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## Classification Notes



Scientists also organize and Classify things so that they are easier to investigate and understand.

Some things that scientists classify

- The human body
- The elements
- Interactions in Ecosystems

The most basic classification system is based on Domains and Kingdoms. Organisms are classified into Domains or Kingdoms based on these characteristics:

1. Whether they are unicellular or multicellular.
2. Whether they are prokaryotic or eukaryotic.
3. Whether they have a cell wall or a cell membrane.
4. Whether they have membrane bound organelles.
5. Whether they are autotrophic or heterotrophic.
6. Whether they reproduce sexually or asexually.
7. How they tolerate environmental conditions. (Heat, salt, or other extreme conditions)

Basic Classifications: DOMAINS

- Archaea
- Eubacteria
- Eukaryota

### Domain Archaea

- Archea means "ancient" bacteria
- Organisms in Archaea are:
  - Unicellular
  - Prokaryotic
  - Reproduce asexually
  - Autotrophic or Heterotrophic
  - bacteria that have adapted to extreme environments
- One Kingdom Archaea

Thermophiles - hot environments  
halophiles - salty environments

## Domain Eubacteria

- "Eu" means "True" bacteria
- Unicellular
- Prokaryotic
- Autotrophic or Heterotrophic
- reproduce Asexually
- most abundant organisms on earth
- One Kindom Eubacteria

Domains Archaea and Eubacteria are commonly grouped together. They are all prokaryotes.

Archaea <sup>live</sup> extreme environments

Eubacteria <sup>live</sup> everywhere else

Bacteria is not all bad. Why?

Recycle nutrients in soil, Create yogurt and Cheese  
help digestive system

## Domain Eukaryota (Eukaryote)

- cells have ~~eukaryotic~~ nucleus
- diverse
- Unicellular or multicellular
- Autotrophic or Heterotrophic
- reproduce sexually or asexually
- Split into 4 kingdoms: Protista, Fungi, Plantae, Animalia

Kingdom Protista – Mostly Unicellular  
and Microscopic.

Autotrophic or Heterotrophic.

Examples: Amoeba

Daphnia

Plasmodium (causes malaria)

some types of algae

## Kingdom Fungi

- Mostly multicellular

All heterotrophic (decomposers)

Can be infectious agents.

Examples: Mushrooms, Bread Mold

## Kingdom Plantae

- Eukaryotic
- multicellular
- Autotrophic
- cell wall (around the cell membrane)

Examples: Trees, Grasses, Flowering Plants

## Kingdom Animalia

- Eukaryotic
- multicellular
- Heterotrophic
- No cell wall

Examples: Sponge, Insects, Jellyfish, Humans

How would you classify these?

An organism that can exist in extremely hot temperatures. It is made of only one cell with no nucleus.

Domain: Archaea Kingdom: archaea

A green organism growing from the ground. It is multicellular and undergoes photosynthesis. Its cells have nuclei and cell walls.

Domain: Eukaryota Kingdom: Plantae

Classification Systems Can Change!

Classification systems change as new organisms are discovered and as more information is gained about organism.

Science is a "work in progress" and things change as new evidence is found.