

# Week 2 Lecture 1

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## 1 Administrative drivel

- First assignment is up on canvas, due tomorrow
- Clickers are still down, so we're doing in class attendance.

## 2 Continuing human evolutionary history

Beginning with some review...

### 2.1 20 million years ago

- Great apes evolve in the african savana
- note: the ecological state is very different then it is in africa today. Grasses are pretty recent, and prior to that there were no grasslands, praries, or savanahs. Most places were woodlands and forests, and the conifers could tollerate less moisture than the broad leaf trees. It was only on the order of about 100 million years ago that we first have andriosperms (flowering and fruit bearing plants). Before that there were cone bearing plants. The flowing plants are what we think of today that animals eat, while to dinosaurs ate mostly coning plant material. Mamals focused on eating flowering plants, which has allowed for the proliferation of the kinds of mamals we see.
- Grasslands are open (very different from moist forests: different food, predators). In a forest the best route of escape is up a tree, which you can't do in a grassland. The best defense in grasslands was to be in a group and use tools to defend yourself. This need lead to primates becoming more social creatures.
- Grasses are flowering plants, and polinate mostly by the wind.

## 2.2 7-8 million years ago

- first common ancestor between chimps and humans is here

New stuff next

## 2.3 3.5 million years ago

- genus *Australopithecus* appears, with species
  - *afarensis*
  - *anamensis*
  - *africanus* (big jaw)
  - more
- most famous specimen: Lucy
  - She was an *Australopithecus afarensis*
  - She was named after the Beatles song "Lucy in the Sky with Diamonds"
- First bipedal primate!
  - Lived in grasslands, so better to see further
  - Frees hands to use tools (stone)
    - \* tools required a lot of knowledge to make more advanced tools
    - \* hand axes didn't have handles
  - Long arms, so probably still partially arboreal
    - \* arms to the side, rather than more underneath like in dogs or horses
    - \* probably an artifact of predecessors living in trees

## 2.4 2.5 million years ago

- *Homo habilis* splits off from *Australopithecus* lineage
- considerably larger brain, relative to body size
  - Diet change from mostly herbivore to some meat
- stone, and maybe bone tools
- almost everyone thought humans came from west Africa, but "Leaky"s wife discovered *Homo habilis*.

## 2.5 1.8 million years ago

- Homo ergaster and H. erectus
- First hominids to expand into Europe and Asia from Africa
- Large populations and longer lives, so we know a lot
- direct predecessor to homo sapiens
- Control of fire for heat and warmth, uncertain about cooking (first fire users!)
  - Carried it around with them
  - used it to defend against night predators
  - especially important with earth's cooling, since there were multiple ice ages.
- more-developed stone tools
  - hand axes developed handles
  - first spears with heads
  - better spear heads and axe heads
- Approximately human proportioned body (looked pretty close to humans)

## 2.6 800k years ago

- Homo heidelbergensis arises from H. erectus
- lived in Africa, Europe W. Asia
- Still larger brain (almost as large as modern humans)
- Discovered within the last few decades

## 2.7 400k years ago

- Homo neanderthalensis, descendent of H. heidel... in Eurasia (first not evolved in Africa)
- Large brain (up to 20% larger than humans)
  - Extensive use of tools, shelters, fire, even boats (not quite ocean fairs)
  - probably clothing, at least hides as blankets and covers
- Broad body allowed for cold tolerance
  - But limited their hunting ability, making them less efficient at hunting than humans would be

- humans could easily outrun
- evolved in cold climate
- short limbs, smaller appendages in general (nose, ears, etc)

## 2.8 200k years ago

- Homo sapiens also descended from H. Heidel..., but in Africa
- pretty dry at the time
- Lighter-weight skeleton
- Co-existed with Neanderthals for 20-30k years, with interbreeding (Neanderthals extinct 40k years ago)
  - Hypotheses about this extinction: human interbreeding or out competing
- Neanderthals likely had slightly larger eye volume
- Neanderthals likely had slightly smaller group sizes
- the same region of the brain that handle social interactions is also involved in higher-level cognition (interactive comprehension; reasoning; mind; language)
- these regions are better developed in humans than in neanderthals
- skulls grow with the surface of the brain, so we can see the brain structure (loosley) from fossils of skulls.