

Module 1: Biology — The Study of Life — Study Questions

1. What are the seven characteristics shared by all living things?
2. Define each level of biological organization from atom to biosphere.
3. Which level of organization is considered the fundamental unit of life? Why?
4. What is the primary purpose of biological classification (taxonomy)?
5. List the eight taxonomic ranks from most inclusive to most specific.
6. What is binomial nomenclature? Why do scientists use scientific names rather than common names?
7. What are the steps of the scientific method?
8. What is the difference between a hypothesis and a theory?
9. Define homeostasis and give a biological example.
10. What is the difference between a control group and an experimental group?
11. Contrast how autotrophs and heterotrophs acquire energy.
12. What is the difference between the flow of energy and the cycling of nutrients through an ecosystem?
13. How does natural selection lead to evolution?
14. What are the three domains of life? Give an example organism from each.
15. Explain the difference between a scientific theory and a scientific law.
16. Why is the phrase "structure determines function" considered a unifying theme in biology?

17. What makes something "alive" versus "non-living"?
18. How do organisms maintain homeostasis when their environment changes?
19. Design a simple experiment: Identify the independent variable, dependent variable, and control.
20. Why is it important to have a large sample size in a scientific experiment?