

At any particular time in history, there are millions of different kinds of plants and animals in the world. In 1753, a scientist in Sweden named Carolus Linnaeus thought of an orderly system for **classifying plants and animals**. He grouped all organisms according to a two-part name (**binomial**). The first part of the name is the "generic" grouping or **genus**. The second part is the "specific" grouping or **species**.

Scientists today still use this basic idea of his system, but modern classifications systems are much more complicated having many levels of hierarchical organization.

For example, **taxonomic** systems group organisms according to structure and physiological connections between organisms.

Phylogenic systems classify based on genetic connections. **Evolution** theories have impacted modern classification.

The three domain system was first proposed by Carl Woese in 1980. By creating a level of classification higher than kingdom it becomes possible to show the greater diversity between life forms (particularly in the prokaryotes). The current understanding of early evolution (based mostly upon genetic analysis) is that the Eubacteria and Archaea split from each other around 3.5 to 4 billion years ago. The Archaea and eukaryotes seem to have diverged more recently than the eukaryotes and the Eubacteria.

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

The three domains are the: Eubacteria, Archaea and the Eukaryotes.

Prokaryotes

Characteristic	Eubacteria	Archaea	Eukaryotes
Membrane Bound Nucleus	NO	NO	Yes
Cell Wall	Peptidoglycan	glycoprotein	SOME Plants - cellulose Fungi - chitin
Chlorophyll Based Photosynthesis	Yes Bluegreen Algae Cyanobacteria	NO	Yes - plants
Methanogenesis	NO	Yes	NO
Genetic Material	DNA	DNA	DNA