

SECTION 2: EVALUATE ALTERNATIVES

17 HOMINID EVOLUTION TEACHER NOTES

explanations about the phylogenetic relationships between extinct species of hominids. These characteristics may include spatial and size relationships between the eyes, nose, and mouth, which can provide clues about how dependent a type of hominid was on a particular sense such as sight or smell. The relationship between size, shape, and location of bones gives some indication of muscle size and nature of locomotion in a type of hominid. The kinds of teeth, worn patterns, and relative jaw size of a hominid also provide information about the kinds of foods that might have been eaten. Scientists can even determine the ages of the hominid fossil samples at the time of death

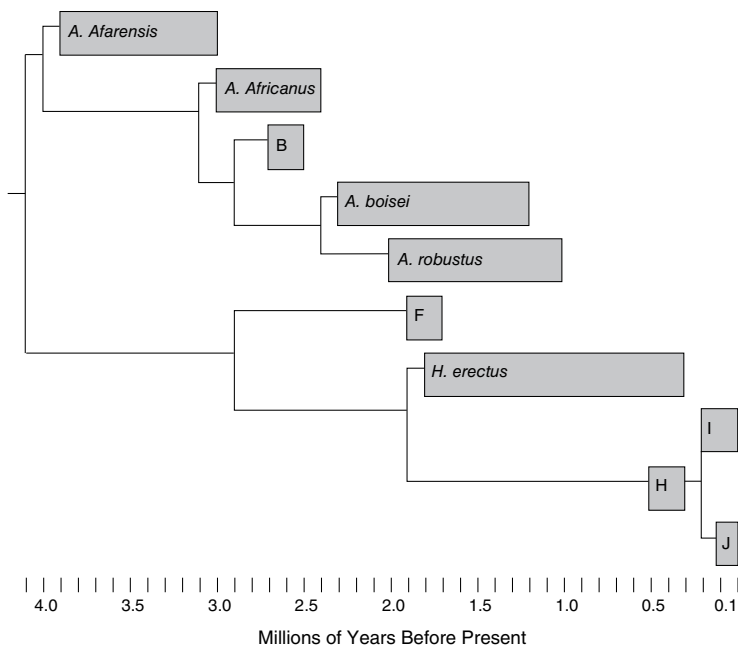
by looking at the extent of tooth erosion and bone growth plates.

In this activity, the students will use replica skulls (or the Smithsonian National Museum of Natural History online 3-D collection of hominid fossils) to evaluate three different explanations for the phylogenetic relationships of several extinct hominid species. The three figures provided on the student handout represent three different explanations for the phylogenetic relationship of hominids that have been proposed by different scientists. These different explanations, therefore, illustrate some of the major disagreements in the field about the phylogenetic relationships of extinct hominids and modern humans.

These disagreements arise because interpretations of the characteristics of extinct hominids are based on incomplete fossil specimens, and these interpretations, as a result, are often contentious. Scientists, for example often disagree about how a specimen should be classified or what a particular characteristic of a specimen suggests about the appearance or behavior of a hominid.

Figure 17.6 represents the current and one of the most widely accepted views of the phylogenetic relationships of hominids and when various traits first evolved. This phylogenetic tree is based on information provided in the book *The Tangled Bank: An Introduction*

Figure 17.6. Phylogenetic Relationships of Hominids



Note: Species B is *P. aethiopicus*; species F is *H. habilis*, species I is *H. neanderthalensis*, species J is *H. Sapiens*.