**Taxonomy Notes Guide: - General Biology B**

You are responsible not only for the material in this guide but the diagrams and pictures on the notes. The notes can be found on Mr. Walkers website: [www.walkersclass.com](http://www.walkersclass.com).

**Alive or NOT alive?**

•Characteristics of Living things:

–Have orderly structure made of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

–Produce offspring

–Grow and develop

--Adjust to changes in the environment

**Problems with Common Names**

•Many organisms have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ names. However, a common name can be misleading. For example, a sea horse is a fish, not a horse.

•In addition, it is confusing when a species has more than one common name.

**Classification**

•One tool that they use to do this is classification—the grouping of objects or information based on similarities.

•\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (tak SAH nuh mee) is the branch of biology that groups and names organisms based on studies of their different characteristics.

**Systems of Classification**

•Aristotle’s system: The Greek philosopher Aristotle (384-322 B.C.) developed the first widely accepted system of biological classification.

–He classified all the organisms he knew into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ groups: plants and animals.

–According to his system, birds, bats, and flying insects are classified together even though they have little in common besides the ability to fly.

–As time passed, more organisms were discovered and some did not fit easily into Aristotle’s groups, but many centuries passed before Aristotle’s system was replaced.

**Linnaeus’s system of binomial nomenclature**

•In the late eighteenth century, a Swedish botanist, Carolus \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (1707-1778), developed a method of grouping organisms that is still used by scientists today.

•Linnaeus’s system was based on physical and structural similarities of organisms.

•As a result, the groupings revealed the relationships of the organisms.

•Eventually, some biologists proposed that structural similarities reflect the evolutionary relationships of species.

**Binomial Nomenclature**

•Modern classification systems use a two-word naming system called binomial nomenclature that Linnaeus developed to identify species.

•In this system, the first word identifies the genus of the organism.

•The second word identifies the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the organism.

**Binomial Nomenclature**

•The first word in the two word name is called the Genus.

–A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (JEE nus) (plural, genera) consists of a group of similar species.

•The second word, which sometimes describes a characteristic of the organism, is called the specific epithet.

•Taxonomists are required to use Latin because the language is no longer used in conversation and, therefore, does not change.

**How to write binomial nomenclature**

•Scientific names should be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in print and underlined when handwritten.

•The first letter of the genus name is uppercase, but the first letter of the specific epithet is lowercase.

•Grouping organisms on the basis of their evolutionary relationships makes it easier to understand biological diversity.

• Animalia: Animals

• Plantae: Plants

• Fungi: Molds and fungus

• Protista: Single celled organisms (amoeba)

• Archaea: OLD bacteria/extremophiles

• Bacteria/Monera: Bacteria

• Eukarya: Eukaryotic cells/organisms

• Bacteria: Prokaryotics cells/bacteria

• Archaea: Ancient bacteria/extremophiles.

**Phylogeny**

• Phylogeny: The evolutionary history of a species.

• Cladistics: The use of cladograms to show evolutionary \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. A cladogram uses the derived traits of a modern species and show traits from ancestral species.

• A dichotomous key is a tool that allows the user to determine the identity of items in the natural world, such as trees, wildflowers, mammals, reptiles, rocks, and fish. Keys consist of a series of choices that lead the user to the correct name of a given item.

