Cross-Curricular Argumentation Guide A

Name: **Date:** **Class:** **Topic: Homologous Structures: Evidence of Common Ancestry**

1. Clarify the claim with any qualifier and define key terms. Homologous structures observed in modern animals provide evidence of common ancestry, explain diversity of traits in species, and infer closeness of relationships on the evolutionary scale.

- homologous structures – anatomical features in different animals that have the same structure, but not necessarily the same function
- adaptation – process whereby organisms best suited to their environment survive to reproduce passing advantageous traits to offspring

2. List the evidence.	**3. Analyze the reasoning.**
1. Homologous structures are a result of a similar genetic makeup of different species.	1. If homologous structures indicate similar genetic make up, then animals with homologous structures must have a common ancestor.
2. The differences in function of homologous structures of modern animals with common ancestry are a result of adaptation over many generations to survive in changing environments.	2. If adaptation results in a species' traits changing over time, then over time, diversity of traits in a species increases.
3. Adaptation in species occurs slowly over time.	3. Since adaptations occur slowly over time, species with more similarities in their homologous structures have a closer relationship on the evolutionary scale. Also, species with greater differences in their homologous structures are farther apart on the evolutionary scale.

4. Identify other arguments for or against the claim.

DNA comparisons can also show shared ancestry and how closely species are related on the evolutionary scale.

5. Make a judgment about the quality of evidence, reasoning, and other arguments.

The quality of evidence is good because it consists of accepted scientific fact. The quality of the reasoning is good because it supports the claim in logical cause-and-effect way. DNA comparison is a strong additional argument.

6. State why you accept or reject the claim.

Based on the factual scientific evidence, logical reasoning, and the DNA argument, I accept the claim.