

Organisms

by Sophia



WHAT'S COVERED

In this lesson, you will learn how to understand the basic characteristics of organisms and how they're classified. Specifically, this lesson will cover:

1. Characteristics of All Organisms

Organisms are living things; they can be anything from a small unicellular organism to an elephant, a human, or a plant. Anything that is alive and living is an organism. The following are five characteristics that all living things have in common.

1. All living things use energy.
2. All living things will respond to their environment.
3. All living things are composed of cells. **Cells** are the basic units of all life. To be alive, something has to be made up of cells.
4. All living things will be able to maintain **homeostasis**, which means they can maintain their internal environment.
5. All living things are able to grow and reproduce.



TERMS TO KNOW

Cell

The basic unit of life.

Homeostasis

An organism's ability to maintain a constant internal environment.

2. Structural Organization of Organisms

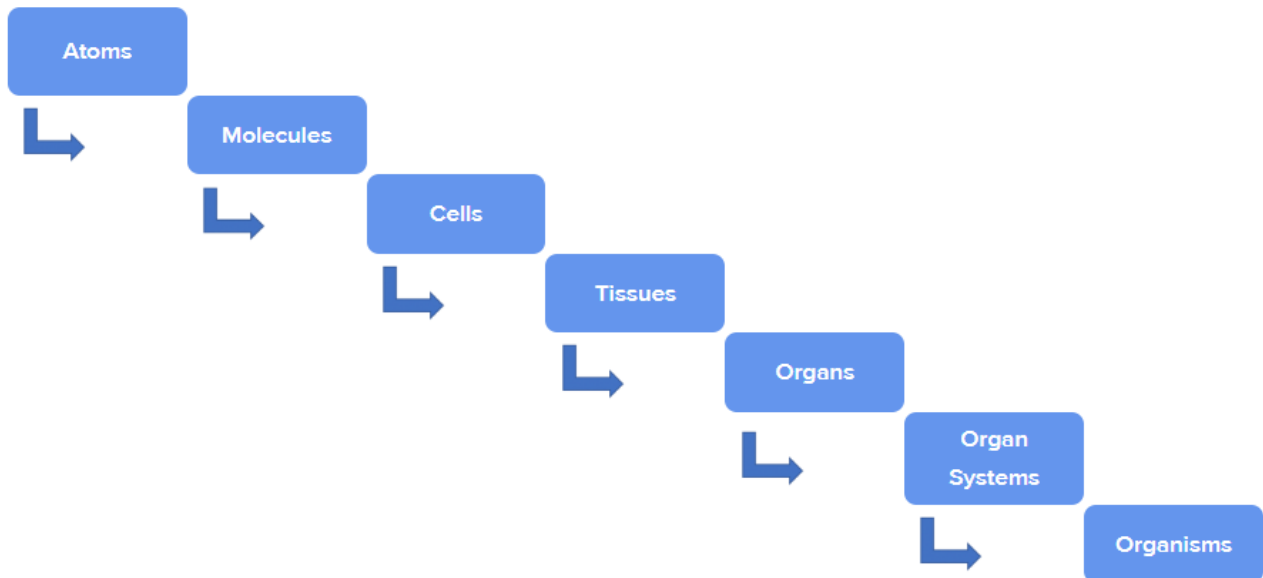
Living things are structured from very, very small to large. All living things are made up of atoms, and these atoms compose molecules.

➞ **EXAMPLE** You know that the human body is made up of a lot of water, and water is made up of hydrogen and oxygen. So you're made up of atoms, which compose molecules; those molecules then compose cells. Some living things are only made up of one cell.

For complex organisms like humans, you continue farther down the line. Our cells will make up tissues, and those tissues will make up organs. Then, those organs can make up organ systems. Finally, the organ systems will make up the entire organism.

➞ **EXAMPLE** All of your organ systems, such as your digestive system, your nervous system, your lymphatic system, et cetera, work together to make up the full organism that is yourself.

To summarize: Atoms make up molecules, which make up cells, which make up tissues, which make up organs, which make up organ systems, which make up an entire organism.



TERMS TO KNOW

Atom

The basic unit of all living and non-living matter/chemicals.

Molecule

A group of atoms bonded together; a chemical compound.

Organ

Part of an organism, composed of many tissues, that is typically self-contained and has a specific vital function, such as the heart or liver in humans.

Organ System

A group of organs that work together to perform one or more specific functions. For example, the brain, spinal cord, and peripheral nerves make up the nervous system, and together receive, process and transmit information.

Organism

A single living thing, composed of one or more cells.

Tissue

Any of the distinct types of material of which animals or plants are made. Tissues are composed of many specialized cells.

3. How Scientists Classify Organisms

Scientists like to classify organisms into different groups based on the characteristics they have in common. Every living thing is classified by scientists into:

- Kingdom
- Phylum
- Class
- Order
- Family
- Genus
- Species

Kingdom is the first classification. All living things can be classified into one of five kingdoms: Monera, Protista, Fungi, Plantae, Animalia. If you think of every living thing in the entire world, it fits into one of these five groups, so these groups are actually very, very large.

But as you move down these groups, all the way to species, it becomes very specific where only one organism fits into each type of species. So you're getting more specific as you move down the classification.

To better understand, take a look at the classification of a panda bear.



Kingdom: Animalia

Phylum: Chordata

Class: Mammalia

Order: Carnivora

Family: Ursidae

Genus: Ailuropoda

Species: Melanoleuca

Classification of a Panda Bear	
Kingdom: <i>Animalia</i>	The panda bear fits into the kingdom Animalia, which tells us that the panda bear is an animal.
Phylum: <i>Chordata</i>	<p>Within the kingdom Animalia, there are about 30 different phyla. The phylum for panda bear is a Chordata; this means that it's a vertebrate, or it has a backbone. Humans have a backbone and thus fit into the same kingdom and phylum as a panda bear.</p> <p>A clam does not have a backbone, so it would be considered an invertebrate and belong to a different phylum, but would still be in the same kingdom as a panda bear because it's still an animal.</p>
Class: <i>Mammalia</i>	The class Mammalia means that the panda is a mammal. All mammals share certain characteristics. Humans are also considered mammals, so humans are in the same kingdom, phylum, and class as a panda bear.
Order:	The order for a panda bear is Carnivora because it is a carnivore, meaning it eats

<i>Carnivora</i>	meat.
Family: <i>Ursidae</i>	The Ursidae family is a family of bears. Humans do not share this characteristic in common with the panda bear.
Genus & Species: <i>Ailuropoda Melanoleuca</i>	This is when you hear the scientific name of an animal. The scientific name is its genus and species together. The species is specific only to the panda bear; no other animal in the world is the same species as a panda bear.



TERMS TO KNOW

Vertebrate

An organism that has a backbone.

Invertebrate

An organism that does not have a backbone.



SUMMARY

This lesson has been an overview of the **characteristics of all organisms**, such as energy and cells, the **structural organization of organisms**, and **how scientists classify organisms**.

Keep up the learning and have a great day!

Source: THIS WORK IS ADAPTED FROM SOPHIA AUTHOR AMANDA SODERLIND



ATTRIBUTIONS

- [Panda](#) | Author: Wikipedia | License: Creative Commons



TERMS TO KNOW

Atom

The basic unit of all living and non-living matter/chemicals.

Cell

The basic unit of life. A part of a cell cannot make a whole cell; at least one whole cell is required to metabolize, maintain homeostasis and reproduce.

Homeostasis

An organism's ability to maintain a constant internal environment.

Invertebrate

An organism that does not have a backbone.

Molecule

A group of atoms bonded together; a chemical compound.

Organ

Part of an organism, composed of many tissues, that is typically self-contained and has a specific vital function, such as the heart or liver in humans.

Organ System

A group of organs that work together to perform one or more specific functions. For example, the brain, spinal cord, and peripheral nerves make up the nervous system, and together receive, process and transmit information.

Organism

A single living thing, composed of one or more cells.

Tissue

Any of the distinct types of material of which animals or plants are made. Tissues are composed of many specialized cells.

Vertebrate

An organism that has a backbone.