

LO: I know about the 5 Kingdoms.

Last week we started learning about how scientists classify living things.

Let's find out more about the 5 kingdoms...

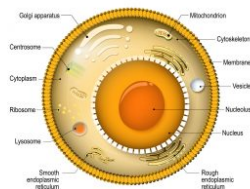
Animals

The animal kingdom is one of the **five kingdoms** which scientists use to classify living things. With millions of species, it is the largest of the five kingdoms. Animals are multicellular organisms with eukaryotic cells. Unlike **plants**, animals get nutrients by eating – they can't make energy themselves.

One important feature of animals is that the type of cells they have. Their cells are eukaryotic, which means they have a nucleus and organelles. Additionally, animal cells do not have cell walls. Animals are also multi-cellular, which means they have more than one type of cell.

Another important feature of animals is that they cannot make their own food like plants can. Instead, they have to eat to get energy. Animals also have the ability to move, to respond to their surroundings and to reproduce sexually.

ANIMAL CELL



Animals all have eukaryotic cells, which have a nucleus and don't have a cell wall

Plants

The Plant Kingdom (or Plantae Kingdom) is made up of all the plants that you see each day. Most plants are multi-cellular, meaning that they consist of many cells. Different types of plants include trees, grass, flowers, and some types of algae. Plants use the light from the Sun to produce their own food. This allows them to grow almost anywhere, as long as there is enough water. Since animals are not able to make their own food, they must eat plants to give them energy. Therefore, the entire animal kingdom depends on the plant kingdom.

In order to be a plant, an organism has to have three defining features. The first feature is that the cells that make a the organism must have a **cell wall**. The only other kingdom that has organisms with cell walls is the the Fungi Kingdom. For instance, algae has no cell wall, thus it is not a plant.

Secondly, a plant must have a waxy layer on the outside skin. This waxy outer layer is known as the cuticle. The cuticle is what causes water to ball up and roll off of the plant. The purpose of this waxy outer-layer is to prevent the plant from losing too much moisture. Next time you touch a leaf, feel the texture. Does it feel waxy?

Thirdly, plants must make their own food (or energy). For this reason, plants are referred to as photoautotrophs. Plants contain a pigment called **chlorophyll** that helps with absorbing sunlight. They get their green color from the chlorophyll which is found inside of their cells. Plants use chlorophyll to collect energy from the light of the Sun. They then use this energy to create food. In this process, they create the food we eat and the oxygen we need to breathe.

Fungi

The Fungi Kingdom is made up of a variety of different fungi. For many years, it was believed that fungi were plants. Today we know that fungi are different from plants in some very important ways.

First, unlike plants, fungi cannot make their own food. They must rely on other food sources to support them. There are also differences in the basic makeup and chemistry of their cells.



Protists

The Protists Kingdom or (Protista Kingdom) consists of cells that have a nucleus (eukaryotic cells) but do not fit into the other kingdoms. Protists are typically only made of one cell, or unicellular. However some protists, such as algae or seaweed, consist of many cells. The protists made of multiple cells only consist of one tissue, rather than many specialized tissues.

When scientists discover a new cell, they try to group it into a specific kingdom. If the cell is a prokaryotic cell (it does not have a nucleus), scientists group it into the monera kingdom. Those are very easy cells to group. However, when scientists determine that a cell is a eukaryotic cell (has a nucleus) it gets difficult. It gets difficult because the cell can fall into one of four kingdoms: animal, plant, fungi, or protists.

Many protists appear to be both plant and animal. Like plants, they are green, and can create their own food. However, like animals, they have moving body parts and are able to move around their environments. You can see why scientists have a hard time classifying these cells.

The best way to think of the protists kingdom, is the kingdom for the misfits or left-overs. This is because when a eukaryotic cell is not an animal, plant, or fungi, the cell is classified a protist. For this reason, protists do not usually have much in common with one another. They have different life cycles, diets, ways to reproduce and ways to move around.

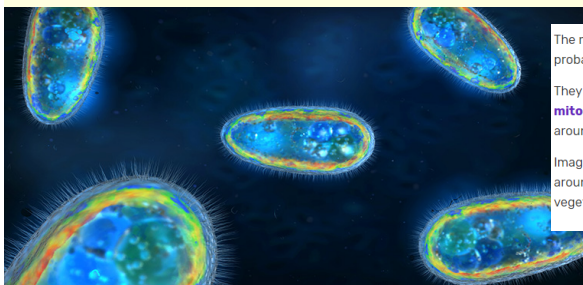


This is the protozoa *Paramecium caudatum*. This unicellular organism feeds on bacteria.

Monera

The Monera Kingdom (or Moneran Kingdom) includes all organisms that have cells that do not contain a nucleus. These cells are also known as **prokaryotic cells**. These organisms are very simple and are usually only as big as one cell! They are very common on earth and you interact with organisms in this kingdom every day.

The Monera Kingdom consists of unicellular lifeforms. Unicellular means that they only have one cell. These cells have no nucleus, and are missing many organelles, or parts, found in other cells. Monera are considered, by many scientists, to be the oldest life forms on Earth. They are probably the ancestors of all living organisms on our planet.

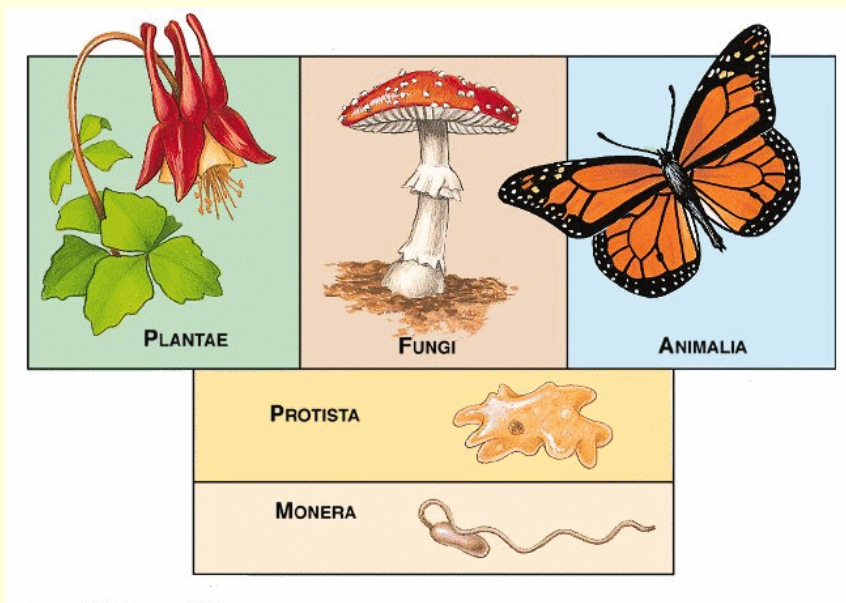


The majority of organisms in the Monera kingdom are bacteria. So when you hear someone say "Monera Kingdom" they probably are talking about bacteria. These organisms are very, very small and simple.

They do not contain common **cell organelles** you would find in a plant or animal cell. For instance, you will not find the **mitochondria** or **endoplasmic reticulum** in a bacteria cell. Also, monera do not have a **nucleus**, instead the DNA floats around inside the cell wall.

Imagine that you have a bowl of vegetable soup. The bowl holds all the soup together and the vegetables are free to float around in the bowl how they want. This is what a bacteria organism looks like. The bowl is the cell wall and the vegetables are the DNA inside the cell wall.

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Draw your own version of the 5 kingdoms- label carefully.

These words are in latin.