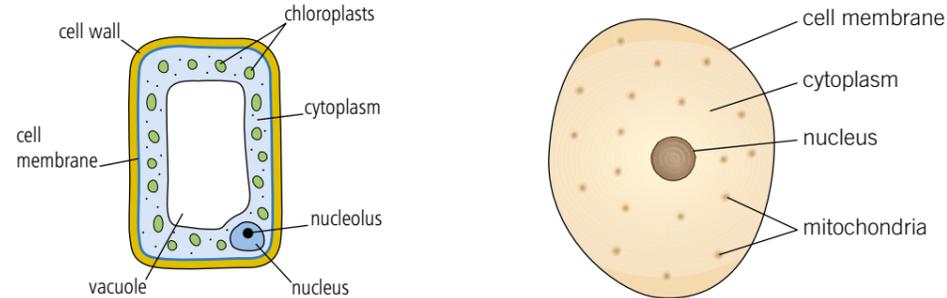


All living things (organisms), are made of **cells**. Some are only made of a single cell, for example, bacteria. A person is made up of millions of cells joined together.

Plant and animal cells

Cells have smaller structures inside them, called components, that each have an important function.



Specialised cells

Specialised cells have special features that allow them to do a specific job or function:

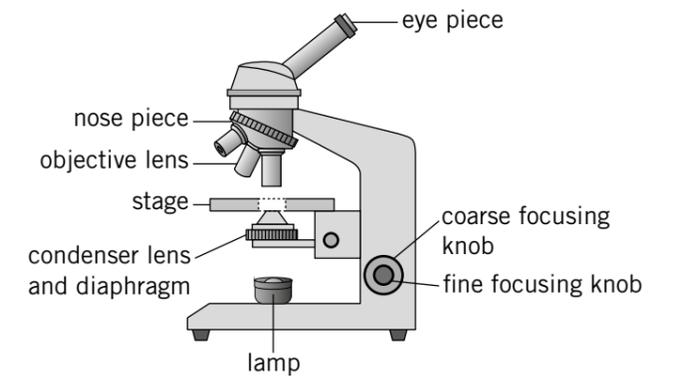
	Cell type	Function	Special features	Diagram
plant cells	root hair cell	absorb water and nutrients from soil	<ul style="list-style-type: none"> root hair creates a large surface area no chloroplasts as no light underground 	
	leaf cell (palisade cell)	carry out photosynthesis	<ul style="list-style-type: none"> found at the top surface of leaves packed with chloroplasts thin with a large surface area to absorb more light 	
animal cells	red blood cell	transport oxygen around the body	<ul style="list-style-type: none"> contain haemoglobin which joins to oxygen no nucleus disc shaped to increase surface area 	
	nerve cell (neurone)	carry electrical impulses around the body	<ul style="list-style-type: none"> long and thin with connections at each end 	
	sperm cell	carry male genetic material	<ul style="list-style-type: none"> streamlined head and a long tail lots of mitochondria to transfer energy 	

Microscopes

Cells can only be seen under a microscope. A microscope magnifies an object using lenses.

Remember that:

- the specimen needs to be thin so light can pass through
- a dye can be added to make the object easier to see.



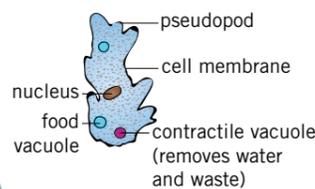
Using a microscope

- 1 Move the stage to its lowest position.
- 2 Place the slide/object on the stage.
- 3 Choose the objective lens with the lowest magnification.
- 4 Look through the eyepiece and turn the coarse-focus knob slowly until you see the object.
- 5 Turn the fine focus knob until it comes into focus.
- 6 Repeat steps 1–5 using a higher magnification lens.

Unicellular organisms

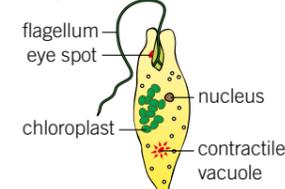
A **unicellular** organism only consists of one cell. They have no fixed shape and are adapted to carry out many different functions.

Amoeba



- nucleus controls growth and reproduction
- move by moving part of their body and the rest follows slowly in the same direction
- eat bacteria, algae, and plant cells by engulfing them
- reproduce by splitting in half (binary fission)

Euglena



- microscopic organism found in fresh water
- contain chloroplasts and make their own food by photosynthesis
- eye spot that detects light
- flagellum allows the *Euglena* to move towards the light to make more food

Movement in and out of cells

Particles move in and out of cells by **diffusion**.

During diffusion, particles spread out from where they are in **high concentration** to where they are in **low concentration**.

Diffusion in water is called **osmosis**.

Glucose and oxygen move from the blood **into** cells by diffusion.

Carbon dioxide moves **out of** cells to the blood by diffusion.

Key terms

Make sure you can write definitions for these key terms.

amoeba cell cell membrane cell wall chloroplast concentration cytoplasm diffusion Euglena flagellum leaf cell microscope mitochondria nerve cell nucleus
red blood cell root hair cell specialised cell sperm cell unicellular vacuole