MAINIDEA

Tracing the evolution of the genus *Homo* is important for understanding the ancestry of humans; the only living species of *Homo*.

K *What I Know*	**W** *What I Want to Find Out*	**L** *What I Learned*

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Essential Questions

- How can the species in the genus *Homo* be described?
- What is the Out-of-Africa hypothesis?
- What are the similarities and differences between Neanderthals and modern humans?

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Vocabulary

Review

- mitochondrion

New

- *Homo*
- Neanderthal
- Cro-Magnon

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The Genus *Homo*

- *Homo* genus includes living and extinct humans.
- First appeared 3 – 2.5 mya
- *Homo* species had bigger brains, lighter skeletons, flatter faces, and smaller teeth than their australopithecine ancestors.
- First species know to control fire and to modify stones for tool use

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The Genus *Homo*

Homo habilis used stone tools

- The earliest *Homo* species was *H. habilis*.
- Lived in Africa 2.4 -1.4 mya
- Retained australopithecine ability to climb trees

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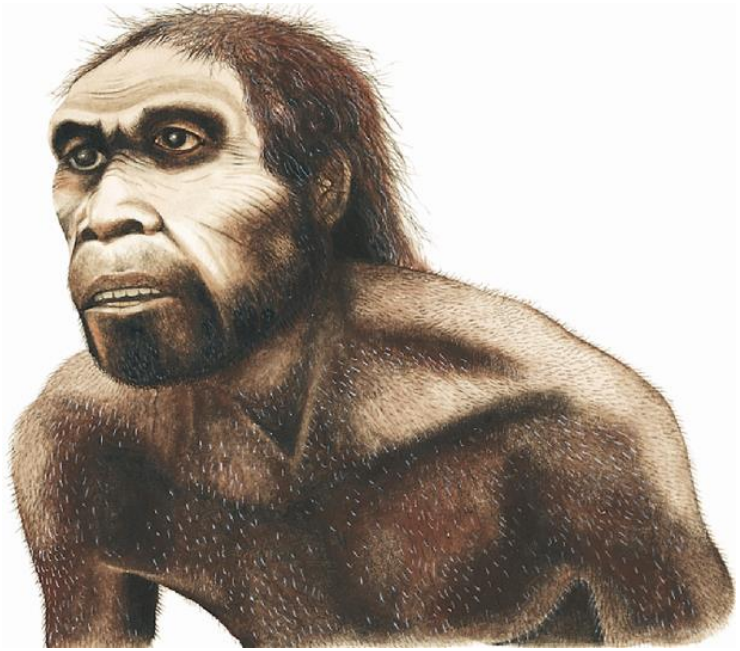
The Genus *Homo*

Homo ergaster migrated

- Larger brain, taller, lighter than *H. habilis*.
- Lived in Africa 1.8 -1.3 mya
- First human nose (nostrils facing downward)
- First African *Homo* species to migrate to Asia and possibly Europe



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The Genus *Homo*

Homo erectus used fire

- Lived between 1.8 million – 400,000 years ago.
- Appears to have evolved from *H. ergaster* as it migrated out of Africa.
- Adapted successfully to a variety of environments from Indonesia to China.
- Larger than *H. habilis*, more human-like teeth, as tall as *H. sapiens*

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The Genus *Homo*

Homo floresiensis – “The Hobbit”

- Fossils of a 1m tall *Homo* species may represent early human dwarfs and do not warrant classification as a new species.
- Australopithecine-sized skull, but fossils had apelike wrist bones and were found with tools.

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The Genus *Homo*

Homo heidelbergensis – traits

- Transitional species between *H. ergaster* and modern humans
- Some scientists put them in the category of *H. sapiens*
- Larger brains and thinner bones than *H. ergaster*
- Larger brow ridges and receding chins compared to *H. sapiens*

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The Genus *Homo*

Homo neanderthalensis built shelter

- The human species Neanderthals evolved exclusively in Europe and Asia about 200,000 years ago from a *H. erectus* ancestor.
- Shorter with more muscle mass than most modern humans
- Used fire and constructed complex shelters, had basic language, cared for their sick, buried their dead

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The Genus *Homo*

Are the Neanderthals our ancestors?

- In parts of Europe and the Middle East, Neanderthals and modern humans overlapped for as long as 10,000 years.
- Some scientists suggest that Neanderthals and modern humans interbred, but other studies suggest that Neanderthals were a separate species and likely did not contribute to the modern human gene pool.
- Neanderthals became extinct ~30,000 years ago.

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Emergence of Modern Humans

- *Homo sapiens* is characterized by a more slender appearance than all other *Homo* species.
- Thinner skeletons, rounder skulls, and smaller faces with prominent chins
- Appeared in the fossil record in what is now Ethiopia about 195,000 years ago

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Characteristics of the *Homo* species

Interactive Table

FPO

Add link to interactive table from page 471 (Table 2) here.

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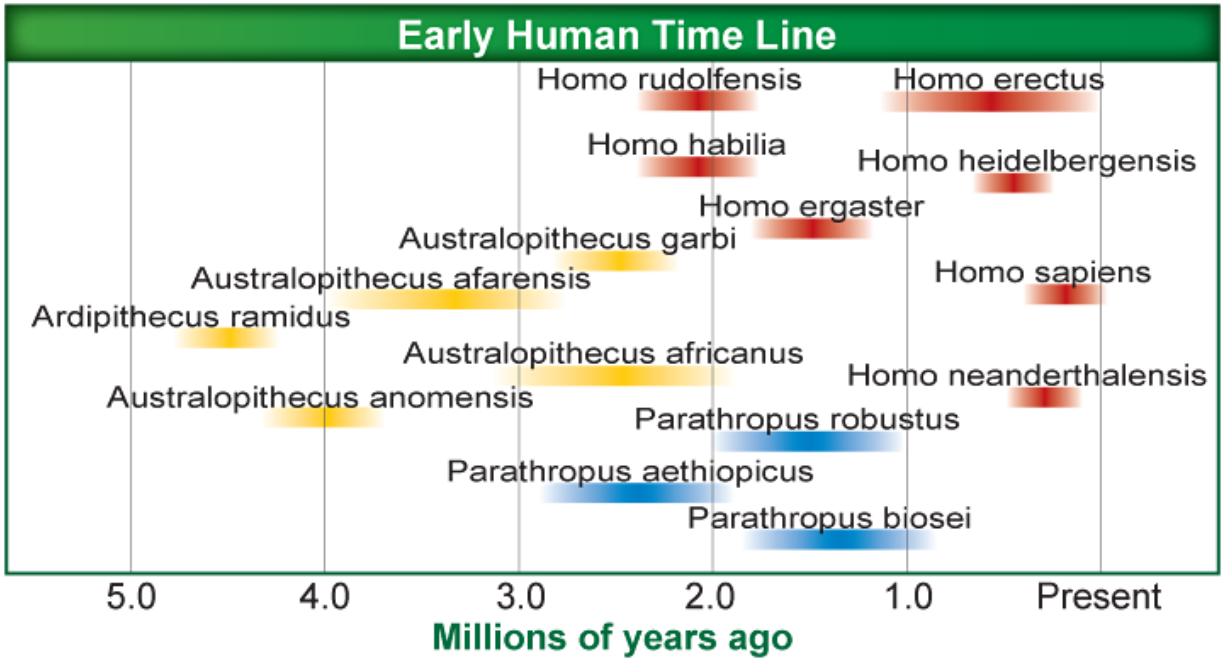
Emergence of Modern Humans

Out-of-Africa hypothesis

- 200,000 years ago, a morphologically diverse genus of hominins were present.
- 30,000 years ago, only modern humans remained.
- Modern humans evolved only once, in Africa, and then migrated.



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Emergence of Modern Humans

Out-of-Africa hypothesis

- The Out-of-Africa hypothesis is supported by mitochondrial DNA analysis of contemporary humans.
- Mitochondrial DNA changes very little over time, humans living today have nearly identical mitochondrial DNA.
- Since mitochondrial DNA is only inherited from the mother, evidence suggests *H. sapiens* emerged in Africa about 200,000 years ago from a hypothetical “Mitochondrial Eve.”
- DNA sequences from the Y chromosome gave similar results.

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Emergence of Modern Humans

The beginning of culture

- First evidence of complex human culture appeared 40,000 years ago.
- Early modern humans expressed themselves artistically/symbolically.
- Cro-Magnons were the first fully modern human subspecies.

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Review

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