**The Tree of Life**

Here is a visual representation to explain how all living beings are related. Unlike genealogical trees, in which information supplied by families is used, phylogenetic trees use information from fossils as well as that generated through the structural and molecular studies of organisms. The construction of phylogenetic trees takes into account the theory of evolution, which indicates that organisms are descendants of a common ancestor.

### Archaea
- These organisms are unicellular and microscopic. The majority are anaerobic and live in extreme environments. About one half of them give off methane in their metabolic process. There are more than 200 known species.

### Plants
- Multicellular autotrophic organisms; they have cells with a nucleus and thick cellular walls that are grouped in specialized tissues. They carry out photosynthesis by means of chloroplasts.

### Animals
- **Eukaryota**
  - This group consists of species that have a true nucleus in their cellular structure. It includes unicellular and multicellular organisms, which are formed by specialized cells that do not survive independently.

- **Protista**
  - A paraphyletic group, it includes the species that cannot be classified in any other group. There are, therefore, many differences among protista species, such as algae and the amoeba.

- **Bacteria**
  - Unicellular organisms that live on surfaces in colonies. Generally they have one cellular wall composed of peptidoglycans, and many bacteria have cell walls. It is believed that they existed as long as three billion years ago.

- **Fungi**
  - Cellular heterotrophic organisms with cell walls thickened with chitin. They carry out digestion externally and secrete enzymes to breakdown the resulting molecules.

### Relationships
- The scientific evidence supports the theory that life on Earth has evolved and that all living beings are related. Unlike genealogical trees, in which information supplied by families is used, phylogenetic trees use information from fossils as well as that generated through the structural and molecular studies of organisms. The construction of phylogenetic trees takes into account the theory of evolution, which indicates that organisms are descendants of a common ancestor.

### Cladistics
- This classification technique is based on the evolutionary relationships of species coming from similar derived characteristics and supposes a common ancestor for all living species. The results are used to form a diagram in which these characteristics are shown as branching points that have evolved, at the same time, the diagram places the species into clades, or groups. Although the diagram is based on evolution, its expression is in present-day characteristics and the possible order in which they developed. Cladistics is an important analytical system, and it is the basis for present-day biological study. It arises from a complex variety of facts, its sequences, morphology, and biochemical knowledge. The cladogram, commonly called the tree of life, was introduced in the 1950s by the German entomologist Willi Hennig.

### Humans
- Humans belong to the class Mammalia and specifically share the subclades of the placental, or eutherian, which means that the embryo develops completely inside the mother and gets its nutrients from the placenta. After birth, it depends on the mother, who provides the maternal milk in the first phase of development. Humans form part of the order Primates, one of the 29 orders in which mammals are divided. Within this order, characteristics are shared with monkeys and apes. The closest relatives to human beings are the great apes.