**Taxonomy – Classifying Organism**

* Taxonomy is a field of biology that deals with classifying organisms
* The classification biologist use to show the\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ relationship of the organisms
* Modern taxonomy uses a binomial **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, which is two scientific names for every organism.
	+ Example: *Homo sapiens*
* The first name is the **\_\_\_\_\_\_\_\_\_\_** name and is always capitalize
* The second name is the **\_\_\_\_\_\_\_\_\_\_\_** all in lowercased letters
* The name should be underline or in italics

**Why does Science have weird names?**

Why can’t we just call a *Drosophila melanogaster* a fruit fly. Well if you were to travel to China or Germany to complete research on the *Drosophila melanogaster,* but called it a fruit fly, your fellow researchers would have no idea what you are talking about.

The binomial nomenclature is **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**!

Scientific names can be abbreviated by using the capital letter of the genus and a period: Example. *P. leo* (lion)

Members of the same genus are closely **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
Only members of the same species can interbreed (under natural conditions)
Some hybrids do occur under unnatural conditions: ligers are crosses between tigers and lions.

**Hierarchy of Classification**

Carolus Linnaeus came up with a ranking system for organisms.

Ranking System Anagram

Kingdom

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Human**  | **Cougar**  | **Tiger** | **Pintail duck** |
| **Kingdom** | Animalia | Animalia | Animalia | Animalia |
| **Phylum/Division** | Chordata | Chordata | Chordata | Chordata |
| **Class** | Mammalia | Mammalia | Mammalia | Aves |
| **Order** | Primate | Carnivora | Carnivora | Anseriformes |
| **Family** | Homindae | Felidae | Felidae | Anatidae |
| **Genus** | Homo | Felis | Panthera | Anas |
| **Species** | sapiens | concolor | tigris | acuta |

Phylum/Division

Class

Order

Family

Genus

Species

**Modern Evolutionary Classification**

* Linnaeus grouped species mainly on visible **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
* Today, taxonomists group organisms into categories that represent lines of evolutionary descent (phylogeny)
* Evolutionary relationships among a group of organisms can be shown on a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
* Similarities in DNA and RNA

DNA & RNA is similar across all life forms

* Genes of many organisms show important similarities at the molecular level
* DNA shows evolutionary relationships & helps classify organisms

**The Six Kingdoms**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Kingdom** | **number of Cells** | **energy** | **cell type** | **examples** |
| **archaebacteria** | **unicellular** | **some autotrophic, most chemotrophic** | **prokaryote** | **"extremophiles"** |
| **eubacteria** | **unicellular** | **autotrophic and heterotrophic** | **prokaryote** | **bacteria, E. coli** |
| **fungae** | **most multicellular** | **heterotrophic** | **eukaryote** | **mushrooms, yeast** |
| **plantae** | **multicellular** | **autotrophic** | **eukaryote** | **trees, grass** |
| **animalia** | **multicellular** | **heterotrophic** | **eukaryote** | **humans, insects, worms** |
| **protista** | **most unicellular** | **heterotrophic or autotrophic** | **eukaryote** | **ameba, paramecium, algae** |

**Dichotomous Key**

* Dichotomous key is a tool used for identifying **unfamiliar organisms**
* A dichotomous key is a written set of choices that leads to the name of an organism

**Consider the following animals. They are all related, but each is a separate species. Use the dichotomous key below to determine the species of each.**

|  |  |
| --- | --- |
| **1.** | **Has grayish blue colored body ......go to 2** |
|
| **Has purple colored body ..... go to 4** |
| **2.** | **Has 4 legs .....go to 3** |
| **Has 8 legs .......... Deerus octagis** |
| **3.** | **Has a tail ........ Deerus pestis** |
| **Does not have a tail ..... Deerus magnus** |
| **4.** | **Has a pointy hump ...... Deerus humpis** |
| **Does not have a pointy hump.....go to 5** |
| **5.** | **Has ears .........Deerus purplinis** |
| **Does not have ears ......Deerus deafus** |

****