

Micro-organisms

Micro-organisms (also known as **microbes**) cannot be seen by the naked eye (micro means tiny and organism means a living creature); many hundreds of them would fit on the full stop at the end of this sentence.

They are found everywhere, in soil, air, water, on your skin and in your guts. Most of the time, when they are in the right place the majority of micro-organisms are **not harmful to people** and often do a lot of good such as breaking down waste and making bread. We could not live without them!

There is a huge variety of micro-organisms. They can work alone or in colonies. They can help you or hurt you. Most importantly, they make up the **largest number of living organisms** on the planet. There aren't millions, billions, or trillions. There are trillions of trillions of trillions of microbes around the Earth. Maybe more!

The **five types of living micro-organisms** are bacteria, viruses, fungi, algae and protozoa.

1. **Bacteria** can be rod-shaped, spiral-shaped or spherical. Some bacteria can be useful, such as certain types found in the stomach, but other nasty kinds can give you a bad tummy ache or a sore throat.
2. **Viruses** are parasites, which means they can only survive inside the cells of other living things. They can cause infectious diseases, such as chicken pox, measles or coronavirus.
3. **Fungi** can be different sizes ranging from a single cell, like yeast (used to make bread rise), or other fungi such as moulds or toadstools.
4. **Algae** can also be many different sizes – some single-celled algae are actually used in toothpaste!
5. **Protozoa** are single-celled organisms and can cause many diseases, although they are occasionally helpful too.

Top 10 facts

1. Micro-organisms first appeared on earth about **3.5 billion years ago**. They were very important in sustaining life on our planet.
2. Microbes generate at least half the **oxygen** we breathe.
3. Microbes thrive in extremes of **heat, cold, radiation, pressure, acidity and darkness**, and often where no other life forms could exist and where nutrients come only from inorganic matter.
4. Typically there are between **10,000 and 10 million bacteria on each hand!**
5. The number of germs on your fingertips doubles after you use the **toilet**.
6. When you **cough** germs can travel about 3 metres if you do not cover your nose and mouth.
7. Almost **one million bacteria** can be created by one person in a school day.
8. There are more **bacterial cells in our bodies** than there are human cells.
9. While bacteria on the outside of your body can cause serious **infections**, the bacteria inside your body can **protect** against it. Studies have shown that animals without gut bacteria are more likely to catch serious infections.
10. Bacteria are used to **make yogurt and cheese**. The flavour of these foods comes from bacterial by products!

Microorganisms can be both useful and harmful. They can cause disease. Which of these symptoms are caused by microorganisms?

| Symptoms | Tick or Cross |
|---------------|---------------|
| A nose bleed | |
| A broken arm | |
| A stomach bug | |
| A graze | |
| A bruise | |
| A cold | |
| Toothache | |
| Chicken pox | |

Microorganisms can be very useful in breaking down materials. Which of these materials can be broken down by microorganisms?

| Materials | Tick or Cross |
|---------------------|---------------|
| Dead bird | |
| Grass cuttings | |
| Pile of leaves | |
| Coins | |
| Glass bottle | |
| Disposable peelings | |
| Plastic bag | |