

Make a Cladogram Lab

Background: Cladistics is the study of evolutionary classification. A cladogram, or a branching tree, shows evolutionary relationships among organisms. Comparative morphology investigates characteristics for homology and analogy to determine which organisms share a recent common ancestor. A cladogram will begin by grouping organisms based on a characteristic displayed by ALL the members of the group. Subsequently, the larger group will contain increasingly smaller groups that share the traits of the groups before them. However, they also exhibit distinct changes as the new species evolve. Further, molecular evidence from genes which rarely mutate can provide molecular clocks that tell us how long ago organisms diverged, unlocking the secrets of organisms that may have similar convergent morphology but do not share a recent common ancestor.

Pre-Lab Questions:

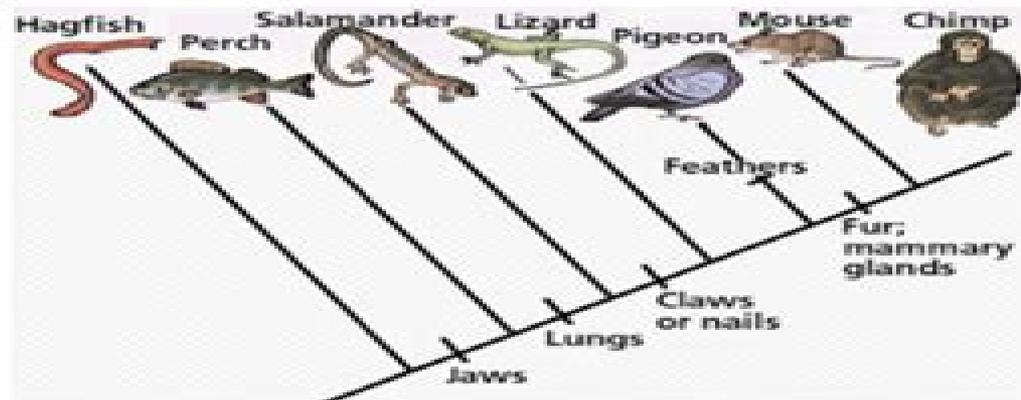


Fig. 1 Sample Cladogram

1. Which organisms in the cladogram in figure 1 have fur and mammary glands?
2. Which organisms in the cladogram in figure 1 have jaws?
3. Based on the cladogram in figure 1, which shared a common ancestor most recently – a mouse and a lizard or a mouse and a perch?
4. Which two organisms would you expect to have a closer matching DNA sequence for a gene that doesn't matter in terms of natural selection – Hagfish and Pigeon or Hagfish and Salamander?
5. Using the species listed in Tables 1 and 2, hypothesize and list the species in order of evolutionary relationships beginning with Amoeba.

Cladograms Genetics Lab Answers

S Ben Porath



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Table of Contents Cladograms Genetics Lab Answers

1. Understanding the eBook Cladograms Genetics Lab Answers
 - The Rise of Digital Reading Cladograms Genetics Lab Answers
 - Advantages of eBooks Over Traditional Books
2. Identifying Cladograms Genetics Lab Answers
 - Exploring Different Genres
 - Considering Fiction vs. Non-Fiction
 - Determining Your Reading Goals
3. Choosing the Right eBook Platform
 - Popular eBook Platforms
 - Features to Look for in an Cladograms Genetics Lab Answers
 - User-Friendly Interface
4. Exploring eBook Recommendations from Cladograms Genetics Lab Answers
 - Personalized Recommendations
 - Cladograms Genetics Lab Answers User Reviews and Ratings
 - Cladograms Genetics Lab Answers and Bestseller Lists
5. Accessing Cladograms Genetics Lab Answers Free and Paid eBooks
 - Cladograms Genetics Lab Answers Public Domain eBooks
 - Cladograms Genetics Lab Answers eBook Subscription Services
 - Cladograms Genetics Lab Answers Budget-Friendly Options

6. Navigating Cladograms Genetics Lab Answers eBook Formats
 - ePub, PDF, MOBI, and More
 - Cladograms Genetics Lab Answers Compatibility with Devices
 - Cladograms Genetics Lab Answers Enhanced eBook Features
7. Enhancing Your Reading Experience
 - Adjustable Fonts and Text Sizes of Cladograms Genetics Lab Answers
 - Highlighting and Note-Taking Cladograms Genetics Lab Answers
 - Interactive Elements Cladograms Genetics Lab Answers
8. Staying Engaged with Cladograms Genetics Lab Answers
 - Joining Online Reading Communities
 - Participating in Virtual Book Clubs
 - Following Authors and Publishers Cladograms Genetics Lab Answers
9. Balancing eBooks and Physical Books Cladograms Genetics Lab Answers
 - Benefits of a Digital Library
 - Creating a Diverse Reading Collection Cladograms Genetics Lab Answers
10. Overcoming Reading Challenges
 - Dealing with Digital Eye Strain
 - Minimizing Distractions
 - Managing Screen Time
11. Cultivating a Reading Routine Cladograms Genetics Lab Answers
 - Setting Reading Goals Cladograms Genetics Lab Answers
 - Carving Out Dedicated Reading Time
12. Sourcing Reliable Information of Cladograms Genetics Lab Answers
 - Fact-Checking eBook Content of Cladograms Genetics Lab Answers
 - Distinguishing Credible Sources
13. Promoting Lifelong Learning
 - Utilizing eBooks for Skill Development
 - Exploring Educational eBooks
14. Embracing eBook Trends
 - Integration of Multimedia Elements

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