History of Evolution

1. What is the difference between evolution and the evolution theory?

2. Explain Pre-Darwinian thought. How did Plato and Aristotle contribute to this thought?

3. What is the Theory of Catastrophism? Who is responsible for this theory?

4. Describe the Theory of Use and Disuse and Inheritance of Acquired Characteristics. Who is responsible for this theory? Why is it invalid?

5. What is the relationship between Charles Darwin, Thomas Malthus, and Alfred Russell Wallace?

6. What is natural selection? Who is responsible for this theory?

7. Anteaters are toothless animals that live in South American rainforests and feed on termites. If the termites they usually feed on are replaced by termites that are too large to swallow whole, how might the anteaters change over time? Using your knowledge of natural selection, sequence the steps that will occur during the evolution of the anteater.

Macroevolution

1. Explain macroevolution.

2. How can fossils serve to be evidence for macroevolution?

3. What are homologous structures? Provide an example. What type of evolution is responsible for the production of homologous structures? Explain.

4. What are analogous structures? Provide an example. What type of evolution is responsible for the production of analogous structures? Explain.

5. What are vestigial structures? Provide an example.

6. Hummingbird moths are night-flying insects whose behavior and appearance are similar to those of hummingbirds. Explain ho these two organisms demonstrate the concept of convergent evolution.

7. Embryology can serve as evidence supporting macroevolution. Explain that statement.

8. Biologists have discovered two species of squirrels living on opposite sides of the Grand Canyon. They hypothesize that they both evolved from a recent, common ancestor that lived in the area before the Grand Canyon formed. What observations or experiments could provide evidence for this hypothesis?

9. Complete the chart by checking the kind of evidence described.

Evidence	Homologous Structure	Analogous Structure	Vestigial Structure	Embryological Development	Genetic Comparisons
A modified structure seen among different groups of descendents.					
In the earliest stages of development, a tail and gill slits can be seen in fish, birds, rabbits, and mammals.					
Exemplified by forelimbs of bats,					

penguins, lizards, and monkeys.					
The forelimbs of flightless birds.					
DNA and RNA comparisons may lead to evolutionary trees.					
Bird and butterfly wings have the same function but different structures.					
A body structure reduced in function but may have been used in an ancestor.					

Microevolution

1. Explain how microevolution is different from macroevolution.

2. Explain natural selection using the flow chart provided in class. Using the flow chart as a guide, provide an example (not used in class) of natural selection.

3. Natural selection can affect populations in three specific ways. List, discuss, and provide three examples of each.

4. How are the following words related: gene pool, population genetics, gene frequencies?

5. Selection acts on individuals, but only populations evolve. Explain why this is true.

6. How would one determine the allele frequencies in a gene pool?

Classification

1. Relate the following words to one another: taxonomy and classification.

2. Aristotle developed a system of classifying organisms that lasted for several centuries. What was this system?

3. Who is the father of taxonomy?

4. What is binomial nomenclature? Who developed this system? What are the two rules for this system?

5. What are the seven levels of taxonomic organization?

6. Relate the following words to one another: cladogram, cladistics, phylogeny.