**Primates and Human Origins**

**What is a primate?**

In general, primates have ­­­­­­­­­­­­­­­­­­­­­­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_vision, a well-developed \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, relatively long fingers and toes, and arms that can\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_around their shoulder joints

**Fingers**, **Toes, and Shoulders**

Flexible \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ enable primates to run along tree limbs and swing from branch to branch with ease.

Primates’ arms are well adapted to climbing because they can rotate in broad circles around a strong shoulder joint.

In most primates, the thumb and big \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can move against the other digits. This characteristic allows primates to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ objects in their hands or feet.

**Well-Developed Cerebrum**

The large cerebrum of primates enables them to display \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_behaviors than many other mammals. Many species have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_behaviors that include adoption of orphans and even warfare between rival primate troops.

**Binocular Vision**

Many primates have a \_\_\_\_\_\_\_\_\_\_\_\_\_\_face, so both eyes face forward with overlapping fields of view. This facial structure allows for binocular vision. **Binocular vision** is the ability to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_visual images from both eyes, providing depth perception and a three-dimensional view of the world.

**Two Groups Primates**

**Prosimians**

-ex. Lemur

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

large ­­­­­­­­­­­­­­­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Anthropoids**

Monkeys, apes, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ active

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_eyes

Development \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

This group split into two major groups when continents split

**Evolution of Primates**

**New World monkeys:**

-live almost entirely in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

-have long, flexible \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to swing from branches.

-have a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** tail, which is a tail that can coil around a branch to serve as a “fifth hand.”

-Found Central/South America

Ex. Spider monkey

**Old World monkeys and great apes.**

Old World monkeys live in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_but \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ prehensile tails.

-Ex. Baboon

-Great apes, also called **hominoids**, include gibbons, orangutans, gorillas, chimpanzees, and humans.

-Found in Africa/Asia

**Hominid Evolution**

Between 6 and 7 million years ago, the hominoid line gave rise to hominids. The **hominid** family includes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

As hominids evolved, they began to walk \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and developed \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ adapted for grasping.

They also developed \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The skull, neck, spinal column, hipbones, and leg bones of early hominid species changed shape in ways that enabled later hominid species to walk upright.

Evolution of this **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, or two-foot, locomotion freed both hands to use tools.

Hominids evolved an **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_thumb** that enabled grasping objects and using tools.

Hominids displayed a remarkable increase in brain size, especially in an expanded cerebrum—the “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_” area of the brain.

**Early Hominids**

At present, the hominid fossil record includes these \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:

*Ardipithecus*

*Australopithecus*

*Paranthropus*

*Kenyanthropus*

*Homo*

There are as many as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ separate hominid species.

This diverse group of hominid fossils covers roughly \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ years.

All are relatives of modern humans, but not all are human ancestors.

Questions remain about how fossil hominids are related to one another and to humans.

**Australopithecus**

An early hominid species, *Australopithecus*, lived from about 4 million to 1 million years ago.

The structure of *Australopithecus* teeth suggests a diet rich in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

The best known species is *Australopithecus* *afarensis*—based on a female skeleton named \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, who was 1 meter tall.

Members of the *Australopithecus* species were bipedal and spent some time in trees.

**Recent Hominid Discoveries**

In 2001, a team had discovered a skull in Kenya.

Its ear resembled a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Its brain was \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Its facial features resembled those of *Homo* fossils.

It was put in a new genus, *Kenyanthropus*, which lived at the same time as *A. afarensis*.

In 2002, paleontologists working in the desert in north-central Africa discovered another skull.

Called *Sahelanthropus*, it is nearly 7 million years old.

If it is a hominid, it would be a million years older than any hominid previously known.

It had a brain like a modern chimp and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ human.

**What is the current scientific thinking about hominid evolution?**

**Rethinking Early Hominid Evolution**

Researchers once thought that human evolution took place in steps, in which hominid species became gradually more humanlike.

Hominid evolution \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ proceed by the simple, straight-line transformation of one species into another.

Rather, a series of complex \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ produced a large number of species whose relationships are difficult to determine.

The hominid fossil record dates back \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ years, close to the time that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ studies suggest for the split between hominids and the ancestors of modern chimpanzees.

**The Road to Modern Humans**

Paleontologists still do not completely understand the history and relationships of species within our own genus.

Other species in the genus *Homo* existed before *Homo sapiens*.

**The Genus *Homo***

The first fossils in the genus *Homo* are about \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ years old.

These fossils were found with tools, so researchers called the species *Homo habilis*, which means “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_”.

2 million years ago, a species called *Homo ergaster* appeared. It had a bigger brain and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ nostrils that resembled those of modern humans.

At some point, either *H. ergaster* or a related species named *Homo erectus* began \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ out of Africa through the Middle East.

**Out of Africa—But Who and When?**

Evidence suggests that hominids left Africa in several \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, as shown in the diagram.

It is not certain where and when *Homo sapiens* arose.

One hypothesis, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ model, suggests that modern humans evolved independently in several parts of the world from widely separated populations of *H. erectus.*

Another hypothesis, the o\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ut-of-Africa model, proposes that modern humans evolved in Africa between 200,000–150,000 years ago, migrated out to colonize the world, and replaced the descendants of earlier hominid species.

**Modern *Homo sapiens***

The story of modern humans over the past 500,000 years involves \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_main groups.

The earliest of these species is called *Homo neanderthalensis.*

Neanderthals lived in Europe and Asia 200,000–30,000 years ago.

They made \_\_\_\_+\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and lived in organized social groups.

The other group is *Homo* *sapiens*—people whose skeletons look like those of modern humans.

50,000–40,000 years ago some populations of *H. sapiens* seem to have changed their way of life:

-They made more sophisticated stone \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and elaborately worked tools from bones and antlers.

-They produced \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

-They buried their dead with elaborate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

About 40,000 years ago, a group known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Cro-Magnons appeared in Europe.

By 30,000 years ago, Neanderthals had disappeared from Europe and the Middle East.

Since that time, our species has been Earth’s only hominid\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.