**Chapter 27: Classification**

**27.1: True or False**

*Write true if the statement is true or false if the statement is false.*

\_\_\_\_\_ 1. Classification helps understand the present diversity and past evolutionary history of life on Earth.

\_\_\_\_\_ 2. Linnaeus grouped together organisms that shared obvious physical traits, such as number of heads or shape of toes.

\_\_\_\_\_ 3. Binomial nomenclature gives each species a unique, two-word Latin name.

\_\_\_\_\_ 4. Eukaryota consists of four kingdoms: Animalia, Plantae, Fungi, and Protista.

\_\_\_\_\_ 5. Charles Darwin is known as “the father of classification”.

\_\_\_\_\_ 6. Organisms are currently grouped together if they look alike.

\_\_\_\_\_ 7. The Linnaean system of classification consists of a hierarchy of groupings, called domains.

\_\_\_\_\_ 8. The domain is a grouping that is larger and more inclusive than the kingdom.

\_\_\_\_\_ 9. *Homo sapiens* means “ape (primate) with big brain.”

\_\_\_\_\_ 10. Most biologists agree there are four domains of life on Earth: Bacteria, Archaea, Prokaryota, and Eukaryota.

\_\_\_\_\_ 11. The evolution of life on Earth is ongoing for over 4 billion years.

\_\_\_\_\_ 12. Closely related species are grouped together in a family.

\_\_\_\_\_ 13. The kingdom is the largest and most inclusive grouping.

\_\_\_\_\_ 14. The genus is the smallest and most exclusive grouping.

\_\_\_\_\_ 15. Carolus Linnaeus developed his classification system in the early 1800s.

**Critical Reading**

*Read these passages from the text and answer the questions that follow.*

**Linnaean Classification**

All modern classification systems have their roots in the **Linnaean classification system.** It was developed by Swedish botanist Carolus Linnaeus in the 1700s. He tried to classify all living things that were known at his time. He grouped together organisms that shared obvious physical traits, such as number of legs or shape of leaves. For his contribution, Linnaeus is known as the “father of taxonomy.”

The Linnaean system of classification consists of a hierarchy of groupings, called **taxa** (singular, taxon). Taxa range from the kingdom to the species. The **kingdom** is the largest and most inclusive grouping. It consists of organisms that share just a few basic similarities. Examples are the plant and animal kingdoms. The **species** is the smallest and most exclusive grouping. It consists of organisms that are similar enough to produce fertile offspring together. Closely related species are grouped together in a **genus.**

**Binomial Nomenclature**

Perhaps the single greatest contribution Linnaeus made to science was his method of naming species. This method, called **binomial nomenclature**, gives each species a unique, two-word Latin name consisting of the genus name and the species name. An example is *Homo sapiens*, the two-word Latin name for humans. It literally means “wise human.” This is a reference to our big brains.

Why is having two names so important? It is similar to people having a first and a last name. You may know several people with the first name Michael, but adding Michael’s last name usually pins down exactly whom you mean. In the same way, having two names uniquely identifies a species.

**Revisions in Linnaean Classification**

Linnaeus published his classification system in the 1700s. Since then, many new species have been discovered. The biochemistry of organisms has also become known. Eventually, scientists realized that Linnaeus’s system of classification needed revision.

A major change to the Linnaean system was the addition of a new taxon called the domain. A **domain** is a taxon that is larger and more inclusive than the kingdom. Most biologists agree there are three domains of life on Earth: Bacteria, Archaea, and Eukaryota. Both Bacteria and Archaea consist of single-celled prokaryotes. Eukaryota consists of all eukaryotes, from single-celled protists to humans. This domain includes the Animalia (animals), Plantae (plants), Fungi (fungi), and Protista (protists) kingdoms.

*Questions*

1. What is Linnaeus known for?

2. What is binomial nomenclature?

3. What is a major difference between a kingdom and a species?

4. What is a domain? What are the three domains?

5. List the members of the domain Eukaryota.

**Multiple Choice**

*Write the number of the correct choice.*

1. Who is considered the “father of taxonomy?”
   1. Charles Darwin
   2. Carolus Linnaeus
   3. Gregor Mendel
   4. Francis Crick
2. Which of the following is in the correct order, from most inclusive to most exclusive?
   1. kingdom - family - order - species
   2. kingdom - phylum - family - species
   3. phylum - class - species - genus
   4. order - class - genus - species
3. The three domains of life include
   1. Prokaryota
   2. Eukaryota
   3. Bacteriota
   4. all of the above
4. Eukaryotic organisms that are neither fungi, plants, nor animals are members of which kingdom?
   1. Animalia
   2. Plantae
   3. Fungi
   4. Protista
5. An example of binomial nomenclature would be
   1. *Homo sapiens*
   2. *Panthera tigris*
   3. *Tyrannosaurus rex*
   4. all of the above
6. Revisions in Linnaean classification were made, in part, because
   1. many species went extinct.
   2. many organisms were found to be members of the same species.
   3. of an understanding of the biochemistry of many organisms.
   4. all of the above
7. Which two domains consist only of single-celled prokaryotes?
   1. Bacteria and Archaea
   2. Bacteria and Eukaryota
   3. Archaea and Eukaryota
   4. Prokaryota and Bacteria

**Vocabulary I**

*Match the vocabulary word with the proper definition.*

**Definitions**

\_\_\_\_\_ 1. the science of classifying organisms

\_\_\_\_\_ 2. groupings

\_\_\_\_\_ 3. a taxon that is larger and more inclusive than the kingdom

\_\_\_\_\_ 4. grouping of closely related species

\_\_\_\_\_ 5. developed classification system in the 1700s

\_\_\_\_\_ 6. the largest and most inclusive grouping

\_\_\_\_\_ 7. the smallest and most exclusive grouping

\_\_\_\_\_ 8. system in which modern classification systems are based

\_\_\_\_\_ 9. gives each species a unique, two-word Latin name

**Terms**

a. binomial nomenclature

b. Carolus Linnaeus

c. domain

d. genus

e. kingdom

f. Linnaean classification system

g. species

h. taxa

i. taxonomy

**Fill in the Blank**

*Fill in the blank with the appropriate term.*

1. The science of \_\_\_\_\_\_\_\_\_\_\_\_ organisms is called taxonomy.

2. A hierarchy of groupings is known as a \_\_\_\_\_\_\_\_\_\_\_\_.

3. \_\_\_\_\_\_\_\_\_\_\_\_ nomenclature gives each species a unique, two-word Latin name.

4. A \_\_\_\_\_\_\_\_\_\_\_\_ is a new taxon that is larger and more inclusive than the kingdom.

5. The \_\_\_\_\_\_\_\_\_\_\_\_ is the smallest and most exclusive grouping.

6. The Bacteria and Archaea domains both consist of single-celled \_\_\_\_\_\_\_\_\_\_\_\_.

7. Eukaryota consists of the \_\_\_\_\_\_\_\_\_\_\_\_, Plantae, Fungi, and Protista kingdoms.

8. Bacteria, Archaea, and Eukaryota are the three \_\_\_\_\_\_\_\_\_\_\_\_ of life.

9. All modern classification systems have their roots in the \_\_\_\_\_\_\_\_\_\_\_\_ classification system.

**Critical Writing**

*Thoroughly answer the question below. Use appropriate academic vocabulary and clear and complete sentences in paragraph form.*

Describe the Linnaean classification, and define binomial nomenclature