



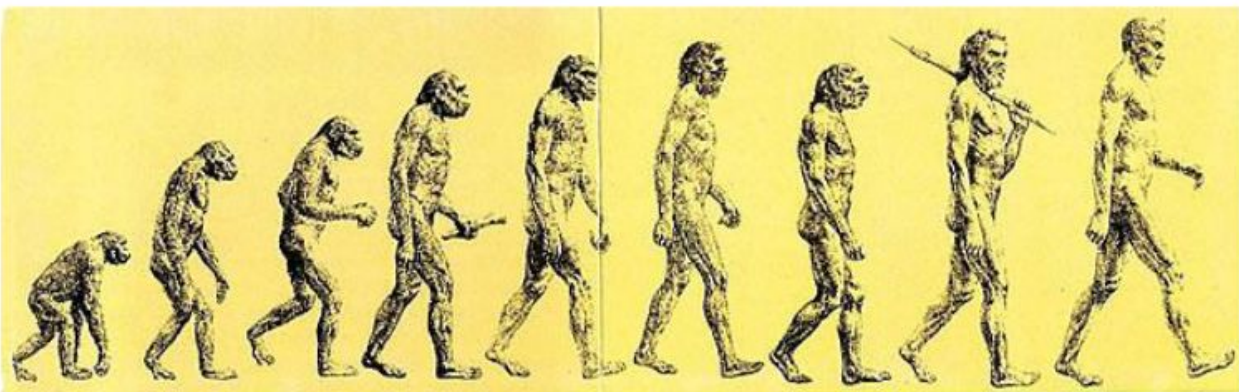
Homo Erectus

Monika Dwivedi
Pt DDU Govt Girls PG College
Rajajipuram, Lucknow.



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DRYOPITHECUS
(14-8 million
years)

RAMAPITHECUS
(12-8 million
years)

**AUSTRALO-
PITHECUS**
(4 million
years)

**ADVANCED
AUSTRALO-
PITHECUS**
(2 million
years)

**HOMO
ERECTUS**
(1.8-0.3
million
years)

**EARLY HOMO
SAPIENS**
(400,000-100,000
years)

**NEANDERTHAL
MAN**
(150,000-30,000
years)

**CRO-MAGNON
MAN**
130,000-60,000
years)

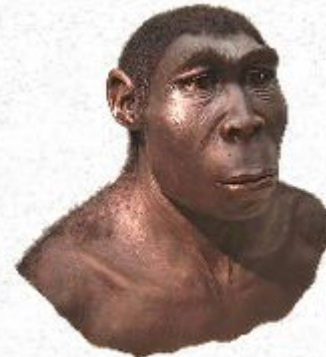
MODERN MAN
(40,000 years to
present)

IMPORTANT STAGES IN EVOLUTION OF MAN

Introduction

- The First fossil was found from Java in 1891 by Eugene Dubois.
- Its common name assigned is “Java man”.
- materials found - a skull cap, a complete femur, three teeth, and a jaw fragment.
- It was named “*Pithecanthropus erectus*” meaning an apeman who could walk straight.
- Dated back to 500,000 years ago.

Homo erectus



Homo erectus

Distribution and Variations

Important Homo erectus Sites



	Date of Fossil (years ago)	Cranial Capacity (in cm. ³)
Africa:		
East Turkana	1,900,000-1,600,000	850-900
West Turkana	1,500,000	
Olduvai Gorge	1,300,000-700,000	1067
Bouri	1,000,000	
Swartkrans	1,800,000-1,500,000	
Ternifine	700,000-500,000	
Sale	400,000	900
Israel:		
Ubeidiya	1,600,000-1,400,000	
Europe:		
Dmanisi	1,750,000	600-650
Atapuerca	1,200,000	-
Java:		
Modjokerto	1,800,000	---
Sangiran	1,800,000-1,600,000	813-1059
Trinil	900,000 ?	---
Ngandong	546,000-143,000 ?	
China:		
Yuanmou	1,700,000 ?	
Lantian	800,000	780
Zhoukoudian	770,000-400,000	850-1250
Hexian	400,000	1025



Homo erectus from Southeast Asia



Homo ergaster from East Africa

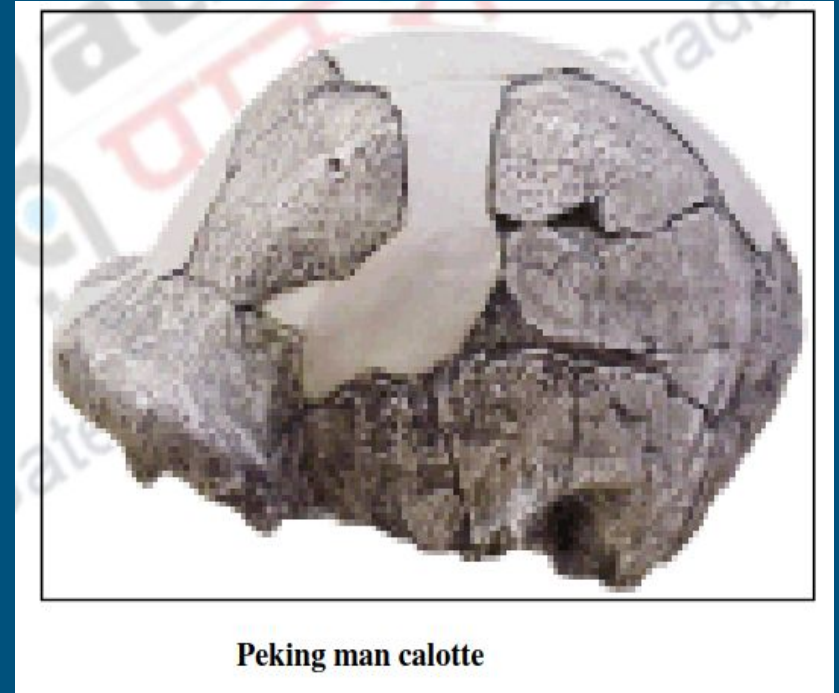
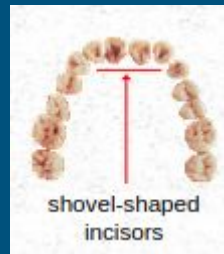
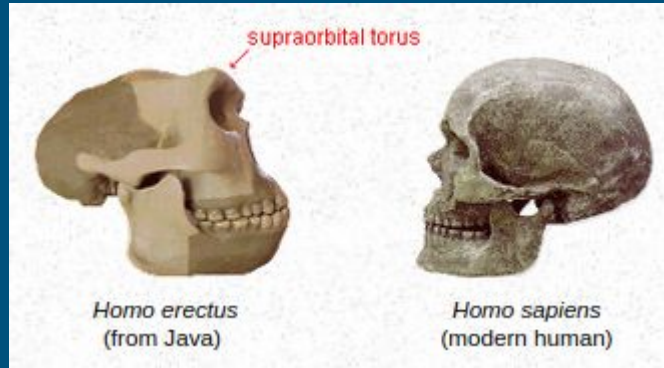
Anatomical Features

- The cranial capacity averages about 1000 cc in range of 750 to 1250 cc.
- The size of the brain case of most of the specimens falls within the lower range of variation of modern Homo sapiens
- The cranial bones are thick with thick brow ridges which are continuous forming a distinct supra orbital torus.
- There is a pronounced postorbital constriction.
- The skull is low and relatively flat, or platycephalic and in some specimens especially,
- In Java man, there is a bony ridge, the sagittal keel found along the midline at the top of the brain case.
- The profile of the cranium as seen from the side clearly shows: The angularity of the occipital, above this is a horizontal bar of bone, the occipital torus.

Anatomical Features

- Greatest width of the skull is towards the bottom.
- Facial skeleton is comparatively large and broad as compared to that of modern Homo sapiens.
- Face is massively constructed, and its lower parts project forward.
- Bone forming the wall of the nose is thinner and the nasal bridge is relatively high and prominent.
- Teeth of H. erectus are smaller than the Australopithecus but larger than the H. sapiens.
- The dental arcade is diverging with the greatest width occurring between the third molars.
- The mandible lacks chin, but does not have a mandibular torus.
- Externally the erectus femur resembles that of the sapiens but x-rays reveal that the outer wall of the shaft of erectus femur is twice as thick as that of the sapien's femur.
- The presence of prominent linea aspera on the posterior side of the femur strongly suggests erect posture and bipedal locomotion for the H. erectus.

Anatomical Features



Cultural Context

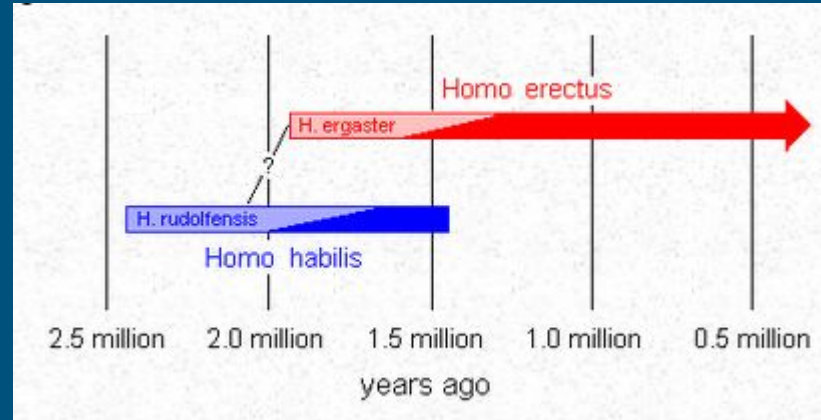
- **Acheulian Tool Tradition**
 - Stone tool making tradition.
 - First appearance in 1.5 million years ago in East Africa.
 - Large and small tools
 - Small flakes used for butchering.
 - Large bifacial tools, hand axe for digging and pounding.
- **Big Game Eating**
 - F. Clark Howell
 - Torralba
 - Ambrona
 - Substantial number of elephants remains found with evidence of human presence.

Cultural Context

- Control of Fire
 - Found in winter and freezing area, anthropologist presumed that they learned to control fire.
 - Evidence of control of fire from China from 500000 years ago with fossils of erectus.

- Campsites

Phylogenetic Position



A few researchers have generally opposed the view that *H. erectus* was the direct ancestor of later species, including *Homo sapiens*

. By emphasizing a distinction between “primitive” and “derived” traits in the reconstruction of relationships between species, several paleontologists have attempted to show that *H. erectus* does not make a suitable morphological ancestor for *Homo sapiens*

Because the braincase is long, low, and thick-walled and presents a strong browridge, they claim that *H. erectus* shows derived (or specialized) characteristics not shared with more modern humans.

At the same time, it is noted, *Homo sapiens* does share some features, including a rounded, lightly built cranium, with earlier hominins such as *H. habilis*. For these reasons, some paleontologists (including Leakey) consider the more slender, or “gracile,” *H. habilis* and *H. rudolfensis* to be more closely related to *Homo sapiens* than is *H. erectus*.

Instead, studies of size in human evolution indicate that representatives of *Homo* can be grouped into a reasonable ancestor-to-descendant sequence showing increases in body size. Despite having a heavier, more flattened braincase, *H. erectus*, most particularly the African representatives of the species sometimes called *H. ergaster*, is not out of place in this sequence.

If this much is agreed, there is still uncertainty as to how and where *H. erectus* eventually gave rise to *Homo sapiens*. This is a major question in the study of human evolution and one that resists resolution even when hominin fossils from throughout the Old World are surveyed in detail. Several general hypotheses have been advanced, but there is still no firm consensus regarding models of gradual change as opposed to scenarios of rapid evolution in which change in one region is followed by migration of the new populations into other areas