

Questions 23-33 are based on the following passage and supplementary material.

Marsupials Lend a Hand to Science

Marsupials (mammals that carry their young in a pouch) are a curiosity among biologists because they lack a corpus callosum, the collection of nerve fibers connecting the two hemispheres of the brain. In most other mammals, the left hemisphere of the brain controls the right side of the body, the right hemisphere controls the left, and the corpus callosum allows communication between the hemispheres. Scientists **23** are long believing that this structure enables complex tasks by sequestering skilled movement to a single hemisphere without sacrificing coordination between both sides of the body; this sequestration would explain handedness, the tendency to consistently prefer **24** one hand over the other, in humans. However, a recent finding of handedness in marsupials suggests that a **25** trait other than the presence of a corpus callosum **26** links as handedness: bipedalism.

23

- A) NO CHANGE
- B) will long be believing
- C) have long believed
- D) long believe

24

- A) NO CHANGE
- B) and favor the use of one hand over the other,
- C) one hand over the other that could be chosen,
- D) one hand on a regular basis,

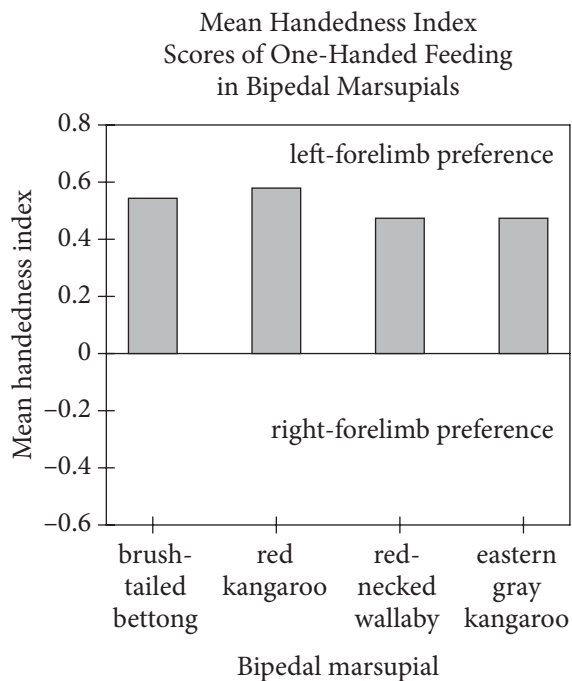
25

- A) NO CHANGE
- B) trait,
- C) trait;
- D) trait:

26

- A) NO CHANGE
- B) correlates with
- C) correlates from
- D) links on

Researchers at Saint Petersburg State University and the University of Tasmania observed marsupials walking on either two legs (bipeds) or four (quadrupeds) and performing tasks such as bringing food to their mouths. The scientists employed a mean handedness index; **27** negative scores indicated a left-forelimb preference and positive scores indicated a right-forelimb preference. While eating, the eastern gray kangaroo, red-necked wallaby, red **28** kangaroo and, brush-tailed bettong, all bipedal marsupials, preferred using their left forelimb, as revealed by **29** positive mean handedness index values less than 0.2 for all four species. These results suggest handedness among these animals.



Adapted from Andrey Giljov et al., "Parallel Emergence of True Handedness in the Evolution of Marsupials and Placentals." ©2015 by Elsevier Ltd.

27

Which choice accurately reflects the information in the graph?

- A) NO CHANGE
- B) scores of 0 or less indicated a left-forelimb preference and positive scores indicated a lack of forelimb preference.
- C) positive scores indicated a lack of forelimb preference and negative scores indicated a right-forelimb preference.
- D) positive scores indicated a left-forelimb preference and negative scores indicated a right-forelimb preference.

28

- A) NO CHANGE
- B) kangaroo, and
- C) kangaroo; and
- D) kangaroo—and,

29

Which choice most accurately reflects the data in the graph?

- A) NO CHANGE
- B) positive mean handedness index values greater than 0.6
- C) positive mean handedness index values between 0.4 and 0.6
- D) mean handedness index values of 0

30 Having four feet, quadrupedal marsupials in the study did not show a strong preference for the use of one forelimb. For instance, gray short-tailed opossums and sugar gliders were assigned mean handedness values very close to zero—they used their right and left forelimbs nearly equally. In effect, the study provided no evidence of handedness among quadrupedal marsupials.

30

Which choice provides the best transition from the previous paragraph?

- A) NO CHANGE
- B) Like most other mammals,
- C) In contrast to their bipedal counterparts,
- D) While using their forelimbs for eating,

31 Kangaroos, though, still do not exhibit handedness to the extent that humans do. As the researchers noted, the quadrupeds typically live in trees and employ all four limbs in climbing. The bipeds, on the other hand, are far less arboreal, leaving their forelimbs relatively free for tasks in 32 whom handedness may confer an evolutionary advantage. Why the majority of marsupials studied preferred their left forelimbs while the majority of humans prefer their right remains a mystery, however, 33 as does the mechanism by which, in the absence of a corpus callosum, the hemispheres of the marsupial brain communicate.

31

Which choice presents a main claim of the passage?

- A) NO CHANGE
- B) For the marsupials in the study, then, handedness seems to be associated with bipedalism.
- C) There are many things scientists do not understand about the marsupial brain.
- D) Additional studies on this phenomenon will need to be performed with other mammals.

32

- A) NO CHANGE
- B) which
- C) what
- D) whose

33

The writer wants to conclude the passage by recalling a topic from the first paragraph that requires additional research. Which choice best accomplishes this goal?

- A) NO CHANGE
- B) though researchers should not neglect the sizable minority of humans who are left handed.
- C) and scientists believe that studies like this one may someday yield insights into the causes of certain neurological disorders.
- D) and an additional study is planned to study handedness in other animals that stand upright only some of the time.