

# Microorganisms

National curriculum objectives (year 6):

- describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals

# Science in the news today

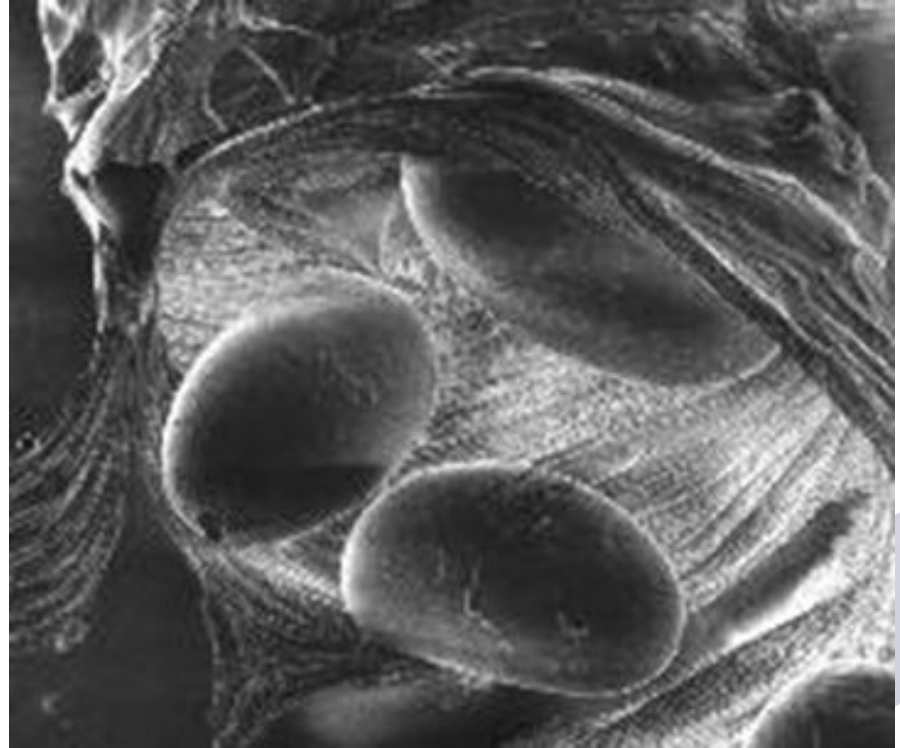
HONEY BEES ALSO FACING NEW PANDEMIC.

The honey bee has been facing a pandemic caused by a fungus, a type of microorganism. The fungus, called Nosema, lives in the guts of honey bees and stops the bees from reproducing. It is thought that this pandemic has been threatening the bees for almost 20 years. While this has been documented across Europe, Canada and even in Kenya, this infection has almost exclusively been recorded in the European honeybee.

Bees are very important for us and the planet because they pollinate many of the food crops we eat and, of course, give us honey! This means that the fungus may damage plant communities because it is reducing the number of bees that can pollinate plants.

# Here is a picture of Nosema

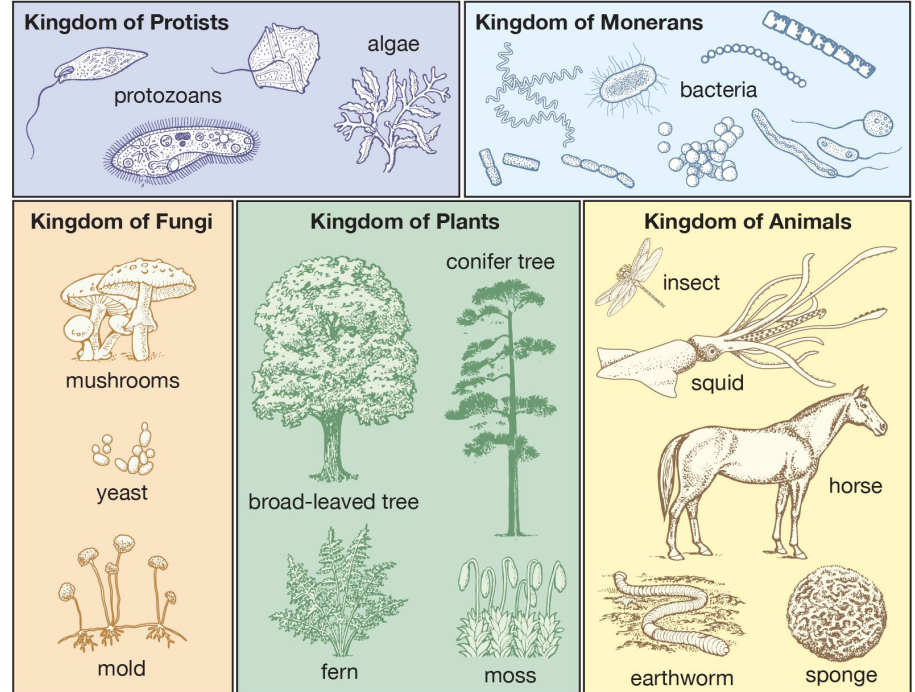
This is the fungus, Nosema, inside the gut of a honeybee



# Animals, plants and microorganisms

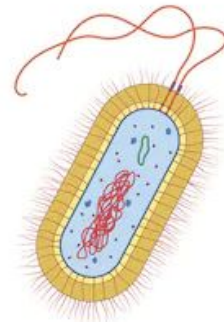
Living things can be split into three broad categories: animals, plants and microorganisms.

You see lots of different animals and plants every day, but you can't see microorganisms because they are the smallest organisms on earth!

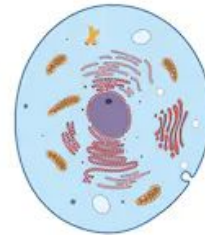


# How are microorganisms different to animals and plants?

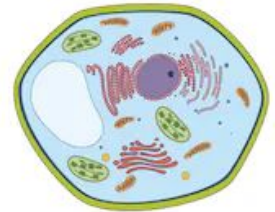
- Plants and animals are made up of many, many billions of cells, whereas microorganisms are typically made of only one cell.
- This means that animals and plants are millions of times bigger than microorganisms.
- In animals and plants, cells work together to perform different functions. Because microorganisms are just one cell, they don't contain any organs, and have different ways of getting nutrients than plants and animals.



Bacterial cell



Animal cell



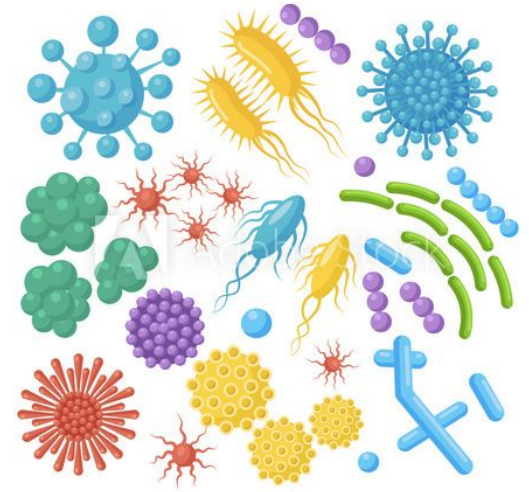
Plant cell

There are over one billion cells in the human heart alone!

# What is a microorganism?

Microorganism is the scientific name for germs. They are tiny living things that cannot be seen with the human eye. There are many different types of microorganism including bacteria, viruses and fungi.

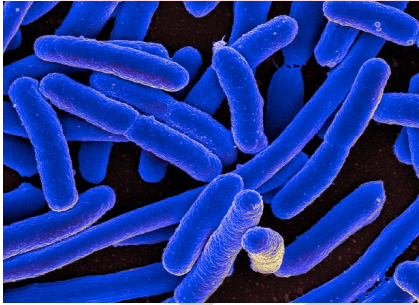
Microorganisms live everywhere, from your eyelashes to the deep areas of the earth's crust. The human body has more microorganisms inside it than the number of living cells!



# How can microorganisms be seen?

To be able to see microorganisms, scientists use a special machine called a microscope. A microscope magnifies the image of an object so that we can see really tiny things.

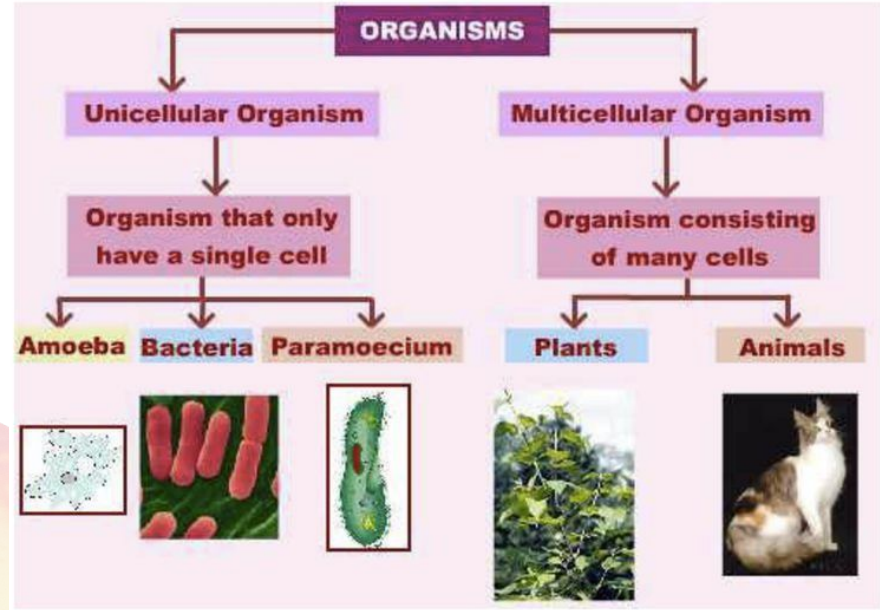
Here are some pictures of microbes under a microscope:



# How do we know if something is a microorganism?

Most microorganisms are unicellular, meaning they are only one cell.

They come in all different shapes and sizes. For example, viruses are the smallest type of microorganism and look very different to bacteria.

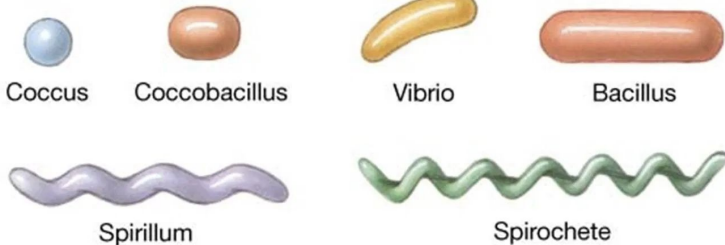




# Bacteria

Bacteria can be harmless, but some are dangerous and cause disease. We have millions of harmless bacteria living on us, and they can even be helpful. For example, the bacteria living in our gut helps digest food and ward off dangerous bacteria that get in.

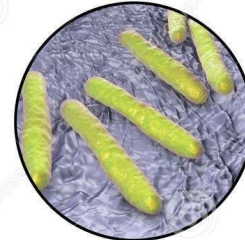
Bacteria come in these different shapes:



## SHAPES OF BACTERIA



**Spherical**



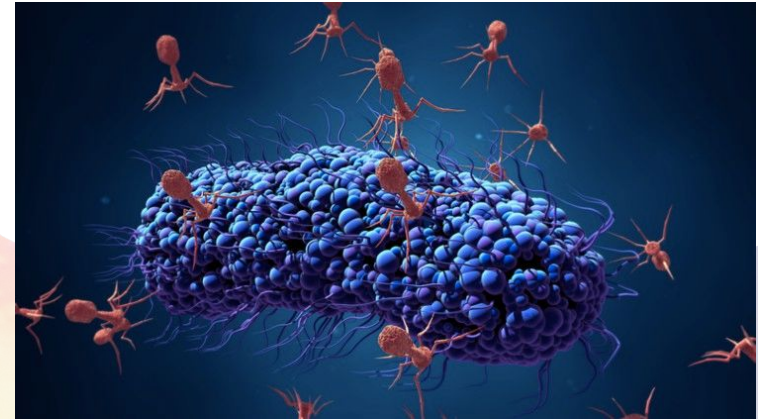
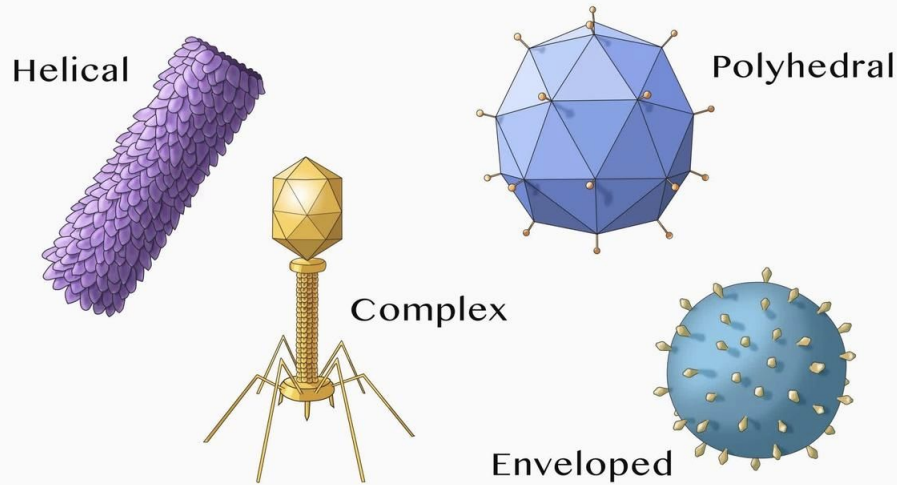
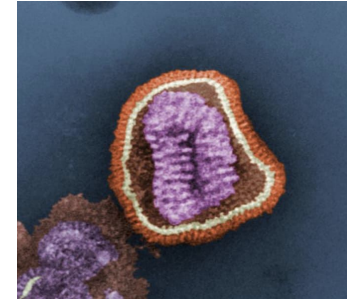
**Rod-like**



**Spiral**

# Virus

Viruses cannot reproduce on their own. They wait for a 'host' which they hijack and use as a factory to replicate themselves. They also come in many different shapes and sizes.



This is lots of viruses attacking a bacteria cell

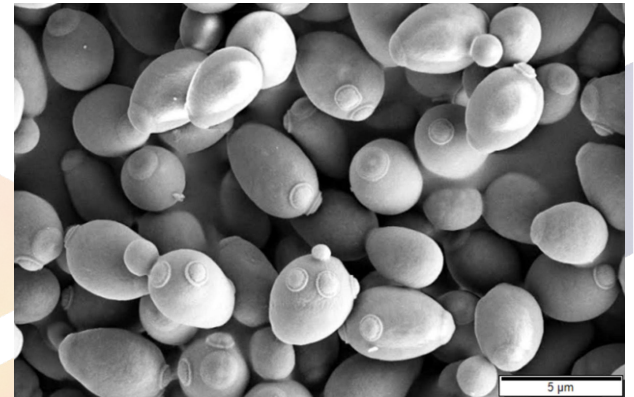
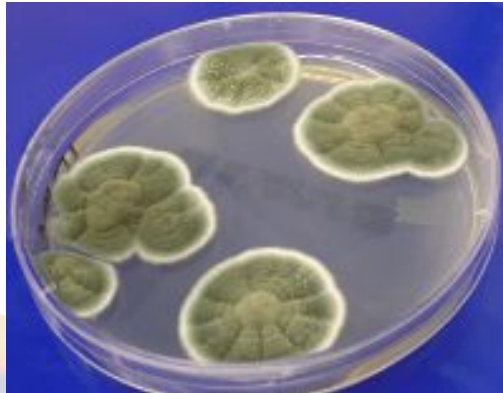
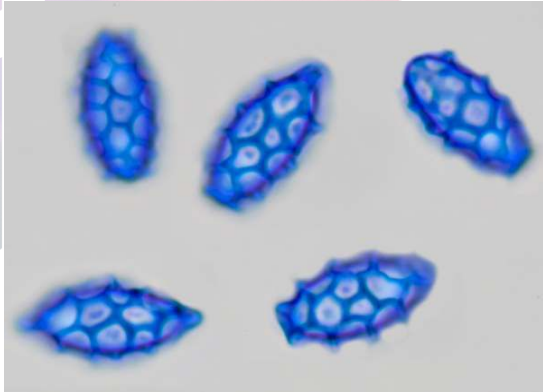
# Fungi

Fungi are another type of microorganism that include yeasts and moulds.

Yeast is a type of fungi that is used in bread making. It helps bread to rise.

This is what yeast looks like

under the microscope:



## Helpful or harmful?

For each example below, find out what kind of microorganisms are involved, and decide whether they are helpful or harmful. Once you have decided, explain why you have made that decision.

1. Making yoghurt
2. Plaque on teeth combining with small bits of food
3. Decomposing leaves, vegetables etc
4. Bacteria on food that is uncooked or undercooked
5. Chicken pox
6. Baking bread
7. Warding off bad bacteria inside the stomach

# Make your own mini microscope!

## What do you need?

- clear tape
- 2 pencils
- a pipette
- small objects from around the house e.g a coin, a leaf, a note
- water
- a white sheet of paper



## Instructions:

1. First set two pencils down about 2 inches from each other.  
Top tip – make sure the pencils are parallel
1. Next, stick a long piece of tape over both the pencils and to the table.  
Top tip – Try and make the tape is as tight as possible!
1. Then, drop a small drop of water on the top of the tape using a pipette. You can try different sized drops to see which one produces the best magnification.
2. Now, slide a small object or microscope slide under the droplets of water on the tape and observe! The slide will magnify 4 times or more, but you can use a magnifying glass as well to make the object even bigger.

We would love to see the ones you've made, so please take a photo and send it to [outreach@sciencecreates.com](mailto:outreach@sciencecreates.com)