

Classification Notes

Classification of living things, a.k.a. Taxonomy

- a. Grouping organisms based on **similar** *characteristics* in a logical way.
- b. Largest grouping of living things = types of organisms
 - Prokaryote** – single celled organisms with NO Nucleus
 - Eukaryote** – single and multi celled organisms with nuclei in each cell

Current Method of Classification

Carolus Linnaeus (1707-1778) invented our current system.

Linnaeus developed a 2-name system – **Binomial nomenclature**

Genus + species = Latin name (a.k.a. *Scientific name*)

(The most specific name of an organism, for example, humans = *Homo sapiens*)

~ Thirty years ago, there were only two kingdoms – Plants and Animals (Aristotle - 4th century)

Now, we teach 4 Kingdoms and 3 Domains. Science is ever changing!

The Three Domains

1. Domain **Archaea** (All are Prokaryotes)

Basic characteristics;

Single- celled

No nucleus

Live in extreme conditions (hot, salty & smelly!)

2. Domain **Bacteria** (All are Prokaryotes)

Basic characteristics;

Single- celled

No nucleus

Have a cell wall

Can be beneficial or harmful

3. Domain **Eukarya** (All are Eukaryotes)

Basic characteristics;

Single- celled **or** **multi-**celled

Have a nucleus

Have membrane bound organelles (like nucleus and mitochondria)

Other relevant vocab:

Autotroph – organisms that produce their own food (through photosynthesis)

Heterotroph – organisms that cannot produce their own food

END OF 2015 NOTES

the rest is a BONUS!!

Order of Classification:

1. Living things from the **Domain Eukarya** are classified into **seven more levels** (*broadest to most specific*)

	<u>Classify a Human being</u>	<u>Classify the chimpanzee</u>
2. Kingdom	Animalia	Animalia
3. Phylum	Chordata	Chordata
4. Class	Mammalia	Mammalia
5. Order	Primate	Primate
6. Family	Hominidae	Hominidae
7. Genus	<i>Homo</i>	<i>Pan</i>
8. species	<i>sapien</i>	<i>troglydytes</i>

* A simple mnemonic device to help you remember the Order of Classification

Dear King Philip Came Over For Good Soup

Complete the following 8 levels of Classification for yourself – broadest to most specific...

I'm thinking of a student...

Massachusetts (State/Domain)

Falmouth (District/Kingdom)

Lawrence (School/Phylum)

7 (Grade/Class)

3 (Team/Order)

_____ (Science class per/Family)

_____ (Last name/Genus)

_____ (first name/species)

Hey – it's YOU!

Name _____

Date _____

Per _____

The Four Kingdoms – all within the **Domain Eukarya**

1. Kingdom Protista (the Protists – text pge 270⁺)

All Protists ...

- * **single-celled**
- * **have a nucleus**
- * Can be animal-like, plant-like, or fungus-like (the “*wanna-be*’s)

A) Animal - like

- * **Heterotroph**
- * No **cell wall**
- * Can move

* Draw some examples:

Amoeba (text pge 277)

Paramecium (text pge 279)

B) Plant-like

- * **Autotroph**
- * Make their own food through **Photosynthesis**
- * Produce huge amounts of **Oxygen (O₂)** for the planet!
- * First to form **colonies**

(this probably led to multi-celled plants and animals)

* Draw some examples:

Euglena (text pge 276)

Algae (text pge 275)

(can be harmful = red tide)

Volvox (text pge 275)

(colony of unicellular organisms)

C) **Fungus-like** – the slime molds (*page 280*)

* **Heterotroph**

* Can be harmless or harmful

(The potato famine in Ireland (1845) was a slime mold that wiped out the entire potato crop)!

2. **Kingdom Fungi**

Domain Eukarya – page 2

Multi-celled

* Spend their lives embedded in their food source = **Heterotroph**

* Largest life form is thought to be a fungus (It covers 30 acres and weighs >100 tons!)

* Draw some examples:

Mushroom (*page 286*)

Yeast (*page 285*)

Mold (*page 284*)

* Lichens (*page 288*) are unusual fungi:

They are made of an algae (provides food for the lichen) AND of a fungus

(provides shape and keeps the lichen moist).

3. **Kingdom Plantae** (The Plants)

* **multi-celled**

* **autotrophs**

* Make their own food through **Photosynthesis**

(The capture of sunlight to give off energy to convert carbon dioxide and water to sugar and oxygen)

* As plants evolved, they became able to move from water to land

1. **Plants without seeds**

a. **Multi-celled algae** (*page 200*)

i. need to live in or near the water

b. **Mosses, Hornworts, Liverworts** (*page 208*)

i. live in moist places on land

c. **Ferns** (*page 213*)

i. live on land

2. **Plants with seeds**

- a. **Gymnosperms** (*page 242*)
 - i. Have naked seeds (may be encased in a cone)
- b. **Angiosperms** (*page 244*)
 - i. Have covered seeds (these are the flowering plants)

Ms Cruse

Name _____

Life Science

Date _____ Per _____

Domain Eukarya – page 3

4. Kingdom Animalia (The Animals)

Multi-celled

All cells have nuclei

- * ALL animals are **Heterotrophs** (cannot make their own food)
- * Animal groups are categorized
 - A) **Invertebrates** (no backbone)
 - B) **Vertebrates** (with a backbone)
- * Animals have evolved from water to land
- * Animal groups are classified from simplest to most complex

A) Invertebrates – (no backbone)

Class:

- 1. Sponges** - simplest animals
 - a. colonies of cells living together
- 2. Cnidarians** - *jellyfish & corals*
 - a. Have body cells organized into tissues.
- 3. Worms** - *flatworms, roundworms and segmented worms*
- 4. Mollusks** - *snails, slugs, clams, scallops, octopus, and squid*
 - a. soft bodies, may have an outer shell
- 5. Arthropods** - *crustaceans, centipedes, spiders and insects*
 - a. joint-footed animal
- 6. Echinoderms** – *starfish, sea urchins*

- a. rough, spiny skin
- b. internal skeleton
- c. 5 part body
- d. tube feet

B) Vertebrates - Phylum Chordata - animals with a backbone

Class:

- 1. **Fish**
 - a. **cold** blooded
 - b. live in **water**

- 2. **Amphibians**
 - a. cold blooded
 - b. live in **water** or on **land**

- 3. **Reptiles**
 - a. **cold** blooded
 - b. live on **land**

- 4. **Birds**
 - a. **warm** - blooded
 - b. live on **land**
 - c. lay eggs
 - d. have feathers
 - e. fly

- 5. **Mammals**
 - a. **warm** - blooded
 - b. live in **water** or on **land**
 - c. have hair or fur

- d. have milk glands to feed their young
- e. breathe through lungs
- f. well-developed brains and sense organs