

Java man, or *Homo erectus*, who stood upright, had an asymmetric and complex brain that Lucy lacked. The first were discovered in 1891.

Neanderthal man or *Homo neanderthalensis*, discovered in Germany in 1861, is a dead lineage which briefly coexisted with early *Homo sapiens*. Neanderthals died off or were outsmarted due to competition. They are not our ancestors.

Towle presents a cladistic lineage for hominids on page 326.

Your floorplan presents a modern cladistic lineage for hominids under "How to read an Evolutionary Tree" (page 10)

There is a great deal of debate regarding the fossil or structural evolutionary record ("stones and bones") versus the genetic or molecular evolutionary record ("genes and brains") as concerns the evolution of intelligence. Important brain genes are called HAR1, PDYN, FOXP2, and ASPM. Of these, ASPM was discussed in the AMNH exhibit (and my itinerary) and is believed when defective to cause a severe brain defect called microcephaly or small-brain. It is important that while dolphins have a bigger brain than us, we have more cerebral folds. This makes us more developed intellectually.

Humans and chimpanzees differ genomically by no more than 1.2%. All hominid lineages ultimately branched and died: the emanation is not linear (1 from the other), but is instead a dead-end.

What makes us human? Ultimately, our creativity (art, music, and engineering), and our ability to communicate effectively with each other. Teaching, in fact, allows us to build upon the successive accomplishments of every generation that comes before us. Records and our ability to learn from them also keep us from repeating the mistakes of our forefather ancestors. Sounds philosophical, but it's not...our ability to wax philosophical is also what makes us human!

These are your last content notes. We will be in formal review mode from now until the end of the term. Our last day of class meeting is June 16, 2008. The LE regents is June 24, 2008. Get here 8AM with pens and pencils, and your sharp minds. I'll miss you all tons and tons! Sincerely, *Dr. Ned* ☺