

Human Fossils from the First Quarter of the 21st Century



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ABSTRACT: Significant discoveries have been made from the first quarter of this Century in the field of evolutionary biology to redefine the human evolution. Discoveries present the morphological variability in fossil forms and indicate the valuable role of that particular continent in tracing the human origin. This article presents a general review of the human fossils found so far of this century that force us to rethink about the current concept of human origin. Most of the fossils have been found in East Africa, South Africa, Central Africa, Russia, Israel and Indonesia. Some of these are related to *Australopithecus afarensis*, some to *Aus. africanus* while some to Neanderthal. A complete human skeleton remains has been found from Ethiopia (Middle Awash region) and named as *Ardipithecus ramidus* is believed to be the common ancestor of humans and chimpanzees. Naser *Ramla* from Israel is considered as an ancestor of Neanderthals because it used stone tool production technology to make tools. Some fossils share features of both *Australopithecus* and early *Homo*, such as *Orrorin tugenensis* and *Homo naledi*. *Australopithecus deyremeda* is considered as an extinct species of *Australopithecine*. Some of these are contemporary of modern humans, such as *Homo floresiensis*, whose complete skeleton has been found from the Flores island of Indonesia and it has also been considered as an Asian descendant of *Homo erectus*. Denisovans found in Russia's Denisova cave is considered as a new species, it belongs to the Lower Middle Palaeolithic period, so it is also considered to be related to Neanderthal, although its fossil remains include only digit bone, 4 tooth, parts of jaw and long bones and parietal part of the cranium.

KEYWORDS: Human fossils, Evolution, Discoveries, New species.

KENYANTHROPUS PLATYOPS

Kenyanthropus platyops was accepted as a new species in 2001; although this acceptance is disputed because in 2003 scientist Tim White discovered that the skull of *Kenyanthropus platyops* is similar in many ways to *Australopithecus afarensis*. Fossils of *Kenyanthropus platyops* are 3.5 to 3.2 million years old which were discovered in 1999 and 2001 by the Justus Ares and Maeve Leakey team from Lake Turkana, Kenya. *Kenyanthropus platyops* means 'flat face', which is a characteristic of humans, on the basis of which it has been considered as a connecting link between humans and apes. Leakey said that this fossil represents a new hominin genus. While other scientists considered it a species of *Australopithecus* and till now many scientists consider it under *Australopithecus afarensis*. In fossil remains of this species 30 skulls and teeth have been found at the site, its skull is the oldest among the skulls discovered so far. The bone of the big toe suggests that it could walk upright. The shape of the teeth is intermediate between that of apes and humans. No definite proof has been found related to their culture. Scientists speculate that its culture would be similar to that of its contemporary *Australopithecus afarensis*. No evidence of tools or stone tools has been found. Because it is contemporary with *Australopithecus afarensis* so scientists speculate that this species would probably have lived in small groups of men and women like *Australopithecus afarensis* and would have lived in an environment where there would be grasslands and forests and probably used available plants as food. But there is no evidence of the type of plants available.

ORRORIN TUGENENSIS

In 2001, a new human ancestor, *Orrorin tugenensis*, was discovered. This fossil is estimated to be about 6 million years old. Its position in the human family tree is considered to be at the line that separates from chimpanzees and goes towards humans. Some bone of limbs, parts of jaw bone and some teeth have been found in its fossils remains. In 2002 fossils of 5 individuals related to it were found in Kenya and this expedition was run under the leadership of Martin Pickford (Kenya Palaeontology Expedition) and Brigitte Senut (The Museum of Natural History, Paris). The genus name *Orrorin* means 'Original Man' in the Tugen language, while the species name *tugenensis* was given because its remains were found on Tugen Hill of Kenya. The places where *Orrorin's* remains have been found in Tugen Hills, Kenya are Cheboit, Kapsomin, Kapcheberek, and Aragai. *Orrorin* is thought to be more similar to modern man (*Homo sapiens*) than to *Australopithecus afarensis* ("Lucy"). This similarity is based on the morphological

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similarity of the femur bone. Its culture has been estimated based on the remains found, it may have used unmodified simple tools and plant twigs to obtain food, like modern chimpanzees. On the basis of large and flat molar teeth, it is estimated that its food must have been fruits, vegetables and meat. On the basis of the humerus bone and the bent finger bone, its adaptations for climbing trees can be inferred. The structure of the teeth is primitive and the size is small while the enamel is thick, although the canine teeth are larger and sharper than those of humans.

ARDIPITHECUS KADABBA

Ardipithecus kadabba was recognized as a new human species in 2001. Its remains were found in Ethiopia between 1997 and 2000. On the basis of the remains, it is estimated that it used to walk with two legs. However, on the basis of the size of the body and brain, it was similar to the modern chimpanzee. Its canine teeth are similar to those of later hominins. Some post cranial bones and sets of teeth have been found in its remains. The big and strong bone of the big toe confirms its bipedalism. Scientist Yohannes Haile-Selassie found a fragment of the jaw of this species in the Central Awash Region of Ethiopia in 1997, later found 11 more remains belonging to 5 individuals, from which he concluded that he had discovered an early human ancestor. Arm bones, hand and foot bones and a clavicle bone were also found in other specimens. These evidences have been considered to be 5.8-5.2 million years old. In 2002, 6 teeth were also found from the middle awash region, on the basis of which Asa Koma told that these evidences are unique. Based on the evidence of these teeth, in 2004 Yohannes Haile-Selassie, Gen Suwa, and Tim White called it a new species and named it *Ardipithecus kadabba*. In Afar language kadabba means 'oldest ancestor'. Kadabba's back teeth are large in size, so it is estimated that it must have eaten fibrous foods. Apart from this, on the basis of fauna found from the Fossils site, it was inferred that in kadabba lived in a mixed environment of grasslands and forests.

SAHELANTHROPUS TCHADENSIS

Sahelanthropus tchadensis was discovered in 2001 by Michel Brunet and his research team from the Toros-Menalla site of the Djurab Desert in northern Chad. Fractured postcranial material has been found in its specimens, on the basis of which it has been inferred that some of its symptoms are similar to humans and some to apes. Its age has been estimated to be 6-7 million years ago. It is related to chimpanzees and considered an ancestor of humans because it comes before the division of chimpanzee and human lineage. Its physical features include strong skull, chimpanzee like brain and muscles attachment like ape. On the basis of fragmentary postcranial material, some scientists believe that its foramen magnum was anteriorly oriented, therefore its posture was erect and the locomotion was bipedal. Pronounced brow ridges also show its resemblance to early humans. The orthognathus face and the absence of the honing complex in the jaws shows its similarity to early hominins, although pronounced posterior neck muscle attachments confirm that it was a quadruped. Thus some scientists believe that *S. tchadensis* may have been an early member of the evolutionary tree of humans.

HOMO FLORESIENSIS

Homo floresiensis was discovered as a new species in 2004 from the Indonesian island of Flores. On the basis of fossil remains, it has been considered a dwarf human species. These fossils are 1200 to 100,000 years old; on that basis it has been considered contemporary of modern man. This species has been considered a descendant of the Asian *Homo erectus*. Partial skeletons of 9 individual and a complete skull have been found in the remains, which have been named 'LB1'. LB1 is a nearly complete, small sized skeleton with skull which is of a 30-year-old female, hence the nicknamed "Little Lady of Flores" or "Flo" or "Hobbit". It was named and classified by Peter Brown et al in 2004. In 2017, based on phylogenetic analysis, it was concluded that *H. floresiensis* is an early human and a sister species of *Homo habilis*. Its remains were first discovered in 2003 by a joint team of Australian-Indonesian archaeologists from the Liang Bua cave in the Indonesian island of Flores and named as LB1. A tooth has also been discovered of this species which is believed to be LB2 species. An arm bone has also been found which has been named LB3. It has been called *H. floresiensis*. This specimen is about 74,000 years old. This individual was 3 feet 6 inches tall. It had a small brain, large teeth, lack of chin, receding foreheads and sloping forward shoulders. It may have used stone tools and fire. A large number of bone fragments of *Stegodon* (an extinct species of elephant) have been found along with the remains of this species, so it is believed that it may have hunted *Stegodon*.

ARDIPITHICUS RAMIDUS

Fossils of *Ardipithicus ramidus* were discovered from Ethiopia in 2009 and it is considered a new species. Almost a complete skeleton has been found in its remains, which was given the nickname 'Ardi'. The remains found are of a 50 kg woman whose brain is small, almost complete skull, teeth, pelvis, limb bones have been found in the remains. This fossil skeleton is the common

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ancestor of the last Ape Human and also suggests that there are differences between the last Ape Human ancestor and the living African ape.

Fossils of *Ardipithecus ramidus* were first found in 1992 and 1994 by American paleontologist Tim White and his team from the middle awash region of Ethiopia. Since then this team has discovered more than 100 fossils of *Ar. ramidus*. In the Afar language of Ethiopia, 'ardi' means 'ground' or 'floor', so Tim White named this species *Ardipithecus* to separate it from *Australopithecus*. Foot bones and pelvis suggest that it could climb on trees and walk on biped. A large number of diamond - shaped canine teeth have been found, suggesting very little difference between the male and female of this species. Remains of animals have been found along with the fossils of 'ardi', so it is estimated that they lived in a wild environment.

AUSTRALOPITHECUS SEDIBA

Specimens of *Australopithecus sediba* were first discovered in 2008 from Malapa, South Africa, while it was published in 2010 and included as a species under the *A. africanus* group. The remains are believed to be 1.98 million years old and belong to the Early Pleistocene. Some parts of the obtained fossil skeleton, such as the upper part of the chest, some teeth and the length of the bones of the limbs and small cranial capacity, are similar to early *Australopithecus*, while the premolars, molars, facial features, pelvis and the lower part of the chest are similar to humans, which has been speculated that it can provide important information about human ancestors. The shape of its pelvis suggests that it could have walked upright on regular basis, while its other physical characteristics are similar to those of australopithecines. Measurements of the humerus and femur of *sediba* indicate greater human symmetry than those of *Homo habilis*. *Au. sediba* is considered an extinct species of australopithecine. The skeletons from Malapa Cave are of a juvenile and a female which have been designated holotype MH1 and paratype MH2 respectively. It is believed that *Au. sediba* was a contemporary of *Paranthropus robustus* and *Homo erectus/Homo ergaster*.

DENISOVANS

Denisovans were discovered in Russia's Denisova cave in 2008 and published in 2010. Information about its physical characteristics is not enough because only one hand digit bone, four teeth, fragments of arm and leg bone, fragments of jaw bone and parietal part of skull have been found in its remains. Its remains are believed to be 500,000 -30,000 years old and on the basis of nuclear DNA analysis of finger bone and tooth, it is estimated that it was a new species different from *Homo sapiens* and *Homo neanderthalensis* which were found 48,000 to 30,000 years ago. This is the first species that was placed in the genus *Homo* on the basis of genes. Denisovans species were being found in Asia in the Lower and Middle Paleolithic period. The species was formally identified in 2010, based on mitochondrial DNA (mtDNA) obtained from a digit bone discovered in 2008 that belonged to a female. Nuclear DNA shows its greater similarity to Neanderthals. Its other remains have been found in Baisia Karst Cave of Tibetan Plateau and Cobra Cave of Annamite Mountains of Laos. DNA evidence suggests that they had a darker skin tone and a Neanderthal-like facial structure, although the molars are larger, similar to those of *Australopithecines*. In 2018, a team led by Vivian Sloan and Svante Paabo of the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany, identified mitochondrial DNA from a 90,000 year-old long bone fragment recovered from Siberia, Russia, and reported that the remains belonged to the first generation of mixed ancestry. Remain belonged to a 13 year-old girl they named 'Denny' because her 40 percent DNA fragment was identical to the Neanderthal genome and 40 percent to that of the Denisovan. Due to mitochondrial DNA similarities to Neanderthals, the team concluded that Denny's mother was a Neanderthal, and the father was a Denisovan.

Paabo has made important contributions to the discoveries of anthropology and has also contributed to the discovery of this Neanderthal-Denisovan mixed species and understanding their genetic relationship with modern humans, so Paabo was awarded the 2022 Nobel Prize in Physiology/Medicine.

NESHER RAMLA

Scientists from Tel Aviv University and the Hebrew University of Jerusalem discovered early human remains from Israel. The remains include parts of the skull, lower jaw and teeth, which date back 130,000 years and are believed to be the ancestors of Neanderthal humans. The name of this species has been given as *Nasher Ramla* and it is believed that these humans lived with *Homo sapiens* for 100,000 years. This discovery will help to know about the arrival of humans in Asia. Evidence of tools and fauna found with Neanderthal human ancestors' remains in Europe are similar to that found with the early human remains of *Nasher Ramla* in Israel. It is believed that the *Nasher Ramla* is alike extinct archaic humans who lived in the Middle Pleistocene period. Human remains have been found from the *Nasher Ramla* site in 2010–11 and 2021. In 2021, the first *Nasher Ramla* person was identified. As in the Middle Palaeolithic, Levallois tools and lithic cores have been found from the *Nasher Ramla* site. Scientists believe that the *Nasher Ramla* man knew the stone tool making technique as Neanderthals and *Homo sapiens* knew because

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evidence of tool industry has been found which suggests that Neshar Ramla had cultural contact with *Homo sapiens* and Neanderthals.

HOMO NALEDI

Homo naledi was discovered in 2013-15 from the Rising Star Cave in Africa. Due to the receipt of a large number of remains, it was declared in 2015 as a new species named *Homo naledi*. The discovery yielded 1,550 remains of approximately 15 individuals dating back to the Middle Pleistocene, 3, 35,000–236,000 years old. Despite receiving so many remains, its classification could not be done clearly, although it shows similarity in some physical features with *Australopithecus* and early *Homo*. Their cranial capacity is estimated to be 465-610 cm³, average body height is 143.6 cm and weight is 39.7 kg. The brain and body structure of *H. naledi* is as complex as that of contemporary *Homo*. It is estimated that they could walk like humans and could travel long distances. Used to spend more time in trees and were more adapted to hang in trees. They were able to make and use tools, it is estimated that they would be related to the Lower and Middle Paleolithic tool industry. In its fossils, skull, jaws, teeth, ribs and inner ear bones and body parts like hands and feet have also been found, which belong to children, young and old people, some bones have also been found connected like the jaw and hand are connected with the skull. Some of its remains have also been found in 2011 from the Afar region of Ethiopia.

AUSTRALOPITHECUS DEYIREMEDA

The remains of *Australopithecus deremida*, discovered in 2014 from Vorano-Mile, Afar region, Ethiopia, were published in 2014 and scientists determined that they were related to *Australopithecines* and another form of *A. afarensis*. 3 jaw bone fragments and teeth have been found in the remains, on the basis of which these evidences are believed to be of Pliocene period 3.5 to 3.3 million years ago. However, due to the limited number of remains, it is not clear to which species it belongs, although on the basis of the jaws it shows similarity to *Paranthropus*. The mandible in the remains is prognathous, the mandibular bone and enamel are thick, on the basis of which its anatomical features are estimated to be similar to those of *Paranthropus*. It is assumed that their diet would have been hard foods as seen in the characteristics of *Paranthropus robustus*. Scientists estimate that other hominins may have lived during the time of *Australopithecus deremida*, 3.5 to 3.3 million years ago.

HOMO LUZONENSIS

Homo luzonensis is an ancient human species discovered from the Callao Cave of Luzon Island, Philippines and this discovery was published in 2019. Researchers have found 13 bones of 3 different individuals from the sediment of the Callao cave, on the basis of which it has been accepted as a new human species until other evidence is found. It is considered a small species and it shows similarity to *Homo floresiensis* discovered in 2004. *Homo luzonensis* is believed to be 67,000 years old. And it has been accepted as a new branch of the human evolutionary tree.

HOMO LONGI /DRAGON MAN

Scientists have found a 140,000-year-old large-sized skull whose facial part was in good condition from the Dragon River region of Northeast China on 25 June 2021. This skull belonged to an adult male with large forehead, eyebrows, deep set eyes and prominent nose. The researchers named it 'Homo longi' and gave it the nickname "Dragon Man" because it was found in the Dragon River area. Scientists speculated that it was an extinct species of modern man. According to them, this can help in estimating when and where modern humans originated.

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