

What are microbes?

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Microbes are tiny living things that are found all around us and are too small to be seen by the naked eye. They live in water, soil, and in the air. The human body is home to millions of these microbes too, also called microorganisms.

Some microbes make us sick, others are important for our health. The most common types are bacteria, viruses and fungi. There are also microbes called protozoa. These are tiny living things that are responsible for diseases such as toxoplasmosis and malaria.

Bacteria are made up of just one cell

Bacteria are single-cell organisms. Some bacteria need oxygen to survive and others do not. Some love the heat, while others prefer a cold environment. Well-known examples of bacteria include salmonella and staphylococcus bacteria.

Most bacteria aren't dangerous for humans. Many of them even live on or in our body and help us to stay healthy. For instance, lactic acid bacteria in the bowel help us to digest food. Other bacteria help the immune system by fighting germs. Some bacteria are also needed in order to produce certain types of food, like yogurt, sauerkraut or cheese.

Less than 1% of all bacteria are responsible for diseases – but this is just a rough estimate because there are no exact numbers. Tuberculosis, for instance, is caused by bacteria. Bacterial infections can be treated with antibiotics. These are medicines that kill the bacteria or at least stop them from multiplying.

Many other infections – including diarrhea, colds or tonsillitis – can also be caused by bacteria, but viruses are usually responsible for them. Antibiotics aren't effective against viruses. So it's not a good idea to start using them too soon if it's only suspected that bacteria are causing the infection.

Viruses invade healthy cells and make us ill

Unlike bacteria, viruses have no cells of their own. This means that they're not, strictly speaking, living organisms. Instead, they're made up of one or more molecules surrounded by a protein shell. The genetic information found inside this shell is needed for the viruses to reproduce.

Many viruses are responsible for diseases. Some are harmless and only trigger a minor cold, while others can cause serious diseases like AIDS. Other diseases caused by viruses include influenza ("the flu"), measles or inflammation of the liver (viral hepatitis).

Viruses invade healthy cells and start to multiply from these cells. A virus can't reproduce without these host cells. Not all viruses cause symptoms, and in many cases the body successfully fights back against the attackers. This is the case with cold sores, which many people have experienced at some time. They are caused by viruses that are found in certain nerve cells and can lead to the typical blisters in some people if their immune system is weak or run-down.

It's relatively difficult to fight viruses with medication. To protect against some viruses, the immune system can be “trained” by a vaccination so that the body is better prepared to fight the virus.

Fungi are widespread

Fungi can live in lots of different environments. The best-known fungi include yeast, mold and edible fungi like mushrooms. Just like bacteria, some fungi occur naturally on the skin or in the body. But fungi can also cause diseases.

Diseases caused by fungi are called mycoses. Common examples include athlete's foot or fungal infections of the nails. Fungal infections can sometimes also cause inflammations of the lungs, or of mucous membranes in the mouth

or on the reproductive organs, and become life-threatening for people who have a weakened immune system.

But humans have also benefited from the helpful qualities of some fungi. We owe the discovery of penicillin to a type of mold that is used to produce this antibiotic.

Sources

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