

# Human evolution

Fall 09

**Introduction:** As an introduction to the big picture on human evolution, you will examine some of the human remains, stone tools, and dating methods of the field of paleanthropology. You may want to review the lecture and reading materials relation to the history of life, evolution, and human evolution

## The Taxonomic Hierarchy

Kingdom-- Animalia

Phylum--Chordata

Class--Mammalia

Order--**Primates**

Suborder - - Haplorrhini

Superfamily - - **Hominoidea**

(includes Monkeys, Baboons, Gibbons, and all Hominidae)

Family--Hominidae "hominids"

(includes *Australopithecus*, Chimpanzee, Gorilla, Human [maybe Orangutan])

Subtribe **Hominina**

(includes *Australopithecus*, *Homo*, *Paranthropus*, *Pan* ...)

Genus--*Homo*

(includes *erectus*, *habilis*, *neanderthalensis*, *sapiens* . . .)

Species--*sapiens*

Subspecies--*sapiens*

## Key concepts:

- The history of human evolution including locations and ages of some of the fossils and associated tools.

## What's due

- D2L Workshop 7 10 points

As always, be prepared, answer the questions starting on p.2 using these instructions.

The images for each question are linked to on each question (don't forget your username and password for NATS104).

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## Worksheet

Answer each question below (copy & paste the worksheet into your word-processor). The associated links provide the needed information, but also consult the readings and the lecture notes. Then, attempt D2L Workshop 7 and transfer the information from the worksheet into the workshop.

1. Phylogenetic relationships (2 points) [phylog.html](#)

- a. What are the 5 traits of the "hominids?"
  
  
  
  
  
  
  
  
  
  
- b. Are modern humans hominids? \_\_\_\_\_  
Are chimpanzees hominids? \_\_\_\_\_  
Are monkeys hominids? \_\_\_\_\_
  
  
  
  
  
  
  
  
  
  
- c. How long have hominids existed?

2. Morphology of the skulls. (2 points) [skulls.html](#)

Arrange the skulls (A-F) by general appearance between *Australopithecus africanus* (A) at one extreme and *Homo sapiens* (F) at the other. (Ignore images G & H: Note their state of preservation. Older fossils tend not to be well preserved!) Write the sequence (A, C, B, ...) below.

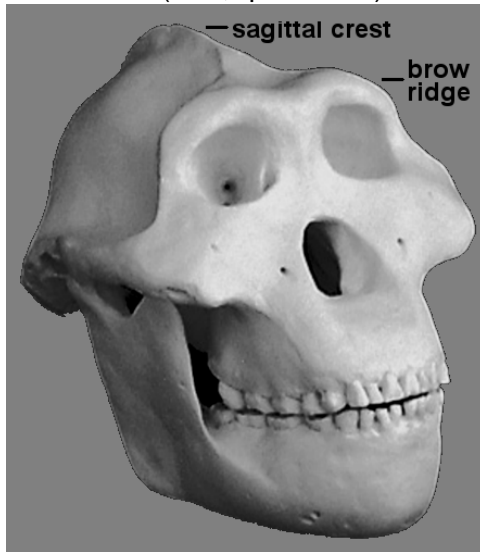
Which features did you use in arranging this sequence?.

Compare your sequence (see [this link](#) for name associated with each skull) to the hominid evolutionary tree from the first question ([phylog.html](#)). Is the *morphological gradient* (the sequence you wrote down) the same as the *evolutionary sequence* for fossil hominids (the evolutionary tree sequence)?

Compare the morphological gradient and the evolutionary sequence.  
If they are the same, what selection pressures favored sequence you wrote down?  
If they are different from the evolutionary sequence, what selection pressures might be responsible?

3. Specialization (2 points ) [skulls.html](#)

Which skull (A-G, question 2) has the largest brow ridges and sagittal crest?



*Paranthropus boisei*



Female  
Gorilla

Male  
Gorilla

Why do some primates have a cranial ridge (sagittal crest) and brow ridges? (Note the gorilla skulls above, right. What is gorilla's diet? Hint:

[http://en.wikipedia.org/wiki/Sagittal\\_crest](http://en.wikipedia.org/wiki/Sagittal_crest) and <http://www.britannica.com/eb/article-9016731/browridge>)

4. Tools: (2 points) [tools.html](#) & [ToolFosl.html](#)

Arrange the tool assemblages from simplest to most complex. Write the sequence below (A, C, B, ...). Compare this sequence with [ToolFosl.html](#). Does your sequence go from oldest to youngest? (see [phylog.html](#) for ages of the hominid species)

5. Age and Range (2 points) [locations.html](#)

The maps are arranged from oldest to youngest.

Based on the maps, which species was first to leave Africa, and approximately when?

When and where did *Homo sapiens* originate?

When did *Homo sapiens* spread through central Europe?

When did *Homo sapiens* spread through the New World?