

DNA AND EVOLUTIONARY RELATIONSHIPS – QUIZ

Part I – Multiple Choice

1. What is the primary role of DNA in living organisms?

- A. It stores genetic information.
- B. It provides energy for cells.
- C. It transports oxygen throughout the body.
- D. It breaks down food.

2. Why can DNA comparisons be used to study evolutionary relationships?

- A. DNA is identical in every species.
- B. DNA similarities and differences can provide evidence of common ancestry.
- C. DNA determines an organism's age.
- D. DNA only occurs in closely related species.

3. If two species have very similar DNA sequences, what does this most likely suggest?

- 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 are necessarily the same species.

4. Which species would most likely be considered the closest relative of Species X based on the data below?

- A. Species X and Species A: 98% DNA similarity
- B. Species X and Species B: 85% DNA similarity
- C. Species X and Species C: 72% DNA similarity
- D. All three are equally related

5. What does a phylogenetic tree represent?

- A. The amount of food available to organisms
- B. The evolutionary relationships among organisms
- C. The geographic size of an ecosystem
- D. The number of organisms in a population

6. Which statement best describes a common ancestor?

- A. An organism that is identical to all of its descendants
- B. An ancestral organism or population from which different groups descended
- C. The strongest organism in a population
- D. An organism that cannot reproduce

7. Why are mutations important to evolutionary relationships?

- A. They always harm organisms.
- B. They can introduce genetic differences that may accumulate over generations.
- C. They prevent populations from changing.
- D. They make all organisms genetically identical.

Part II – Select All That Apply

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

8. Which types of evidence can help scientists determine evolutionary relationships?

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

9. Which statements about DNA and evolution are correct?

- A. Closely related species often share many similarities in their DNA.
 - B. DNA differences can accumulate over generations.
 - C. DNA comparisons can provide evidence of common ancestry.
 - D. All living organisms have identical DNA sequences.
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Part III – True or False

Directions: Write **T** or **F** on the line.

- 10. _____ Species that share a more recent common ancestor are generally more closely related.
 - 11. _____ Scientists can use similarities and differences in DNA to compare evolutionary relationships.
 - 12. _____ Two closely related species must have completely identical DNA.
 - 13. _____ Mutations can contribute to genetic variation within populations.
 - 14. _____ A phylogenetic tree can be used to show patterns of common ancestry.
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