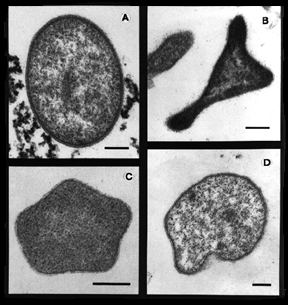
# [http://www.windows2universe.org/earth/Life/images/domains_sm.gif](http://www.windows2universe.org/earth/Life/images/domains_lg_gif_image.html)Classification of Living Things

# http://www.windows2universe.org/earth/Life/cell\_intro.html

Scientists have found and described approximately 1.75 million species on Earth and new species are being discovered every day. From tiny bacteria to yeasts to starfish to blue whales, life's diversity is truly impressive! One way to organize them is by classification. Scientists put similar species into groups so that those millions of species do not seem so many. Living things are divided into three groups based on their genetic similarity. The three groups are:

* [Archaea](http://www.windows2universe.org/earth/Life/archaea.html): very ancient [prokaryotic](http://www.windows2universe.org/earth/Life/cell_intro.html) microbes.
* [Eubacteria](http://www.windows2universe.org/earth/Life/classification_eubacteria.html): More advanced [prokaryotic](http://www.windows2universe.org/earth/Life/cell_intro.html) microbes.
* [Eukaryota](http://www.windows2universe.org/earth/Life/classification_eukaryota.html): All life forms with [eukaryotic cells](http://www.windows2universe.org/earth/Life/cell_intro.html) including plants and animals

[](http://www.windows2universe.org/earth/Life/images/archaea_noaa_lg_gif_image.html)These three groups are called **domains**.

The **Archaea domain** consists of microbes. Most live in extreme environments. Archaea was originally thought to be just like bacteria, but archaea is a much different and simpler form of life. It may also be the oldest form of life on Earth. Archaea requires neither sunlight for photosynthesis as do plants, nor oxygen. Archaea absorbs CO2, N2, or H2S and gives off methane gas as a [waste product](http://www.windows2universe.org/earth/Life/lifes_garbage.html) the same way humans breathe in oxygen and breathe out carbon dioxide.

**Eubacteria**, also known as “true bacteria”, are microscopic [prokaryotic cells](http://www.windows2universe.org/earth/Life/cell_intro.html). **Prokaryotic cells** have no nucleus or organelles enclosed within membranes. Species in the domains [Archaea](http://www.windows2universe.org/earth/Life/archaea.html) and [Eubacteria](http://www.windows2universe.org/earth/Life/classification_eubacteria.html) have prokaryotic cells. Cyanobacteria, called blue-green algae, are Eubacteria that have been living on our planet for over 3 billion years. Blue-green algae grow in the shallow parts of the ocean. Today it is only common in certain regions, but a few billion years ago, there were millions of it! Through [photosynthesis](http://www.windows2universe.org/earth/Life/photosynthesis.html), billions of tiny bacteria were able to add oxygen to Earth’s atmosphere. This allowed animals that breathe oxygen to survive.

The **Eukaryota domain** is divided into several groups called kingdoms.

* [Kingdom Protista](http://www.windows2universe.org/earth/Life/protista.html) – Organisms with just one eukaryotic cell
* [Kingdom Fungi](http://www.windows2universe.org/earth/Life/fungi.html) – Including mushrooms and other fungus
* [Kingdom Plantae](http://www.windows2universe.org/earth/Life/plantae.html) – Including trees, grass and flowers
* [Kingdom Animalia](http://www.windows2universe.org/earth/Life/animalia.html) – From snails to birds to mammals

Within each kingdom, species are further classified into groups based on similarities. These groups might seem very different, but they all have a few main aspects in common including their unique cells that are called eukaryotic.

**Eukaryotic cells** have a [nucleus and organelles](http://www.windows2universe.org/earth/Life/cell_organelles.html) that are surrounded by membranes. Each organelle does a specific cell function. All species in the [Eukaryota domain](http://www.windows2universe.org/earth/Life/classification_eukaryota.html) (protists, fungi, plants, and animals) have eukaryotic cells. Individual protists have only one cell, while plants and animals can have trillions of cells. Complex creatures like humans have special cells for special functions like carrying oxygen around the body, digesting food, or making bone.