

Name: _____ Date: _____ Class: _____

Evolution and Ecology in EvoWorm



Part I: Environmental Pressures & Trade-offs

1. The Cost of Speed In the game, having a high Speed mutation allows a worm to move much faster. However, speeding up can sometimes be a disadvantage if a worm has low Vision or lacks Toxin Sense.

- Explain why this trade-off exists in the game's environment.
- Think of a real-life animal species. Describe an "advantageous" trait it possesses that could actually become a disadvantage if its environment suddenly changed.

2. The Fossil Record & Missing Links During your gameplay, you may have developed a worm with a highly unique combination of mutations, but it died before the match ended.

- Why don't these unique worms show up on the final evolutionary tree?
- How does this limitation in the game mirror the real-life limitations scientists face when studying cladograms and the fossil record?

Part II: Analyzing the Evolutionary Tree

Please refer to the graph below to answer the following questions.

3. Survival Scenarios Based on the cladogram provided, analyze which surviving worm lineages (A, B, C, D, E, or F) would most likely survive the following new environmental pressures. Select all that apply and explain your reasoning using evidence from their phenotype (mutation set).

- **A) Severe Food Scarcity:** Which lineage(s) would survive best if healthy berries became extremely rare? Explain why.

- **B) Increase in Hawks:** Which lineage(s) would survive best if the bird event happened much more frequently? Explain why.

- **C) New Invasive Predator:** Which lineage(s) would survive best if a fast, aggressive predator worm was introduced? Explain why.

- **D) Toxic Environment:** Which lineage(s) would survive best if a massive increase in poisonous berries occurred? Explain why.

