

GENETIC RELATIONSHIPS AMONG SPECIES – QUIZ

Part I – Multiple Choice

- 1. What can scientists learn by comparing the DNA of different species?**
 - A. Which organisms are most closely related
 - B. Which organism is the largest
 - C. How long every organism will live
 - D. Which organism has the most offspring
- 2. If two species have very similar DNA sequences, what is the most likely explanation?**
 - A. They have no evolutionary relationship.
 - B. They may share a relatively recent common ancestor.
 - C. They must live in the same environment.
 - D. They must be exactly the same species.
- 3. What is a common ancestor?**
 - A. An organism that is identical to all of its descendants
 - B. An organism or population from which two or more groups evolved
 - C. The strongest organism in an ecosystem
 - D. An organism that cannot reproduce
- 4. Which type of evidence is especially useful for determining genetic relationships among species?**
 - A. DNA sequence comparisons
 - B. Body size comparisons only
 - C. Geographic location alone
 - D. Average lifespan
- 5. Scientists compare a particular gene in three species. Species A and B have very similar sequences, while Species C has many more differences. What does this evidence suggest?**
 - A. Species A and B are likely more closely related to each other than either is to Species C.
 - B. Species C must be the ancestor of Species A and B.
 - C. Species A and C are necessarily the closest relatives.
 - D. DNA cannot provide information about evolutionary relationships.
- 6. What is a phylogenetic tree used to show?**
 - A. The feeding schedule of organisms
 - B. Evolutionary relationships among organisms
 - C. The population size of every species
 - D. The physical size of organisms
- 7. On a phylogenetic tree, two species that share a more recent common ancestor are generally considered**
 - A. more closely related
 - B. completely unrelated
 - C. identical species
 - D. unable to evolve

Part II – Select All That Apply

Directions: Select **ALL** answers that are correct.

8. Which types of evidence can be used to determine evolutionary relationships among species?

- A. DNA sequence similarities
- B. Protein similarities
- C. Homologous structures
- D. Fossil evidence

9. Which statements about genetic relationships are correct?

- A. More similar DNA sequences can indicate a closer evolutionary relationship.
 - B. All species have exactly the same DNA sequences.
 - C. Genetic differences can accumulate over generations.
 - D. DNA comparisons can provide evidence about common ancestry.
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Part III – True or False

Directions: Write **T** or **F**

- 10. ____ Species with more similar DNA sequences may have a more recent common ancestor.
 - 11. ____ A phylogenetic tree can be used to represent hypotheses about evolutionary relationships.
 - 12. ____ Genetic evidence shows that every species evolved independently from unrelated ancestors.
 - 13. ____ Mutations can create genetic differences that accumulate in populations over generations.
 - 14. ____ Two species must have identical DNA sequences to be considered closely related.
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Part IV – Fill-in-the-blank

- 15. Comparing DNA sequences allows scientists to identify genetic _____ and _____. Species with more similar DNA sequences may share a more recent common ancestor.
- 16. A recent common ancestor suggests that the two species are more _____ related evolutionarily than species whose common ancestor lived much farther in the past.
- 17. _____ change DNA sequences. When inherited mutations accumulate in separate populations over many generations, the populations can become increasingly genetically _____ from one another.