

Module 5: Scientific Connections

Review Sheet

5.01: Evolution

1. What evidence supports the common ancestry of humans and chimpanzees?
2. Describe the idea of natural selection.
3. What did Lamarck and Darwin contribute to the evolutionary theory?
4. What are some of the evidences behind the theory of evolution?
5. How are organisms placed into groups?
6. Identify one misconception about the theory of evolution.
7. Using the table below, describe how each component provides evidence to the theory.

Evidence of Evolution	Definition	How does this provide evidence for evolution?
Fossils		
Homologous Structures		
Vestigial Structures		
Comparative Embryology		
Molecular Biology		
Biogeography		

8. Define common ancestry.
9. When examining different species, what forms of evidence help scientists determine how recently those species shared a common ancestor?

5.02: Evolutionary Relationship

10. How can natural selection create a change in a population?
11. How can certain traits like camouflage increase the species chance of survival? How might a species survive if they don't have camouflage?
12. Describe the importance of genetic variation with respect to changing environments.
13. Which events do biologists define as a random change in allele frequency due to chance?
 - a. Speciation
 - b. Genetic drift
 - c. Artificial selection
 - d. Reproductive isolation
14. Using the table below, provide an explanation and at least one example for each mechanism of evolution.

Mechanism of Evolution	Explanation	Example
Gene Flow		
Genetic Drift		
Nonrandom Mating		
Mutations		
Natural Selection		

15.

5.02: Evolutionary Relationships Honors:

- 16. How might a species evolve and fill different niches?
- 17. Explain how genetic drift and gene flow are similar.
- 18. What is a molecular clock and how is it used?
- 19. Explain what makes mitochondrial DNA a useful molecular clock.
- 20. Why are neutral mutations used in molecular clocks, but not negative or positive mutations?
- 21. Explain coevolution. How can it be a problem?
- 22. What are the causes for mass extinctions?

5.03: Primate Evolution

- 23. What associations between the skulls can be made of skull size and brain capacity?
- 24. Know the terminology from the skull activity
- 25. How has skull and brain size affect hominid evolution?
- 26. Name some ways evolution changed the physical characteristics of hominids.
 - a. Eyes
 - b. Toes
 - c. Teeth
 - d. Brain size
- 27. What evidence is needed to determine common ancestry?
- 28. Does evidence show that primate evolution occurs as a linear path or a branching tree?

5.04: Classification of Living Organisms

- 29. What were the 3 original kingdoms of classification?
- 30. Why did the number of kingdoms increase to 5?
- 31. What are the 8 major taxa of modern Linnean taxonomy?
- 32. How might genetic codes help classify organisms?
- 33. Where have you seen an example of this?
- 34. Compare and contrast Linnean taxonomy and Cladistics
- 35. How are Archea and Bacteria similar?

36. Why was it necessary to separate Archea and Bacteria from the Kingdom Monera?
37. How do different Clades relate to each other?
38. How has the technology of gene and protein sequencing changed Linnean Taxonomy?
39. Why are viruses not included in Linnean Taxonomy?
40. How do viruses and bacteria differ?
41. Explain phylogeny