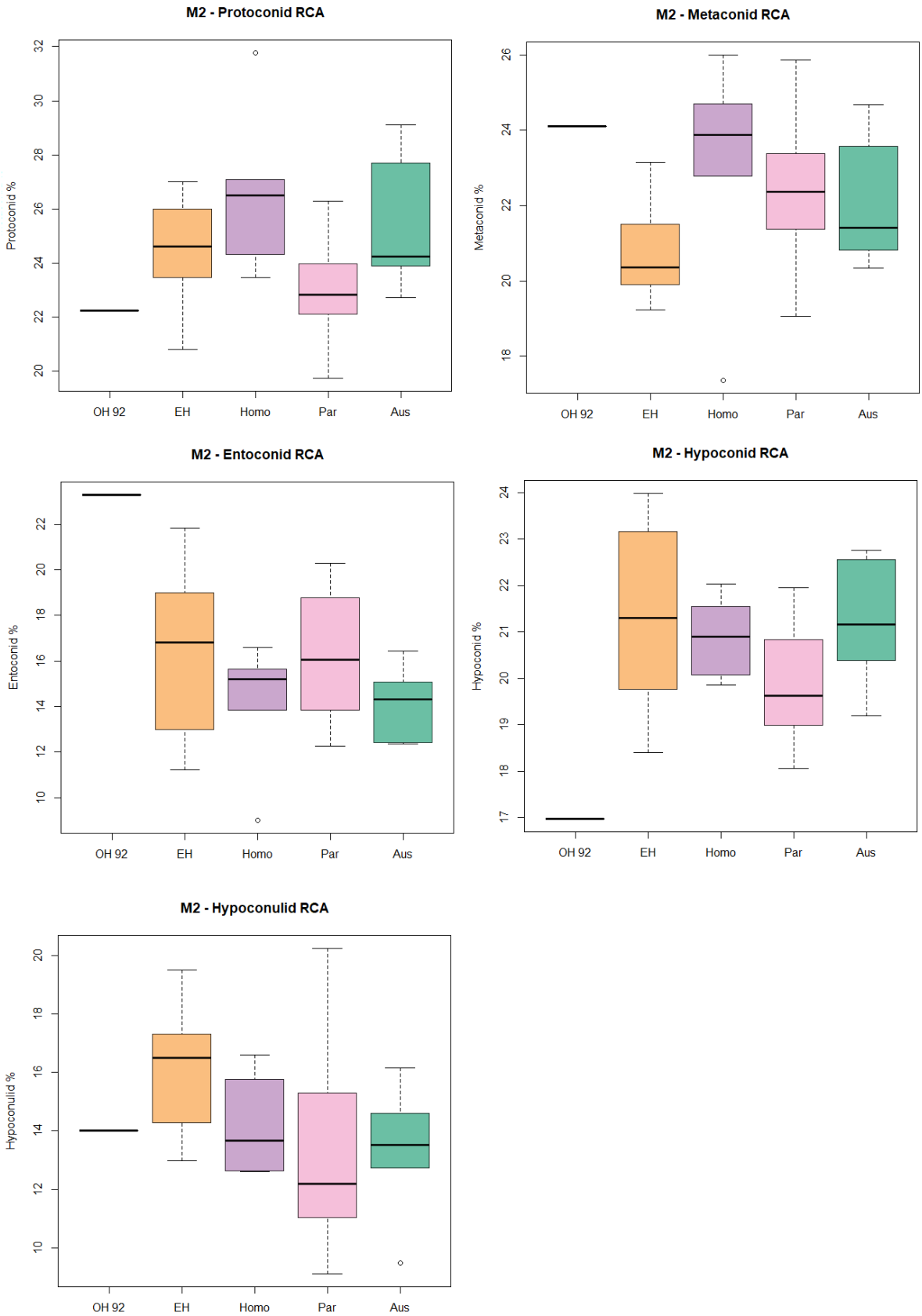
SOM Figure S1. Position of OH 30B and OH 92 in the molar row. A) Scatterplots of the mesio-distal (MD) and bucco-lingual diameters; B-D) paired scatterplots of the first three principal components obtained from the relative cusp areas (RAC) of the molars.



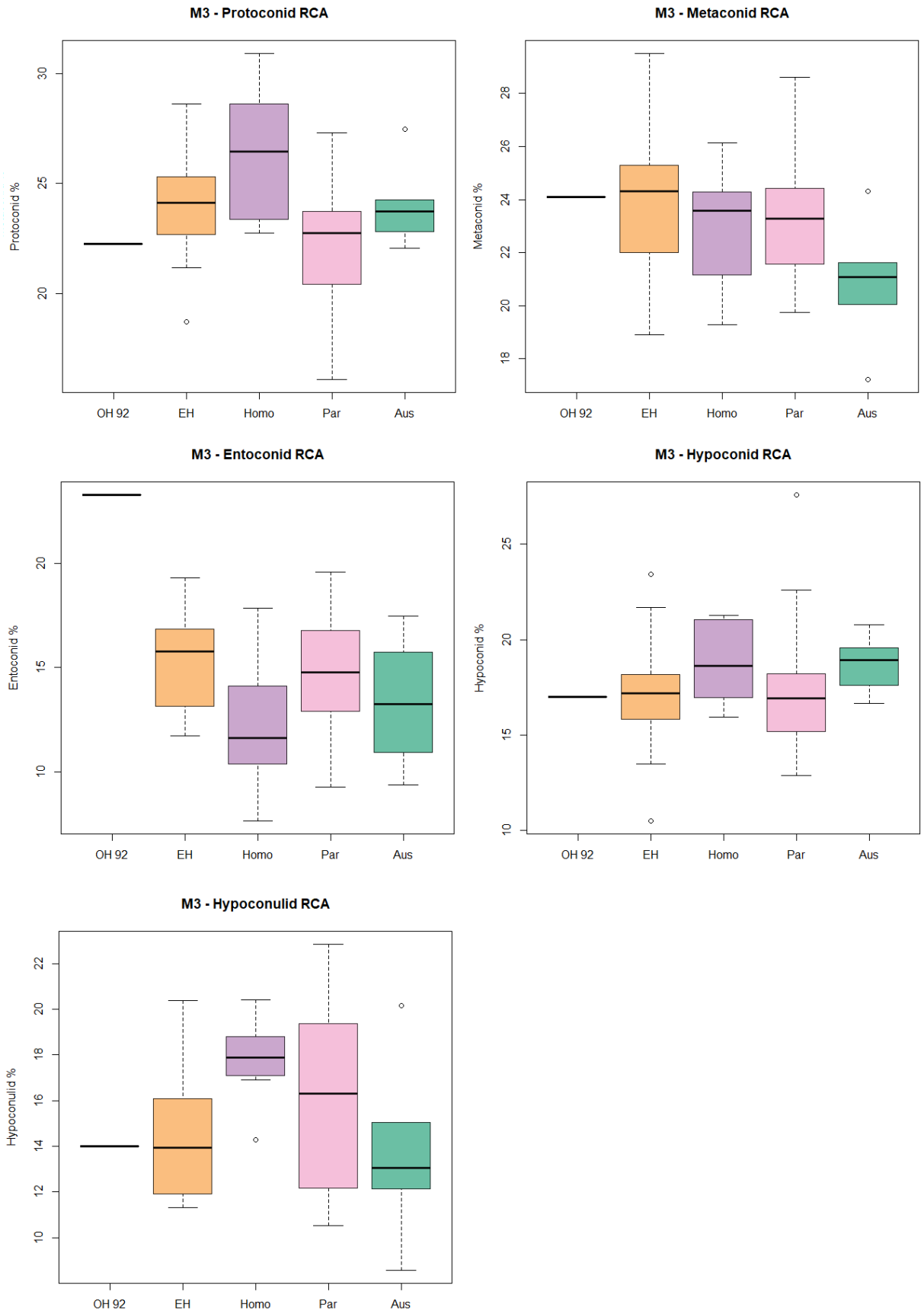
SOM Figure S2. Mesiodistal (MD) and buccolingual (BL) diameters of OH 30B and OH 92 compared to other fossil hominin teeth: A) M_1, B) M_2, and C) M_3.



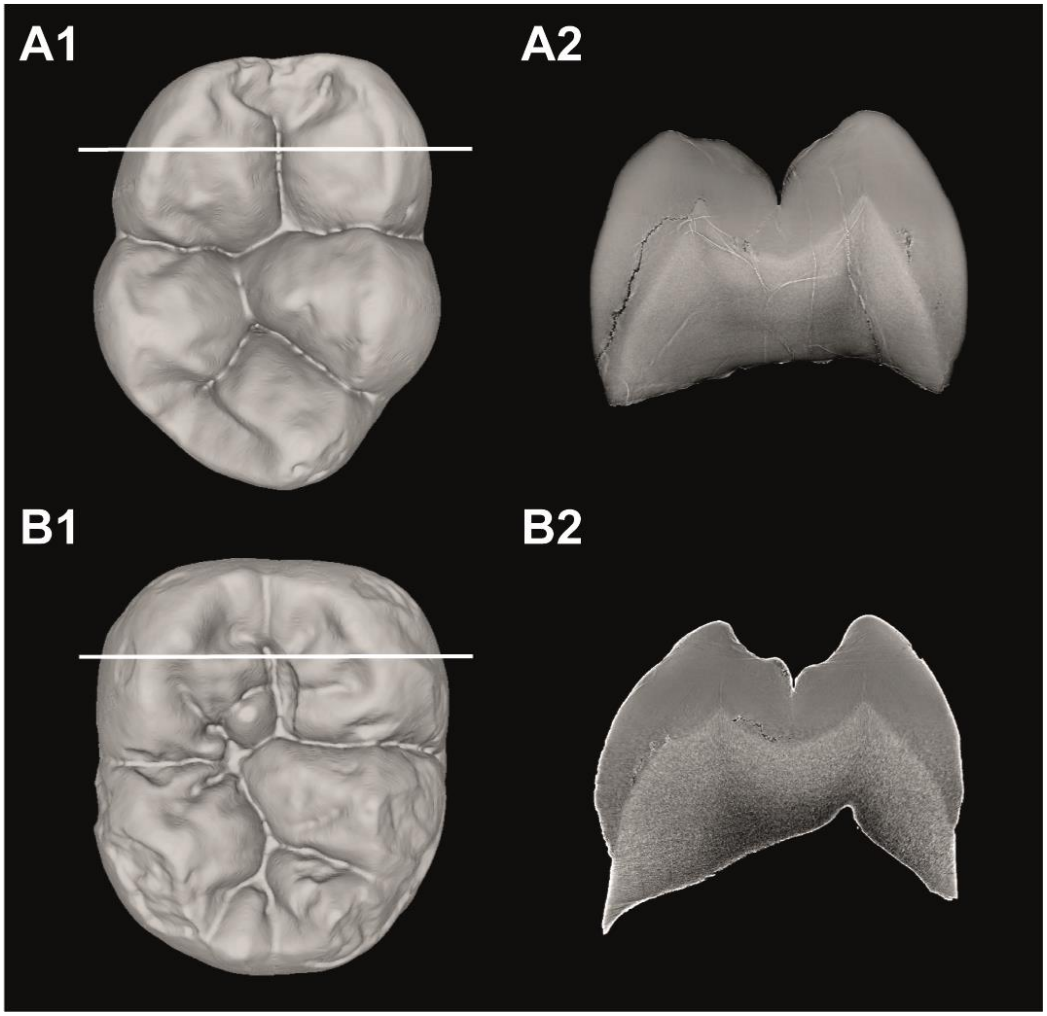
SOM Figure S3. Relative cusp areas (RCA) of OH 30B compared to fossil hominin M1s. EH: Early *Homo*; Homo: later *Homo*; Par: *Paranthropus*; Aus: *Australopithecus*



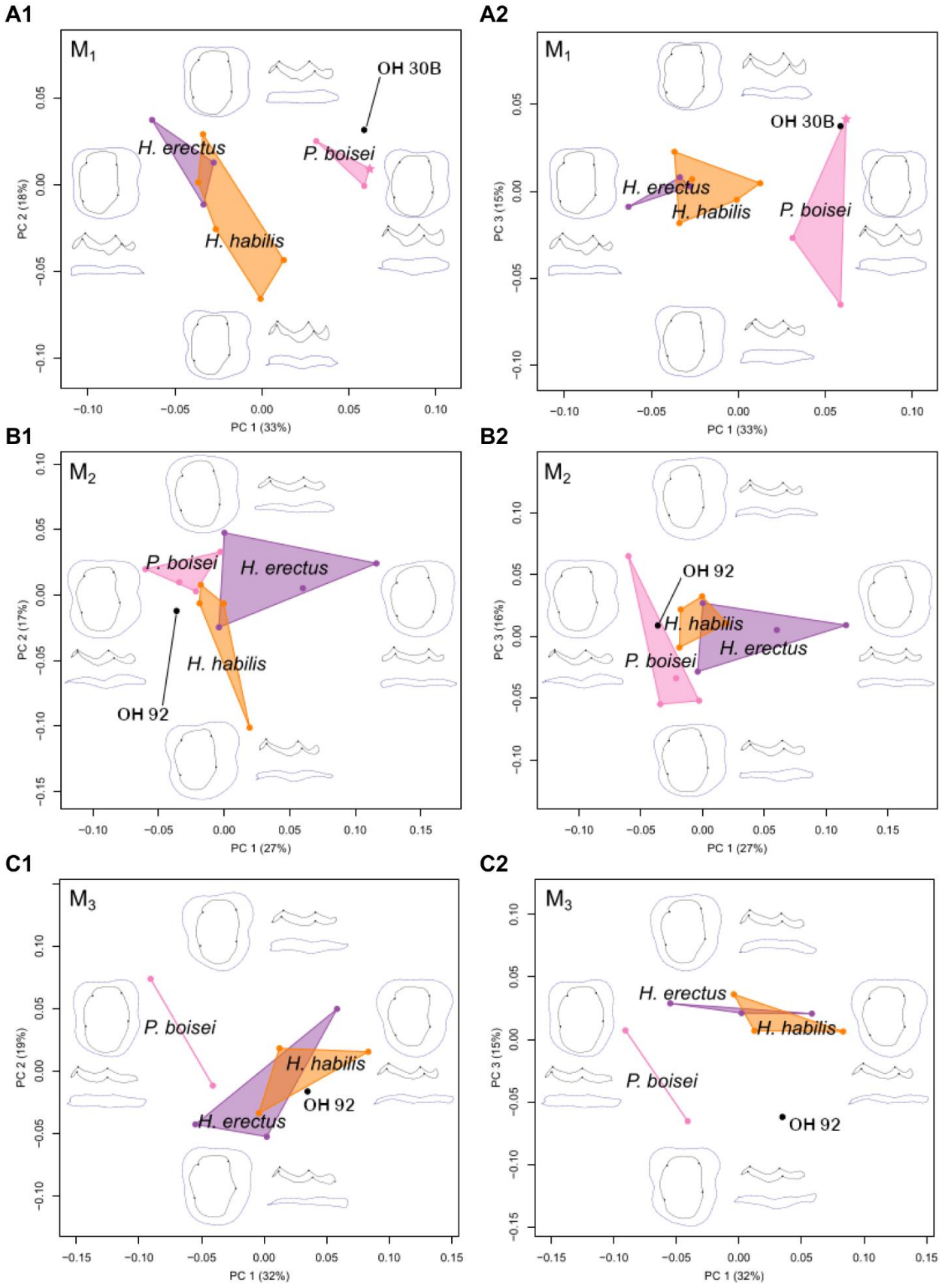
SOM Figure S4. Relative cusp areas (RCA) of OH 92 compared to fossil hominin M2s. EH: Early *Homo*; Homo: later *Homo*; Par: *Paranthropus*; Aus: *Australopithecus*



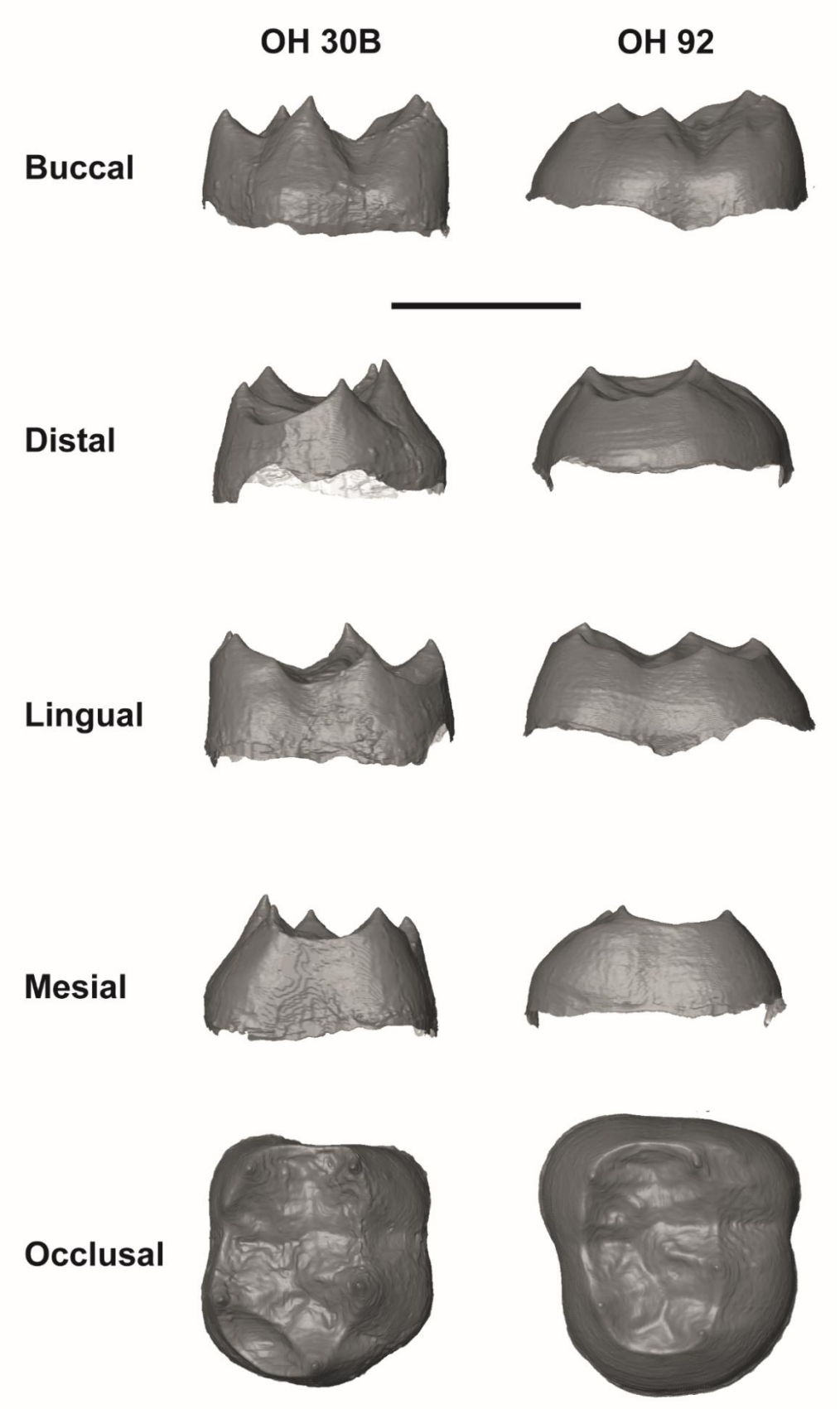
SOM Figure S5. Relative cusp areas (RCA) of OH 92 compared to fossil hominin M3s. EH: Early *Homo*; Homo: later *Homo*; Par: *Paranthropus*; Aus: *Australopithecus*



SOM Figure S6. A) Slice used for calculating average (AET) and relative enamel thickness (RET) of OH 30B (A2) and its position on the tooth (A1); B) Slice used for calculating AET and RET of OH 92 (B2) and its position on the tooth (B1). The method follows Skinner et al. (2015).



SOM Figure S7. Results of principal component analyses (PCAs) (shape space) on the sample composed by only those species reported in Olduvai. A) OH 30B compared to M_1. PC1 vs PC2 (A1). PC1 vs PC3 (A2); B) OH 92 compared to M_2. PC1 vs PC2 (B1). PC1 vs PC3 (B2); C) OH 92 compared to M_3. PC1 vs PC2 (C1). PC1 vs PC3 (C2)



SOM Figure S8. Three-dimensional models of the enamel-dentine junction (EDJ), showing OH 30B (left) and OH 92 (right) from buccal, distal, lingual, mesial, and occlusal perspectives. Scale bar: 10 mm.

SOM Table S1

List of the specimens, measurements and Operational Taxonomic Unit (OTU) used in the analysis of linear measurements and cusp and crown areas. MD: Mesio-Distal diameter; BL: Bucco-Lingual diameter; CR: crown area; PR%: relative protoconid area; ME%: relative metaconid area; HY%: relative hypoconid area; EN%: relative entoconid area, HYPL%: relative Hypoconulid area. OTU: P, *Paranthropus*; EH, Early *Homo*; H, *Homo*; A, *Australopithecus*. REF: a, this paper; b, Wood (1991); c, Grine et al. (2017).

Code	Tooth	Side	MD (mm)	BL (mm)	CR (mm^2)	PR %	ME %	HY %	EN %	HYPL %	OTU	REF
OH 30B	M_1	R	17.2	14.3	199.2	20	21.7	21.5	19.5	17.1		a
OH 92	$M_{2/3}$	R	16.8	14.8	204.9	22.3	24.1	17	23.3	14		a
KNM-ER 729A	M_1	R	16.4	16	219.5						P	b
KNM-ER 802C	M_1	R	16.5	15.8	209	23.9	23.4	19.4		9.8	P	b
KNM-ER 806C	M_1	L	14.2	12.5	143.5	24.4	20.6	23	12.2	14.6	H	b
KNM-ER 820	M_1	R	12.5	10.7	110.5	24	25.3	23.1	14	13.6	H	b
KNM-ER 820	M_1	L	12.5	10.6	108.5	24	27.6	21.2	15.7	12.9	H	b
KNM-ER 992A	M_1	R	12.5	10.9	109.5	25.6	25.1	24.7	15.5	11	H	b
KNM-ER 992B	M_1	L	12.7	10.9	123.5	26.3	23.5	24.7	13.8	12.6	H	b
KNM-ER 1482A	M_1	L	13.2	13.3							EH	b
KNM-ER 1502	M_1	R	13.8	11.5	125	22.4	20.8	19.6	15.2	17.2	EH	b
KNM-ER 1506A	M_1	R	13.7	12.7	142.5	20.4	20	25.3	17.2	18.2	EH	b
KNM-ER 1507	M_1	L	13.2	11.1	124	20.6	19	25	15.7	14.5	H	b
KNM-ER 1508	M_1	R	13.5	11.9							EH	b
KNM-ER 1509C	M_1	L	15.3	14.4	204						P	b
KNM-ER 1801	M_1	L	13.9	13.2	159						EH	b
KNM-ER 1802A	M_1	R	14.8	13	160	23.8	22.2	24.4	14.4	11.9	EH	b
KNM-ER 1802A	M_1	L	14.9	13.2	157.5	26.3	22.2	22.9	14.3	10.8	EH	b
KNM-ER 1816A	M_1	L	16.5	13.7							P	b
KNM-ER 1820	M_1	L	15.3	14.4	185	17.6	24.1	17	20.5	14.1	P	b
KNM-ER 3230	M_1	R	17	15.4	218.5	18.1	20.8	22.2	16.9	22.4	P	b

KNM-ER 3734	M_1	L	13.6	10.6	110.5						EH	b
KNM-ER 3890	M_1	L	15.6	14	182.5	20	23	18.4	20	14	P	b
KNM-ER 5429	M_1		16.3	14							P	b
KNM-ER 15930	M_1	L	14.6	12.8							P	b
KNM-WT 15000	M_1	R	11.9	11.1							H	b
KNM-WT 15000	M_1	L	12.2	10.9							H	b
OH 7	M_1	R	14.3	12.6	147.5	24.7	24.1	21.7	14.6	16.6	EH	b
OH 7	M_1	L	14.1	12.5	147	24.5	24.5	21.8	13.3	16.7	EH	b
OH 13	M_1	R	13	11.6	123	28	21.5	22	16.3	13.8	EH	b
OH 16	M_1	R	14.6	12.8	159.5	24.5	22.3	23.2	14.4	16.3	EH	b
OH 22	M_1	R	13.4	12	127	28.7	25.6	20.5	13	13.4	H	b
OH 30	M_1	L	17	14.5	187	20.6	23.3	21.1	17.6	15.2	P	b
OH 37	M_1	L	13	10.9	114.5						EH	b
OH 51	M_1	L	14	12.9	156						H	b
OMO W-752	M_1	R	14.1	13							A	b
OMO L7A-125	M_1	R	16.8	18.7							P	b
OMO L45-2	M_1	R	12.9	12							A	b
OMO L51-1	M_1	R	14	12.6							A	b
OMO 75-14a	M_1	R	15.6	14.1							P	b
Peninj	M_1	R	16.4	15.5	210.5						P	b
Peninj	M_1	L	16.6	15.4	209.5	21.2	21	18.9	14.6	14.8	P	b
MLD 2	M_1	R	14.7	13.9	179.5	22.6	25.1	21.7	13.1	17.5	A	b
MLD 2	M_1	L	14.8	14.1	175	24.9	23.1	23.7	11.4	16.9	A	b
MLD 18	M_1	R	12.6	13.1	148.5						A	b
Sts 9	M_1	R	15	13.1	151.5	23.4	26.1	20.8	17.8	12.2	A	b
Sts 24	M_1	R	13.2	11	125.5	23.1	23.9	19.9	18.7	15.1	A	b
Sts 52b	M_1	R	13.8	13.2	154	23.7	23.4	21.8	12.3	18.5	A	b
Stw/H 1	M_1	L	13.3	12.2	134.5			22.3	20.4	12.3	A	b
Taung	M_1	R	13.4	13							A	b
Taung	M_1	L	13.3	13.3	146.5	20.1	22.9	17.7	18.8	15	A	b
TM 1517	M_1	R	14.8	13.2	170.5	23.2	22.3	22	15.5	16.7	A	b
TM 1536	M_1	R	12.9	11.7	132.5						P	b
SK 6	M_1	R	16.7	14.8	195.5	19.4	22	22	17.4	16.4	P	b
SK 6	M_1	L	16.7	15.5	199.5	19.5	21.8	22.3	16.3	16	P	b
SK 23	M_1	R	15	14.7	190	22.9	23.9	21.6	14.7	17.4	P	b

SK 23	M_1	L	15.2	14.8	188.5	20.7	22.5	21.8	15.1	19.6	P	b
SK 25	M_1	R	15.1	14	169.5	19.2	20.6	20.9	14.2	15.9	P	b
SK 25	M_1	L	15.1	14	166.5	21.6	21.3	20.7	13.5	15.6	P	b
SK 34	M_1	R	15.1	14.8	196.5	21.9	23.2	24.2	15.3	15.5	P	b
SK 34	M_1	L	15	13.8	187	23	23	21.7	16	16.6	P	b
SK 55b	M_1	R	14.9	13.8	167.5	20	21.5	23	16.4	14.3	P	b
SK 55b	M_1	L	15	13.7	170	20.9	16.2	22.6	16.8	17.9	P	b
SK 61	M_1	R	14.7	14.5	191.5	21.9	22.5	20.9	14.6	14.4	P	b
SK 63	M_1	R	14.8	13.7	161	21.1	23	18.6	17.1	16.1	P	b
SK 63	M_1	L	14.6	13.4	166	21.7	20.2	19.9	15.7	19	P	b
SK 104	M_1	R	15	14.3	159.5	19.4	17.9	19.4	16.6	17.2	P	b
SK 828	M_1	L	15.9	14.2	185	20	21.9	21.1	14.6	16.8	P	b
SK 838b	M_1	L	14.9	13.2	155	24.5	22.9	19.4	17.4	15.8	P	b
SK 843	M_1	L	15	13.6	170.5	22.6	22.3	23.8	13.8	17.3	P	b
SK 846a	M_1	R	15	13.9	168	21.1	24.4	22	14.9	17.6	P	b
SK 1587	M_1	L	15.1	13.1	155	21.9	20.6	21.3	16.8	16.1	P	b
SK 1588	M_1	R	14.7	12.3	149	20.5	23.2	21.1	20.1	15.1	P	b
SK 3974	M_1	R	15.1	13.5	160	19.7	21.6	19.7	16.6	12.2	P	b
KNM-ER 729A	M_2	R	19.8	18.1	302	23.7	23.5	19.2	18.4	11.8	P	b
KNM-ER 806B	M_2	L	15.2	13.1	155.5	23.5	17.4	21.5	13.8	15.8	H	b
KNM-ER 992A	M_2	R	13.6	12.3	131	27.1	24.4	20.6	15.6	12.6	H	b
KNM-ER 992B	M_2	L	13	12.2	138.5	26.7	26	19.9	15.2	12.6	H	b
KNM-ER 1171E	M_2	L	19	17	263	22.2	25.9	19.4	19.6	9.1	P	b
KNM-ER 1506A	M_2	R	14.3	13.3	151.5	23.8	21.5	22.4	16.8	16.2	EH	b
KNM-ER 1802A	M_2	R	16.6	14.2	196	23.5	19.9	24	12.2	14.3	EH	b
KNM-ER 1802A	M_2	L	17	14.2	190	24.5	23.2	23.2	21.8	16.8	EH	b
KNM-ER 1805C	M_2	R	14.3	12.9	161.5						EH	b
KNM-ER 1808G	M_2	R	13.6	12	129.5	24.3	22.8	20.1	16.6	16.6	H	b
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KNM-ER 2597	M_2	L	15.2	14	171						EH	b
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KNM-ER 3230	M_2	L	20.2	19	310						P	b
KNM-ER 3734	M_2	L	14.1	11.7	139						EH	b
KNM-ER 15930	M_2	L	16	14.5							P	b

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KNM-WT 15000	M_2	L	12.2	11.5							H	b
KNM-BK 67	M_2	R	13	10.9	118	26.3	23.3	22	15.3	14	H	b
KNM-BK 67	M_2	L	13.5	11.2							H	b
OH 7	M_2	L	15.7	13.7	169.5	26	20.1	19.8	11.2	13	EH	b
OH 13	M_2	R	14.2	12	139.5	24.7	21.5	19.4	19	15.4	EH	b
OH 16	M_2	R	15.4	15.1	192.5	27	19.2	21	13	17.7	EH	b
OH 22	M_2	R	13	11.7	127.5	31.8	24.7	21.2	9	13.3	H	b
OH 37	M_2	L	14.7	13.3	164.5						EH	b
OH 38	M_2	R	18.5	17.6	271						P	b
OMO L7A-125	M_2	L	16.2	18							P	b
OMO L157-35	M_2	L	20	16.3							P	b
OMO L860-2	M_2	R	17.7	15.2							P	b
OMO 47-46	M_2	R	16.8	16.4							P	b
OMO 75-14a	M_2	R	17.5	15.4							P	b
OMO 75-14a	M_2	L	16.7	15.4							P	b
OMO F22-1a	M_2	R	19	17.2							P	b
Peninj	M_2	R	17.6	16.2	241.5	22.8	22.4	18.2	16.1	15.1	P	b
Peninj	M_2	L	17.8	16.2	239.5				12.7		P	b
MLD 2	M_2	R	16.2	0	206.5	24	21.8	22.8	13.8	13.6	A	b
MLD 2	M_2	L	16.8	15.3	209	22.7	20.8	21.8	15.1	14.6	A	b
MLD 18	M_2	R	14.2	14.7	183						A	b
MLD 24	M_2	L	15.1	13.8	179.5	24.5	20.3	22.6	16.4	16.2	A	b
MLD 40	M_2	L	15.3	14.1							A	b
Sts 4	M_2	L	14.7	13.2	157	27.7	21	20.4	12.4	12.7	A	b
Sts 6	M_2	R	15.5	14	192						A	b
Sts 7	M_2	R	15.3	15.3							A	b
Sts 7	M_2	L	15.8	14.6							A	b
Sts 52b	M_2	R	14.4	13.4	158	29.1	24.7	20.6	12.3	9.5	A	b
Sts 52b	M_2	L	15.2	13.5	148.5	23.9	23.6	19.2	14.8	13.5	A	b
TM 1600	M_2	L	15.4	14.7	189.5	24.5	23.2	20.8	15	10.8	P	b
SK 1	M_2	L	17.1	15.4	197.5	22	22	19.5	15.4	13.4	P	b
SK 5	M_2	L	15.6	14.2	173	26.3	23.4	19.4	15.6	14.7	P	b
SK 6	M_2	R	18	16.4	225.5	23.3	20	21.5	16.9	12.2	P	b
SK 6	M_2	L	17.9	16.2	224.5	22.3	19.6	19.8	19.6	18.7	P	b
SK 23	M_2	R	15.6	14.9	191	24.6	22	19.6	14.1	18.8	P	b

SK 23	M_2	L	16	14.9	188.5	24.1	23.3	21	13.5	12.7	P	b
SK 25	M_2	R	16.8	15.2	205	19.8	22.4	22	12.9	11.7	P	b
SK 34	M_2	R	17	16.4	241.5	23	19	20.3	16.6	15.9	P	b
SK 34	M_2	L	17.1	16.5	246	23.4	20.3	18.9	15.9	15.4	P	b
SK 37	M_2	L	17	14.7	186	21.8	22.3	19.1	18.5	10.8	P	b
SK 55b	M_2	R	15.7	14.3	182.5	20.8	22.2	20.8	20.3	15.6	P	b
SK 843	M_2	L	16.1	13.9	175.5	22.2	24.5	21.4	12.3	20.2	P	b
SK 858	M_2	R	16.4	14.8	218.5	23.8	24.9	19.7			P	b
SK 1586	M_2	R	14.8	14.8	182.5	26	21.6	21.6	12.6	11	P	b
SK 1586	M_2	L	15.1	14	171.5	25.7	22.4	19.8	13.4	11.4	P	b
SK 1587	M_2	R	15.7	13.2	155	22.6	22.9	18.1	19.7	10	P	b
SK 1587	M_2	L	15.5	13	155.5	22.8	20.9	18.6	19	10.9	P	b
SK 1648	M_2	R	15.9	14.7							P	b
SK 3976	M_2	L	17.8	16.2	210				16	12.9	P	b
KNM-ER 729A	M_3	R	22.2	19	337	18.7	20.8	15.1	16.6	20.2	P	b
KNM-ER 729A	M_3	L	21.2	19	314	23.7	25.6	12.9	18.6	11.9	P	b
KNM-ER 730	M_3	L	13.7	11.5	124.5	26.1		17.7			H	b
KNM-ER 801A	M_3	R	19.2	16							P	b
KNM-ER 802F	M_3	R	18.7	16.4	242.5	19.8	23.3	13.8	19.6	10.9	P	b
KNM-ER 806A	M_3	L	14.9	12.4	150.5	23.9	19.9	15.9	11.6	17.3	H	b
KNM-ER 806D	M_3	R	14.4	12.3	134	22.8	23.9	18.7	16	19	H	b
KNM-ER 810B	M_3	L	17.7	15.7	223	23.5	24.2	15.2			P	b
KNM-ER 818	M_3	L	21.9	18.2							P	b
KNM-ER 992A	M_3	R	13.2	12.1	123	30.9	23.6	16.3	12.2	17.9	H	b
KNM-ER 992B	M_3	L	13.4	12.3	132	28	26.1	18.6	10.2	18.6	H	b
KNM-ER 1462	M_3	L	14.4	13.3	152	22.4	22	10.5	13.2	20.4	EH	b
KNM-ER 1467	M_3	L	18.7	15.4	227.5						P	b
KNM-ER 1480	M_3	R	15.4	12.5	153.5	21.5	27.4	17.3	13.4	11.4	EH	b
KNM-ER 1509A	M_3	L	19.8	15.9	245.5	27.3	19.8	13.8	13.4	10.6	P	b
KNM-ER 1801	M_3	L	17	14.6	198.5	23.4	27.5	18.4			EH	b
KNM-ER 1805C	M_3	R	15	12.2	154	24.7	25	19.2	16.2	15.3	EH	b
KNM-ER 1812C	M_3	L	14.5	12.5	140	22.9	19.3	21.1	17.9	14.3	H	b

KNM-ER 2601	M_3	R	13.5	10.4	120	18.8	22.5	21.7	15.8	16.7	EH	b
KNM-ER 3230	M_3	R	21.3	16.9	282	16.1	23.6	15.2	14.5	14.5	P	b
KNM-ER 3230	M_3	L	20.5	16.5	265						P	b
KNM-ER 3953	M_3	R	15.4	12.5							P	b
KNM-ER 5877	M_3	R	25.5	20							P	b
KNM-ER 15930	M_3	L	18.2	15							P	b
KNM-ER 15940	M_3	R	18.5	15.9							P	b
KNM-ER 15940	M_3	L	18	15.5							P	b
KNM-ER 15950	M_3	L	20	17							P	b
KNM-WT 17396	M_3	L	19	17							P	b
KNM-BK 67	M_3	R	12.8	11.2	109.5	29.2	22.4	21	10.5	16.9	H	b
KNM-BK 67	M_3	L	12.9	11.4	117.5	26.8	24.7	21.3	7.7	20.4	H	b
OH 4	M_3	L	15.4	13	161.5	24.1	22	17.3	13.3	13.3	EH	b
OH 13	M_3	R	14.8	12.4	145.5	23	21.6	17.2	16.8	11.3	EH	b
OH 13	M_3	L	14.8	12.3	144	21.2	24.3	16	17.4	13.2	EH	b
OH 16	M_3	R	15.9	14.4	182	28.3	24.7	16.5	12.4	15.1	EH	b
OH 16	M_3	L	15.9	14.3	183.5	27.8	24	18	11.7	13.4	EH	b
OH 27	M_3	R	15.4	13.3	159.5	25.4	19.7	15.7	12.2	11.9	EH	b
OMO L2-89	M_3	L	13.7	11.5							A	b
OMO L7A-125	M_3	R	18.2	14.8							P	b
OMO L338x-39	M_3	L	19.4	15.1							P	b
OMO L398-630	M_3	R	17.7	14.7							P	b
OMO L628-2	M_3	L	19	17.8							P	b
OMO L628-3	M_3	L	18.7	16.2							P	b
OMO 33-9	M_3	R	19.3	15.1							P	b
OMO 75-14a	M_3	L	15.1	14.1							P	b
OMO 136-1	M_3	L	17.9	15.6							P	b

OMO 136-2	M_3	L	16.7	14.6							P	b
OMO F22-1b	M_3	R	20.2	18							P	b
OMO F203-1	M_3	R	17.2	15.9							P	b
Peninj	M_3	R	18.8	15.7	247.5	21	22.2	17	14.1	19.4	P	b
Peninj	M_3	L	18.2	16.1	249.5	20.2	21.2	15.6	15	14.4	P	b
MLD 4	M_3	L	0	14.2	170.5			18.5		13.8	A	b
MLD 18	M_3	R	14.2	13.9	162	27.5		16.7		12.3	A	b
MLD 19	M_3	L	15.1	13.6	164.5	23.7	24.3	16.7			A	b
TM 1518	M_3	R	16.8	15	206	22.8	17.2	18.9	17.5	12.1	A	b
TM 1519	M_3	R	15.7	14	195						A	b
TM 1520	M_3	L	16.9	14.1	189.5	23.7	20.1	19.5	14	15	A	b
Sts 7	M_3	L	16.4	14.4							A	b
Sts 52b	M_3	R	13.7	12.8							A	b
Sts 52b	M_3	L	13.7	13							A	b
Sts 55b	M_3	L	15.5	13.7	171	24.3	21.6	20.8	9.4	20.2	A	b
Stw /H 14	M_3	R	17.7	14.7	204	22.1	21.1	19.6	12.5	8.6	A	b
TM 1517	M_3	R	16.4	14.3	191.5	22.7	22.7	18	18.3	11.5	P	b
TM 1600	M_3	L	16.1	14.9	188.5						P	b
SK 6	M_3	R	18.4	16.2	228.5	22.8	23.6	18.2	16.8	18.8	P	b
SK 6	M_3	L	18.7	15.5	225.5	20.4	23.3	18.2	16.4	22.8	P	b
SK 12	M_3	L	17.3	15.3	218.5	23.6		16.9			P	b
SK 23	M_3	R	17.5	14.4	192.5	24.2	21.6	22.6	14.5	17.4	P	b
SK 23	M_3	L	16.8	13.1	176	20.5	24.4	27.6	13.9	13.6	P	b
SK 34	M_3	R	18.2	17	242	23.3	20.9	14.5	16.7	12.4	P	b
SK 34	M_3	L	18.1	16	235	20.4	26.2	14.9	15.1		P	b
SK 75	M_3	R	17.5	15	187	21.1	28.6	21.7	11.8	16.3	P	b
SK 81	M_3	L	17.4	14.8	207						P	b
SK 840	M_3	L	16.4	12.9	160	26.6	21.9	15.9	17.2	17.8	P	b
SK 841b	M_3	L	15.9	13.8	166	26.8	23.5	15.4	12.3	22	P	b
SK 843	M_3	L	17.5	15.1	194	21.6	25.8	20.9	12.1	19.3	P	b
SK 844	M_3	L	16	14	186.5	23.6	24.7	18.2	11	22.3	P	b
SK 858	M_3	R	17.5	0	178.5						P	b
SK 880	M_3	L	17.9	14.5	199.5	23.8	20.3	17.5	9.3	10.5	P	b
SK 885	M_3	L	15.5	14	166.5						P	b
SK 1586	M_3	R	16.3	15.1	196	23.7	21.7	18.6			P	b
KNM-ER 64060	M_3	L	14.8	13.3		24.5	22.9	19.8	18.1	17.9	EH	c
UR 501	M_3					21.7	23.4	20.9	16.2	18	EH	c
SKX 257/258	M_3					22.6	21.4	20.8	18.8	16.4	EH	c

Stw 151	M_3				21	25.5	20.1	16.3	17.2	EH	c
KNM-ER 5431	M_3	R	16.8	15.7	22.6	22.1	21.2	16.8	17.3	EH	c
KNM-ER 64060	M_3	L	15.8	13.9	26.2	19.9	18.4	21.4	14	EH	c
LD 350-1	M_3				26	20.4	23.2	13.4	17	EH	c
UR 501	M_3				20.8	20.3	21.4	18.1	19.5	EH	c
KNM-ER 64060	M_3	L	14.5	13.2	28.6	29.5	15	15.7	11.3	EH	c
KNM-BK 8518	M_3				25	25.3	16	19.2	14.5	EH	c
LD 350-1	M_3				25.2	18.9	23.4	16.7	16.1	EH	c
Stw 80	M_3				23.1	25.3	13.5	19.3	18.9	EH	c

SOM Table S2

List of the specimens used in analysis of 2D enamel thickness. Comparative data from Skinner et al. (2015). EA = Enamel area; DA = Dentine area; EDJ L = Enamel-dentine junction length; BCD = Bi-cervical diameter; AET = Average enamel thickness; RET = Relative enamel thickness

Accession	Genus	Side	Tooth	EA (mm^2)	DA (mm^2)	EDJ L (mm)	BCD (mm)	AET (mm)	RET
AL145-35	*Australopithecus*	L	M_1	26.17	46.68	20.85	11.53	1.26	18.37
AL333w-1a	*Australopithecus*	L	M_1	24.28	39.34	18.78	11.21	1.29	20.61
AL128-23	*Australopithecus*	R	M_2	20.66	29.68	16.37	11.18	1.26	23.17
AL145-35	*Australopithecus*	L	M_2	29.81	46.48	20.12	12.09	1.48	21.73
AL241-14	*Australopithecus*	L	M_2	29.35	33.35	17.87	12.56	1.64	28.44
AL333w-1a	*Australopithecus*	L	M_2	27.65	35.39	17.93	11.14	1.54	25.92
AL400-1a	*Australopithecus*	R	M_3	29.14	38.8	18.85	10.63	1.55	24.82
AL333w-32	*Australopithecus*	R	M_3	28.37	39.9	18.65	13.03	1.52	24.08
STW421B	*Australopithecus*	L	M_1	30.7	58.83	23.72	12.34	1.29	16.87
Taung1	*Australopithecus*	L	M_1	28.32	42.9	21.94	11.71	1.29	19.71
STW327	*Australopithecus*	L	M_1	29.63	49.77	20.8	11.55	1.42	20.19
STW151	*Australopithecus*	R	M_1	28.87	32.41	19.2	9.8	1.5	26.41
STW106	*Australopithecus*	R	M_1	20.35	36	18.67	10.56	1.09	18.17
STW123a	*Australopithecus*	R	M_1	31.75	37.45	18.96	10.86	1.67	27.36
STW309a	*Australopithecus*	R	M_1	32.56	53.09	23.77	12.04	1.37	18.8
STW246	*Australopithecus*	L	M_1	29.62	46.15	21.22	10.77	1.4	20.55
STS24	*Australopithecus*	R	M_1	29.11	34.07	18.99	9.81	1.53	26.26
STW3	*Australopithecus*	L	M_2	40.98	46.55	21.43	12.89	1.91	28.03
STW412B	*Australopithecus*	L	M_2	25.31	42.86	20.52	11.83	1.23	18.84
STW327	*Australopithecus*	L	M_2	43.22	61.57	23.12	13.96	1.87	23.83
MLD2	*Australopithecus*	R	M_2	36.84	52.71	22.7	14.43	1.62	22.35
STW498c	*Australopithecus*	L	M_2	37.64	76.41	26.4	14.69	1.43	16.31
STW404	*Australopithecus*	R	M_2	33	44.89	19.6	11.78	1.68	25.13
STW61	*Australopithecus*	R	M_2	35.12	43.53	21.23	13.31	1.65	25.08
STW555	*Australopithecus*	L	M_2	31.33	50.19	23.53	11.18	1.33	18.8
STW109	*Australopithecus*	R	M_2	38.61	51.7	22.41	14.89	1.72	23.96
STW537(269)	*Australopithecus*	R	M_2	41.75	53.19	23.24	14.03	1.8	24.63
STW308	*Australopithecus*	R	M_2	40.9	50.42	22.11	13.28	1.85	26.05
STW133	*Australopithecus*	L	M_2	42.87	61.5	22.94	13.2	1.87	23.83
STW213	*Australopithecus*	L	M_2	33.92	44.63	21.39	11.78	1.59	23.74
STW529(532)	*Australopithecus*	L	M_3	42.55	47.54	21.48	12.75	1.98	28.73
STW 560B	*Australopithecus*	L	M_3	38.78	59.64	23.1	14.14	1.68	21.74
STW498c	*Australopithecus*	L	M_3	46.64	69.26	26.79	14.75	1.74	20.92
STW384	*Australopithecus*	R	M_3	42.95	72.46	24.98	15.41	1.72	20.2
STW14	*Australopithecus*	R	M_3	43.16	56.74	22.45	12.84	1.92	25.52
STW404	*Australopithecus*	R	M_3	39.4	51.7	21.27	11.97	1.85	25.76
STW109	*Australopithecus*	R	M_3	42.98	51.03	22.21	14.83	1.94	27.09
STW520	*Australopithecus*	R	M_3	31.33	48.53	22.25	12.65	1.41	20.22

STW586	*Australopithecus*	L	M_3	37.73	41.5	20.44	11.59	1.85	28.66
STW280(278)	*Australopithecus*	R	M_3	41.65	60.69	25.1	15.28	1.66	21.3
STW537	*Australopithecus*	R	M_3	44.73	62.91	24.8	14.47	1.8	22.74
KNM-ER 820	*Homo*	R	M_1	23.06	36.28	19.55	10.28	1.18	19.59
KNM-BK 67	*Homo*	R	M_2	25.75	30.51	18.55	10.25	1.39	25.13
KNM-ER 992A	*Homo*	R	M_2	24.56	33.35	18.76	11.61	1.31	22.67
KNM-ER 1507	*Homo*	L	M_2	29.98	38.25	19.4	11.72	1.55	24.99
KNM-BK 67	*Homo*	R	M_3	26.41	32.48	17.89	10.1	1.48	25.89
KNM-ER 992A	*Homo*	R	M_3	23.89	38.45	19.1	11.39	1.25	20.17
DNH 67	*Homo*	R	M_1	33.43	33.04	18.08	9.87	1.85	32.18
KNM-ER 1802	*Homo*	R	M_1	33.65	36.51	20.2	11.32	1.67	27.57
KNM-ER 1802	*Homo*	R	M_2	34.85	37.05	20.07	12.52	1.74	28.53
KNM-ER 1506A	*Homo*	R	M_2	30.88	41.12	21.31	12.24	1.45	22.6
KNM-ER 15930[a]	*Paranthropus*	L	M_1	31.23	38.22	18.93	11.19	1.65	26.69
KMN-ER 1820	*Paranthropus*	L	M_1	51.24	53.53	24.37	12.93	2.1	28.74
L427-7	*Paranthropus*	L	M_2	51.38	46.59	20.54	12.81	2.5	36.65
Omo47-1973-1500	*Paranthropus*	R	M_2	36.05	46.45	21.31	13.72	1.69	24.82
KNM-ER 3230	*Paranthropus*	L	M_2	65	72.45	25.89	16.8	2.51	29.5
KNM-ER 15930[a]	*Paranthropus*	L	M_2	42.07	51.94	22.38	12.56	1.88	26.09
L628-3	*Paranthropus*	L	M_3	63.04	75.26	23.98	14.3	2.63	30.3
KNM-ER 3230	*Paranthropus*	R	M_3	59.65	54.59	21.93	15.19	2.72	36.81
KNM-ER 15930	*Paranthropus*	L	M_3	49.37	47.59	20.72	13	2.38	34.53
DNH60B	*Paranthropus*	R	M_1	31.62	31.62	18.61	10.8	1.7	30.22
SK3974	*Paranthropus*	R	M_1	39.92	41.17	18.99	10.39	2.1	32.76
SK6	*Paranthropus*	R	M_1	31.15	53.22	21.73	12.46	1.43	19.65
SK61	*Paranthropus*	R	M_1	44.23	57.72	23.94	12.8	1.85	24.32
SK62	*Paranthropus*	L	M_1	43.62	43.95	20.76	10.89	2.1	31.69
SK 63	*Paranthropus*	R	M_1	38.67	41.58	20.15	10.99	1.92	29.77
SK(826b)828	*Paranthropus*	L	M_1	40.79	55.35	24.27	12.01	1.68	22.59
DNH60C[b]	*Paranthropus*	R	M_2	38.93	32.92	17.98	11.77	2.17	37.74
SK6[b]	*Paranthropus*	L	M_2	49.42	54.13	21.655	14.17	2.28	31.02
SKW5	*Paranthropus*	L	M_2	43.46	49.06	20.56	12.4	2.11	30.18
SKX4446	*Paranthropus*	R	M_2	45.4	61.11	23.34	14.31	1.95	24.88
SK1587a	*Paranthropus*	L	M_2	36.03	37.86	18.34	10.81	1.96	31.93
SK25	*Paranthropus*	R	M_2	53.23	49.06	21.11	12.11	2.52	36
SK843.846a	*Paranthropus*	L	M_2	42.51	51	21.09	13.03	2.02	28.22
SK1	*Paranthropus*	L	M_2	45.2	58.01	23.13	13.44	1.95	25.66
SK6	*Paranthropus*	L	M_3	48.99	48.18	21.94	13.91	2.23	32.18
SK23	*Paranthropus*	L	M_3	42.52	51.97	22.4	12.71	1.9	26.33
SKW5	*Paranthropus*	R	M_3	45.34	49.44	20.46	12.49	2.22	31.51
SK843.846a	*Paranthropus*	L	M_3	45.7	53.76	22.22	11.4	2.06	28.06
SK75	*Paranthropus*	R	M_3	44.86	54.85	22.47	13.13	2	26.96
SK81	*Paranthropus*	L	M_3	42.28	54.77	21.93	12.64	1.93	26.04
SKX10643	*Paranthropus*	R	M_3	39.96	43.56	20.48	12.47	1.95	29.56
SKX5014	*Paranthropus*	R	M_3	38.94	57.27	22.64	14.06	1.72	22.73
TM1600	*Paranthropus*	L	M_3	38.7	49.56	21.41	13.75	1.81	25.67
SK851	*Paranthropus*	R	M_3	45.97	62.33	23.37	15.55	1.97	24.92

OH 92*	Uncertain	L	M_2	50.01	49.55	20.73	12.96	2.41	34.28
OH 30B*	Uncertain	L	M_1	50.1	54.67	22.59	10.85	2.22	29.99

[a] KNM-ER 15930 LM_1 incorrectly listed as LM_2 in Skinner et al. (2015). Correct LM_2 measurements were added for this study

[b] Listed incorrectly as M_1 in Skinner et al. (2015)

SOM Table S3

List of specimens used for geometric morphometrics and natural logarithm of Centroid Size (CS) obtained from the Procrustes Superimposition of the landmark configurations.

Code	Tooth	Side	Site	OTU	Source	Log(CS)
A.L. 145-35	LM1	L	Hadar, Ethiopia	*A. afarensis*	NME	4.094
A.L. 266-1	LM1	L	Hadar, Ethiopia	*A. afarensis*	NME	4.035
A.L. 330-7	LM1	L	Hadar, Ethiopia	*A. afarensis*	NME	4.145
A.L. 330-5	LM1	R	Hadar, Ethiopia	*A. afarensis*	NME	4.031
A.L. 333w-1	LM1	L	Hadar, Ethiopia	*A. afarensis*	NME	4.096
A.L. 417-1°	LM1	L	Hadar, Ethiopia	*A. afarensis*	NME	4.035
Sts 24	LM1	R	Sterkfontein, South Africa	*A. africanus*	DNMNH	4.012
Sts 52b	LM1	R	Sterkfontein, South Africa	*A. africanus*	DNMNH	4.079
StW 106	LM1	R	Sterkfontein, South Africa	*A. africanus*	Wits	4.042
StW 123°	LM1	R	Sterkfontein, South Africa	*A. africanus*	Wits	4.025
StW 145	LM1	R	Sterkfontein, South Africa	*A. africanus*	Wits	4.077
StW 309°	LM1	R	Sterkfontein, South Africa	*A. africanus*	Wits	4.191
StW 364	LM1	R	Sterkfontein, South Africa	*A. africanus*	Wits	4.092
StW 421°	LM1	R	Sterkfontein, South Africa	*A. africanus*	Wits	4.193
Taung	LM1	L	Taung, South Africa	*A. africanus*	Wits	4.101
KNM-ER 806c	LM1	L	Koobi Fora, Kenya	*H. erectus*	NMK	4.117
KNM-ER 992	LM1	L	Koobi Fora, Kenya	*H. erectus*	NMK	4.041
KNM-ER 1502	LM1	R	Koobi Fora, Kenya	*H. habilis*	NMK	4.043
KNM-ER 1802	LM1	R	Koobi Fora, Kenya	*H. habilis*	NMK	4.190
OH 7	LM1	L	Olduvai Gorge, Tanzania	*H. habilis*	NMT	4.104
OH 13	LM1	R	Olduvai Gorge, Tanzania	*H. habilis*	NMT	4.056
OH 16	LM1	R	Olduvai Gorge, Tanzania	*H. habilis*	NMT	4.134
OH 22	LM1	R	Olduvai Gorge, Tanzania	*H. erectus*	NMT	4.071
OH 30	LM1	L	Olduvai Gorge, Tanzania	*P. boisei*	NMT	4.248
KNM-ER 1820	LM1	L	Koobi Fora, Kenya	*P. boisei*	NMK	4.241
KNM-ER 15930	LM1	L	Koobi Fora, Kenya	*P. boisei*	NMK	4.108
DNH 8	LM1	L	Drimolen, South Africa	*P. robustus*	Wits	4.204
DNH 46	LM1	R	Drimolen, South Africa	*P. robustus*	Wits	4.115
DNH 60b	LM1	R	Drimolen, South Africa	*P. robustus*	Wits	4.066
SK 6	LM1	L	Swartkrans, South Africa	*P. robustus*	DNMNH	4.222
SK 23	LM1	L	Swartkrans, South Africa	*P. robustus*	DNMNH	4.178
SK 25	LM1	L	Swartkrans, South Africa	*P. robustus*	DNMNH	4.114
SK 61	LM1	R	Swartkrans, South Africa	*P. robustus*	DNMNH	4.240
SK 62	LM1	L	Swartkrans, South Africa	*P. robustus*	DNMNH	4.133
SK 104	LM1	L	Swartkrans, South Africa	*P. robustus*	DNMNH	4.127
SK 826b(828)	LM1	L	Swartkrans, South Africa	*P. robustus*	DNMNH	4.220
SK 843	LM1	L	Swartkrans, South Africa	*P. robustus*	DNMNH	4.165
SK 1587°	LM1	L	Swartkrans, South Africa	*P. robustus*	DNMNH	4.114
SKW 5	LM1	R	Swartkrans, South Africa	*P. robustus*	DNMNH	4.110
SKX 4446	LM1	R	Swartkrans, South Africa	*P. robustus*	DNMNH	4.240
A.L. 128-23	LM2	R	Hadar, Ethiopia	*A. afarensis*	NME	4.025
A.L. 145-35	LM2	L	Hadar, Ethiopia	*A. afarensis*	NME	4.205

A.L. 188-1	LM2	R	Hadar, Ethiopia	*A. afarensis*	NME	4.220
A.L. 241-14	LM2	L	Hadar, Ethiopia	*A. afarensis*	NME	4.155
A.L. 266-1	LM2	R	Hadar, Ethiopia	*A. afarensis*	NME	4.104
A.L. 330-5	LM2	R	Hadar, Ethiopia	*A. afarensis*	NME	4.190
A.L. 333w-1	LM2	L	Hadar, Ethiopia	*A. afarensis*	NME	4.142
A.L. 417-1°	LM2	L	Hadar, Ethiopia	*A. afarensis*	NME	4.098
A.L. 440-1	LM2	R	Hadar, Ethiopia	*A. afarensis*	NME	4.185
MLD 2	LM2	R	Makapansgat, South Africa	*A. africanus*	Wits	4.282
Sts 52b	LM2	R	Sterkfontein, South Africa	*A. africanus*	DNMNH	4.126
StW 14	LM2	R	Sterkfontein, South Africa	*A. africanus*	Wits	4.242
StW 109	LM2	R	Sterkfontein, South Africa	*A. africanus*	Wits	4.267
StW 133	LM2	L	Sterkfontein, South Africa	*A. africanus*	Wits	4.245
StW 213	LM2	L	Sterkfontein, South Africa	*A. africanus*	Wits	4.147
StW 234	LM2	R	Sterkfontein, South Africa	*A. africanus*	Wits	4.133
StW 327	LM2	L	Sterkfontein, South Africa	*A. africanus*	Wits	4.292
StW 404	LM2	R	Sterkfontein, South Africa	*A. africanus*	Wits	4.144
StW 412b	LM2	L	Sterkfontein, South Africa	*A. africanus*	Wits	4.187
StW 491	LM2	L	Sterkfontein, South Africa	*A. africanus*	Wits	4.226
StW 498c	LM2	L	Sterkfontein, South Africa	*A. africanus*	Wits	4.323
StW 560E	LM2	R	Sterkfontein, South Africa	*A. africanus*	Wits	4.324
KNM-ER 806b	LM2	L	Koobi Fora, Kenya	*H. erectus*	NMK	4.156
KNM-ER 992	LM2	L	Koobi Fora, Kenya	*H. erectus*	NMK	4.083
KNM-ER 1802	LM2	R	Koobi Fora, Kenya	*H. habilis*	NMK	4.264
KNM-ER 1808g	LM2	R	Koobi Fora, Kenya	*H. erectus*	NMK	4.073
OH 7	LM2	L	Olduvai Gorge, Tanzania	*H. habilis*	NMT	4.171
OH 13	LM2	R	Olduvai Gorge, Tanzania	*H. habilis*	NMT	4.083
OH 16	LM2	R	Olduvai Gorge, Tanzania	*H. habilis*	NMT	4.187
OH 22	LM2	R	Olduvai Gorge, Tanzania	*H. erectus*	NMT	4.045
KNM-ER 25520	LM2	R	Koobi Fora, Kenya	*P. boisei*	NMK	4.458
L62-17	LM2	R	Omo, Ethiopia	*P. aethiopicus*	NME	4.228
L157-35	LM2	L	Omo, Ethiopia	*P. aethiopicus*	NME	4.409
Omo 47-1973-1500	LM2	R	Omo, Ethiopia	*P. boisei*	NME	4.264
F203-1	LM2	R	Omo, Ethiopia	*P. boisei*	NME	4.285
KNM-ER 15930	LM2	L	Koobi Fora, Kenya	*P. boisei*	NMK	4.226
SK 1	LM2	L	Swartkrans, South Africa	*P. robustus*	DNMNH	4.274
SK 6	LM2	R	Swartkrans, South Africa	*P. robustus*	DNMNH	4.291
SK 23	LM2	L	Swartkrans, South Africa	*P. robustus*	DNMNH	4.205
SK 25	LM2	R	Swartkrans, South Africa	*P. robustus*	DNMNH	4.213
SK 843	LM2	L	Swartkrans, South Africa	*P. robustus*	DNMNH	4.211
SK 1587b	LM2	R	Swartkrans, South Africa	*P. robustus*	DNMNH	4.142
SKW 5	LM2	L	Swartkrans, South Africa	*P. robustus*	DNMNH	4.196
SKX 4446	LM2	R	Swartkrans, South Africa	*P. robustus*	DNMNH	4.301
TM 1600	LM2	L	Kromdraai, South Africa	*P. robustus*	DNMNH	4.250
A.L. 188-1	LM3	R	Hadar, Ethiopia	*A. afarensis*	NME	4.249
A.L. 266-1	LM3	R	Hadar, Ethiopia	*A. afarensis*	NME	4.148
A.L. 288-1	LM3	R	Hadar, Ethiopia	*A. afarensis*	NME	4.122
Sts 52b	LM3	R	Sterkfontein, South Africa	*A. africanus*	DNMNH	4.096

StW 3	LM3	L	Sterkfontein, South Africa	*A. africanus*	Wits	4.208
StW 14	LM3	R	Sterkfontein, South Africa	*A. africanus*	Wits	4.301
StW 109	LM3	R	Sterkfontein, South Africa	*A. africanus*	Wits	4.272
StW 142(StW 312)	LM3	L	Sterkfontein, South Africa	*A. africanus*	Wits	4.236
StW 237	LM3	L	Sterkfontein, South Africa	*A. africanus*	Wits	4.331
StW 384	LM3	R	Sterkfontein, South Africa	*A. africanus*	Wits	4.379
StW 404	LM3	R	Sterkfontein, South Africa	*A. africanus*	Wits	4.170
StW 491	LM3	L	Sterkfontein, South Africa	*A. africanus*	Wits	4.237
StW 498c	LM3	L	Sterkfontein, South Africa	*A. africanus*	Wits	4.361
StW 520	LM3	R	Sterkfontein, South Africa	*A. africanus*	Wits	4.218
StW 529	LM3	L	Sterkfontein, South Africa	*A. africanus*	Wits	4.188
StW 537	LM3	L	Sterkfontein, South Africa	*A. africanus*	Wits	4.280
StW 560°	LM3	R	Sterkfontein, South Africa	*A. africanus*	Wits	4.275
TM 1520	LM3	L	Sterkfontein, South Africa	*A. africanus*	DNMNH	4.248
KNM-ER 806°	LM3	L	Koobi Fora, Kenya	*H. erectus*	NMK	4.137
KNM-ER 992	LM3	R	Koobi Fora, Kenya	*H. erectus*	NMK	4.050
KNM-ER 1812c	LM3	L	Koobi Fora, Kenya	*H. erectus*	NMK	4.101
OH 4	LM3	L	Olduvai Gorge, Tanzania	*H. habilis*	NMT	4.127
OH 13	LM3	L	Olduvai Gorge, Tanzania	*H. habilis*	NMT	4.118
OH 16	LM3	R	Olduvai Gorge, Tanzania	*H. habilis*	NMT	4.172
KNM-ER 15930	LM3	L	Koobi Fora, Kenya	*P. boisei*	NMK	4.286
KNM-ER 25520	LM3	R	Koobi Fora, Kenya	*P. boisei*	NMK	4.542
SK 6	LM3	R	Swartkrans, South Africa	*P. robustus*	DNMNH	4.327
SK 22	LM3	R	Swartkrans, South Africa	*P. robustus*	DNMNH	4.284
SK 23	LM3	L	Swartkrans, South Africa	*P. robustus*	DNMNH	4.161
SK 34	LM3	R	Swartkrans, South Africa	*P. robustus*	DNMNH	4.362
SK 75	LM3	R	Swartkrans, South Africa	*P. robustus*	DNMNH	4.272
SK 841b	LM3	L	Swartkrans, South Africa	*P. robustus*	DNMNH	4.191
SK 843	LM3	L	Swartkrans, South Africa	*P. robustus*	DNMNH	4.262
SKW 5	LM3	L	Swartkrans, South Africa	*P. robustus*	DNMNH	4.206
SKX 5002	LM3	L	Swartkrans, South Africa	*P. robustus*	DNMNH	4.281
SKX 5014	LM3	R	Swartkrans, South Africa	*P. robustus*	DNMNH	4.270
SKX 10642	LM3	L	Swartkrans, South Africa	*P. robustus*	DNMNH	4.213
SKX 10643	LM3	R	Swartkrans, South Africa	*P. robustus*	DNMNH	4.246
TM 1517b	LM3	R	Kromdraai, South Africa	*P. robustus*	DNMNH	4.209
TM 1600	LM3	L	Kromdraai, South Africa	*P. robustus*	DNMNH	4.250
OH 92	-	R	Olduvai Gorge, Tanzania	-	NMT	4.233
OH 30B	-	R	Olduvai Gorge, Tanzania	-	NMT	4.235

SOM Table S4
Scanning and reconstruction parameters used for OH 30B and OH 92 at the European Synchrotron Radiation Facility (ESRF), Grenoble (France).

Scans description	Complete scans
Samples	OH 30B, OH 92
Voxel size (µm)	4.26
Average detected energy (keV)	104
Optics	Tandem Hasselblad 100mm/150mm (x1.5)
Filter	0.65mm Mo
Propagation distance (mm)	6200
Sensor	PCO edge 4.2 CLHS
Scintillator	LuAG:Ce 200 µm
X-ray source	BM18 central 1.56T pole, 65mA 16 bunches
Scan geometry	Tetra-acquisition, 2 scans on 360 degrees, the central scan in half-acquisition, the second in annular geometry. Combination of the two scans brings a 4 times horizontal field of view. Vertical concatenation of z stages with 5mm of displacement for each stage.
Exposure time (ms)	100 ms (accumulation of 5x20ms)
Projections	8000 * 2 (2 scans per tetra-acquisition)
Time per scan	16 minutes * 2 per z stage, total of 5 z stages
Reconstruction	Lateral concatenation of the central and annular scans, single distance phase retrieval during tomographic reconstruction, ring artefacts correction, 16 bits conversion, binning 2-2

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