



# Classification of Animals and Plants



Living things can be classified or organised into different categories based on their features, behaviours and way of life. With modern science, scientists are even using DNA comparison to make a clearer picture of the groups that these things fit into.

There are three overarching **Domains** that all life fits into and these are:

- **Archea:** Simple single-celled microorganisms (similar to Eukaryote cells) that includes *thermofilum*, *ferroplasma* and *haloquadratum walsbyi*.
- **Bacteria:** Simple single-celled microorganisms made of prokaryote cells. These are cells that don't have membranes around their organelles. This domain includes *heliobacterpylori* bacillus, anthracis and clostridium tetani.
- **Eukaryota:** Complex life forms which are made up of eukaryote cells. These cells are more complicated than prokaryote cells and have membranes around their organelles. This domain includes plants, insects, animals and fungi.

There is much dispute about how organisms should be grouped but what is given in this article is a basic overview. We will be focusing on the third domain of Eukaryota for the next section.

**Eukaryota** is itself divided into the five main **Kingdoms** below:

## Plantae (or plants)

- These produce their own food through photosynthesis and so are called autotrophs.
- They have indeterminate growth which means that they can keep getting bigger and bigger.
- Contain chlorophyll, so many appear green.
- Their cells have rigid cell walls and chloroplasts for photosynthesis.
- Includes: ferns, mosses and flowering plants.

## Fungi

- These feed off other organisms and many are decomposers as they break down dead material like dead trees and animals. They are called heterotrophs as they don't make their own food.
- Have a similar morphology to both plants and animals but also differ to both.
- Includes: mushrooms, mould and yeast.

## Protista (or protists or protozoa)

- These single-celled organisms can move by themselves.
- They are mostly heterotrophic.
- Includes: paramecium and amoeba.

## Chromista

- These are sometimes grouped with Protista.
- They contain chloroplasts so carry out photosynthesis.
- The chlorophyll they have is different to plant chlorophyll.
- They have four membranes around their chloroplasts whereas plants only have two.
- Includes: brown algae, diatoms and water moulds.

## Animalia

- Made up of many cells.
- Have a body shape that becomes fixed when they reach adulthood.
- They move freely during some stage in their life cycle.
- They are heterotrophs as they rely on other organisms for food.
- Includes: 9 main groups called phyla.

**Animalia** includes Porifera who have a body full of holes and channels that allows water to flow through freely. This phylum covers sea sponges like the stovepipe sponge and rope sponge. Cnidaria are jellyfish and are more complicated than the sponges as they have some organ systems and sensory organs. Sea nettles and box jellies both fall under this phylum. Flatworms or Platyhelminthes are flat in shape, live in water and have a branching gut system. Flukes and tapeworms are both types of flatworm. Hookworms and whipworms both fit into the phylum of Nematoda. Most of these are parasites that live in the gut of other animals; they themselves have a tube gut. Annelida are the segmented worms with long bodies divided into sections, with many having internal separations also. They are covered in mucus and rely on their skin for oxygen. Earthworms and leeches fall into this phylum. Animals with a hard shell and muscular foot including squid, snail and oysters fit into phylum Mollusca. The largest phylum of all Animalia is Arthropoda or the insects. They generally have an exoskeleton and segmented bodies like a suit or armour. Spiders, crabs and ants are all part of Arthropoda. Echinodea are marine dwelling organisms that generally have five point symmetry. This phylum includes starfish, sea cucumbers and sea urchins. The final phylum is Chordata, which is called this because the members have a spinal cord; they also have a tail during some stage of their life cycle. This phylum is divided into the six **Classes** outlined below:

**Chondrichthyes**

- Don't have hard bones.
- Are made of a cartilage skeleton.
- Have multiple rows of teeth.
- Have paired fins.
- Includes: great white sharks and stingrays.

**Amphibia**

- Reproduce in water.
- Start life as a larvae (like a tadpole).
- Cold blooded.
- Start with gills then develop lungs.
- Can also breathe through the skin.
- Lay eggs.
- Includes: frogs and newts.

**Reptilia**

- Cold blooded.
- Lay eggs.
- Have horny skin like scales.
- Have a three-chambered heart.
- Have lungs.
- Includes: turtles and crocodiles.

**Osteichthyes**

- Bony fish.
- Made of a bony skeleton.
- Have external scales.
- Have swim bladders to help with floating.
- Includes: snapper and carp.

**Aves**

- Have feathered wings.
- Are two legged.
- Warm blooded.
- Have a four-chambered heart.
- Lay eggs.
- Have a beak without teeth.
- Includes: kiwi and geese.

**Mammalia**

- Warm blooded.
- Give birth to live young.
- Have hair.
- Have mammary glands that produce milk for feeding their young.
- Four-chambered heart.
- Includes: elephants and mice.

As you can see, the way that living things are organised is a very complicated and well thought out structure. Scientists have tried for many years to make sure these things fit in a set of sensible groups. With each of these classes there are further divisions of Order, Family, Genus and Species.

For example, if we look at the **common black rat**. It has the following categorisation: Domain: Eukaryota, Kingdom: Animalia, Phylum: Chordata, Class: Mammalia, Order: Rodentia, Family: Muridae, Genus: Rattus, Species: Rattus rattus.

Or **humans**:

Domain: Eukaryota, Kingdom: Animalia, Phylum: Chordata, Class: Mammalia, Order: Primates, Family: Hominidae, Genus: Homo, Species: Homo sapiens.

