

**Taxonomy** is the science of classifying organisms.

Classification, in biology, is the identification, naming, and grouping of organisms into a formal system based on similarities such as internal and external anatomy, physiological functions, genetic makeup, or evolutionary history.

**Two types of classification:**

1. Artificial: is based on easily observed characteristics, like colour, shape or number of legs.
2. Natural: is based on external and internal characteristics such as backbone, etc., similarities in anatomy, physiology and behaviour.

- Artificial classification is the most practical and easy to use method of grouping organisms.

**Binomial System**

- Introduced by scientist Carl Linnaeus in 18<sup>th</sup> century
- First to group organisms together by natural classification
- He devised the Binomial System which is a system of naming each species of organisms with Latinized biological names.
- Every known species has a place in this classification as it starts with major groups of general features, which are broken down into smaller and smaller groups that get more and more specific in an Order of Classification: Kingdom, Phylum, Sub-phylum, Class, Order, Family, Genus, Species.

	Man	Lion	Ocelot	Domestic Cat	Zebra	Horse
Kingdom	Animalia	Animalia	Animalia	Animalia	Animalia	Animalia
Phylum	Chordata	Chordata	Chordata	Chordata	Chordata	Chordata
Sub-Phylum	Vertebrate	Vertebrate	Vertebrate	Vertebrate	Vertebrate	Vertebrate
Class	Mammalia	Mammalia	Mammalia	Mammalia	Mammalia	Mammalia
Order	Primates	Carnivora	Carnivora	Carnivora	Herbivora <i>Perissodactyla</i>	Herbivora <i>Perissodactyla</i>
Family	Hominidae	Felidae	Felidae	Felidae	Equidae	Equidae
Genus	Homo	Panthera	Leopardus	Felis	Equus	Equus
Species	sapiens	leo	pardalis	catus	zebra	caballos

**Taxonomy** is the science of classifying organisms.

Classification, in biology, is the identification, naming, and grouping of organisms into a formal system based on similarities such as internal and external anatomy, physiological functions, genetic makeup, or evolutionary history.

**Two types of classification:**

1. Artificial: is based on easily observed characteristics, like colour, shape or number of legs.
2. Natural: is based on external and internal characteristics such as backbone, etc., similarities in anatomy, physiology and behaviour.

- Artificial classification is the most practical and easy to use method of grouping organisms.

**Binomial System**

- Introduced by scientist Carl Linnaeus in 18<sup>th</sup> century
- First to group organisms together by natural classification
- He devised the Binomial System which is a system of naming each species of organisms with Latinized biological names.
- Every known species has a place in this classification as it starts with major groups of general features, which are broken down into smaller and smaller groups that get more and more specific in an Order of Classification: Kingdom, Phylum, Sub-phylum, Class, Order, Family, Genus, Species.

	Man	Lion	Ocelot	Domestic Cat	Zebra	Horse
Kingdom	Animalia	Animalia	Animalia	Animalia	Animalia	Animalia
Phylum	Chordata	Chordata	Chordata	Chordata	Chordata	Chordata
Sub-Phylum	Vertebrate	Vertebrate	Vertebrate	Vertebrate	Vertebrate	Vertebrate
Class	Mammalia	Mammalia	Mammalia	Mammalia	Mammalia	Mammalia
Order	Primates	Carnivora	Carnivora	Carnivora	Herbivora <i>Perissodactyla</i>	Herbivora <i>Perissodactyla</i>
Family	Hominidae	Felidae	Felidae	Felidae	Equidae	Equidae
Genus	Homo	Panthera	Leopardus	Felis	Equus	Equus
Species	sapiens	leo	pardalis	catus	zebra	caballos

## Speciation

**Species:** is defined as 'a group of individuals of common ancestry that closely resemble each other and are normally capable of interbreeding to produce fertile offspring'.

**Speciation:** is the process by which species are formed and this occurs when groups of a population become isolated in some way.

Geographical isolation: refers to the separation of some individuals of a species from the rest as by an ocean, mountain or desert. Separation lead individuals to feed on different materials, be subjected to different environmental conditions compared to the rest of the species. After a while they will look and behave differently.

Reproductive isolation: refers to individuals of a species which may be physically able to reproduce but have different courting behaviours and a completely different mating season. They are thus not able to mate with each other and produce offspring. So they are considered different species.

Each species has its own special structural, behavioural and ecological characteristics.

**Breed:** Individuals may look very different within a species but are able to interbreed:

- eg. In animals these are called breeds such as in dogs which vary in size, shape, hairiness etc. They are able to interbreed and all belong to the same species

**Varieties** such as in plants eg. Corn. There are different varieties of plants but pollination between them is possible.

**Races** as in the human race which vary in colour, hair type and body structure. They can still interbreed so all belong to species *Homo sapiens*.