

Microbe Types

Organisms can be divided into three main groups: Archaea, bacteria and eukaryotes. The first two groups consist of microbes, and are all prokaryotes — organisms that lack a cell nucleus. The third group — eukaryotes — consists of both microbes and larger multicellular organisms, such as plants and animals. Eukaryotes have a cell nucleus, a membrane that envelops the cell's genetic material.

Initially, scientists used physical features to group similar organisms. Today, species of organisms are arranged according to evolutionary relationships. While this is based partially upon physical features, scientists also use fossil and genetic evidence. Microbes fall into five categories: Archaea; bacteria; fungi; protists; viruses and prions. The last two types are not actually living cells. They are included with the microbes because they can only be viewed with a microscope, and have the ability to replicate themselves.

Archaea Microbes

Archaea may be the closest living relatives to the first organisms on Earth. These primitive organisms tend to live in extreme environments — such as ones with high temperature, salt concentration or pH — similar to what might have been found on the Earth billions of years ago. In some ways, Archaea resemble bacteria. They live mostly as single cells and have cell walls. They also lack a cell nucleus — which makes them prokaryotes. Like bacteria, they have circular DNA. In other ways, however, Archaea are more like eukaryotes.

Some species of Archaea live in the extremely salty Dead Sea, or in Lake Madrid in Kenya, which is both salty and has a high pH. Other kinds prefer living in the high temperatures found in hot springs, or even in the waste water of geothermal power plants. The ability of Archaea to live in extreme environments has enabled scientists to use these microbes for other purposes, such as in the development of high temperature laundry detergent.

Bacteria Microbes

Bacteria are single-celled microbes that, like Archaea, are prokaryotes without a cell nucleus. Unlike eukaryotes, which have strands of genetic material, bacteria have circular DNA. Bacteria grow in many types of habitats, as well as live on and inside animals and plants. Bacteria have been found living 1.7 miles below the surface of the Earth, and in locations with temperatures up to 167 degrees Fahrenheit. While bacteria are single-celled, they often grow in clumps of cells called colonies.

Bacteria vary greatly in their habitats, as well as how they obtain food or energy. Some bacteria require oxygen to live, while others thrive in low oxygen environments. Some bacteria — like plants — use light as an energy source, while others use chemicals found in their habitat. Scientists have learned much about genetics by studying bacteria. This information has also been applied to other areas. For example, scientists have been able to create microbes that produce medical compounds such as insulin.

Fungi Microbes

The yeasts used to make bread and beer are examples of fungi, as are commonly-known molds and mushrooms. Fungi are microbes that sometimes look like plants. However, they lack the chlorophyll that plants use to convert sunlight into chemical energy. There are three basic types of fungi. Saprophytic fungi absorb nutrients from nonliving organic material, such as dead plants and animals, paper and clothing. Parasitic fungi obtain nutrients from organisms that are still alive. Symbiotic fungi absorb nutrients from other organisms, but don't harm them in the process.

A key role of fungi in the environment is decomposition — the breaking down of organic matter, especially waste and dead organisms. Without the action of fungi, the Earth would be covered in waste material. Fungi can be used to produce antibiotics, vitamins and industrial chemicals. Some fungi, however, cause diseases or damage to agriculture. The Irish potato famine in the mid-nineteenth century, which resulted in the death of 250,000 people in Ireland, was caused by a fungus.

Protists Microbes

Protists are microbes that occur either as single cells or a colony of similar cells. They live in water or in moist habitats on land. They can be found in other multicellular organisms, with either a parasitic or symbiotic relationship to their host. Unlike other groups of organisms — such as fungi and animals — protists are not closely related to each. They are more of a collection of miscellaneous organisms that do not fit well into other groups. Protists are sometimes divided into three categories: plantlike algae, animal-like protists, and slime molds that resemble fungi.

More recently, scientists have used genetic information about protists to divide them into more accurate categories. Basal protists are the most primitive kind. They lack mitochondria — structures in the cell which other eukaryotes use to generate energy. Alveolates have flattened sacs just under their outer membrane. The microbe that causes malaria is an alveolate. Stramenopiles all have a tail-like flagella at some point in their life. The red algae group includes most of the seaweeds. Other seaweeds are classified as green algae protists.

Viruses and Prions Microbes

Viruses are microbes that are not actually living cells. Viruses cannot replicate themselves without a host cell. When they are outside of the cell, they are inactive. Viruses can infect many organisms, including single bacterial cells and the cells of humans. Compared to bacteria, viruses are extremely small. A million viruses can fit inside a single bacterium. Viruses are also specific for certain cells. A virus that infects one type of bacterium will not infect others.

Like viruses, prions are not living cells. They are proteins that are sometimes classified under microbes because they can cause diseases. Prions, however, lack genetic material that other organisms and viruses contain. The exact nature of how prions cause infections is unclear. The prions studied so far include ones that cause degenerative brain illnesses. Unlike most disease-causing microbes, prions occur naturally within human and other mammalian brains.

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crystal

May 28, 2012 at 4:57 am



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April 18, 2013 at 4:38 pm



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Nikita

April 23, 2013 at 12:32 am



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May 8, 2013 at 6:50 am



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May 16, 2013 at 10:58 am



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you guys are life savers



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kanye tonnie

October 16, 2012 at 7:33 pm



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