

Late Pleistocene *Homo* remains

The North African remains of Late Pleistocene early *Homo sapiens* come from Morocco, Libya and Sudan. The earliest of these are two crania, a juvenile humerus and a juvenile mandible from Jebel Irhoud, Morocco. Haua Fteah (Great Cave), Libya, has two: the ascending rami of two mandibles. The Singa skull comes from eastern Sudan.

Jebel Irhoud

The Jebel Irhoud cave provides the only evidence of hominin crania associated with Middle Stone Age artifacts in North Africa. The most complete cranium, JI 1, was accidentally discovered during mining operations in the cave. A partial cranium (JI 2) and a child's mandible (JI 3), and various Middle Stone Age artifacts, were also discovered in fairly undocumented provenience low in the sequence. A mandible fragment (JI 5) was later found in the faunal collection. Only the juvenile humerus shaft was excavated under controlled conditions, from level 18.

The site's date is based on Electron Spin Resonance (ESR) taken from horse's teeth from level 17. The dates are 127-87 kya using the early uptake model and a less acceptable 190-105 kya assuming linear uptake. This would date the bottom of the site (the humerus and possibly the mandible) to oxygen isotope stage 5d-5c. The relationship of the crania to these dates is unclear; however, given the excavation history, they are likely to be younger.

The humerus is generally archaic, with thick shaft walls and a small medullary canal, a flattened shape and an unusual amount of muscularity if it really is the same specimen as the mandible and therefore the same young age. These characteristics are found in young Neanderthals, but might also be characteristic of other archaic children: there is no way to know. The crania provide more specific information for ascertaining relationships.

The two crania are broadly equal in size; in general, their similarities and differences parallel those of the Omo (East African) crania in that the vault of one specimen is more archaic than the vault of the other. They have numerous features that, to a varying degree, are found in sub-Saharan Africa; yet others, especially in the forehead and occipital region, are unusual in an African setting. The vaults are high and very broad, the maximum breadth – like the Omo crania – not as far to the rear as in Neanderthals. The browridges are continuous and prominent (but not especially large), and the bulging forehead begins above and behind them, separated from the top of the supraorbitals by a supratatorial sulcus that is stronger in JI 2.

Cranium 2's features suggest that it might be a male. Cranium 1 is usually regarded as a female due to more delicate cheeks and weaker muscle attachments. Yet, cranium 1 has the more archaic braincase. The differences are not great and it is realistically difficult to develop a strong case for differing biological sex.

It is easy to see continuity with earlier African samples. A Middle Pleistocene population such as that represented by Bodo, Kabwe and Nduku could develop into one with the Jebel Irhoud features through supraorbital reduction (especially in the maxillary area), frontal expansion and some expansion of the upper portion of the occipital bone. However, to do so would require a set of cranial changes somewhat different from those taking place to the south, quite possibly influenced by genic exchanges from other areas. One such area might be the Levant where older specimens, such as Zuttiyeh, are said to show resemblances to JI 1.

Fred Smith has argued that the pattern of supraorbital reduction across sub-Saharan Africa is quite different to the circum-Mediterranean pattern. To the south, his data shows that the reduction is evenly spread across the torus, while in the populations surrounding the Mediterranean the mid-orbital and lateral elements reduce while over the nose there may actually be expansion of supraorbital height. Mid-orbital reduction is often greatest, as over evolutionary time the torus divides into a superciliary arch and lateral portions. Jebel Irhoud follows the circum-Mediterranean supraorbital pattern, although differently in the two crania. There is more central reduction in JI 1, but more expansion over the nose in JI 2.

The crania show other non-African but clearly circum-Mediterranean features, such as occipital bunning, that is likely to be the result of genic influence from Europe, where bunning occurs earlier. Patterns of human gene flow are complex and multidirectional during the Late Pleistocene.

Singa, Sudan

The Singa skull from the eastern Sudan is a faceless cranium which has been an enigma since its discovery in 1924. Its age has been estimated as 133 +/- 2 kya by using uranium/thorium decay analysis of the calcrite deposits on the vault. It has been called a "Neanderthaloid", a Neanderthal-modern "hybrid", a "proto-Bushman" and pathological. The latter has stood the test of time and makes the best sense of the specimen's contradictory features.

There are some resemblances to Jebel Irhoud 1, particularly in the frontal region and supraorbitals. Chris Stringer has described a vaulted forehead and reduced supraorbital morphology that implies an African population that immediately preceded the appearance of *Homo sapiens sapiens*. The cranial posterior, however, contrasts. The temporal and occipital regions are greatly shortened in Singa and the basal spongy bone development is much less. The occipital contour is rounded rather than flattened and the mastoids are much smaller. Internal and external occipital protuberances are in similar positions, whereas they are well separated in Jebel Irhoud. It also differs in a long depression surrounding and paralleling the sagittal suture for virtually its entire span. Some of the features of the cranial rear are probably a consequence of its pathological condition. Other areas involved include the marked bone thickening at the well-developed parietal bosses. Because the source of the pathology remains unclear, it is not possible to determine which aspects of the cranium are pathological and which are normal.

Haua Fteah mandibles

The 46-40 kya mandibles were found on the margins of a large hearth. They consist of only the posterior portions of two diminutive individuals. In both mandibles, the ramus is rather short and squat. Its anterior edge begins at the position of the third molar. The latter feature is significant because it reflects a lack of marked midfacial prognathism. When this prognathism is expressed in its extreme, the maxillary teeth are so far forward that, as the mandibular teeth shift forward to meet them, a retromolar gap is opened between the last molar and the ramus (articulating with the cranium). The ramus might be thought of as remaining in a stable position. Thus, these mandibles "fit" the morphological expectations of the Jebel Irhoud 1 face with its distinct canine fossa and lack of midfacial prognathism. A similar specimen may be the small jaw from Dire Dawa (Ethiopia), dated to 77-61 kyr by osidian hydration analysis.