

*Human Origins*  
*Lab Exercise #2: Primate Fossils*

The second lab exercise for the course will require you to consider the questions posed below and answer them in report form. You will complete these exercises outside of class. Answer each question thoroughly, taking into account the photos provided and the materials in your course text.

The written report recording your answers should be presented in an articulate, professional word processed format, using a standard 10 – 12 point font. Present your answers in complete sentences, and edit for good grammar and usage.

The report is due in class on **November 4, 2010**.

1. Compare the two skulls below, one belonging to the modern chimpanzee, and the other to the extinct species *Aegyptopithecus*. What similarities and differences do you observe? What do these suggest about the evolution of these species and their relationship to other mammals?
  - a. Adult specimens of the extinct primate *Aegyptopithecus* have been found in two very different size ranges; one group is about twice the size of the other group. What would be your prediction about the social structure of this species, based on this finding?



Chimpanzee



*Aegyptopithecus*

2. How is the skull of *Proconsul africanus* less primitive than the skull of *Aegyptopithecus*?



*Aegyptopithecus*



*Proconsul africanus*

3. DNA hybridization is a technique used to compare DNA sequences of animals of different species. One technique for separating the DNA strands is to heat them to a high temperature and cause the double helix strands separate. When the strands are then combined with those of another species, the strand will separate at a slightly lower temperature, in direct proportion to the **dissimilarity** of the DNA sequences of the species. Assume that the strands of DNA of species A separate at exactly 100 degrees C. What can you infer from the following results of this hybridization experiment?

- Species A + B: separate at 90 degrees C.
- Species A + C: separate at 95 degrees C.
- Species A + D: separate at 92 degrees C.
- Species A + E: separate at 98 degrees C.

Who is species A's closest relative?

What is the % of difference in the DNA sequences of species B and E?

Assuming that species A through E all derived from a common ancestor at some point in the distant past, draw a diagram expressing the relative points of divergence of all the species.