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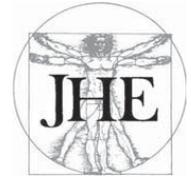Projet ARCHOR Archéologie des origines : émergence et évolution des premières techno-cultures View project

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First occurrence of early *Homo* in the Nachukui Formation (West Turkana, Kenya) at 2.3-2.4 Myr

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Abstract

Cognitive abilities and techno-economic behaviours of hominids in the time period between 2.6-2.3 Myr have become increasingly well-documented. This time period corresponds to the oldest evidence for stone tools at Gona (Kada Gona, West Gona, EG 10-12, OGS 6-7), Hadar (AL 666), lower Omo valley (Ftji1, 2 & 5, Omo 57, Omo 123) in Ethiopia, and West Turkana (Lokalalei sites -LA1 & LA2C-) in Kenya. In 2002 a new palaeoanthropological site (LA1α), 100 meters south of the LA1 archaeological site, produced a first right lower molar of a juvenile hominid (KNM-WT 42718). The relative small size of the crown, its marked MD elongation and BL reduction, the relative position of the cusps, the lack of a C6 and the mild expression of a protostylid, reinforced by metrical analyses, demonstrate the distinctiveness of this tooth compared with *Australopithecus afarensis*, *A. anamensis*, *A. africanus* and *Paranthropus boisei*, and its similarity to early *Homo*. The LA1α site lies 2.2 m above the Ekalalei Tuff which is slightly younger than Tuff F dated to 2.34 ± 0.04 Myr. This juvenile specimen represents the oldest occurrence of the genus *Homo* in West Turkana.
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Introduction

Intensive archaeological fieldwork has been conducted in the Nachukui Formation since 1987 by the West Turkana Archaeological Project (Kibunjia et al., 1992; Roche and Kibunjia, 1994). This led to the discovery, and excavation of more than 30 archaeological sites, ranging in age from 2.4 to 0.7 Myr (Roche et al., 2003; Brugal et al., 2003; Prat et al., 2003). In particular, two 2.3-2.4 Myr old localities in the Lokalalei site complex, stratigraphically situated into the base of the Kalochoro Member, have been extensively excavated: Lokalalei 1 (GaJh5) in 1991 (Kibunjia, 1994, 1998) and Lokalalei 2C (GaJh6C) in 1997 (Roche et al., 1999). Lokalalei 1 is a low density archaeological site, with lithic material consisting of cores, whole and broken flakes, and a few unflaked cobbles. The cores show opportunistic and low productivity reduction sequences, which technologically contrast with the organized and high productivity debitage sequences observed at the nearby site of Lokalalei 2C (Delagnes and Roche, 2005). The faunal assemblage in Lokalalei 1 complex site (n = e.500) is dominated by bovids (Antilopini, Aepycerotini, Alcelaphini, Reduncini), equids, suids and cercopithecids (*Theropithecus brumpti* and Colobinae sp.) in decreasing order. The faunal composition points to diverse habitats within a floodplain (Brugal et al., 2003). In June 2002, a new palaeontological site, Lokalalei 1α, was identified in this area at 100 meters south of Lokalalei 1. The discovery of a *Cercopithecoides williamsi* femur (JPB) led to the extension of the sieved area and to the discovery of a first right lower molar of a hominid (KNM-WT 42718) into a yellow beige clayey siltstone.

Lithostratigraphy, dating and environmental context

Two lithostratigraphic sections, LOKS1 and LOKS2 (Fig. 1), have been established close to the Lokalalei 1 and Lokalalei 1α sites, on the left bank of the Lokalalei laga. These two sections belong to the base of the Kalochoro Member (Harris et al., 1988). The Lokalalei 1α site is located within a yellow-beige clayey siltstone near the top of the LOKS1 section (Fig. 1). This section is 7.5 m thick, and mostly consists of two fine-grained lithofacies, a chocolate brown fine claystone that forms beds of 0.70 to 2 m thick at the base of the section, and a beige massive clayey siltstone forming beds of 0.40 to 2 m thick. Coarse-grained lithofacies are only represented at the base of the section by a 0.70 m thick beige-brown clayey siltstone containing abundant granules and gravels, and numerous gastropod shells (*Melanoides*), and by a 5 cm thick bed of microconglomerate with subangular to rounded volcanic gravels and pebbles, situated in the middle part of the section. Two volcanic ash layers (designed as "lower and upper tuffs") are observed in the LOKS1 section. The "lower tuff" consists in a set of two 0.25-0.30 m thick beds of blue-grey tuff both with erosive bases, separated by a 0.10 m thick layer of beige laminated claystone. Planar crossbeds, horizontal laminations and erosive bases indicate a shallow stream depositional environment marked by low to medium energy flood stages. The "upper tuff" is located 1.30 m above the "lower tuff". It is a 0.20 m thick light grey, massive and powdery tuff that pinches out rapidly toward the north.

Section LOKS2 (Fig. 1) is located 100 m to the west-southwest of LOKS1. It is 19 m thick and includes the Lokalalei 1 archaeological site. The main fine-grained lithofacies in this section consists of beige-grey to beige-green clayey siltstone or silty claystone forming beds up to 1.60 m thick. The second dominant fine-grained lithofacies is a chocolate brown claystone containing locally sparse granules. Coarse clastic deposits are more common in this section, and are represented by brown, massive gravely claystone containing small (2-3 cm) subangular to rounded volcanic pebbles, beige-grey or beige-green massive fine sandstones forming beds 5-cm up to 2 m thick, and beige to beige-green siltstones with locally small pebbles and angular volcanic rocks fragments. A 0.30 m thick microconglomeratic bed with subangular volcanic gravels and pebbles occurs in the upper part of the section. The top of the section is marked by a 0.10 m thick gastropod-rich sandstone with subangular gravels and small pebbles, overlying a 5 cm thick layer of fine sandstone
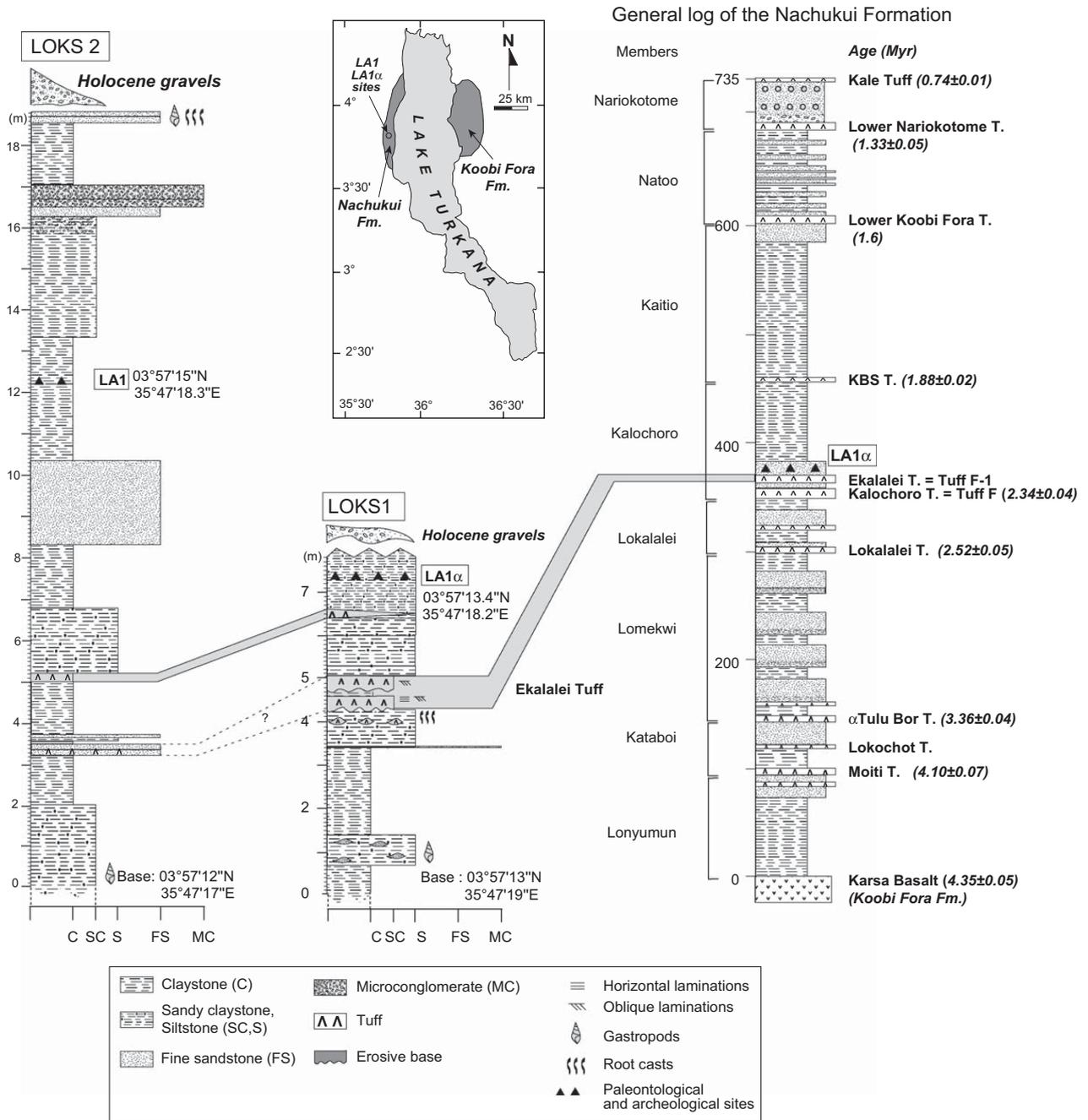
Fig. 1. Lithostratigraphic and chronological correlations of the LA1 and LA1α archaeological and paleontological sites within the Nachukui Formation: Map of the Lake Turkana basin, sections LOKS1 et LOKS2, and general log of the Nachukui Formation modified after McDougall, 1985 and Harris et al., 1988.

showing trace fossils in the form of network of open tubes, possibly gastropod tracks. A 0.20 m thick tuff layer formed by several 1-3 cm thick beds of blue-grey tuff alternating with cm-thick silty claystone layers has been identified in this section. A beige tuffaceous fine-grained sand layer 0.20 m thick has also been identified 1.50 m below the blue-grey tuff.

In order to establish the stratigraphical position of the 3 tuff layers identified in the LOKS1 and

LOKS2 sections, the geochemical composition of glass shards (major elements) has been analysed using a Cameca SX50 electron microprobe at Ifremer, Centre de Brest. Analyses have been conducted on polished thin sections of four samples of LOKS1 "lower tuff", one sample of LOKS1 "upper tuff", and one sample of LOKS2 tuff, on a minimum of 20 individual shards for each one. These analyses were obtained at 15 kV accelerating voltage with a sample current of 12 nA.

The average composition of the glass shards in LOKS1 "lower tuff" is equivalent to the average composition of the Ekalalei Tuff identified by Harris et al. (1988) and Roche et al. (1999) in the Lokalalei complex site (Table 1).

The analyses conducted on the two other samples (LOKS1 "upper tuff" and LOKS2 tuff), show that their range compositions are similar, and distinct from the LOKS1 "lower tuff" (Fig. 2). Therefore the LOKS1 "upper tuff" and LOKS2 tuff are stratigraphically equivalent (Fig. 1).

The sites Lokalalei 1α and Lokalalei 1 are stratigraphically situated 0.90 m and 7.10 m above the "upper tuff" layer in the LOKS1 and LOKS2 sections, respectively. In the LOKS1 section, the "upper tuff" is located 1.30 m above the "lower tuff" = Ekalalei Tuff, which correlates with Tuff F-1 of the Shungura Formation that lies 4 meters above the 2.34 ± 0.04 Myr old Tuff F of the
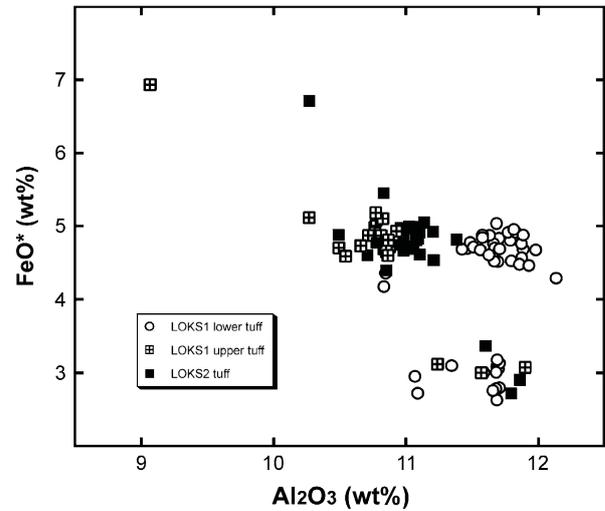

Fig. 2. FeO total versus Al_2O_3 for glass shards contained in LOKS1 and LOKS2 tuffs. The concentrations have been recalculated to 100% on an H_2O-free basis.

Shungura Formation (de Heinzelin and Haesaerts, 1983, p.89; Harris et al., 1988; Feibel et al., 1989, p. 607; Brown, 1994, p.300). The Ekalalei Tuff is thus slightly younger than 2.34 ± 0.04 Myr. The tuffaceous sand layer situated 1.50 m below the tuff in the LOKS2 section could be interpreted as a lateral variation of facies of the Ekalalei Tuff (Fig. 1).

All the sediments surrounding Lokalalei 1 and Lokalalei 1α sites are fine-grained, with a very minor contribution of volcanic clasts. They are interpreted as low to medium energy fluvial environment where claystone facies represents floodplain deposits. Sedimentation rates that characterize this type of depositional environment are generally high, from a few tens cm up to 1 m for 1000 years (Smith and Smith, 1980; Brown and Gathogo, 2002). The duration of accumulation of the 6.2 m thick fine sandstone and claystone deposits that separate the sites Lokalalei 1α and Lokalalei 1 can be estimated at a time scale of 10^3 to 10^4 years. Considering the measurement error (0.04 to 0.5 Myr) classically adopted for the fission track and/or K/Ar, $^{40}Ar/^{39}Ar$ ages obtained on various tuffs in Eastern Africa (Brown et al., 1985; Harris et al., 1988; Feibel et al., 1989; Haileab and Brown, 1994), the two sites can be considered as chronologically close. In any case Lokalalei 1α has an age very close to 2.34 ± 0.04 Myr (possibly

Table 1

Average compositional data (major elements) of the LOKS1 "lower tuff" and the Ekalalei Tuff (calculated from Harris et al., 1988, table 1, page 7). In order to compare our microprobe analyses with data from Harris et al., 1988, the following conversions have been used: TiO_2 (%) $\times$ 5994 = Ti (ppm), $Fe_2O_3 \times 0.8998$ = FeO

	LOKS1 « lower tuff »	Ekalalei Tuff (Harris et al., 1988)
SiO_2	72.51	
TiO_2	0.26	0.28
Al_2O_3	10.46	
FeO	3.80	4.15
MnO	0.16	0.22
MgO	0.09	
CaO	0.18	0.21
Na_2O	1.00	
K_2O	1.41	1.5
P_2O_5	0.02	
Total	89.88	

10 000 years less, according to the sedimentation rate estimations).

The LA1α fauna includes fishes (scale of *Polypterus*, Claridae), reptiles (Crocodiles -*Crocodylus* and *Euthecodon*-, Geochelonids), unidentified suids (a low-crowned form) and hippopotamids. The latter is represented by teeth fragments and a complete third metatarsal similar in size to *Hippopotamus amphibius,* but with a different proximal morphology (globally more quadrangular than the triangular shape observed in the extant species). The bovids are common with at least three taxa: *Kobus* sp., a Tragelaphini and a small size antelope (Antilopini or Aepycerotini). Several elements belong to a large size monkey: left femur (without the mid-shaft but with the proximal and distal ends), left calcaneum, first upper worn incisor, proximal end of a left first metatarsal, distal part of first phalanx and several molar fragments. These remains were preliminary attributed to the genus *Theropithecus*, already noted at the archaeological site Lokalalei 1 (Brugal et al., 2003), but thanks to N.G. Jablonski observations, they are now assigned to the species *Cercopithecoides williamsi*. This species is for the first time recorded in the faunal list of West Turkana archaeological and paleontological sites where numerous cercopithecidae remains are not identified yet (Harris et al., 1988). The similitude in size between the *Cercopithecoides williamsi* and *Theropithecus brumpti* postcranial elements have probably led to taxonomic confusion between these two species (Jablonski, pers. comm.).

The taphonomic conditions (bones and teeth high fragmentation, small size of the material fragments, strong weathering) indicate a biased primary deposit of a natural background fauna (in relation with sedimentary environment), later deteriorated by natural erosive process. However, the presence of several elements of *Cercopithecoides* points out relative low disturbance for some individuals.

Hominid description and comparison

KNM-WT 42718 is a well-preserved permanent right lower first molar. The crown formation is complete, but the roots are not yet developed (Fig. 3). No traces of occlusal wear are present, corresponding to grade 1 of Molnar's classification (1971).

Description

The occlusal outline of the crown is regular, long, narrow and rectangular without any tapering distally. All five principal cusps are present and well-developed. The lingual face of the crown is vertical with a moderately developed lingual groove. The buccal face is vertical with a moderate convex incurvature on the upper part, and the buccal grooves are well-developed. The mesial and distal faces are vertical. The mesiodistal crown diameter is 13.7 mm and the buccolingual diameter (maximum) is 11.6 mm (BL trigonid = 11.3 mm and BL talonid = 11.6 mm).

The occlusal surface of the crown is extensively crenulated by secondary fissures that form enamel ridges and cuspules. There is no complex confluence of the cusps but rather high complex enamel crenulations due to the development of the essential lobes and their secondary ridges. The main fissures present an Y-pattern. The metaconid contacts the hypoconid. The metaconid is more distally extended than the protoconid. The metaconid is the largest cusp, closely followed by the protoconid. The entoconid and the hypoconid are nearly equivalent in size. The hypoconulid is the smallest cusp, but is well-developed. This cusp is distobuccally positioned.

The anterior fovea is linear and well-developed (grade 3 according the Arizona State University Dental Anthropology System or ASUDAS standard, Turner et al., 1991, scale 0 to 4). However, it does not form a double anterior fovea as defined by Grine (1984, p. 51) i.e. a "subdivision of the anterior fovea into two fossids, affected by a transverse ridge (the accessory trigonid crest)". The anterior fovea is bounded mesially by the mesial marginal ridge where accessory mesial tubercles are developed, and distally by the distal trigonid crest (defined as an enamel ridge connecting the protoconid and the metaconid, Grine, 1984; Scott and Turner II, 1997). This crest is not strongly expressed and does not form a connecting bridge
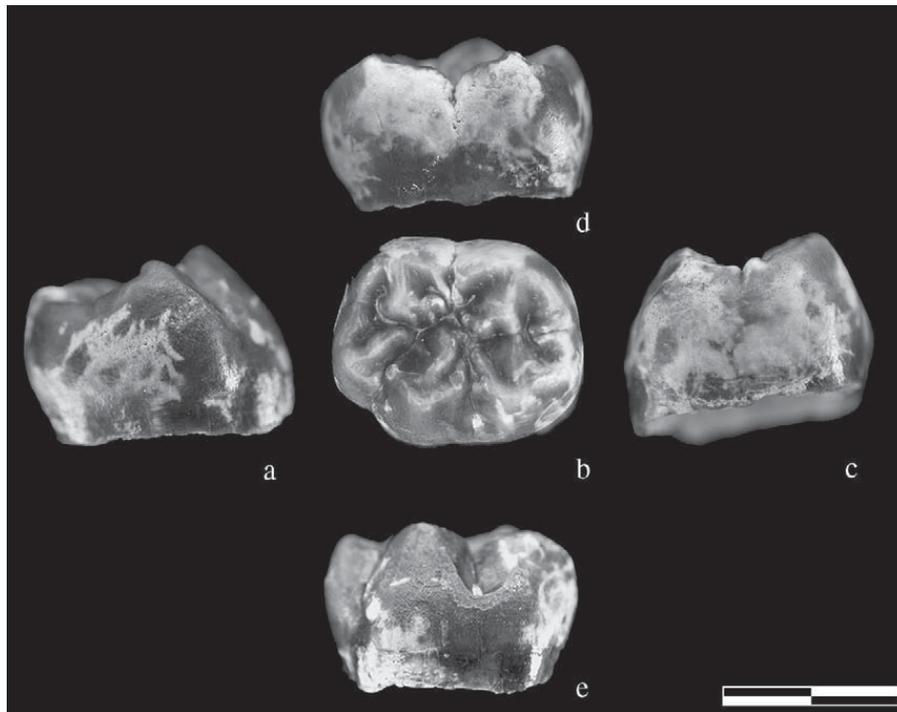
Fig. 3. KNM-WT 42718, (a) distal, (b) occlusal, (c) mesial, (d) lingual, (e) buccal views. Scale bar is 1 cm.

between the cusps (grade 1, according to ASU-DAS standard, Turner et al., 1991, scale 0 to 2). The distal trigonid crest is interrupted by a deep mesial longitudinal fissure which has a median position. There is a linear deep fovea posterior, bounded by a well-developed distal marginal ridge.

There is no evidence of a *tuberculum sextum* (C6, cusp located between the hypoconulid and entoconid, (grade 0 ASUDAS, scale 0 to 5)) and *tuberculum intermedium sensu stricto* (C7, super-numerary cusp expressed between the metaconid and entoconid, grade 0 ASUDAS, scale 0 to 4).

On the buccal surface of the protoconid there is a small enamel ridge that corresponds to a mild expression of the protostylid complex (grade 3 ASUDAS, scale 0 to 7; type 3 -Hlusko, 2004-buccal groove ends in a V-shaped cleft expanding onto both cusps).

Metrical and morphological comparisons

The comparative sample comprises of first and second lower molars of early *Homo*, *Australopithecus africanus*, *A. afarensis*, *A. anamensis*, and *Paranthropus boisei* (Table 2). Specimens were included if they exhibited only minimal to moderate wear (cusp tips only moderately worn and visible fissure pattern). The metric data are from the first author (SP), Robinson (1956), Johanson et al. (1981), Grine (1989), Wood (1991), Moggi-Cecchi et al. (1998), Keyser et al. (2000) and Ward et al. (2001).

Metrical comparisons

For metrical comparisons we use bivariate analysis and posterior classification probabilities. The mean, standard deviation of the mesio-distal and overall bucco-lingual diameters are given in Table 3 (first lower molar) and Table 4 (second lower molar).

The mesio-distal and bucco-lingual diameters of KNM-WT 42718 fall outside the range of distribution of the second lower molar measurements of early *Homo*, *Australopithecus africanus*, *Australopithecus afarensis* and *Paranthropus boisei* (Table 4).

Table 2
Comparative sample, first lower molar

Early *Homo* (n = 16)	DHN35, SKX 257, KNM-ER 806, ER 820, ER 992, ER 1506, ER 1507, ER 1802, ER 3734, WT 15000, OH 7, OH 13, OH 16, OH 22, UR 501, Omo 75s.1969.15
Australopithecus africanus (n = 10)	Sts 9, Sts 18, Sts 24, Stw 80*, Stw 151*, Stw 384, Stw 404, Stw 498, MLD 2, Taung
Australopithecus afarensis (n = 10)	AL 145-35, AL 266-1, AL 288-1, AL 333-74, AL 333w1, AL 333w12, AL 333w60, AL 400-1, LH 2, LH 4
Australopithecus anamensis (n = 4)	KNM-KP 29286, KP 30500, KP 31712, KP 30201
Paranthropus boisei (n = 6)	KNM-ER 1509, ER 1816, ER 1820, ER 3230, ER 3890, Peninj

* The allocation to *A. africanus* has been discussed for Stw 80 and Stw 151. The former specimen has been put in *Homo* sp. in the Witwatersrand Catalogue Hominids when it was discovered. Stw 151 presents some affinities with early *Homo* (..), condition more derived towards early *Homo* than that of Taung (Moggi-Cecchi et al., 1998, p.458) and has been put in early *Homo* sample by Braga and Thackeray (2003).

The measurements (Table 3) and the bivariate plot of MD *vs* BL diameters (Fig. 4) clearly shows the distinctive position of KNM-WT 42718 when compared to the first molar measurements of *A. africanus*, *A. afarensis*, *A. anamensis* and *P. boisei* specimens, and indicates the existence of marked MD elongation and BL narrowing within the variation range of early *Homo* specimens (95% ellipse range coefficient, black line). We can observe an overlap between the variation range of early *Homo* and *A. africanus* if the specimens Sts 24, Stw 80 and Stw 151 are included in the *A. africanus* sample (grey line). However the position of KNM-WT 42718 is out of the variation range of *A. africanus* when Sts 24, Stw 80 and Stw 151 are not included in this sample (dash line). These analyses confirm the conclusion of Tobias (1991, p. 669) that "in these outline features the *H. habilis* M1's resemble those of *A. africanus transvalensis*, though the latter group are bucco-lingually broader for their MD length". The results also confirm the observation of Sperber (1973) that the Sts 24 shape index is of the same order as the habiline index. Furthermore, they corroborate the metrical affinities of Stw 151 with early *Homo*, as previously discussed by Moggi-Cecchi et al. (1998), and stress the difficulty to accommodate some specimens from Sterkfontein member 4 to *A. africanus*

Table 3
Metrical comparison, giving the range, mean (m), and standard deviation (sd) of the mesio-distal (MD) and bucco-lingual (BL) diameters of first lower molar

	MD	BL
KNM-WT 42718	13.7	11.6
early *Homo* (n = 16) *Homo habilis*, *Homo rudolfensis*, *Homo ergaster* and *Homo* sp.	12.2-14.8; m = 13.67; sd = 0.75	10.6-13; m = 11.99; sd = 0.87
Australopithecus africanus (n = 10)	12.6-15.1; m = 13.91; sd = 0.87	11.3-14.7; m = 12.98; sd = 1.23
Australopithecus africanus (n = 7), without Sts 24, Stw 80 and Stw 151	12.6-15.1; m = 14.15; sd = 0.89	12.4-14.7; m = 13.6; sd = 0.79
Australopithecus afarensis (n = 10)	12.1-13.4; m = 12.85; sd = 0.36	11.9-13.6; m = 12.57; sd = 0.54
Australopithecus anamensis (n = 4)	11.5-13.3; m = 12.17; sd = 0.83	10.2-13.5; m = 11.5; sd = 1.5
Paranthropus boisei (n = 6)	15.3-16.6; m = 15.88; sd = 0.57	13.7-15.5; m = 14.4; sd = 0.61

Table 4
Metrical comparison, giving the range, mean (m), and standard deviation (sd) of the mesio-distal (MD) and bucco-lingual (BL) diameters of second lower molar

	MD	BL
KNM-WT 42718	13.7	11.6
early *Homo* (n = 20)	12.7-16.9; m = 14.65; sd = 1.23	11.7-15.4; m = 13.11; sd = 0.9,
A. africanus (n = 12)	13-16.7; m = 14.78; sd = 1.3	13.1-17.4; m = 14.57; sd = 1.39
A. afarensis (n = 12)	10.5-15.3; m = 13.47; sd = 1.35	12-14.7; m = 13.31; sd = 1.1
A. anamensis (n = 5)	13-15.8; m = 13.94; sd = 1.2	12.4-15.1; m = 13.7; sd = 1.07
P. boisei (n = 13)	15.4-20.2; m = 17.91; sd = 1.64	14.2-19; m = 16.59, sd = 1.53

(Clarke, 1988, 1994; Kimbel and White, 1988; Calcagno et al., 1997; Moggi-Cecchi et al., 1998).

To evaluate the morphological affinity of KNM-WT 42718, a taxon-independent approach was attempted, applying taxon-specific discriminant function analysis to the MD and overall BL measurements. The probabilities of a specimen belonging to each group are assessed individually (e.g. "non retricted methods", Suwa, 1996). This is done by calculating the posterior classification probability, which is the probability of assigned individuals' belonging to their original populations, relative to the other reference populations. Because the unequal number of specimens in different species does not reflect the true distribution in the population, but is the result of the sampling procedure, we specified the same *a priori*

classification probability for all groups, using Statistica 6.0 (Statsoft Inc., 2001).

The efficacy of this method and the confidence with which individuals may be re-allocated on the basis of the measurements of lower first molar have been evaluated by cross-examining serial classification on a sample of extant great apes and modern humans (56 *Gorilla gorilla*, 94 *Pan paniscus*, and 51 *Homo sapiens*).

We obtain a high score of classification for the lower first molar measurements with the extant sample using discriminant analysis with cross-validation (100% for *Gorilla gorilla*, 90.32% for *Pan paniscus*, 100% for *Homo sapiens*, Wilk's Lamba = 0.031). All the *Gorilla gorilla*, and *Homo sapiens*, 84.1% of *Pan paniscus* could be re-allocated with probabilities in excess of 80%. These methods provide a high degree of confidence to assign specimens according to our great apes data set.

When KNM-WT 42718 is classified, we obtain a posterior probability (p) that this specimen belongs to early *Homo* p = 0.8033, *A. africanus* p = 0.115, *A. afarensis* p = 0.025, *A. anamensis* p = 0.054, *P. boisei* p = 0.0006, *Homo sapiens* p = 0.001, *Gorilla gorilla* p = 0.0004 and *Pan paniscus* p = 0.000001 (Wilk's lambda = 0.052).

Morphological comparisons

In occlusal view, KNM-WT 42718 has a typically hominin shape and general appearance. KNM-WT 42718 preserves features present in specimens of early *Homo*, such as a long and narrow rectangular crown. This buccolingual narrowness of the M_1 is considered as a morphological indicator of general affinities with early *Homo* (White et al., 1981; Tobias, 1991;
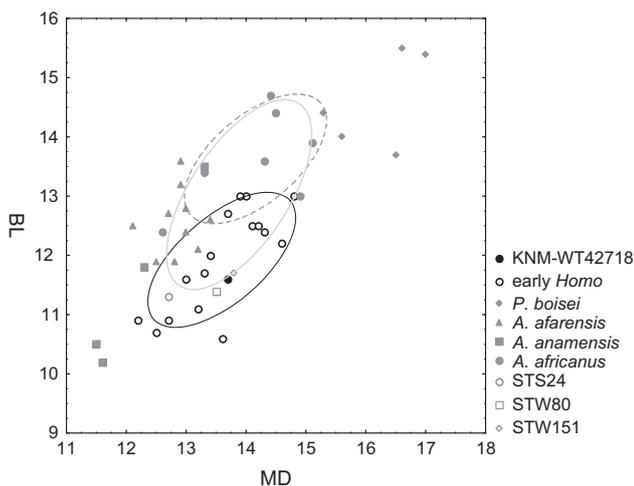

Fig. 4. Bivariate plot of MD and BL diameters of the lower first molars. Area enclosed with black line indicates the scatter plots (95%) for early *Homo*, with grey line for *A. africanus*, with dash line for *A. africanus* without Sts 24, Stw 80 and Stw 151. See Table 2 for the comparative sample.

Wood, 1991; Suwa et al., 1996). KNM-WT 42718 also preserves features that have been described in the genus *Homo* such as buccal and lingual faces that are almost vertical, in contrast to the convexly curved (longitudinally and vertically) buccal face in specimens of *Australopithecus* and *Paranthropus*. The cusps display a more triangular and regular shape rather than the typically more rectangular and 'lobated' contour observed in *Australopithecus* and *Paranthropus*. The hypoconulid is in a buccodistal position, not centrally located as observed in our sample of *Australopithecus* and *Paranthropus*.

The well-defined distal marginal ridge of KNM-WT 42718, and the mild expression of the protostylid contrast with the complete absence (Sts 24) or low distal marginal ridge (Sts 9, Stw 14, Stw 151) and the more developed protostylid (as for example Stw 384, Stw 404, MLD 2) often seen in *A. africanus*. This tooth does not have the basally swollen hypoconid giving a 'bilobate' appearance to the buccal crown profile observed in *A. afarensis* (White et al., 1981), and also differs from this taxon by the more buccal position of the hypoconulid. The rectangular crown shape differs from the rounded rectangular crown shape with a strongly bilobate occlusal profile observed in *A. anamensis*. The absence of a C6 in KNM-WT 42718 contrasts with the condition in *P. boisei* (Wood and Abbott, 1983; Suwa et al., 1996; Irish and Guatelli-Steinberg, 2003). The absence of a C6 and C7 is observed in 33% of our early *Homo* sample (5/15), confirming the observations of Wood and Abbott (1983) for their east African early *Homo* sample.

To summarize, the relative small size of the crown, the existence of marked MD elongation and BL reduction, the verticality of the buccal and lingual faces, the more triangular shape and relative position of the cusps, the lack of C6, and the mild expression of the protostylid, reinforced by the results of the posterior probabilities point to the distinctiveness of this tooth compared with *A. afarensis*, *A. anamensis*, *A. africanus* and *P. boisei*, and its similarity to early *Homo*.

Concerning the age at death of this individual, the early *Homo* specimens are characterized by a pattern of growth closer to that of living great apes than to modern humans (Smith, 1986, 1994; Dean et al., 2001). Following a chimpanzee pattern, the complete crown formation (stage D) indicates an estimated age of 20.52 months ± 2.98 (Anemone et al., 1996).

Discussion/Conclusion

This first lower molar (KNM-WT 42718) is the oldest occurrence of the genus *Homo* in West Turkana. Across Africa, only few fragmented cranial specimens of early *Homo* are known from this time period (around 2.4-2.3 Myr): KNM-BC1, temporal bone, surface deposit 2.4 Myr, Chemeron, Kenya, (Hill et al., 1992; Sherwood et al., 2002); AL 666-1, maxilla, surface find and closely associated with archaeological remains 2.33 ± 0.07 Myr, Hadar, Ethiopia, (Kimbel et al., 1996); UR 501, mandible, surface deposit, ca.2.4 Myr (2.3-2.5 Myr), Uraha, Malawi, (Schrenk et al., 1993; Bromage et al., 1995); and teeth from the Omo basin (Ethiopia), 2.3-2.4 Myr, surface deposits (Howell et al., 1987; Suwa et al., 1996; Ramirez-Rozzi, 1997).

The early *Homo* specimen from Lokalalei 1α, was found 100 m south to the archaeological site Lokalalei 1, which is chronologically close. Early *Homo* could thus be a good candidate for knapping the lithic assemblage of Lokalalei 1 even if the presence of another species *P. aethiopicus* [at 2.5 Myr in West Turkana (Walker et al., 1986) and at 2.3-2.4 Myr in the Omo basin (Howell et al., 1987; Suwa et al., 1996; Ramirez-Rozzi, 1997)] and *A. garhi* [at 2.5 Myr in Bouri, Middle Awash, Ethiopia (Asfaw et al., 1999)] would not be ignored. Whoever the stoneknapper is, the Lokalalei complex of sites that include Lokalalei 1, Lokalalei 1α and Lokalalei 2C, brings valuable contributions to the earliest evidence of the genus *Homo* and to early hominids techno-economic capabilities.

Acknowledgements

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