



Animal cells	Plant cells	Comparing plant and animal cells	Unicellular organisms	Specialised cells	Microscopes	Magnification	Levels of organisation	Skeletal System
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## Key Words

Key Word	definition
Specialised cells	cells designed to carry out a particular role in the body, such as red blood cells
Organelle	Parts of cells with a job
Unicellular	Made of one cell
Respiration	A chemical reaction in mitochondria-releases energy
Prokaryote cell	A singled celled organism with no nucleus eg Bactria
Magnification	How many times larger the image is compared to actual size

## Misconceptions

Root hair cells are **not** human cells which grow hair (plant cells)

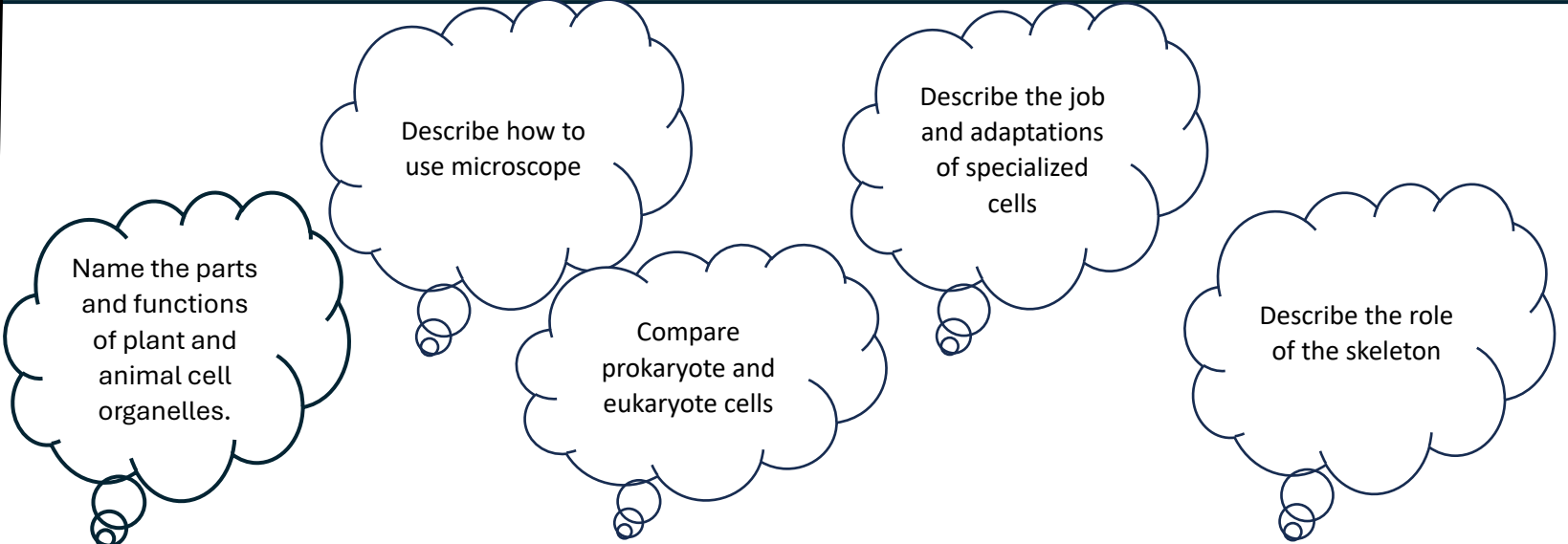
**Not** All bacteria/germs are bad (Bacteria can be useful)

Mitochondria do not **make** energy (mitochondria -release energy by respiration)

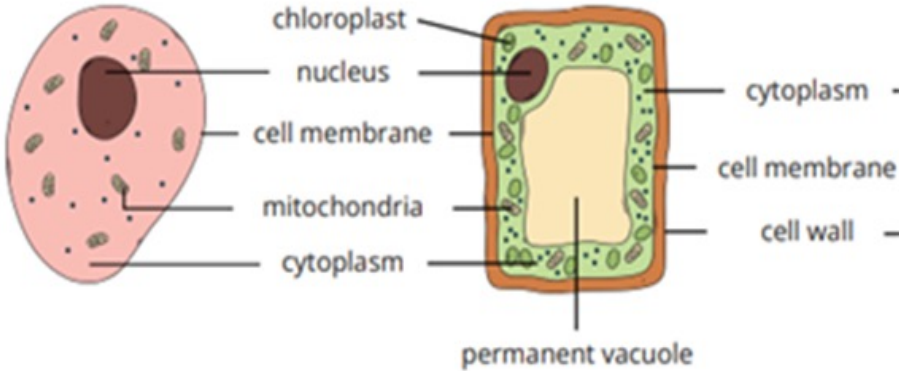
Cell wall does **not** protect the pant (provides support)

Nucleus is **not** the Brain of a cell (Contains DNA)

## Key questions



## Plant and animal cells



## Cell Organelles and functions

Organelle	Function
<b>Nucleus</b>	It contains genetic material (DNA)
<b>Cell membrane</b>	Controls the movement of substances into and out of the cell.
<b>Cytoplasm</b>	Where chemical reactions occur.
<b>mitochondria</b>	aerobic respiration
<b>Ribosomes</b>	Make proteins
<b>Cell wall</b>	provides support for the plant
<b>Chloroplast</b>	Contain a pigment called chlorophyll-photosynthesis
<b>Permanent vacuole</b>	Filled with cell sap

## Role of the skeleton

**Support** – The skeleton provides a frame to hold your body upright and keep your organs in place.

**Protection** - Bones are hard and strong to protect important organs e.g. heart

**Movement** - Your bones and muscles work together to move body.

**Making blood cells**- The inside of the large bones produce red blood cells

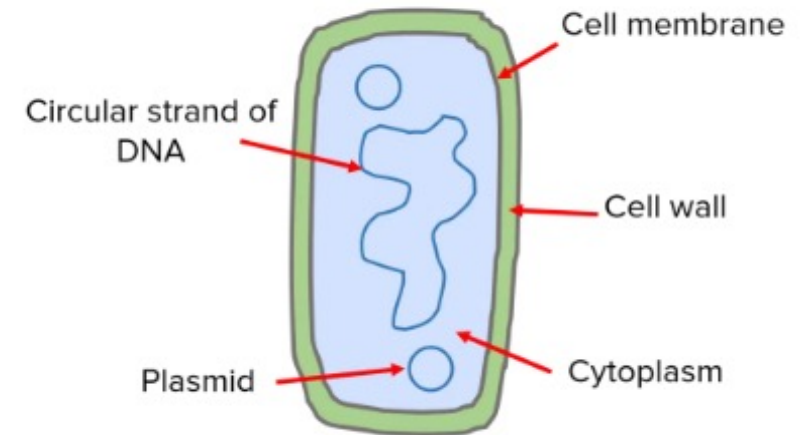
## Specialised cells





Cell	Function	How adapted to carry out function
<b>red blood cell</b>	To transport oxygen	Biconcave shape increases the surface area for the diffusion of oxygen. No nucleus so that there is more room for haemoglobin
<b>muscle cell</b>	Contract to move bones	Lots of mitochondria to provide energy for muscle contraction
<b>sperm cell</b>	To join with an egg cell	Long tail for movement to the egg and lots of mitochondria to release energy to allow the sperm to move.
<b>palisade cell</b>	To carry out photosynthesis	Lots of chloroplasts to absorb light energy for photosynthesis. Its tall, long shape gives the cell a large surface area to maximise the absorption of light.
<b>root hair cell</b>	To absorb water and minerals	Long protrusion fits between grains of soil and provides a large surface area for the absorption of water and minerals into the cell.

## Comparing cells

Sub-Cellular Structure	Animal Cell	Plant Cell	Bacterial Cell
nucleus	✓	✓	✗
circular DNA	✗	✗	✓
mitochondria	✓	✓	✗
chloroplasts	✗	✓	✗
cell wall	✗	✓	✓
cell membrane	✓	✓	✓
cytoplasm	✓	✓	✓
flagellum	✗	✗	✓
permanent vacuole	✗	✓	✗
plasmids	✗	✗	✓

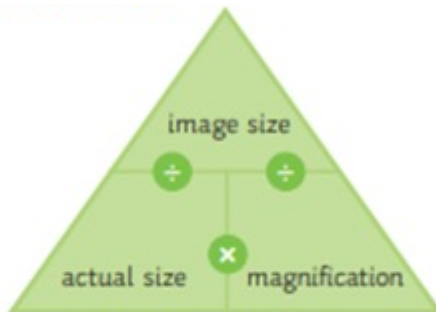
## Prokaryote cell



Organisation	
Cell	Function
	A <b>cell</b> is the smallest unit of a living organism
	A <b>tissue</b> is a group of cells of the same type.
	An <b>organ</b> is a group of different tissues working together to carry out a job.
	An <b>organ system</b> is a group of different organs working together to perform a particular function.

## Magnification calculations

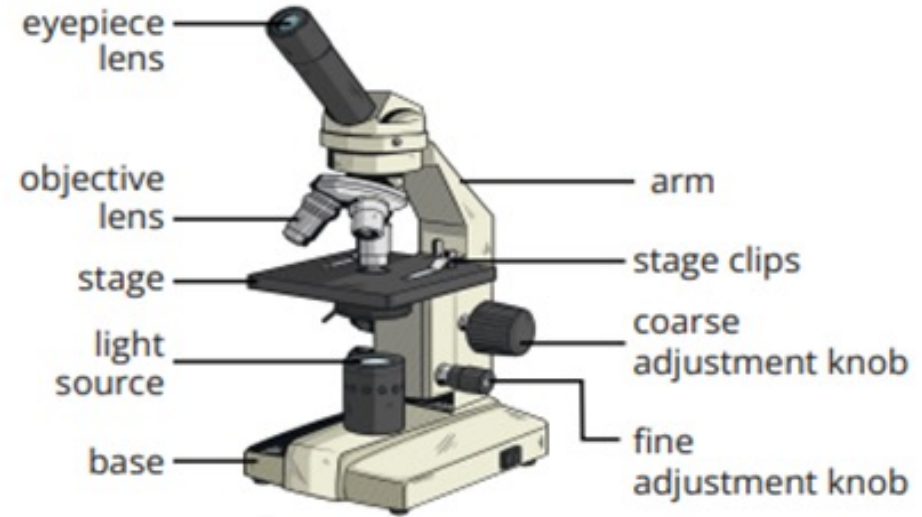
Equation



## Conversion of units

1mm= 1000 micrometers  
millimeters --> micrometers X1000

## Microscopes



## How to use a microscope

1. Make sure the objective lens with the lowest magnification is in use.
2. Put the slide on the stage.
3. Turn the coarse focus knob upwards to manually focus the image.
4. Use the fine focus knob to focus the image further.
5. Switch to an objective lens with a higher magnification and repeat above steps.

## How to set up a microscope

1. Peel off a thin piece of onion cells
2. Lay the onion flat on the surface of the slide
3. Add a small drop of iodine solution to the onion.
4. Lower the thin glass coverslip or cover glass onto the slide. Make sure there are no air bubbles.
5. Place the glass slide onto the stage on the microscope