Homo sapiens (Modern Human)

Anatomically, modern humans can generally be characterized by the lighter build of their skeletons compared to earlier humans. Modern humans have very large brains, which vary in size from population to population and between males and females. The “modern skull” can be characterized by a thin-walled, high vaulted skull with a flat and near vertical forehead. The jaws are also less heavily developed, with smaller teeth.

Where Lived: Evolved in Africa, no worldwide
When Lived: 200,000 years ago to present
Brain Cavity Size: 1375 / 1215 mL (male/female)

+Pan troglodytes (Modern Chimpanzee)

http://www.indiana.edu/~ensiweb/lessons/skulls2.html

Chimpanzees are the closest living relatives of modern humans as they are thought to have diverged from their lineage around 5 to 8 million years ago. The brain cavity of a chimpanzee's skull is much small than a human's, with the teetch larger and face more protruding.

Where Lived: Equatorial Africa
When Lived: 200,000 years ago to present
Brain Cavity Size: 300-500 mL
Average Height: *male & female* 2'8'' (82cm)
Average Weight: *male* 88-132 lbs (40-60kg) female 70-103 lbs (32-47 kg)

Homo sapiens (Cro-Magnon)

http://www.indiana.edu/~ensiweb/lessons/skulls2.html
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Cro-Magnon is a common name that has been used to describe the first early modern humans. They were robustly built and powerful. The body was generally heavy and solid with a strong muscle build. The forehead was fairly straight rather than sloping like in *H. neanderthalensis*. The face was short and wide and the chin was promenant.

Where Lived: Europe, Western Asia, Northern Africa
When Lived: 200,000 years ago to present
Year of Fossil Discovery: 1868
Brain Cavity Size: 1600 mL
Estimated Average Height: 5'10' (178 cm)

Homo neanderthalensis

http://www.indiana.edu/~ensiweb/lessons/skulls2.html

Defining featurs of the skull include the large middle part of the face, angled cheek bones, and a huge nose for humidifying and warming cold, dry air. Their bodies were shorter and stockier than modern humans, believed to be an adaptation for living in cold environments. The brain cavity was larger, but proportional to their brawnier bodies.

Where Lived: Europe and Southern to Central Asia
When Lived: 200,000 to 40,000 years ago
Year of Fossil Discovery: 1829
Brain Cavity Size: 1600-1650 mL
Estimated Average Height: *male* 5'5'' (164 cm) *female* 5'1'' (155 cm)
Estimated Average Weight: *male* 143 lbs (65 kg) *female* 119 lbs (54 kg)

Homo erectus

http://www.indiana.edu/~ensiweb/lessons/skulls2.html

Sometimes referred to as *Homo ergaster, Homo erectus* fossils are the oldest known early humans to have possessed modern human-like body proportions with relatively elongated legs and shorter arms compared to the size of the torso, indicating life lived on the ground and the ability to walk, and possible run long distances. Microscopic study of the teeth indicate that it had a similar growth rate to that of an ape.

Where Lived: Northern, Eastern, and Southern Africa; Western Asia (Dmanisi, Republic of Georgia); East Asia (China and Indonesia)
When Lived: 1.89 million to 143,000 years ago
Year of Fossil Discovery: 1891
Brain Cavity Size: 800-850 mL
Estimated Average Height: 4'9''-6'1'' (145-185 cm)
Estimated Average Weight: 88-150 lbs (40-68 kg)

Australopithecus boisei

http://www.indiana.edu/~ensiweb/lessons/skulls2.html

Australopithecus boisei is characterized by a specialized skull with adaptations for heavy chewing. Flaring cheekbones gave *Au. boisei* a very wide and dish-shaped face, creating a larger opening for bigger jaw muscles to pass through and support massive cheek teeth four times the size of a modern human's.

Where Lived: Eastern Africa (Ethiopia, Kenya, Tanzania, Malawi)
When Lived: ~2.3 to 1.2 million years ago
Year of fossil discovery: 1959
Brain Cavity Size: 510 mL
Estimated Average Height: *male* 4'6" (138cm); *female* 4'1" (124cm)
Estimated Average Weight: *male* 108lbs (49kg); *female* 75 lbs (34kg)

Australopithecus africanus

http://www.indiana.edu/~ensiweb/lessons/skulls2.html

Australopithecus africanus had a combination of human-like and ape-like features. *Au. Africanus* had a rounder cranium housing a larger brain and smaller teeth compared to its ancestral counterpart, *Au. Afarensis*. *Au. Africanus* also had ape-like features including relatively long arms and a strongly sloping face that juts out from unterneath the braincase with a pronounced jaw. Pelvis, femur, and food bones indicate that it walked bipedally, but its shoulder and hand bones indicate they were also adapted for climing.

Where Lived: Southern Africa
When Lived: ~3.3 to 2.1 million years ago
Year of fossil discovery: 1924
Brain Cavity Size: 450-500 mL
Estimated Average Height: *male* 4'6'' (138cm); *female* 3'9'' (115cm)
Estimated Average Weight: *male* 90lbs (41kg); *female* 66 lbs (30kg)

Timing Is Everything

Odyssey of Life: Part I
The Ultimate Journey
NOVAactivity

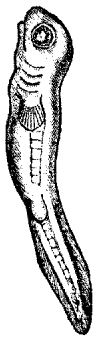
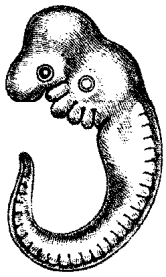
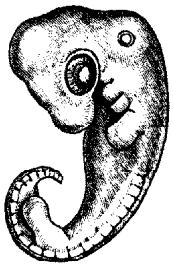
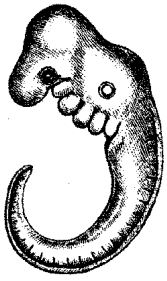
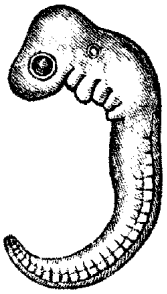
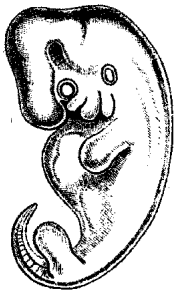
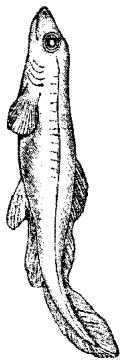
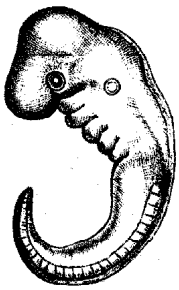
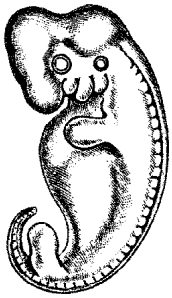
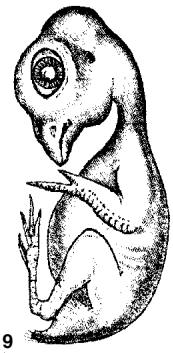
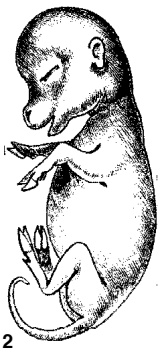
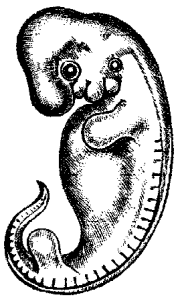
Can you tell a chicken from a fish? How about a human from a pig? Sure you can, you say. Chickens have wings, fish have fins, humans have arms, and pigs have hoofs. But what about when they are just starting to form? The drawings below represent three developmental stages of five different animals. They have been all mixed up—see if you can tell what's what.

Materials for each person:

- paper
- scissors
- pencil

1 Cut out the squares with illustrations of embryos below and see if you can correctly match the embryos with the animals, placing them in order from earliest to latest stages of development.

2 When you are done, write an explanation of why you ordered the drawings the way you did. What similarities do the drawings have? What differences? What, if any, trends do you see as you go from stage 1 to stage 3?

	fish	chick	pig	calf	human
stage 1	 1	 4	 7	 10	13
stage 2	2	5	 8	 11	 14
stage 3	 3	 6	 9	 12	 15