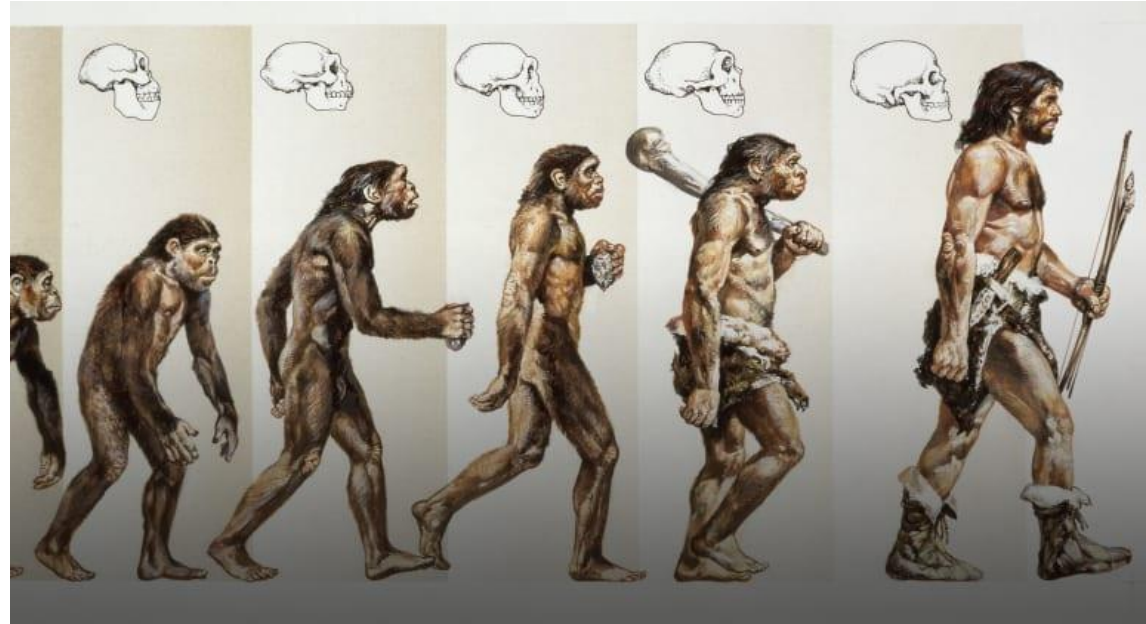




## Human Evolution



In this lesson:

Human Migration

Human Evolution timeline

The Future of Human

By: Dr. Krawan Sabah Hawrami

# The First habitat of Human

- Tentatively suggested Africa
- Asia was generally seen as the most likely place for the cradle of humankind, which was supported by Euge`ne Dubois' recognition of the first Homo erectus (1891–1892) found the time known as the Java Man
- The location of the true origin of humans remained undecided

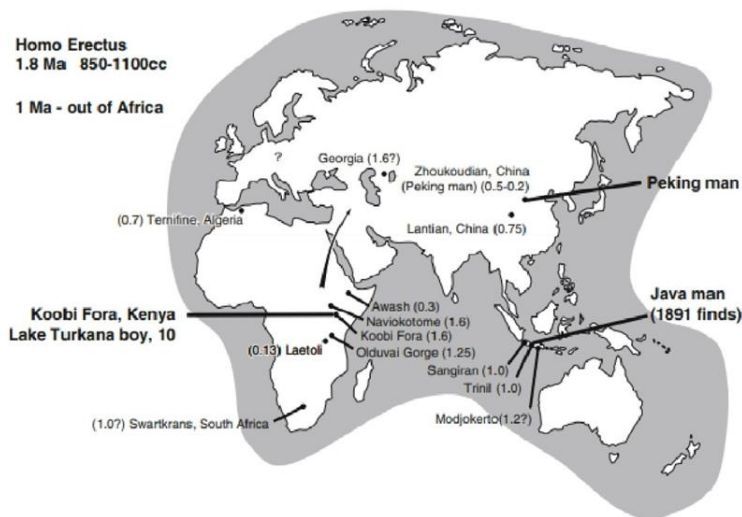
Human Evolution: Theory and Progress

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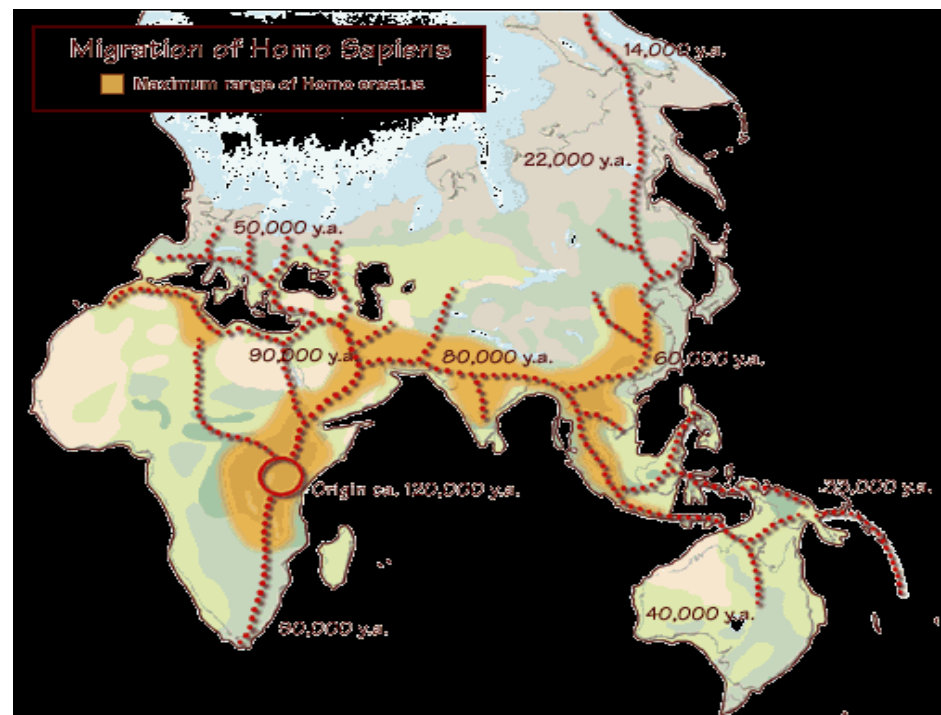
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Homo Erectus  
1.8 Ma 850-1100cc

1 Ma - out of Africa

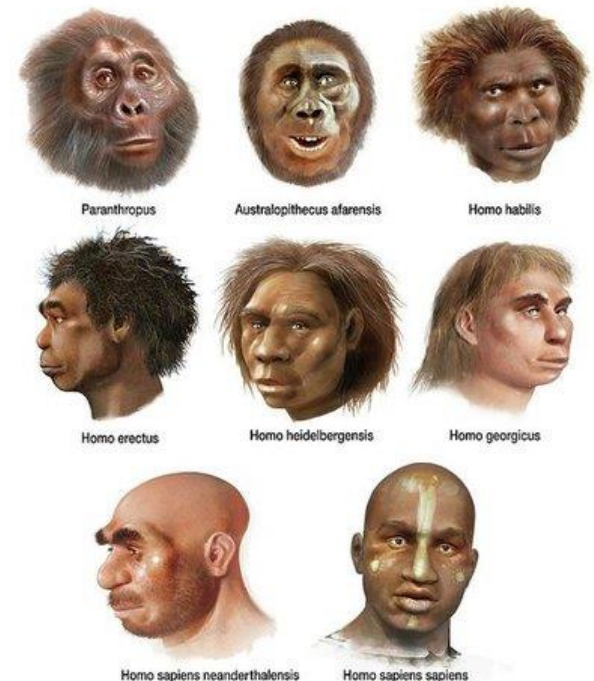


Human Evolution: Theory and Progress, Fig. 5 Dates and location of early Homo erectus finds



# Genetic Revolution

- Since the 1960s, the field of evolutionary genetics has arguably made the greatest impact upon human evolutionary studies. for example, the analysis of ancient DNA taken from Neanderthal fossils (Green et al. 2010).
- Studies of genetic variation reveal that the greatest diversity can be found in African populations.
- specific histories confirms an African origin for our species and suggests our ancestors migrated out of Africa about 70–40 ka (Cann et al. 1987).



## Four Classic questions

- Understanding of the past 6–7 million years of the human story is not that simple.
- This aspect has had a great impact on the key questions in human evolution which are:
  - terrestriality
  - Bipedalism
  - Encephalization
  - Civilization
- Understanding what really happened in human evolution depended upon solving these four questions.

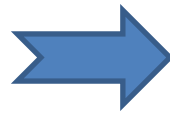
# Modern Questions

- The number of key questions has multiplied and now involves a thorough interdisciplinary understanding of:
- Evolution and functions of adaptation
- Behavior, Brain size, Chronology, Climate, Common descent
- Evolutionary constraints, Culture, Dispersal and migration
- Diet, Diversity, Ecosystems, Genetics,
- geography, language, lineage, morphology,
- ontogeny, phylogeny, species concept,
- technology, and variation.



## Role of Theory of Evolution

- Environmental pressures have long been assumed to play a key role in hominin speciation and adaptation (Maslin & Christensen 2007).
- one of the most extensive geological features on the Earth's surface, runs north–south for around 4,500 km from Syria through East Africa to Mozambique.
- Evidence from carbon isotope records from both soil carbonates and biomarkers provide clear evidence of a progressive vegetation shift from trees and shrubs to tropical grasses



## Environmental theories

- This shift has been ascribed to increased aridity in the East Africa during this period and supports the savannah hypothesis, which attempts to explain the appearance of bipedalism.
- Environmental theories; some stage 'social' attributes and behaviours may have influenced morphological evolution.
- Anthropology, behavioral ecology, economics, primatology, and neuroscience tell us that human life history has evolved gradually, humans are highly cooperative, and reproduction is communal (Tooby & DeVore 1987; Boyd & Richerson 2005).

# Changes in Shape of Human

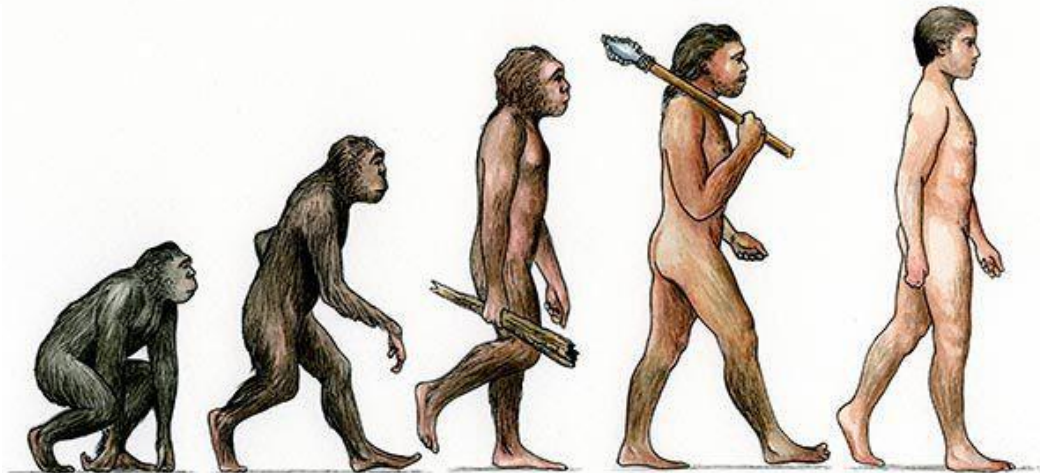
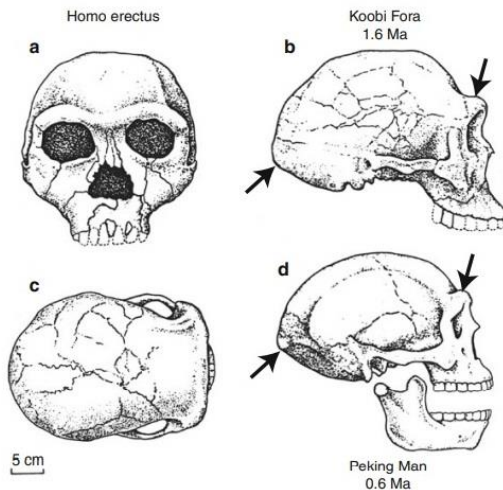
- This major adaptive shift coincides with *Homo erectus* (1.8 Ma–300 Ka)
- significant increases in brain size
- changes in body shape (relatively elongated legs and shorter arms)
- which indicated a loss of tree climbing adaptations
- Innovations in tool technology (earliest handaxes)
- An ability to walk and possibly run long distances

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**Human Evolution: Theory and Progress, Fig. 6** Comparison of *Homo erectus* skulls of Turkana boy (Kenya) and Peking man (China)



Act  
Go:



# Adaptation and changes

- Since body size influences a range of physiological traits including energy requirements, choice of food, reproductive strategies, and locomotor style can learn a lot by comparing
- *H. erectus* specimens would have been 50 % heavier than others females.
- Requirements of gestation and lactation would have been significantly higher for *erectus* females (Aiello & Key 2012).
- Human biologists suggest that shortening the inter-birth interval would reduce these costs and increase reproductive output.
- Changes in behavior, for example, increased cooperation and the division of labor and language.

# Changes in diet

- Another way to meet energetic requirements would be to eat energy-dense foods such as meat
- The earliest evidence for fire is also associated with erectus fossils, this is significant because cooking food increases the energy availability in foods (Carmody & Wrangham 2009).
- The expensive tissue hypothesis argues that we have managed to cut energetic costs by reducing gut size

## **because:**

- 1- H. erectus made the move toward hunting or digestible meat products.
- 2- They did not want more work to get more food

## Future Directions

- We are increasing our understanding of the fossil record and must be prepared for additional surprises
- In the last few years, of all the new fields, genetics has probably had the biggest impact on human evolutionary studies
- However, if anything has been learnt from the past, it is that our understanding of human evolution can only occur by combining evidence from multiple fields of study
- This way, new theories can be developed and then tested with evidence.

# *Thanks for your attention*

- For more read:
- Encyclopedia of Global Archaeology Chapter: Human Evolution: Theory and Progress Publisher: Springer New York Editors: Claire Smith: Online: [Veldhuisetal.2014.pdf](#)