

Principles of Taxonomy Concept Questions

1. Give some reasons why taxonomy is important.
2. Why is the use of scientific names important?
3. Why is phylogeny sometimes called the foundation of taxonomy?
4. Many of the classifications used by Linnaeus are still in use today, even though he did not know about evolution. How is this possible?
5. What is the relationship between a family and an order?
6. If two animals are in the same class, what other categories must they share?
7. *Panthera leo* (lion), *Canis latrans* (coyote), *Panthera tigris* (tiger), and *Procyon lotor* (raccoon) are all members of the order Carnivora. Which two members are the most closely related?
8. At which taxonomic level do the lion and tiger in Q7 separate?
9. Describe how a classification key is organized.
10. What things seem to be the most important for determining which kingdom an organism will be placed in?
11. How has technology affected classification? -
12. In addition to physical appearance, what else do modern taxonomists consider?
13. Why are bacteria classified in their own kingdoms and not with plants, animals, or fungi?
14. What characteristics are shared by all plants?
15. Suppose you were a microbiologist who had just discovered a new organism. The organism was unicellular, lacked chloroplasts, and had no cell wall. Which kingdom would you place it in?
16. What similarities and differences exist between plants and protists?
17. What similarities and differences exist between plants and fungi?
18. What are the major characteristics that distinguish animals from plants?
19. Why is it not sufficient to classify animals simply as multicellular heterotrophs?
20. Both snakes and worms are tube-shaped with no legs. How could you determine whether the similarity in shape means that they share a recent common ancestor?
21. You are hanging out in the rain forest of Costa Rica and you notice some beetles. Beetles A and B are quite similar but have different markings on their wings. Also, both beetles resemble a third beetle, beetle C that has been previously described. How could you use DNA to determine whether beetles A and B are more closely related to one another or to beetle C?
22. Of course, we're animals. Thinking about your own personality, which kingdom do you see yourself identifying with? Why?
23. Your friends are debating whether a virus is living or non-living. What would you say?
24. a) Viruses are obligate intracellular parasites. What does this mean?
b) You hear another student claim that viruses appeared on the planet before cells. Provide reasoning to support refute the claim.
25. a) What is meant by host range? Distinguish between a virus with a broad host range and one with a more limited host range.
b) Describe the mechanism for the specificity of the host range.
c) Considering your answer to (b), explain how the immune system is able to protect you from a viral infection.
26. Describe how viruses can be spread from person to person.
27. Explain the difference between the way a virus causes disease and the way a bacterium does.
28. Why are viral infections difficult to treat?