

## Micro-organisms



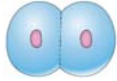
**Micro-organisms** (sometimes called **microbes**) are tiny living things which you need a **microscope** to see.

There are three main kinds: **bacteria**, **viruses** and **fungi**.

Micro-organisms are living things. All living things:

**Move**

**Reproduce**



**Sense their environment**, for example, they can detect changes in temperature

**Grow**

**Respire** – obtain energy using chemical reactions

**Excrete** – get rid of waste products

**Nutrition** – use food as a source of energy

The **7 signs of life:**

**M.R.S. G.R.E.N.**

### Diseases



Only some micro-organisms cause diseases e.g. colds, the flu, cold sores, food poisoning, tooth decay, small pox.

80% of the children infected with smallpox used to die from the disease.

**Edward Jenner** was a doctor. He created the world's first **vaccine** in 1796. Jenner's vaccine stopped people from being infected with small pox.

The World Health Organisation announced the eradication of smallpox by **vaccination** in 1979.

Vaccines teach your **immune system** how to create **antibodies** that protect you from diseases.

### Decay

Bacteria and fungi can cause the **decay** of dead things and food. They feed on the things and turn them into other substances. Decay happens fastest when it is **warm** and damp.

Decay can be good because:

- it gets rid of dead things
- **nutrients** from dead things can get back into the soil to be used by plants to grow. Gardeners often use **compost heaps** full of decaying dead things to make **compost**, which they put on their soil.

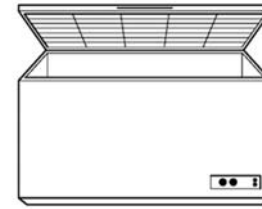


Decay can be bad because it ruins food and the micro-organisms can cause **food poisoning**. When you make food you should **wash your hands** to stop micro-organisms getting onto the food.

To grow and reproduce, micro-organisms need **food + W.O.W: Water, Oxygen, Warmth**.

You can stop or slow down the decay of food by removing at least one of the **W.O.W**.

Here are some of the ways used to **preserve food**:



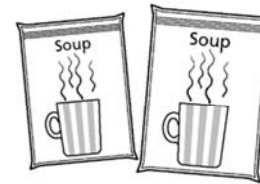
**Freezing food** stops micro-organisms growing but it does not kill them.



**Canning.** The food is heated to 120°C before it is put into tins. This kills the micro-organisms. The tins are sealed so that no more micro-organisms can get in.



**Pickling.** Some foods are stored in vinegar because vinegar kills micro-organisms.



**Drying.** Some foods can be dried. This stops micro-organisms getting the moisture they need to grow but it does not kill them.



**Pasteurisation.** Some liquids are heated to 70°C for 15 seconds which kills most of the micro-organisms.



**Salting.** Some foods have lots of salt added to them, which kills micro-organisms.

### Food



Microbes make lots of delicious foods.

A micro-organism called **yeast** is used to make

**bread** dough rise. Yeast feeds on the sugar in the dough and makes **carbon dioxide** gas which bubbles up through the dough. Bacteria are also used to make **cheese** and **yoghurt**.

### The human body



Billions and billions of bacteria live in the **large intestine** of humans.

These bacteria help us digest our food and make certain vitamins that we need to stay healthy.