Hemingway Name:_____

Taxonomy

- Science of _____ living things
- Biologists have identified and named around _____ million species
- Estimated _____million additional unknown species

Why Classify?

- Organisms need a name and organization
- By the 18th century, European scientists recognized that referring to organisms by their common name was _____
- Common names _____ among regions within a country
- By using a _____scientific name, you can be sure you are discussing the same organism
- In order to study the diversity of life, biologists need a _____to name and group organisms in a logical manner

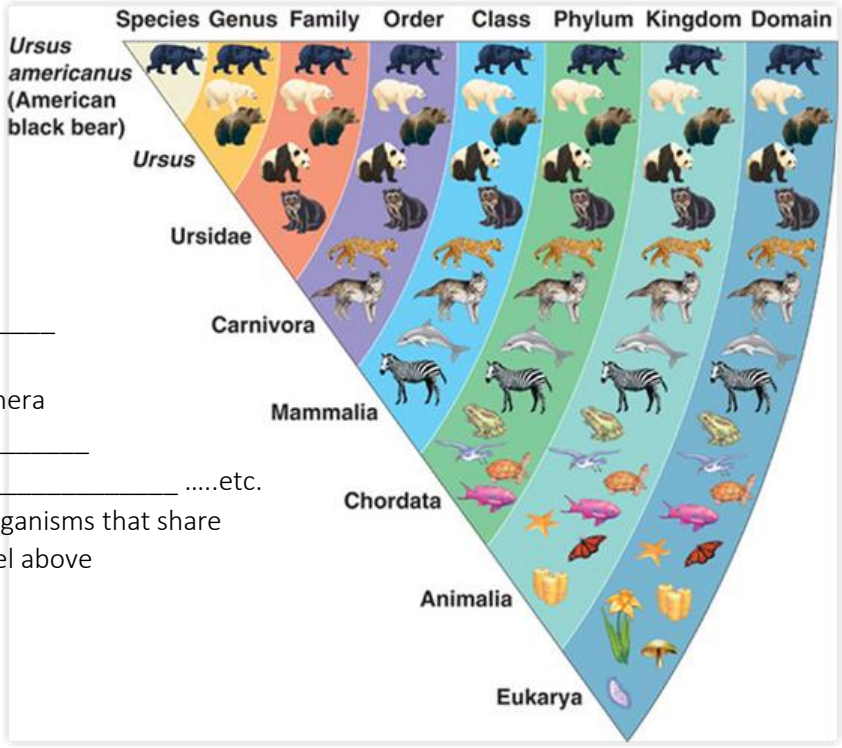
Taxonomy

- The Science of _____and assigning organisms into_____
- Groups of similar organisms are called _____

There are 7 taxa within taxonomy

1._____ Very Large/General grouping
2._____
3._____
4._____
5._____
6._____
7._____ Very small/specific group of organisms

Come up with a mnemonic



Hierarchy

- Classification is _____
- Starting from smallest to largest
- Similar _____ are grouped into genera
- Similar genera are grouped into _____
- Similar families are grouped into an _____ …..etc.
- Each level or taxon groups together organisms that share more_____ than the level above

Hemingway Name:_____

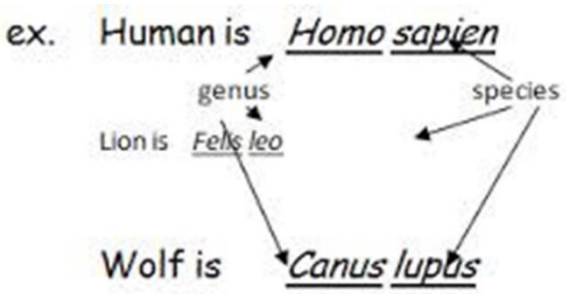
Assigning Names

- Discussed during the 18th century where _____ were well known
- First attempts of naming had scientists naming based on physical characteristics
- Ended up with names _____ words long!

	HUMAN	OSTRICH
DOMAIN	Eukarya	Eukarya
KINGDOM	Animalia	Animalia
PHYLUM	Chordata	Chordata
CLASS	Mammalia	Aves
ORDER	Primate	Struthioniformes
FAMILY	Hominidae	Struthionidae
GENUS	*Homo*	*Struthio*
SPECIES	*sapien*	*camelus*

Binomial Nomenclature

- Developed by Swedish Botanist _____ in the 18th century
- _____ part scientific name
  - Genus and Species
  - Always _____
  - First letter of first word _____
  - Second name _____



Examples of Classification →

Traditional Taxonomy

- Linneaus- 2 Kingdoms
  - Animalia
  - Plantae
- A 5 kingdom system
  - Monera
  - Protista
  - Fungi
  - Plantae
  - Animalia
- Was then split into a 6 Kingdom system
  - Due to large differences within Kingdom Monera, it was split into two different Taxa
    - Eubacteria
    - Archeabacteria

Changing Number of Kingdoms						
First Introduced	Names of Kingdoms					
1700s	Plantae					Animalia
Late 1800s	Protista			Plantae		Animalia
1950s	Monera		Protista	Fungi	Plantae	Animalia
1990s	Eubacteria	Archaebacteria	Protista	Fungi	Plantae	Animalia

Hemingway Name:_____

Molecular Analysis

- A lot of organisms have_____ on the molecular level
  - _____
  - Indicates _____ ancestry
  -
- These similarities are used to determine classification and _____ relationships
- Can also show how a species has _____
- The more similar the DNA sequences of two species, the more recently they have shared a _____

New 3 Domain System

Reflects greater understanding of _____and_____ evidence

Three Domain System:

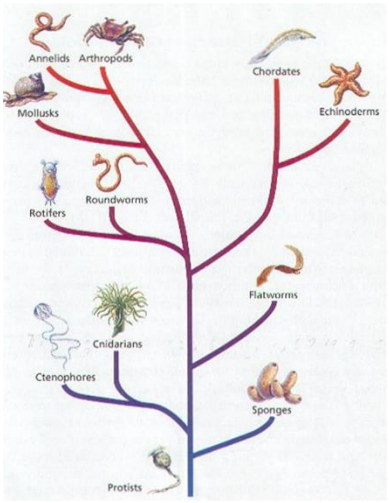
- Molecular Analysis gave scientists new information
- All organisms placed into three broad groups called _____
- Domain _____ (kingdom Archaebacteria) contains chemosynthetic bacteria living in harsh environments
- Domain _____ (kingdom Eubacteria) contains all other bacteria including those causing disease
- Domain _____(kingdoms Protista, Fungi, Plantae, & Animalia) contains all eukaryotic organisms

Classification of Living Things

DOMAIN	Bacteria	Archaea	Eukarya			
KINGDOM	Eubacteria	Archaebacteria	Protista	Fungi	Plantae	Animalia
CELL TYPE	Prokaryote	Prokaryote	Eukaryote	Eukaryote	Eukaryote	Eukaryote
CELL STRUCTURES	Cell walls with peptidoglycan	Cell walls without peptidoglycan	Cell walls of cellulose in some; some have chloroplasts	Cell walls of chitin	Cell walls of cellulose; chloroplasts	No cell walls or chloroplasts
NUMBER OF CELLS	Unicellular	Unicellular	Most unicellular; some colonial; some multicellular	Most multicellular; some unicellular	Multicellular	Multicellular
MODE OF NUTRITION	Autotroph or heterotroph	Autotroph or heterotroph	Autotroph or heterotroph	Heterotroph	Autotroph	Heterotroph
EXAMPLES	*Streptococcus, Escherichia coli*	Methanogens, halophiles	*Amoeba, Paramecium,* slime molds, giant kelp	Mushrooms, yeasts	Mosses, ferns, flowering plants	Sponges, worms, insects, fishes, mammals

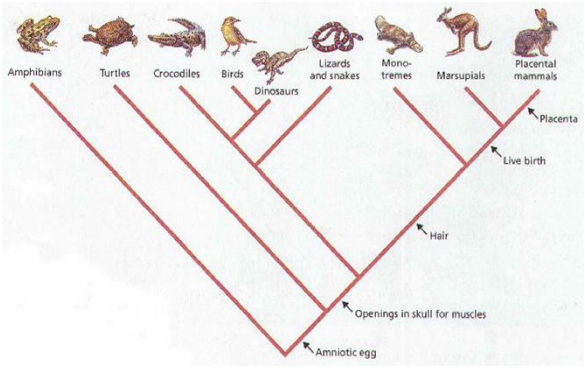
Hemingway Name:_____

Modern Taxonomy



- Modern taxonomists classify organisms based on their evolutionary _____
- _____ have the same structure, but different functions & show common ancestry
    - The bones in a bat's wing, human's arm, penguin's flipper are the same (homologous), but the function is different
- _____ have the same function, but different structures & do not show a close relationship (insect wing & bird's wing)
- Similarity in _____shows a close relationship (vertebrate embryos all have tail & gill slits)
- Similarity in DNA & amino acid sequences of proteins show related organisms

Phylogeny (evolutionary history)



- Phylogenetic trees are _____ showing how organisms are related
    - Also called family trees
- _____ help establish relationships on a phylogenetic tree
- Organizes living things based on their _____
- Common ancestor is shown at the_____ of the tree
- Most modern organisms shown at _____of branches
- Each time a branch divides into a smaller branch, a _____ evolves

Cladograms

- Cladograms shows how organisms are related based on shared, _____ such as feathers, hair, scales, etc.

Classification on How Organism obtain energy

- Heterotroph:

- Autotroph:

TABLE 18-2 *Six Kingdoms of Life*

Kingdom	Cell type	Number of cells	Nutrition
Archaebacteria	prokaryotic	unicellular	autotrophy and heterotrophy
Eubacteria	prokaryotic	unicellular	autotrophy and heterotrophy
Protista	eukaryotic	unicellular and multicellular	autotrophy and heterotrophy
Fungi	eukaryotic	unicellular and multicellular	heterotrophy
Plantae	eukaryotic	multicellular	autotrophy and (rarely) heterotrophy
Animalia	eukaryotic	multicellular	heterotrophy