## Bio12-Q3W3-Primate evolution Qs. Bank

**True/False**
*Indicate whether the statement is true or false.*

____ 1. Scientists believe that primates evolved about 66,000 years ago.

____ 2. Anthropoids are a group of small-bodied primates.

____ 3. Strepsirrhines include lemurs and tarsiers.

____ 4. Strepsirrhines can be found in the tropical forests of South America.

____ 5. "Lucy" is 3.5 billion years old.

____ 6. "Lucy" is classified as *A. africanus*.

____ 7. *A. afarensis* is the earliest known hominid species.

____ 8. *A. afarensis* walked on all four legs and had a humanlike brain.

____ 9. Australopithecines are alive today and can be found in southern Africa and Asia.

____ 10. Australopithecines probably played a role in the evolution of modern hominids.

**Multiple Choice**
*Identify the choice that best completes the statement or answers the question.*

____ 11. The first skull of *Homo habilis* was discovered by
a. Raymond Dart.
b. Louis and Mary Leakey.
c. Donald Johanson.
d. Gert Terblance.

____ 12. When compared to an australopithecine skull, the *Homo habilis* skull is
a. more humanlike.
b. less humanlike.
c. more apelike.
d. exactly the same.

____ 13. Which of the following is not true about *Homo habilis*?
a. They existed between 1.5 and 2 million years ago.
b. They were the first hominids to make and use tools.
c. They were probably scavengers of their food.
d. They gave rise to *A. africanus*.

____ 14. *Homo habilis* means
a. "handy human."
b. "tool-using human."
c. "upright human."
d. "talking human."

____ 15. Of the primates below, which has the largest brain?
a. *Homo habilis*
b. *Homo erectus*
c. an ape
d. an australopithecine

____ 16. Which of the following is *not* true about *Homo erectus*?
a. They probably hunted.
b. They were the first hominids to use fire.
c. They may have given rise to hominids that resemble modern humans.
d. They were found only in Africa.

____ 17. *Homo sapiens* includes
a. Neandertals
c. *A. africanus.*

b. australopithecines. d. *A. afarensis*.

____ 18. The major anatomical difference between hominids and the apes is that the foramen magnum is _____ in hominids.
a. less developed c. thicker
b. located at the bottom of the skull d. all of these

____ 19. Tailless primates that are most like humans are the _____.
a. apes c. New World monkeys
b. Old World monkeys d. lemurs

____ 20. New World monkeys are said to have an extra hand, the _____.
a. opposable thumb c. nails on toes
b. prehensile tail d. flexible fingers and toes

____ 21. Lemurs and lorises are members of the primate group called _____.
a. Haplorhines c. Strepsirrhines
b. Anthropoids d. Huminoids

____ 22. Primates are adapted to live in trees because their eyes _____.
a. are in the front of their heads c. see in stereovision
b. detect color d. all of these

____ 23. *Purgatorius* is thought to be the earliest of primate fossils. It lived about _____.
a. 200 000 years ago c. 8 million years ago
b. 2 million years ago d. 66 million years ago

____ 24. It has been determined that the earliest primates probably lived in the _____.
a. grasslands c. forests
b. mountains d. deserts

____ 25. The hominid that had the most advanced toolmaking abilities and spoken language was _____.
a. Cro-Magnon c. *Purgatorius*
b. Neanderthal d. *Homo habilis*

____ 26. As primates evolved, they developed _____.
a. a good sense of smell and large lower vertebrae
b. good vision and large teeth
c. more complex brains and upright posture
d. large teeth and a well-developed collar bone

____ 27. The first hominids to make and use simple stone tools were _____.
a. *Homo sapiens* c. *Australopithecus afarensis*
b. *Homo habilis* d. *Australopithecus africanus*

____ 28. The earliest primate identifiable from the fossil record is _____.
a. *Purgatorius* c. *Neanderthalus*
b. *Australopithecus* d. *Afarensis*

____ 29. Most early hominid fossils have been found in _____.
a. Egypt c. Africa
b. France d. North America

____ 30. The skeleton of the hominid nicknamed "Lucy" gave anthropologists evidence that _____.
a. cavemen coexisted with dinosaurs
b. Neanderthals coexisted with *Homo habilis*
c. upright walking evolved after large brains
d. upright walking evolved before large brains

____ 31. Which is the oldest hominid species to be unearthed?
a. *Homo habilis* c. *Australopithecus afarensis*
b. *Homo erectus* d. *Australopithecus africanus*

____ 32. Evidence for the determination of bipedal locomotion in an animal could be found by an examination of the _____.
a. pelvis
b. upper arm (humerus)
c. finger (carpal)
d. jaw

____ 33. The skulls and pelvic bones of australopithecines have structures that appear _____ those of apes and modern humans.
a. vestigial to
b. nothing like
c. intermediate between
d. identical to

____ 34. Some primate skeletons were located in a cave in association with these things: a variety of tools, the charred bones of some animals they had cooked and eaten, and numerous paintings on the walls. Carbon-14 dating techniques determined that the bones and other artifacts were about 35 000 years old. The skeletal remains probably belonged to _____.
a. *afarensis*
b. *Homo habilis*
c. Cro-Magnons
d. *Homo erectus*

____ 35. Evidence that Homo erectus was more intelligent than its predecessors would include _____.
a. a small cranial capacity as indicated by their skeletal remains
b. involved messages they wrote on cave walls
c. signs of agriculture and tilled fields
d. tools such as hand axes that have been found near their fire pits

____ 36. Which factor may have played a large role in human evolution?
a. a geologic event that released much radiation into the environment, which in time resulted in an increased mutation rate
b. climatic changes that caused existing primates to search for new food sources
c. flooding due to melting glaciers causing primates to seek refuge in the trees
d. massive grassland fires that caused existing primates to flee to the mountains

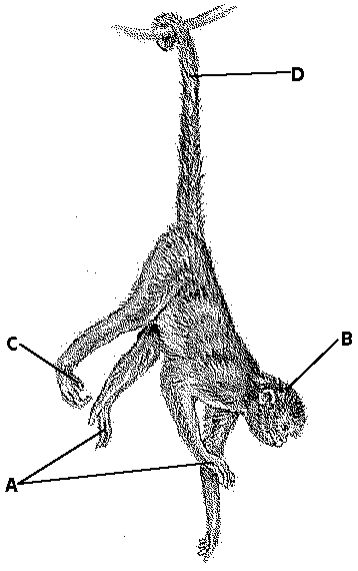


**Figure 16-2**

____ 37. Which adaptation shown in Figure 16-2 is not used for climbing?
a. A
b. B
c. C
d. D

____ 38. Which adaptation shown in Figure 16-2 was lost as monkeys evolved into homonoids?
a. A
c. C

b. B
d. D

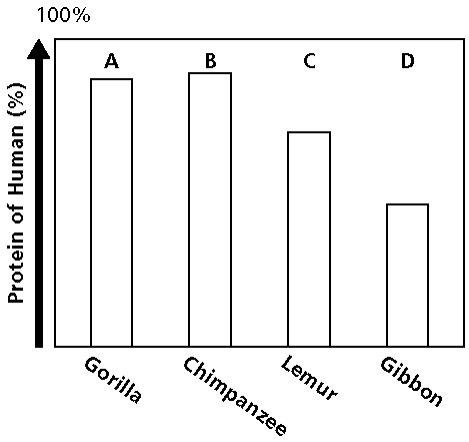


**Figure 16-3**

____ 39. According to Figure 16-3, which species shares the closest ancestor with humans?
a. A
b. B
c. C
d. D

____ 40. According to Figure 16-3, which was the first primate to evolve?
a. A
b. B
c. C
d. D

____ 41. Where would orangatans fall in Figure 16-3?
a. between gorillas and chimpanzees
b. between gorillas and lemurs
c. above chimpanzees
d. between lemurs and gibbons

____ 42. Predict where homo habilus would fall in Figure 16-3.
a. between gorillas and chimpanzees
b. between gorillas and lemurs
c. above chimpanzees
d. between lemurs and gibbons

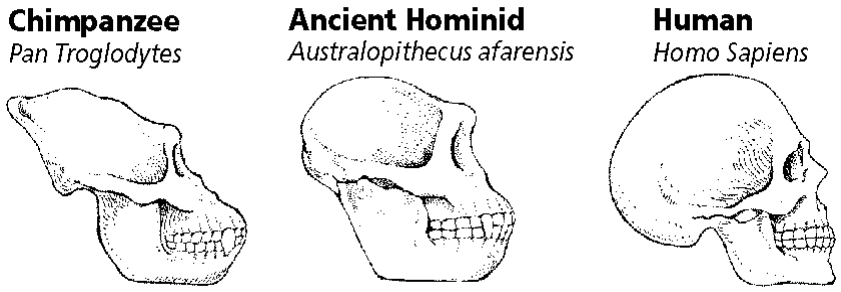


**Figure 16-4**

____ 43. Which characteristic of the skulls in figure 16-4 shows an increase in intelligence?
a. increased brain cavity size
b. decreased teeth size
c. smaller eye sockets
d. rounder jaw

**Completion**
*Complete each statement.*

44. African skulls that show both humanlike and apelike characteristics are thought to be derived from early African primates and are collectively referred to as _____.

45. *Homo sapiens* may have first evolved by 400 000 years ago, and evidence from burial sites around 100 000 years ago indicates the use of communication by one group of people called the _____.

46. A group of people called the _____ lived from 40 000 to 35 000 years ago, when they disappeared from the fossil record.

47. The ability to touch the thumb to the forefinger, permitting objects to be tightly grasped, is called _____.

48. Modern humans and humanlike fossils are classified as _____.

49. A distinctive characteristic of humans is _____ locomotion, the ability to walk on two legs in an upright position.

50. Anthropologists propose that modern primates have evolved from two groups, the strepsirrhines and the _____.

**Short Answer**

51. Summarize the major anatomical changes in hominids during human evolution.

52. Describe the apes.

53. Compare and contrast *Old World* and *New World* monkeys.

54. Describe some of the adaptations primates have for dwelling in trees.

55. Explain why we are still piecing together a picture of how human evolution occurred, and how is it possible that our understanding of it might be flawed?

56. Early primates spent most, if not all, of their time in the trees. How did their successful adaptations there eventually lead to important hominid adaptations?

57. When African forests declined and were replaced with vast areas of grassland, competition for food among animal species intensified. In an attempt to survive, hominids radiated outward from small forested areas. A vegetarian group, the australopithecines, emerged a few thousand years after the cooling period 2.8 million years ago. These hominids had to rely on seeds and tubers during the harsher seasons and on dense vegetation along riverbanks during the remainder of the year. Exploiting a variety of habitats at about the same time as the australopithecines was the first representative of the genus *Homo*. Members of this group consumed many kinds of food, including meat. How would a diet of meat select for a different jaw and tooth structure than is seen in earlier primates?

58. When African forests declined and were replaced with vast areas of grassland, competition for food among animal species intensified. In an attempt to survive, hominids radiated outward from small forested areas. A vegetarian group, the australopithecines, emerged a few thousand years after the cooling period 2.8 million years ago. These hominids had to rely on seeds and tubers during the harsher seasons and on dense vegetation along riverbanks during the remainder of the year. Exploiting a variety of habitats at about the same time as the australopithecines was the first representative of the genus *Homo*. Members of this group consumed many kinds of food, including meat. How would a diet of meat improve the chances of this group's survival, compared to australopithecines?

It is speculated that environmental changes in the African habitat from warm, moist forest to cool, dry grassland exerted selection pressures on all native species, including prehumans. Of all the theories attempting to explain hominid evolution, the one presently receiving much attention links the emergence of humankind to widescale climatic change. Two such major events in human evolution occurred, the first 2.8 million years ago, and the second occurred 1 million years ago.

Ocean-bottom core samples (see Figure 16-1) taken from the west coast of Africa, the Arabian Sea, and the Gulf of Aden off the east coast of Africa lend credibility to this theory. A thick layer of dust and silicate particles has been found in the cores at levels determined to have been deposited 2.8 million and 1 million years before the present. Scientists attribute the deposits to the fact that grasses draw large quantities of silicates from the soil and concentrate them in their tissues for structural use. In a grassland environment, as grasses live, die, and decompose over many years, quantities of silicates accumulate in the surface soil.

Deposits of dust and silicates also coincide with ice sheet formation and the onset of two ice ages in the Northern Hemisphere. Computer models show that the cooling and ice sheet formation influenced weather in both hemispheres. The models illustrate how cool, dry winds would have been diverted toward Africa as the ice sheets grew.

Another important piece of information has been obtained from the Gulf of Aden core. It contains volcanic ash, along with dust and silicates blown by monsoon winds from the Rift Valley. This type of ash is also found in association with some hominid fossils discovered in the Rift Valley.

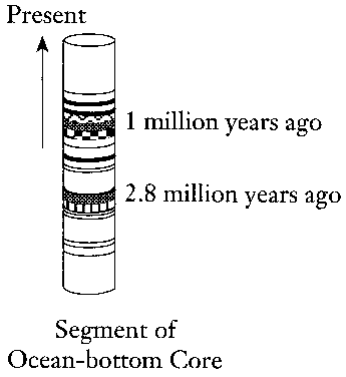


**Figure 16-1**

59. In what way does the presence of volcanic ash in the Gulf of Aden cores and in the Rift Valley help in tracing human evolution? Refer to Figure 16-1.

60. Describe what the African environment might have been like 2.0 million years ago. You may refer to Figure 16-1.

## Bio12-Q3W3-Primate evolution Qs. Bank
## Answer Section

### TRUE/FALSE

1. ANS: F PTS: 1
2. ANS: F PTS: 1
3. ANS: T PTS: 1
4. ANS: F PTS: 1
5. ANS: F PTS: 1
6. ANS: F PTS: 1
7. ANS: T PTS: 1
8. ANS: F PTS: 1
9. ANS: F PTS: 1
10. ANS: T PTS: 1

### MULTIPLE CHOICE

11. ANS: B PTS: 1
12. ANS: A PTS: 1
13. ANS: D PTS: 1
14. ANS: A PTS: 1
15. ANS: B PTS: 1
16. ANS: D PTS: 1
17. ANS: A PTS: 1
18. ANS: B PTS: 1 DIF: B OBJ: 16-5
    NAT: C3 | G1 | G3
19. ANS: A PTS: 1 DIF: B OBJ: 16-2
    NAT: C6 | G2 | G3
20. ANS: B PTS: 1 DIF: B OBJ: 16-1
    NAT: C6 | G2 | G3
21. ANS: C PTS: 1 DIF: A OBJ: 16-2
    NAT: C6 | G2 | G3
22. ANS: D PTS: 1 DIF: B OBJ: 16-1
    NAT: C6 | G2 | G3
23. ANS: D PTS: 1 DIF: A OBJ: 16-3
    NAT: C3 | C4 | G2
24. ANS: C PTS: 1 DIF: B OBJ: 16-1
    NAT: C6 | G2 | G3
25. ANS: A PTS: 1 DIF: B OBJ: 16-5
    NAT: C3 | G1 | G3
26. ANS: C PTS: 1 DIF: B OBJ: 16-3
    NAT: C3 | C4 | G2
27. ANS: B PTS: 1 DIF: B OBJ: 16-5
    NAT: C3 | G1 | G3
28. ANS: A PTS: 1 DIF: B OBJ: 16-3

NAT: C3 | C4 | G2

29. ANS: C PTS: 1 DIF: B OBJ: 16-5
NAT: C3 | G1 | G3

30. ANS: D PTS: 1 DIF: B OBJ: 16-4
NAT: C3 | C6 | G3

31. ANS: C PTS: 1 DIF: B OBJ: 16-4
NAT: C3 | C6 | G3

32. ANS: A PTS: 1 DIF: B OBJ: 16-4
NAT: C3 | C6 | G3

33. ANS: C PTS: 1 DIF: B OBJ: 16-4
NAT: C3 | C6 | G3

34. ANS: C PTS: 1 DIF: B OBJ: 16-5
NAT: C3 | G1 | G3

35. ANS: D PTS: 1 DIF: B OBJ: 16-5
NAT: C3 | G1 | G3

36. ANS: B PTS: 1 DIF: B OBJ: 16-5
NAT: C3 | G1 | G3

37. ANS: B PTS: 1 DIF: A OBJ: 16-1
NAT: C6 | G2 | G3

38. ANS: D PTS: 1 DIF: A OBJ: 16-1
NAT: C6 | G2 | G3

39. ANS: B PTS: 1 DIF: B OBJ: 16-3
NAT: C3 | C4 | G2

40. ANS: D PTS: 1 DIF: A OBJ: 16-3
NAT: C3 | C4 | G2

41. ANS: B PTS: 1 DIF: A OBJ: 16-3
NAT: C3 | C4 | G2

42. ANS: C PTS: 1 DIF: A OBJ: 16-3
NAT: C3 | C4 | G2

43. ANS: A PTS: 1 DIF: A OBJ: 16-5
NAT: C3 | G1 | G3

**COMPLETION**

44. ANS: australopithecines

PTS: 1 DIF: B OBJ: 16-4 NAT: C3 | C6 | G3

45. ANS: Neanderthals

PTS: 1 DIF: B OBJ: 16-5 NAT: C3 | G1 | G3

46. ANS: Cro-Magnons

PTS: 1 DIF: B OBJ: 16-5 NAT: C3 | G1 | G3

47. ANS: opposable thumb

PTS: 1 DIF: B OBJ: 16-1 NAT: C6 | G2 | G3

48. ANS: hominids

PTS: 1 DIF: B OBJ: 16-5 NAT: C3 | G1 | G3

49. ANS: bipedal

PTS: 1 DIF: B OBJ: 16-5 NAT: C3 | G1 | G3

50. ANS: haplorhines

PTS: 1 DIF: B OBJ: 16-2 NAT: C6 | G2 | G3

**SHORT ANSWER**

51. ANS:
Hominids are bipedal, with large brains. The braincase was originally apelike, and the first australopithecines had a face and teeth that were chimplike. The position of the foramen magnum was at the bottom of the braincase. *A. afarensis* and *A. africanus* had larger teeth and jaws that enabled them to eat tough plant materials. Neanderthal humans were powerfully built and were replaced by Cro-Magnons, who were apparently much like modern humans of today.

PTS: 1 DIF: A OBJ: 16-5 NAT: C3 | G1 | G3

52. ANS:
Apes are primates without tails. They are the closest animal relatives of humans. Apes live in Africa and Southeast Asia, are tailless, and have large brains. Apes include chimpanzees, gibbons, gorillas, orangutans, and siamangs. Although all groups have been observed occasionally to kill and eat animals, all are herbivores.

PTS: 1 DIF: A OBJ: 16-2 NAT: C6 | G2 | G3

53. ANS:
Old World monkeys are natives of Africa and Asia. They are a varied group with most species living in trees. Although most species are tropical, they are the only primates, other than humans, that naturally occur outside the tropics. New World monkeys are native to Central and South America. All live in trees and have prehensile tails. These monkeys travel from tree to tree by using their hands for grasping as they swing through the branches.

PTS: 1 DIF: A OBJ: 16-2 NAT: C6 | G2 | G3

54. ANS:
Primates have a highly developed sense of vision with forward-facing eyes, stereoscopic vision, and color vision. Flexible shoulder and hip joints are important for climbing, swinging, and clinging to branches. Opposable thumbs allow tight grasping and manipulation of small objects.

PTS: 1 DIF: A OBJ: 16-1 NAT: C6 | G2 | G3

55. ANS:
The fossil record is not complete. Many of our interpretations of which primate or hominid preceded the other are based on fragments of skeletons. In addition, ancient human fossils are rare due to poor conditions for fossilization at most of the sites.

PTS: 1 DIF: A OBJ: 16-5 NAT: C3 | G1 | G3

56. ANS:

Successful primate adaptations for arboreal life include three-dimensional (stereoscopic) vision, an opposable thumb, the rotating ball-and-socket shoulder joint, and in some cases, the prehensile tail. All but the last adaptation have been significant in the evolution of hominids. Three-dimensional vision permits depth perception, which is critical for tree life, allows for better judgment of predator and prey distances, and also makes the fashioning of tools possible. The opposable thumb makes grasping and crafting tools possible. The flexible shoulder joint made movement through the trees easier for primates and, for hominids, was a necessary step in the evolution of efficient arm movements.

PTS: 1 DIF: A OBJ: 16-1 NAT: C6 | G2 | G3

57. ANS:
The jaw of a vegetarian animal is necessarily heavy with broad, flat teeth. This allows for the chewing and grinding necessary to prepare the food for further digestion. The tooth and jaw structure of an omnivore or carnivore does not require the same massive structure. Meat does not require the same amount and kind of mechanical processing. A meat eater would also need teeth modified for tearing the flesh of the animals consumed.

PTS: 1 DIF: A OBJ: 16-4 NAT: C3 | C6 | G3

58. ANS:
By eating meat, the chances of survival were greatly increased because meat is available year-round. Thus, eating a variety of foods, including meat, enhanced the quality of their diet.

PTS: 1 DIF: A OBJ: 16-4 NAT: C3 | C6 | G3

59. ANS:
The presence of volcanic ash in the cores and in the Rift valley allows for a more precise time correlation between hominid fossils found on land and the climatic record provided by the ocean cores.

PTS: 1 DIF: A OBJ: 16-5 NAT: C3 | G1 | G3

60. ANS:
The African habitat had changed from grassland back to large expanses of forest. This change would have been due to the recession of the ice sheets in the Northern Hemisphere, which resulted in a climate change from cool and dry to warm and moist. The warmer air could hold more moisture. Also, core samples did not contain silicates and dust deposits 2 million years ago, indicating that large expanses of grassland were no longer present.

PTS: 1 DIF: A OBJ: 16-3 NAT: C3 | C4 | G2