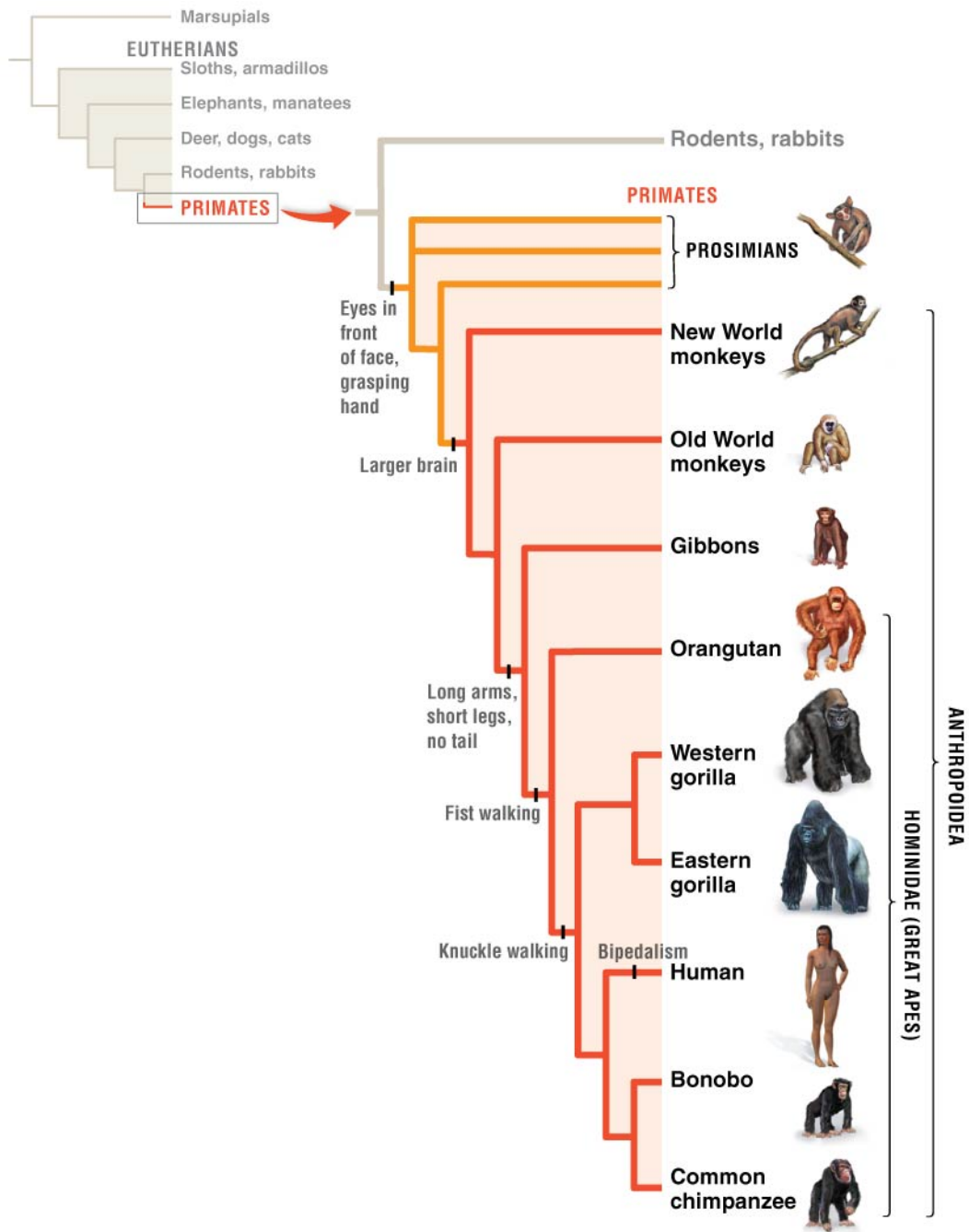1. A patient in a study is treated with an antibiotic for an infection. Researchers observe that most of the beneficial Acidophilus bacteria in her gut are killed, but some do not seem affected by the antibiotic. When she is treated again a week later, some are killed, but *most* now seem unaffected. This observation provides evidence for:

    A. Gene flow
    B. Genetic drift
    C. Mutation
    D. **Natural selection**
    E. Vicariance

2. One characteristic trait that distinguishes apes from monkeys is that apes are better at:

    A. Sitting
    B. Climbing
    C. Leaping
    D. Seeing
    E. **Hanging**

3. The best way to tell the sex of a hominin skeleton is from the:

    A. skull
    B. rib cage
    C. **hips**
    D. teeth
    E. feet

4. It is *not* likely that upright posture in hominins evolved as an adaptation to:

    A. help with keeping cool
    B. **adjust to an environment with more trees**
    C. help with harvesting food
    D. help with carrying food

5. The rapid evolution of flowering plants likely influenced primate evolution in many ways. Which of the possible influences below is the *most* likely?

    A. Increasing the number of mutations that occurred
    B. **Making new adaptive opportunities available**
    C. Increasing gene flow
    D. Reducing gene flow
    E. Increasing competition

6. You discover a fossil mammal with eye sockets that are conspicuously far apart. This likely indicates that this animal

    A. Was active in the daytime
    B. Was active at night
    C. Was a predator
    D. **Was a target for predators**

7. Most mutations are _____. Natural selection tends to favor mutations which are _____.

    A. beneficial; beneficial
    B. beneficial; deleterious
    C. **deleterious; beneficial**
    D. deleterious; deleterious

8. Researchers are studying a zone where two different closely related species of owl have come together due to expansion of their ranges. The species mate freely with each other, and produce viable hybrids. The researchers speculate that, if the hybrids have high fitness, the species may eventually display

    A. Allopatry
    B. Dispersal
    C. **Fusion**
    D. Reinforcement
    E. Exclusion

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9. According to the picture above, which of the following is a clade?

    A. Prosimians
    B. Monkeys
    C. Gibbons, orangutans and gorillas
    D. **Humans, bonobos and chimpanzees**

10. According to the picture above, what is the sister taxon of gibbons?

    A. Prosimians
    B. Monkeys
    C. Orangutans
    D. Orangutans, eastern gorillas and western gorillas
    E. **Great apes**

11. We said in class that human characteristics likely evolved by "looping" between different characteristics.

a) What is meant by looping in this context (2 points)?

    Adaptations in one characteristic provide opportunities for new adaptations in another characteristic, which then provide further opportunities for adaptations in related characteristics . . . .

b) Give an example of three characteristics that were likely involved in the same loop in hominin evolution (3 points). Use commas, only the first three listed will be marked.

    Brain size, complex foraging, language, sociality, toolmaking, slow development, clever hands, stereoscopic vision

12. The breaking apart of continents likely influenced primate evolution in many ways. Which of the possible influences below is the *most* likely?

    A. Increasing the number of mutations that occurred
    B. Making new adaptive opportunities available
    C. Increasing the number of adaptations that occurred
    D. **Facilitating speciation**
    E. Increasing competition

13. Which of these hominin skeletal elements is *least* likely to provide information about posture?

    A. skull
    B. **rib cage**
    C. backbone
    D. hips
    E. knees

14. One characteristic trait that distinguishes apes from monkeys is that apes are better at:

A. Sitting
B. **Swinging**
C. Climbing
D. Leaping
E. Seeing

15. Which of these is *not* a likely explanation why we seem to observe many cycles of radiation and contraction in taxa that we study?

A. Changing environmental conditions
B. Changing ecological conditions
C. **Goal-directed evolution**
D. Emergence of a successful competitor from the taxon
E. Observer bias

16. What is the best explanation of the idea that a "loop" led to humans evolving extreme characteristics?

A. Evolution among our ancestors caused evolution in other species, which caused further evolution among our ancestors
B. **Our ancestors evolved adaptations that made further adaptations possible**
C. Adaptive radiations were followed by contractions and then further radiations
D. Random drift led to adaptive evolution evolution which led to further random drift

17. Researchers of human evolution are interested in types of teeth and diversity of tooth types in human ancestors because they are related to _____, which is relevant for understanding _____.

A. **Dietary habits; complex foraging**
B. Jaw structure; language development
C. Jaw structure; brain size
D. Sexual dimorphism; social structure

18. Which of these is *not* a key problem in figuring out hominin evolution?

A. Which features are derived and which are ancestral
B. Which features are convergent and which are homologous
C. **Which features are adaptive and which result from random drift**
D. Which species were present at what times