Common Primate Physical Characteristics

1. arboreal (flexible feet and hands, prehensile and opposable thumb).
2. omnivorous (molars and premolars unspecialized).
3. large brain and optic area of brain.
4. stereoscopic vision with eyes straight ahead.
5. low rate of reproduction.
6. infant dependency.
Common Primate Social Characteristics

1. Diurnal.

2. Long and strong infant-mother ties with stress on learning and considerable maternal investment in offspring.

3. Extensive play which functions as a way to learn important skills (fighting, dominance, sex, and food acquisition).

4. Learning from others (imitation): observation of adults leads to acquisition of important skills.
Unique to Rare Physical Features of Humans Compared to Other Primates (especially chimps):

1. Bipedalism
2. Cranial enlargement
3. Exaggerated secondary sexual characteristics (loss and gain)
4. Hair Loss
5. Increased manual dexterity
6. Menopause
7. Long life span
Unique to Unusual Social and Behavioral Features of Humans Compared to Other Primates (especially chimps):

1. Widespread food sharing
2. Long duration of offspring dependency
3. Concealed ovulation or loss of estrus
4. Great paternal investment in offspring
5. Language
6. Extensive tool use
7. Wide geographic spread
8. Exploitation of calorically rich foods (e.g., especially game)
9. Cooking (example of culture modifying genetic structure)
10. Home base
11. Division of labor
12. Paternal investment
13. Male-female bonding
Importance of cooking & food processing

• Detoxification
• Enrichment by improving nutritional value of food.
• Reduces chewing requirements.
• Destroys inedible parts
• Improves digestion (more of the food value is available and at a lower cost).

Bodily changes caused by cooking

• Tooth and jaw reduction
• Gut reduction
• Lack of digestive enzymes
• Shorter duration of nursing
How hominids differ from primates in bipedal locomotion adaptations (see Fig. 6.2 of text for illustrated details).

- rigid foot
- shorter and broader pelvis
- longer legs
- S-curve in spine
- reduced neck musculature
- foramen magnum moved forward
- precision manipulation of hand
How hominids differ from primates:
Dietary adaptations

- flattened molars
- rotary chewing
- loss of interlocking canines
- thickened enamel
- loss of prognathism
- loss of supraorbital torus
- loss of sagittal crest
- problems with uncooked foods
General Trends in Hominid Evolution

- increased brain size
- increased tool complexity and variety
- decreased robustness in skeleton
- increased reliance on meat in diet
- reduction in sexual dimorphism
- greater geographic range
- elaboration of culture
From bones to behavior: what sexually dimorphic fossils reveal about behavior

<table>
<thead>
<tr>
<th>Social Behavior</th>
<th>High Dimorphism</th>
<th>Low Dimorphism</th>
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<tr>
<td>Mating</td>
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<td>Male-male competition</td>
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<td>Paternal investment</td>
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<td>high</td>
</tr>
<tr>
<td>Group size</td>
<td>high</td>
<td>low</td>
</tr>
</tbody>
</table>
Basic Hominids

*Sahelanthropus tchadensis*
*Orrorin tugenensis*
*Ardipithecus ramidus*

**Australopithecines**
- *amaniensis*
- *afarensis*
- *bahreghazali*
- *africanus*
- *garhi*
- *aethiopicus*
- *robustus*
- *boisei*

**Homo**
- *habilis (rudolfensis)*
- *erectus (ergaster)*
- *heidelbergensis*
- *sapiens neandertalensis*
- *sapiens sapiens*
Tool Traditions

Lower Paleolithic (2.5-100,000)
  Oldowan
  Acheulian
  (core & flake)

Middle Paleolithic (300,000-40,000)
  Levallois
  Mousterian
  (prepared core & pressure flaking)

Upper Paleolithic (40,000-15,000)
  blade & indirect percussion
  pressure flaking
  bone, ivory, & other materials
  cave art & figurines
  megafauna

Mesolithic (15,000-10,000)
  microliths and bows
  word working tools and adzes, polished stone
  dogs, small game hunting

Neolithic (10,000)
  agriculture