

Welcome to this lesson today on organisms. Today we will be discussing characteristics that all organisms have in common. We will also discuss how scientists classify organisms and the structural organization of organisms.

So first of all, organisms are living things. So any time I say the word organisms, I'm talking about a living thing. It's just the scientific word for living things. So by living things, it could be anything from a small unicellular organism to an elephant to a human to a plant. So anything that's alive and living is an organism.

So these five characteristics here are characteristics that all living things have in common. So the first thing that all living things have in common is that they use energy. So all living things use energy. Next, the second one is that all living things will respond to their environment.

All living things are composed of cells. So cells are the basic units of all life. To be alive, something has to be made up of cells. All living things will be able to maintain homeostasis, which means they can maintain their internal environment. And all living things are able to grow and reproduce.

So in order for something to be living, it has to be able to fulfill these five requirements. Next, we're going to take a look at the structural organization of living things. So we're going to take a look right here at this in purple.

So the way living things are structured is from a very, very small level to a larger level. So all of things are made up of atoms. And these atoms compose molecules. So it could be atoms of hydrogen, oxygen, nitrogen. And those atoms will compose molecules.

So we know the human body is made up of a lot of water. And water is made up of hydrogen and oxygen. So we're made up of atoms, which compose molecules, and those molecules then compose cells. Now, some living things are only made up of one cell. So for those type of living things, its structure would be atoms make up molecules, which make up that cell.

But for complex organisms like humans, we continue farther down the line here. So our cells will make up tissues. So those tissues will then make up or against so cells to make a tissue such as brain tissue for example which makes up an organ such as our brain. And then those organs can make up organ systems.

So our brain is involved in our nervous system. And then our organ systems will make up entire organisms. So all of our organ systems together, such as our digestive system, our nervous system, our lymphatic system, et cetera all work together to make up a full organism of ourself.

So 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. And then the last thing we're going to take a look at here is how scientists classify organisms. So classification is based on common characteristics.

So scientists like to classify organisms into different groups based on characteristics they have in common. So we're going to take a look at the classification of a panda bear because that's my favorite animal. So here we have the classification of a panda bear.

Now, the way that scientists classify is by these groups here-- kingdom, phylum, class, order, family, genus, and species. So every living thing is classified by scientists in this manner. They're classified into these groups.

So first of all, kingdom is the first group that we have up here. All living things can be classified into one of five kingdoms. And the five kingdoms are Monera, Protista, Fungi, Plantae, and Animalia. So the panda bear fits into the kingdom Animalia, which tells us that the panda bear is an animal.

Our next level of classification is the phylum. So if you'll notice here, I have an inverted triangle. And what this is telling us is that as we move down these groups, they're getting smaller and smaller and smaller. Now, if you think of every living thing in the entire world, it fits into one of five groups, so these groups are actually very, very large.

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

So the phylum for panda bear is a Chordata. And what this means is that it's a vertebrate, or it has a backbone. So within the kingdom Animalia, there are actually about 30 different phyla. But the phylum that the panda bear fits into is Chordata, which tells us that it has a backbone. So you can think of there's many other animals that also are phylum Chordata.

So for example, humans, we have a backbone. We fit into the same kingdom and phylum as a panda bear because we share those characteristics in common. But a clam, for example, does not have a backbone, so it would belong to a different phylum, but yet would still be in the same kingdom as a panda bear. It's still an animal.

And then we move down to its class. Its class is Mammalia, which tells us it's a mammal. And all mammals share certain characteristics in common. So we are also considered mammals as humans. So we are in the same kingdom, phylum, and class as a panda bear because we share those characteristics in common.

So as we move down, it gets more and more specific. Our order here for a panda bear is Carnivora because it is a carnivore. It eats meat. Family Ursidae, so that family is a family of bears. So we're no longer sharing these characteristics in common with the panda bear because we are obviously not a bear.

And then we get down to its genus and species, which becomes even more specific. So this is actually when you hear the scientific name of an animal, it is its genus and species together. Now, as we get down to the species, this is specific only to the panda bear.

No other animal in the world is the same species as a panda bear. It's specific to that organism. So it gets more and more specific as we move down these groupings of classification. So this lesson has been an overview on characteristics of organisms and how they are classified.