

TAXONOMY



The Science of
Classifying
Organisms

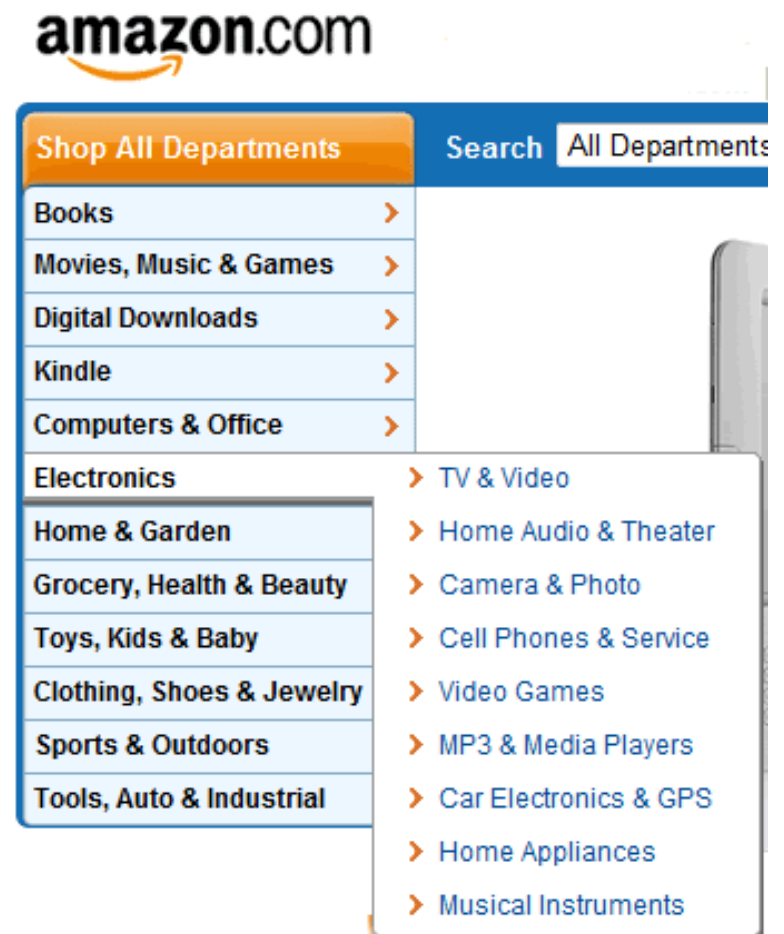
Why do we need to classify?

- Imagine a store.....how do you know where to find the milk or the cereal? Are they in the same aisle? How is the store “organized”? Are all stores similar?
- Imagine your computer or mp3 player..... are all of your songs and files in a single folder or do you have them grouped in some way?

When you have a lot of information, it is best to organize and group items so that you can find them easier or easily see their relationship to other items

....this is why we CLASSIFY

Even websites
must organize their
products



Scientists also need a way to

NAME organisms

- The “common names” used by people can sometimes be misleading or confusing
- In order to communicate effectively, biologists need a **CONSISTENT** naming protocol.

*Check out these slides of confusing names.....



Photo Credits
Sea Lion: Bill Lim
Ant Lion: Amphioxus
Lion: law_keven

Sea Lion?

Antlion?

Lion?





Which one of these is
NOT actually a bear?

Photo Credits

Panda: Chi King

Koala: Belgianchocolate

Black Bear: SparkyLeigh

What kind of organism is it?

(invertebrate, mammal, insect, fish, reptile..)

1. Sea Monkey
2. Firefly
3. Ringworm
4. Jellyfish
5. Spider monkey
6. Crayfish
7. Sea Horse



Photo Credit: Audringje;
flickr

Consider this.....

- Are all “Grey Wolves” gray?
- Are all “Black Bears” black?
- Which is more venomous – a water moccasin or a cottonmouth?



Grey wolves can be white, black and any shade of gray.

Black bears can also be brown or gray

A cottonmouth and a water moccasin are the same animal – the names vary by region.

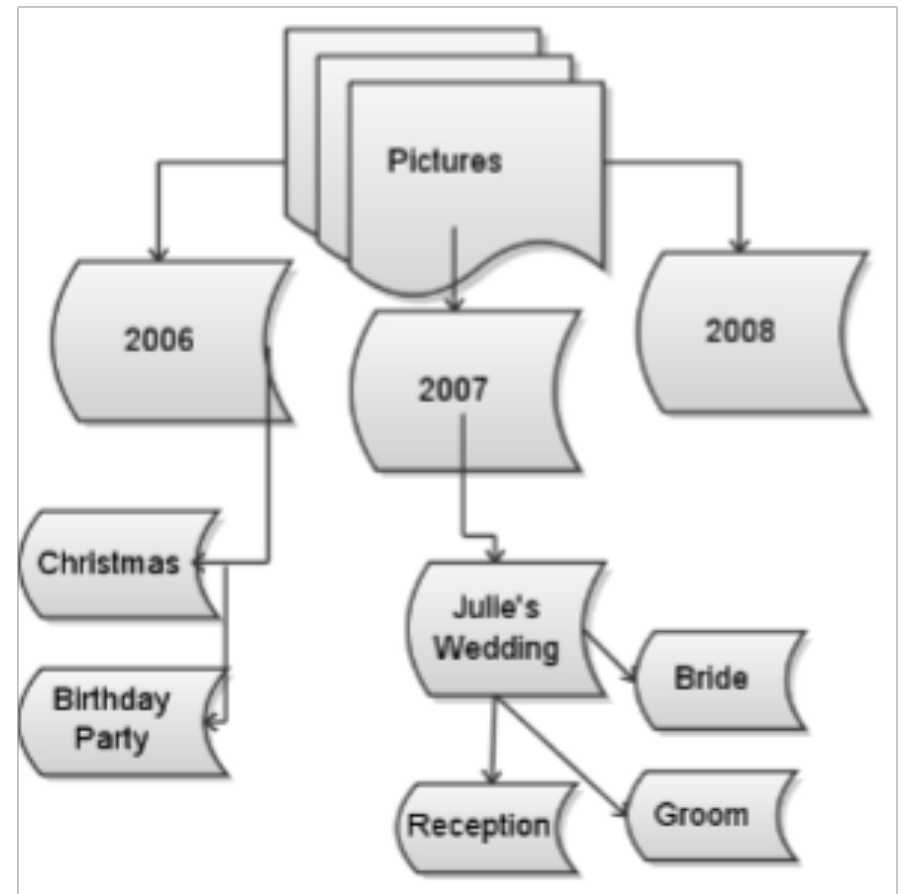
Naming and Organizing are part of the same process

- The system was developed by Carolus Linnaeus who used Greek and Latin names for organisms
- He also created a system where we place all organisms into a few *large* groups - KINGDOMS - and then those groups are further divided into smaller groups

Grouping

- Kingdom
- Phylum
- Class
- Order
- Family
- Genus
- Species

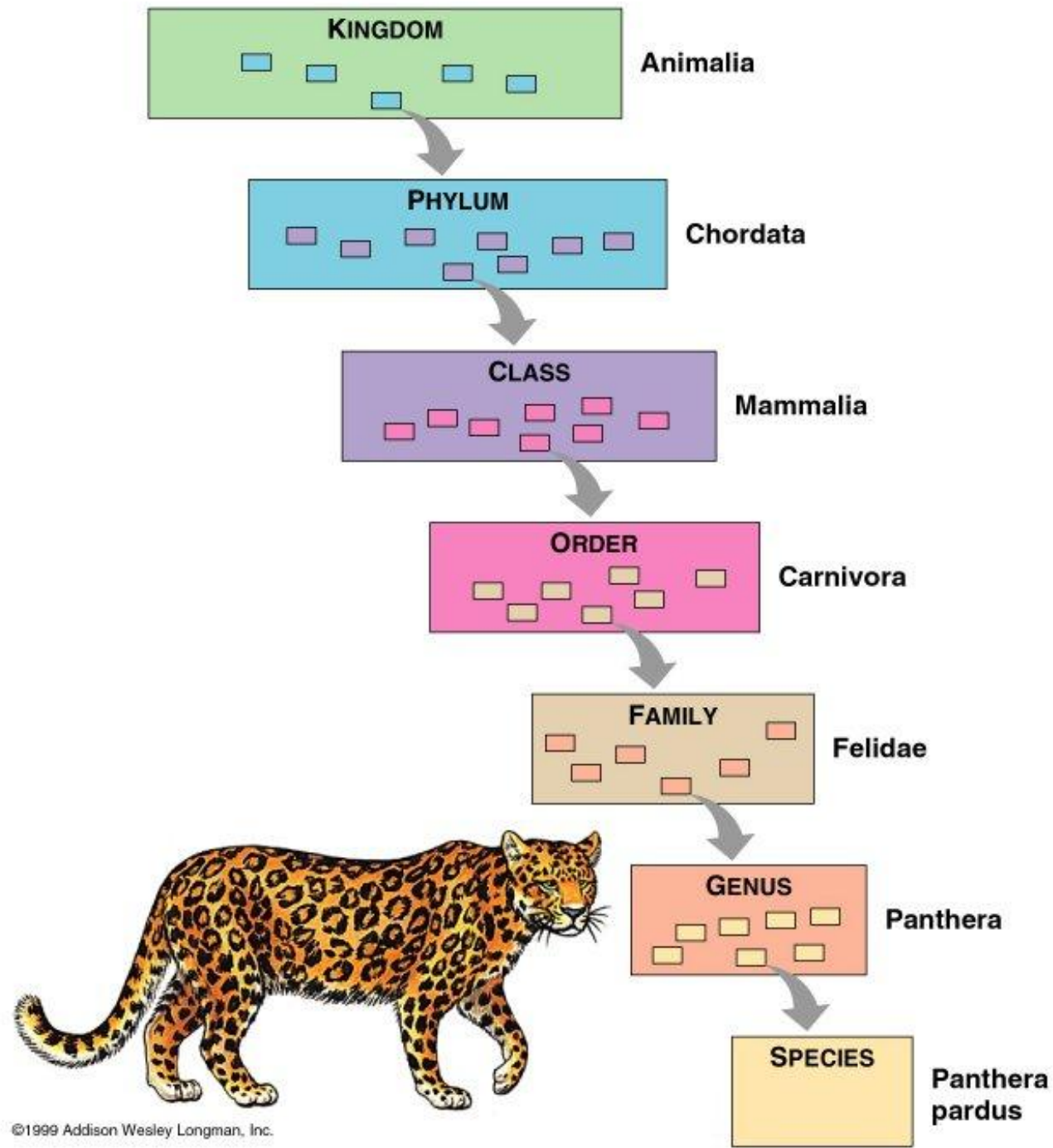
Each group gets smaller and more specific – just think of the way you file things on your computer into folders and subfolders



To help you remember the list

KING PHILIP CAME OVER FOR GREAT SOUP





Humans

Kingdom	Animalia
Phylum	Chordata
Class	Mammalia
Order	Primate
Family	Hominidae
Genus	Homo
Species	sapiens

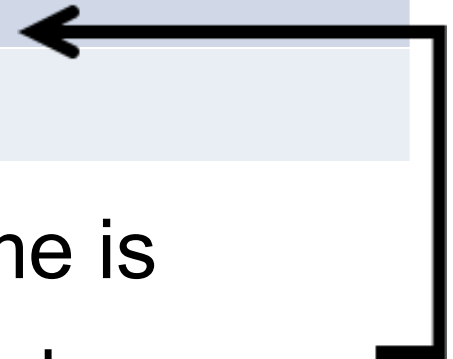


Photo by

The scientific name is
always the genus +
species

Humans = *Homo sapiens*



	Lion	Tiger	Pintail Duck
Kingdom	Animalia	Animalia	Animalia
Phylum	Chordata	Chordata	Chordata
Class	Mammalia	Mammalia	Aves
Order	Carnivora	Carnivora	Anseriformes
Family	Felidae	Felidae	Anatidae
Genus	Panthera	Panthera	Anas
Species	Leo	Tigris	acouta

What are the scientific names of each of these organisms?

More on Naming..

- The system of naming is called BINOMIAL NOMENCLATURE - which means it is a 2-name system.
- Scientific names must either be underlined or italicized
- The genus is always capitalized, the species is lowercase
- Can be abbreviated. Ex. *F. leo* and *F. tigris*

What is a species?

Defined as organisms that can interbreed with one another, and produce fertile offspring



When two organisms of different species interbreed, the offspring is called a **HYBRID**



Example: ligers and mules

Check for Understanding

1. Fill in the blanks: Kingdom, _____, Class, Order, _____, Genus, _____

2. Which two groups are used for an organism's scientific name?

3. Which of the following pairs is MOST closely related?

Acer rubrum & *Acer saccharum*

Acer rubrum & *Chenopodium rubrum*

4. *The system we use for naming is called _____ nomenclature.*

5. *The science of classification is called _____*

The Kingdoms

There are currently 6 kingdoms



Classification into a kingdom is based on certain criteria

-Number of cells (unicellular or multicellular)

-How it obtains energy

(heterotroph or autotroph)

-Type of cell (eukaryote or prokaryote)

Quick Vocabulary Lesson

1. Heterotroph _____

2. Autotroph _____

3. Unicellular _____

4. Multicellular _____

5. Prokaryote _____

6. Eukaryote _____

Some non-science words....

7. *famished* _____

8. *mobility (motility)* _____

Kingdom Animalia

- Multicellular
- Heterotrophic
- Most can move

- Examples: birds, insects, worms, mammals, reptiles, humans, anemones



Kingdom Plantae

- Multicellular
- Autotrophic
- Eukaryotic
- Cannot move (due to cell walls)



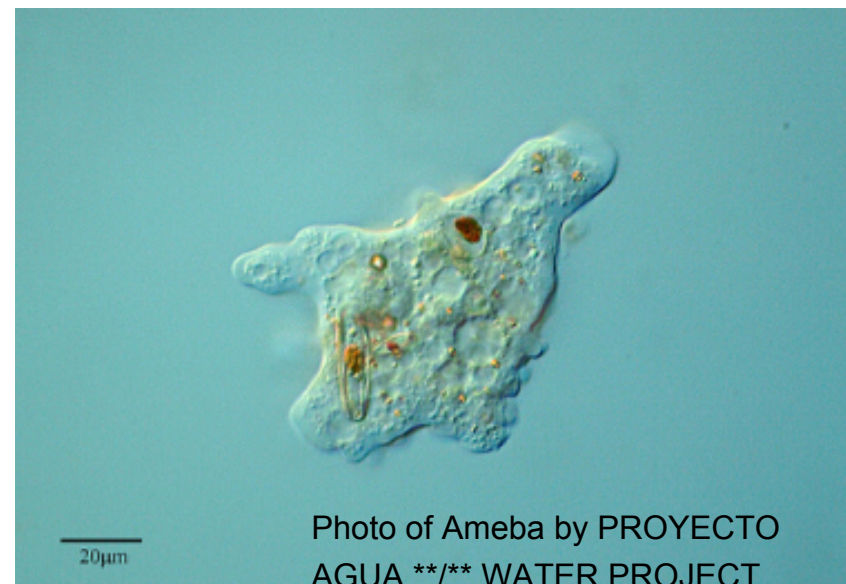
Kingdom Fungae

- Multicellular (most)
- Heterotrophic (mainly decomposers)
- Eukaryotic



Kingdom Protista

- Most are unicellular
- Can be heterotrophic or autotrophic
- Eukaryotes (all have nucleus)
- Examples: Ameba, paramecium, euglena, algae
- Most live in water

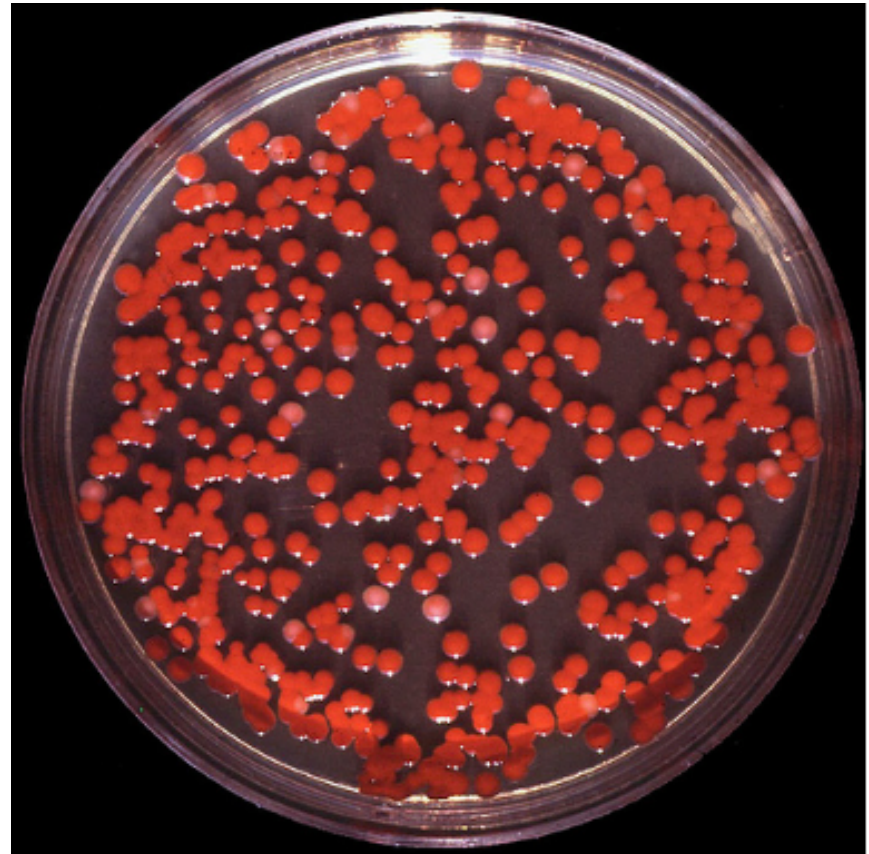


Kingdom Eubacteria & Kingdom Archaeobacteria

- Unicellular
- Can be autotrophic or heterotrophic
- Prokaryotes (do not have a nucleus)

Eubacteria = common
bacteria (E. coli,
Salmonella)

Archaeobacteria =
“ancient bacteria”, exist
in extreme environments



Three Domain System

Recently, scientists have added a group above Kingdom. Three groups, called DOMAINS, contain each of the six kingdoms.

Domain Eukarya - includes organisms composed of eukaryotic cells (plants, animals, fungi, protists)

Domain Bacteria - includes all prokaryotic cells, Kingdom Eubacteria

Domain Archaea - includes only "ancient" bacteria, Archaeobacteria

EAT FOUND!!!



BLACK + TAN WITH GREY

- MALE
- NO COLLAR
- Not VERY FRIENDLY, I think he might be SCARED.
- Not HOUSE BROKEN EITHER 😞
- Found on SUNSET BVD.
- If HE IS yours Please call

TAXONOMY FAIL