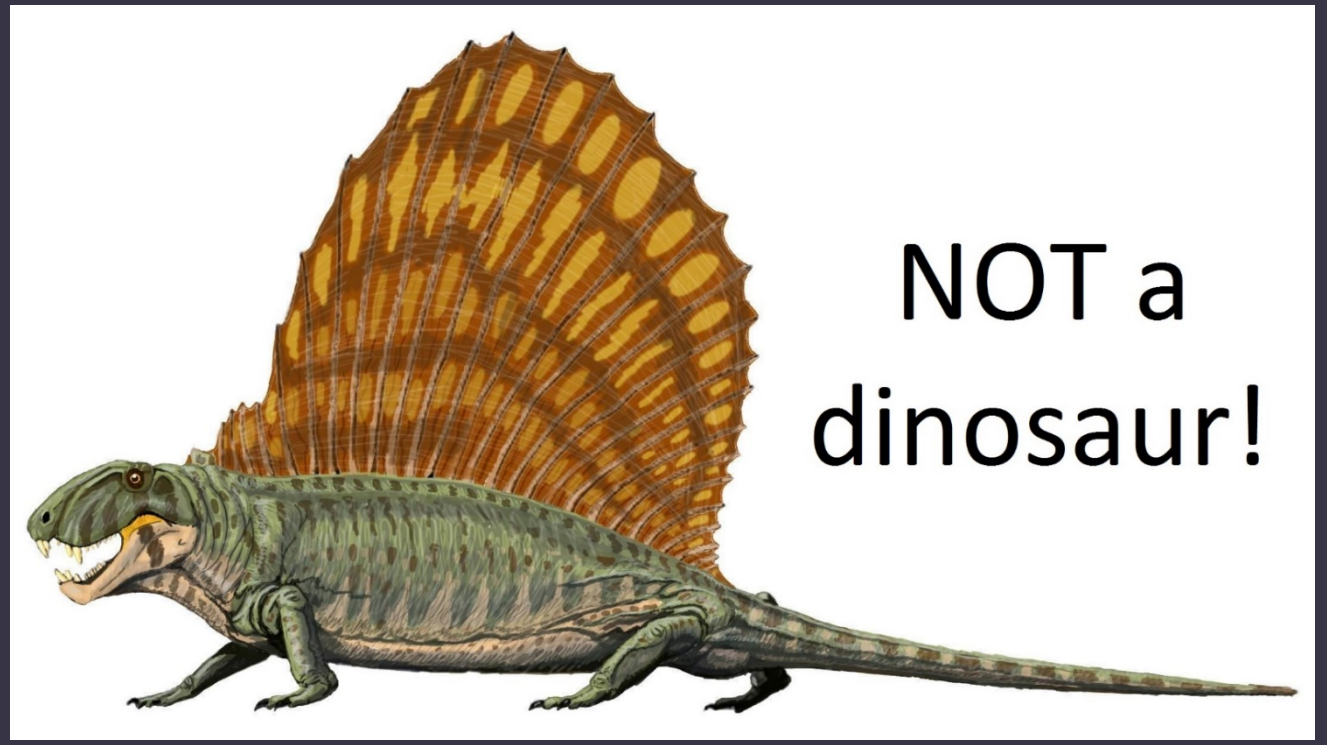
Classification of Life

What is a species?

All living organisms are classified into groups based on very basic, shared characteristics. Organisms within each group are then further divided into smaller groups. These smaller groups are based on more detailed similarities within each larger group.

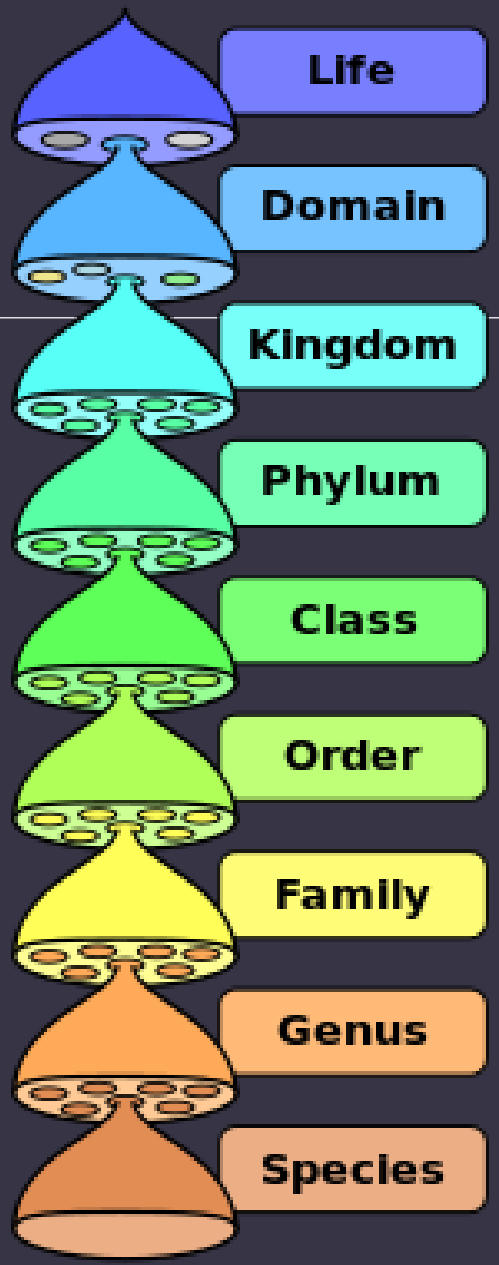
No classification system is universally accepted.



Taxonomy

Taxonomy is the science of defining and naming groups of biological organisms on the basis of shared characteristics. Organisms are grouped together into taxa and these groups are given a taxonomic rank.

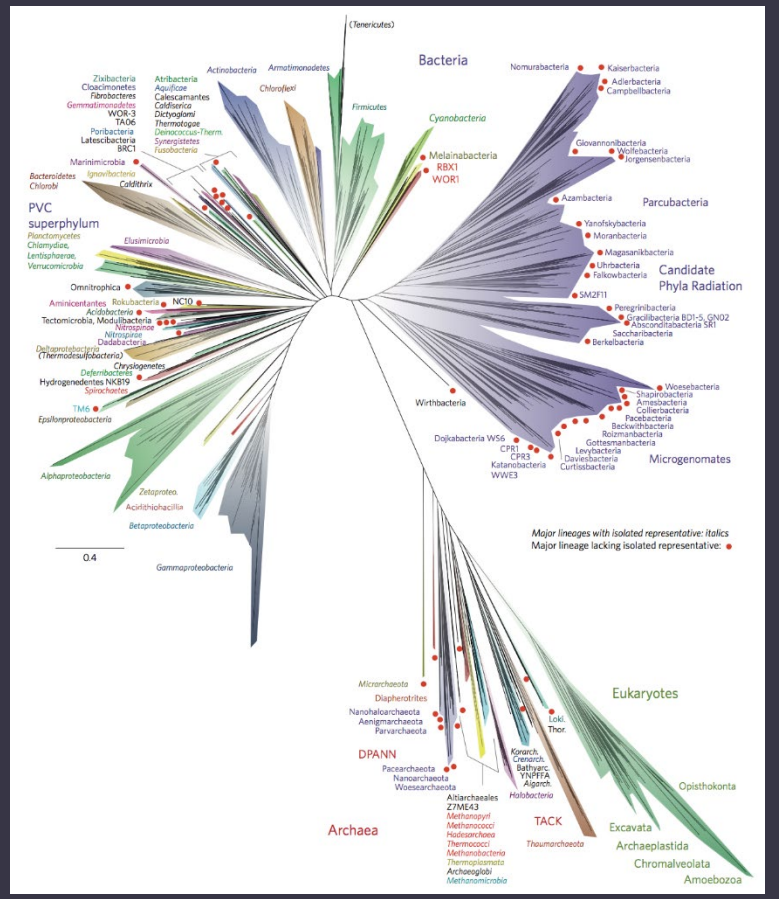
Taxonomy is how humans define and classify our world.



Levels

The classification of living things includes 8 levels:

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

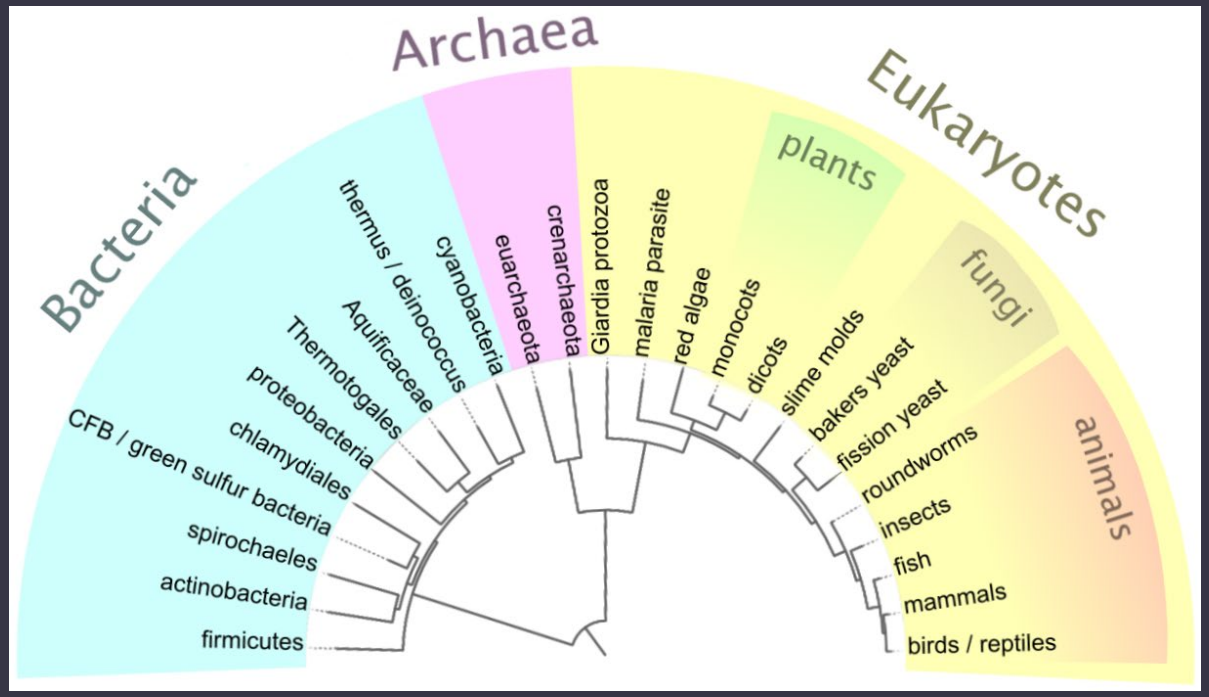


phylogenetic tree or evolutionary tree

Domain

Life is first classified by cells:

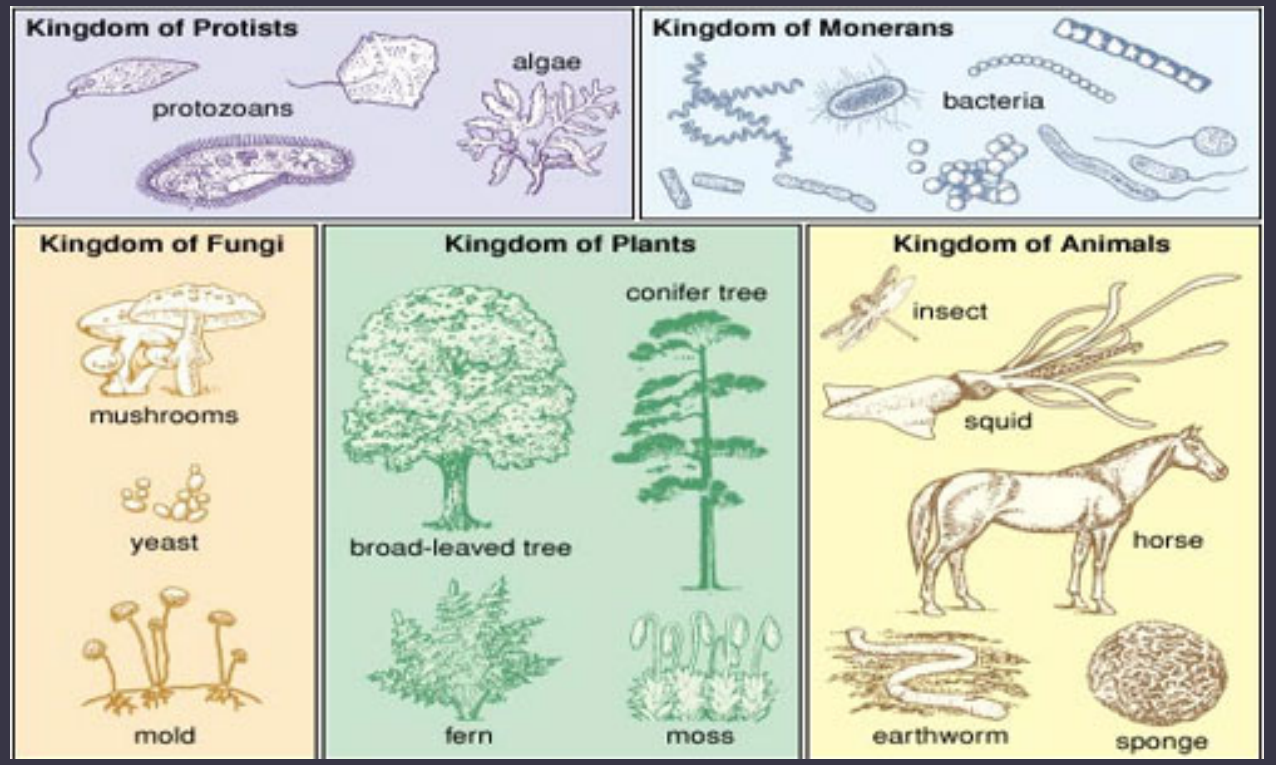
- Archaea
- Bacteria
- Eukarya



Kingdom

Living things are placed into certain kingdoms based on how they obtain their food, the types of cells that make up their body, and the number of cells they contain:

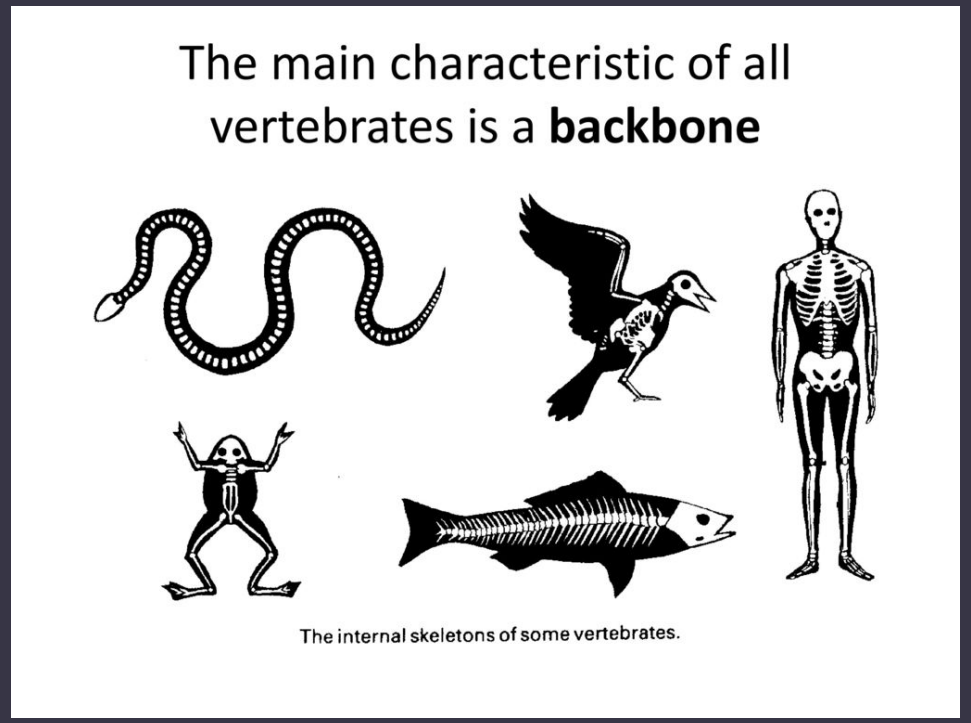
- Monera
- Protist
- Fungi
- Plant
- Animal



Phylum

An attempt to find some kind of physical similarities among organisms within a kingdom. These physical similarities suggest that there is a common ancestry among those organisms in a particular phylum.

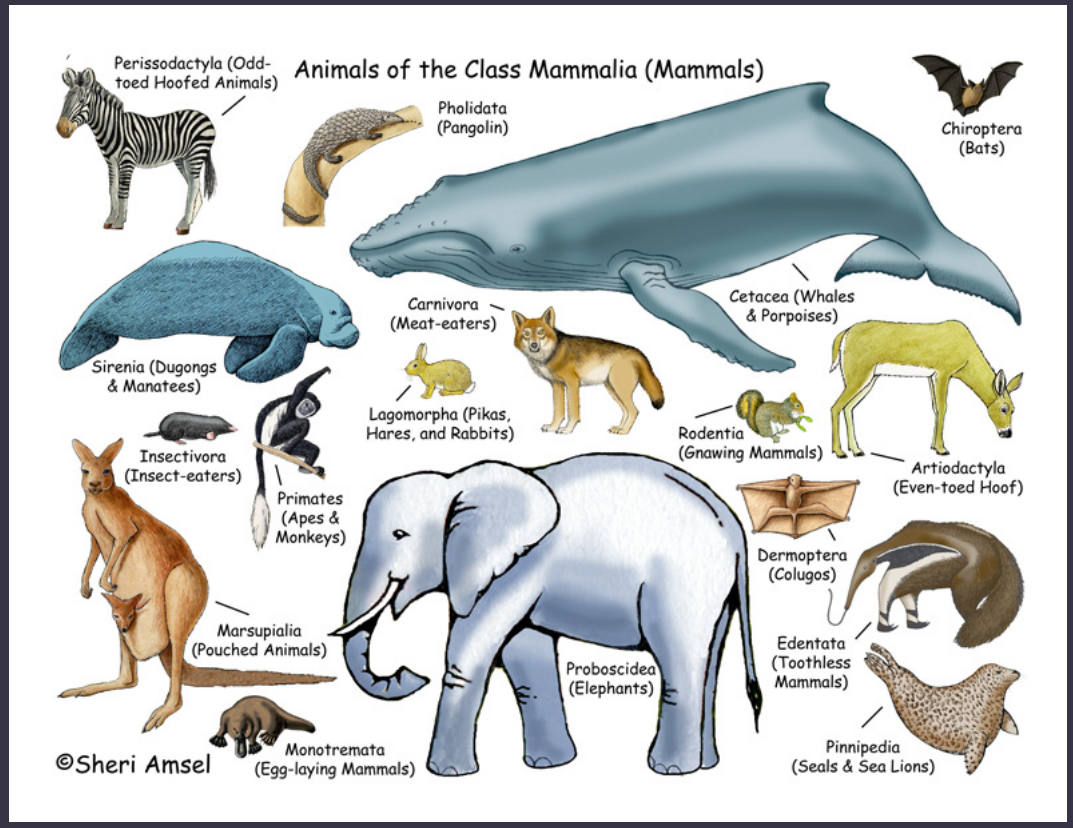
For example: There are 30 phyla within the animal kingdom. Humans are a part of the phylum Chordata. These organisms are vertebrates meaning they have a backbone.



Class

Organisms of a class have even more in common than those in an entire phylum.

Some things that determine if an animal is a mammal include: mammary glands (milk for offspring), hair, temperature regulation, middle ear bones, air-breathing. Nearly all mammals give birth to live young: monotremes, like the platypus, lay eggs.



Order

A taxonomy key is used to determine to which order an organism belongs. A taxonomy key is nothing more than a checklist of characteristics that determines how organisms are grouped together.

Rodents are characterized by a single pair of continuously growing incisors in each of the upper and lower jaws.

40% of all mammals belong to the rodent order.

Family

Organisms within a family have more in common than with organisms in any classification level above it. Because they share so much in common, organisms of a family are said to be related to each other.

All cats belong to the felidae family.

All cats are carnivores, stalk and ambush prey, retractable claws, dental and cranial adaptations for a strong bite, and often have characteristic striped or spotted coat patterns for camouflage.

Genus

The genus classification is very specific so there are fewer organisms within each one. The genus is used to determine the first part of its two-part name.

Canis is a genus of the Canidae containing species such as wolves, coyotes, jackals, dingoes, and dogs.

Species of this genus are distinguished by their moderate to large size, their massive, well-developed skulls and dentition, long legs, and comparatively short ears and tails.

Species

Species are as specific as you can get. It is the lowest and most strict level of classification of living things. The main criterion for an organism to be placed in a particular species is the ability to breed with other organisms of that same species. The species of an organism determines the second part of its two-part name.

Kingdom: Animalia
Phylum: Vertebrates (Chordates)
Class: Mammalia
Order: Carnivora (meat-eaters)
Family: Ursidae (bears)
Genus: Ursus
Species: Ursus arctos (brown bear)

Clade

Outside of taxonomic rankings, species also fall into a clade, which is all the descendants of a common ancestor.

Since there are more nested clades in the tree of life than available taxonomic ranks, sometimes we just call things clade now.

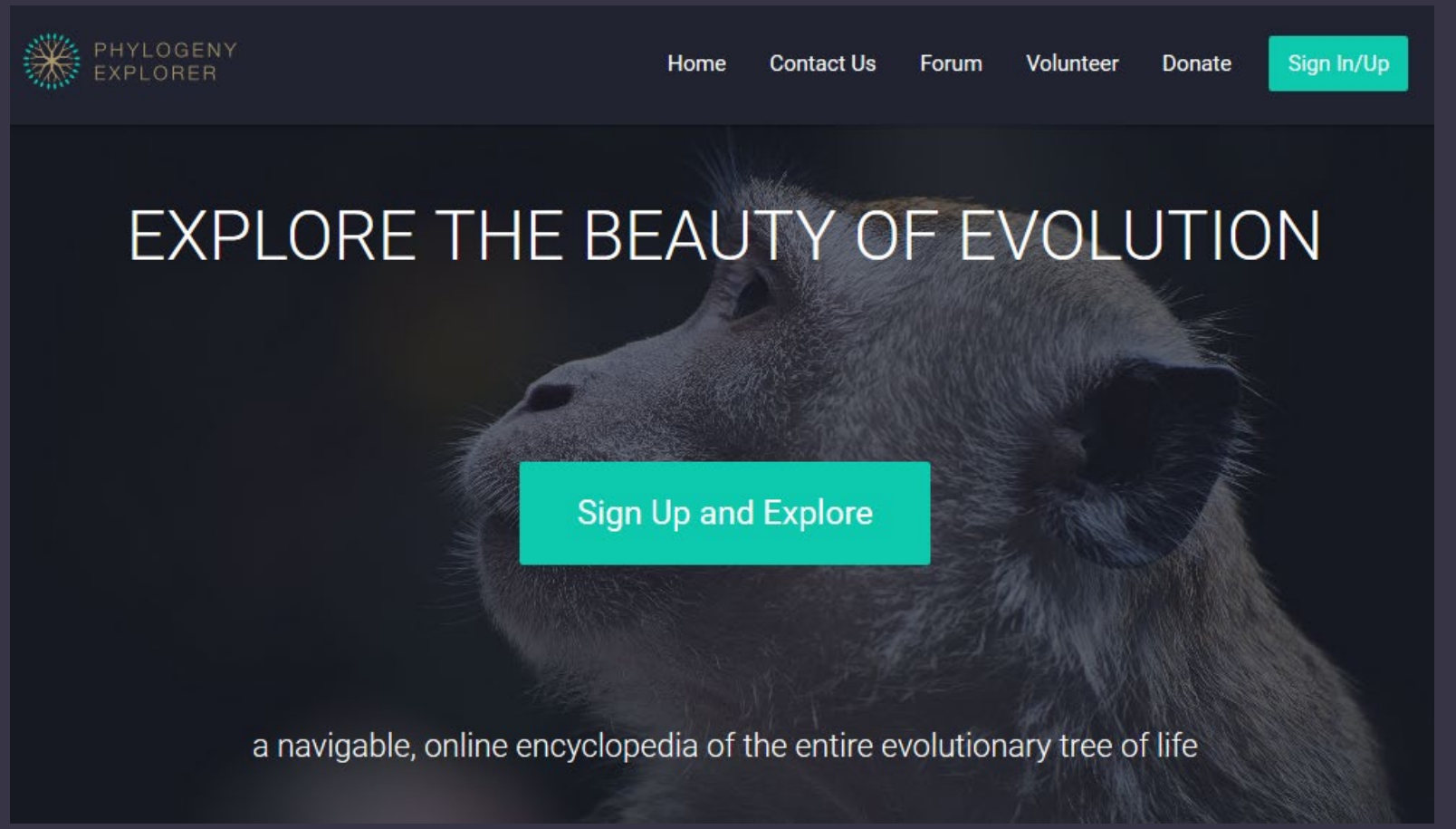
For example, the Hominidae clade (which is also a family), the great apes, all share a common ancestor. We are part of this clade.

Phylogenetic Tree

A phylogenetic tree or evolutionary tree is a branching diagram or "tree" showing the evolutionary relationships among various biological species or other entities—their phylogeny—based upon similarities and differences in their physical or genetic characteristics.

https://textimgs.s3.amazonaws.com/boundless-biology/tree-of-life-svg.svg

Phylogeny Explorer website



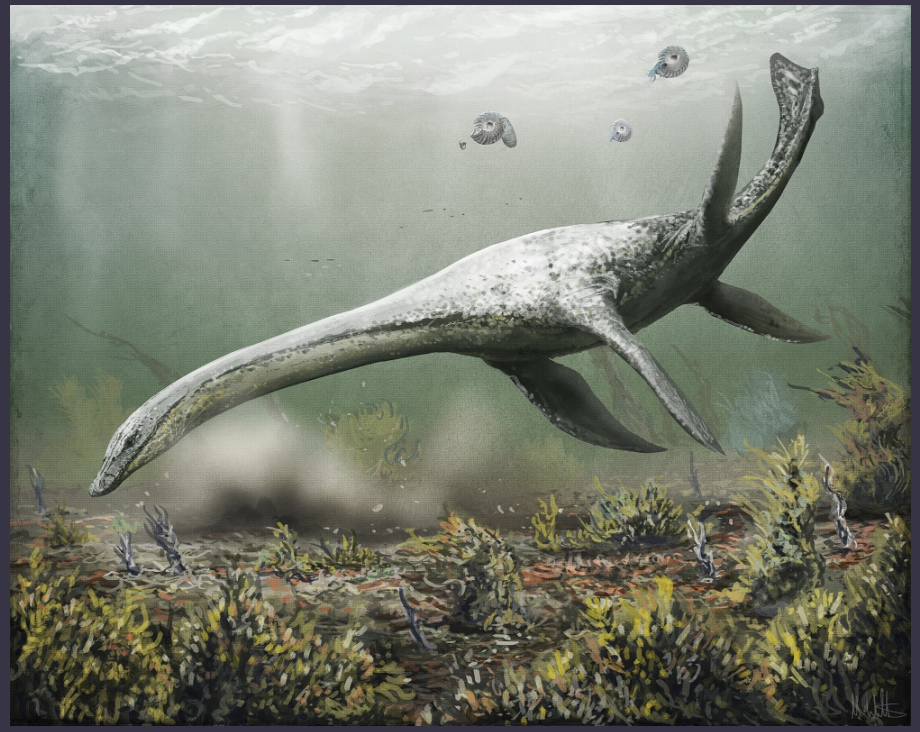
https://phylogenyexplorerproject.com

Homo Sapiens (Humans)

Scientific classification	
Kingdom:	Animalia
Phylum:	Chordata
Class:	Mammalia
Order:	Primates
Suborder:	Haplorhini
Infraorder:	Simiiformes
Family:	Hominidae
Subfamily:	Homininae
Tribe:	Hominini
Genus:	*Homo*
Species:	***H. sapiens***

So what exactly is a dinosaur?

Dinosaur



NOT a dinosaur

Dinosaur Taxonomy

In the most simplest sense, a dinosaur is defined by its legs, with its hind limbs held erect beneath the body.

https://en.wikipedia.org/wiki/Dinosaur#Taxonomy