# Science V13/S5 - Scientific Classification

What exactly does it mean when someone refers to humans as “homo sapiens”? They are not referring to an ancient caveman, but rather, another name for all humans alive today. It is our scientific name. Most of the plants and animals we interact with every day you know by their common name, like a rose or a wolf.

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|---|---|
| DOMAIN | Eukarya |
| KINGDOM | Animalia |
| PHYLUM | Chordata |
| CLASS | Mammalia |
| ORDER | Carnivora |
| FAMILY | Canidae |
| GENUS | *Canis* |
| SPECIES | *Canis lupus* |


The problem with common names is that they might vary from place to place and almost always vary by language. “Wolf” in Spanish is “lobo”. Scientists figured out that if they wanted to share their research about different living things, they needed a system to call all organisms that could be used around the world, no matter the language. It was from this need that the system of Binomial nomenclature was created.

This system has been around for some time. It was established in the 1750s by Carolus Linnaeus and is called the Linnaean system of binomial nomenclature. Many of the names use Latin language roots to describe the organism. For example, the scientific name of a grey wolf is Canis lupus. In Latin, lupus means wolf. It is called binomial, which means “two names”, because all scientific names are comprised of both the genus and the species. You can actually tell how closely living things are related based on what names they share.

The scientific names only mention the genus and the species, but that only scratches the surface in terms of how we classify living things. Every organism is classified into eight levels: Domain, Kingdom, Phylum, Class, Order, Family, Genius, Species. A wolf and a hyena share the same order, Carnivora. Through their classification, we can see they are both related in the Carnivore order.

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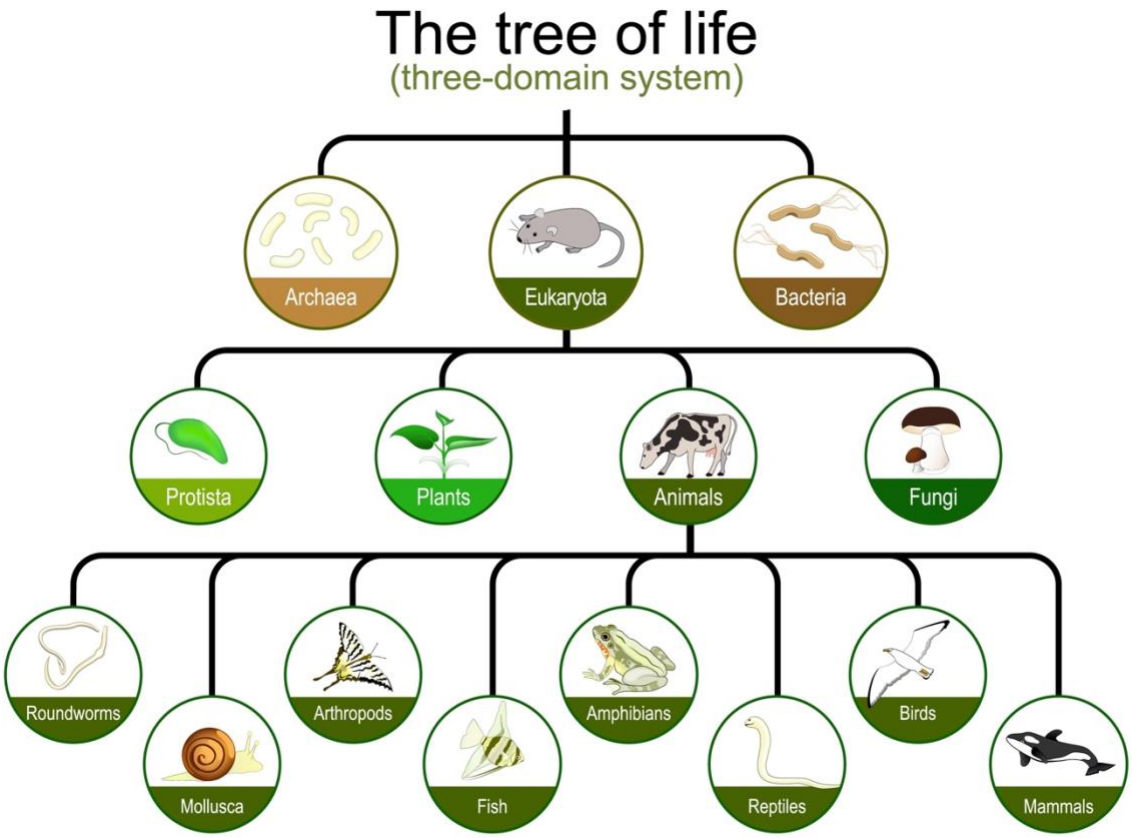
|---|---|
| DOMAIN | Eukarya |
| KINGDOM | Animalia |
| PHYLUM | Chordata |
| CLASS | Mammalia |
| ORDER | Carnivora |
| FAMILY | Hyaenidae |
| GENUS | *Crocuta* |
| SPECIES | *Crocuta Crocuta* |


By contrast, a wolf and a snake have a lot less in common, only sharing the same Phylum, Chordata, which means they both have vertebrae (backbones). Because the level they share is

higher in the classification system, we can conclude that they are not going to share as many characteristics.

You can learn a lot about an organism by knowing the characteristics of the different classification levels. An example is the Class Mammalia. All animals that we call mammals share this class, as well as the traits that we know all mammals have in common, like being warm-blooded, having hair or fur, and mammary glands to produce milk for their young. This is very different than the Class Reptilia, with animals like snakes and lizards, that are cold-blooded and lay eggs. The phylum Chordata (animals with backbones) is divided into five common classes: fish, amphibians, reptiles, mammals and birds.




There have been changes to the classification system over time. Earlier versions had everything classified as either part of the plant or animal kingdom. As science advanced, more kingdoms were added as we learned more about microorganisms. Eventually, scientists realized they needed a level higher than kingdom and added domains. The three-domain system was introduced in 1990, which takes all living things back to their most basic building block, the cell, and the presence of a nuclear membrane. These domains are Archaea, Eukaryote, and Bacteria. Scientific classification will continue to evolve as we learn more about our natural world.