

Knowledge organiser

Big idea:



Y7 topic: CELLS

I have already learned:

In KS2: to identify and name the main parts of the circulatory system, and explain the functions of the heart, blood vessels and blood.

This topic links to:

Y7: reproduction topic - looking at how sperm cells are used

Y8: photosynthesis topic – looking in more detail at plant cells

Y8: respiration - looking in more detail at how mitochondria are used

It is important to study about cells because...

As cells are the smallest units of life, all living things are made up of one or more cells. Cells house the biological machinery that makes the proteins, chemicals, and signals responsible for everything that happens inside our bodies. Every biological problem can be solved by studying cells.

Possible careers involving cells are...

Cell biologist

teacher

Researcher

Zoologist

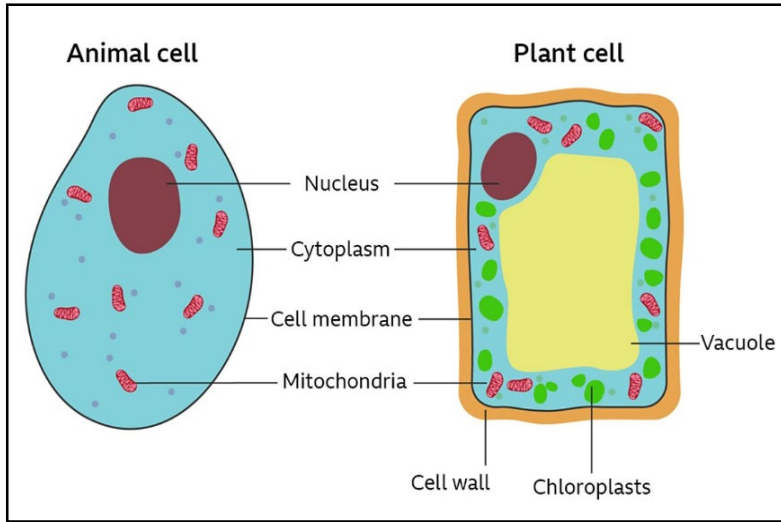
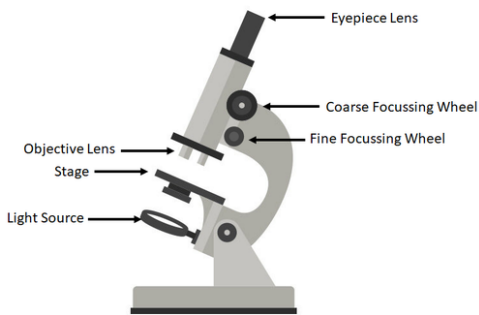
biologist

Nurse

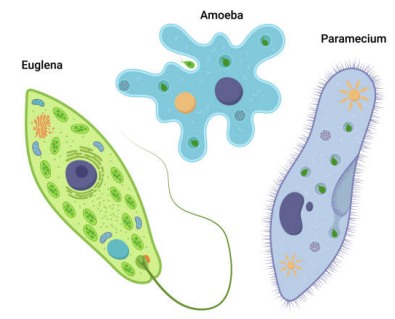
doctor

Key Word	Definition
cell	Basic building blocks of all living things.
nucleus	Controls the cell and contains genetic material. Genetic information is needed to make new cells.
cell membrane	Controls what comes in and out of a cell.
cytoplasm	Where chemical reactions in a cell take place.
mitochondria	Where respiration happens. Respiration transfers energy for the organism.
cell wall	Outer layer of a plant cell that provides support and makes the cell rigid.
vacuole	Storage of watery liquid called cell sap.
chloroplast	Where photosynthesis happens. Contains a green substance called chlorophyll.
diffusion	The movement of gas and liquid particles from an area of high concentration to a low concentration. An example of this is the exchange of oxygen and carbon dioxide in the lungs.
adaptation	Features cells have that make them able to do their job- e.g. sperm cells having a tail to swim
Specialised cell	A cell that has developed 'special' features to be able to do a particular job.

$$\text{Magnification} = \frac{\text{Eye piece Lens Magnification}}{\text{Objective lens Magnification}} \times \text{Objective lens Magnification}$$



Uni-cellular organisms
Some organisms are made of only one cell. There are no tissues, organs or organ systems. These organisms have structural adaptations to help them survive.



Specialised cells are found in multicellular organisms. Each specialised cell has a particular function within the organism.

Animal or plant cell	Type of cell	Function	Adaptation (Special features of plant and animals that help them survive)
Animal	Sperm cell 	To fertilise the egg cell	Carry male genetic material. Streamlined head and a tail to swim. Lots of mitochondria to provide energy to move.
Animal	Nerve cell 	To carry nerve impulses to different parts of the body	Long. Connections at each end. Can carry electrical signals.
Plant	Root hair cell 	To absorb water and minerals	Large surface area
Plant	leaf cell 	To absorb sunlight for photosynthesis	Large surface area with lots of chloroplast to absorb light energy.