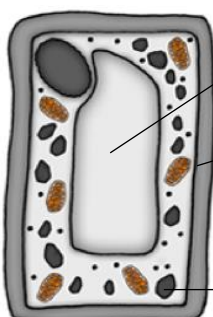


animal cell

cytoplasm	<i>site of chemical reactions in the cell</i>	gel like substance containing enzymes to catalyse the reactions
nucleus	<i>contains genetic material</i>	controls the activities of the cell and codes for proteins
cell membrane	<i>semi permeable</i>	controls the movement of substances in and out of the cell
ribosome	<i>site of protein synthesis</i>	mRNA is translated to an amino acid chain
mitochondrion	<i>site of respiration</i>	where energy is released for the cell to function

Eukaryotes complex organisms

contains all the parts of animal cells plus extras



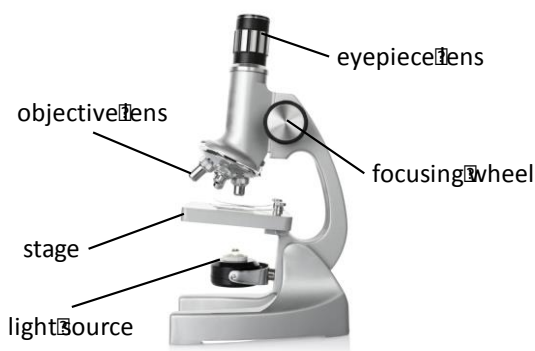
plant cell

permanent vacuole	<i>contains cell sap</i>	keeps cell turgid, contains sugars and salts in solution
cell wall	<i>made of cellulose</i>	supports and strengthens the cell
chloroplast	<i>site of photosynthesis</i>	contains chlorophyll, absorbs light energy

PREFIXES

Prefix	Multiple	Standard form
centi (cm)	1 cm = 0.01 m	$\times 10^{-2}$
milli (mm)	1 mm = 0.001 m	$\times 10^{-3}$
micro (μm)	1 μm = 0.000 001 m	$\times 10^{-6}$
nano (nm)	1nm = 0.000 000 001 m	$\times 10^{-9}$
pico (pm)	1pm = 0.000 000 000 001m	$\times 10^{-12}$

decreasing size and scale



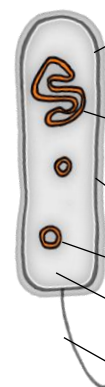
Estimates can be useful when you only have a sample of what you are counting
e.g. the number of red blood cells in a blood sample

Many of the structures found in cells were not able to be seen before the development of electron microscopes e.g. ribosomes

Microscopy

$$\text{magnification} = \frac{\text{size of image}}{\text{real size of the object}}$$

Edexcel GCSE Biology Key Concepts Part 1

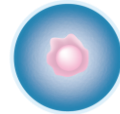

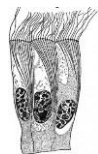


cell membrane	<i>site of chemical reactions in the cell</i>	gel like substance containing enzymes to catalyse the reactions
bacterial DNA	<i>not in nucleus floats in the cytoplasm</i>	controls the function of the cell. Can be found as chromosomal DNA and plasmid DNA (small rings).
cell wall	<i>NOT made of cellulose</i>	supports and strengthens the cell
cytoplasm	<i>semi permeable</i>	controls the movement of substances in and out of the cell
flagella	<i>whip like tail</i>	allows the bacterial cell to move
ribosome	<i>site of protein synthesis</i>	mRNA is translated to an amino acid chain

Bacterial cells are much smaller than plant and animal cells

Prokaryotes simpler organisms

Specialised cells

egg		<i>fertilised by a sperm</i>	nutrients in the cytoplasm, haploid nucleus and changes in the cell membrane after fertilisation
sperm		<i>fertilise an egg</i>	streamlined with a long tail acrosome containing enzymes large number of mitochondria, haploid nucleus
Ciliated epithelial cell		<i>push and move mucus</i>	Thin layer of moving hairs on the surface of the cells called cilia.

Feature	Light (optical) microscope	Electron microscope
Radiation used	Light rays	Electron beams
Max magnification	~ 1500 times	~ 2 000 000 times
Resolution	200nm	0.2nm
Size of microscope	Small and portable	Very large and not portable
Cost	~£100 for a school one	Several £100,000 to £1 million plus