



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 chloroplasts cell membrane Cells have smaller structures inside them, cell wall called components, that each have an cytoplasm important function. -cytoplasm cell - nucleus membranemitochondria nucleolus mitochondria nucleus

Specialised cells

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

vacuole

	Cell type	Function	Special features	Diagram
	root hair cell	absorb water and nutrients from soil	root hair creates a large surface areano chloroplasts as no light underground	
plant cells	leaf cell (palisade cell)	carry out photosynthesis	found at the top surface of leavespacked with chloroplaststhin with a large surface area to absorb more light	
animal cells	red blood cell	transport oxygen around the body	contain haemoglobin which joins to oxygenno nucleusdisc shaped to increase surface area	
	nerve cell (neurone)	carry electrical impulses around the body	long and thin with connections at each end	A STATE OF THE STA
	sperm cell	carry male genetic material	streamlined head and a long tail lots of mitochondria to transfer energy	

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
- contractile vacuole reproduce by splitting in half (binary fission)

Euglena flagellum eye spot nucleus chloroplast contractile vacuole

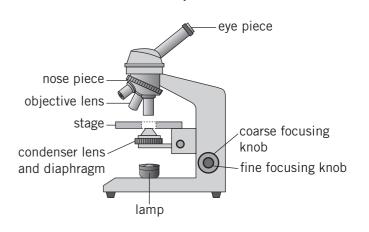
- microscopic organism found in fresh water
- · contain chloroplasts and make their own food by photosynthesis
- eye spot that detects light
- flagellum allows the Euglena to move towards the light to make more food

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.
- Repeat steps 1-5 using a higher magnification lens.

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.



Make sure you can write definitions for these key terms.

amoeba 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 unicellular sperm cell