

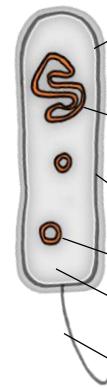
cytoplasm	<i>site of chemical reactions in the cell</i>	gel like substance containing enzymes to catalyse the reactions
nucleus	<i>contains genetic material</i>	controls the activities of the cell and codes for proteins
cell membrane	<i>semi permeable</i>	controls the movement of substances in and out 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

animal cell

Eukaryotes complex organisms

contains all the parts of animal cells plus extras

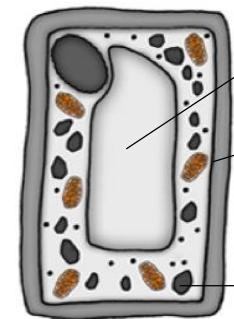
Edexcel GCSE Biology Key Concepts Part 1



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



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 μ m = 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	$\times 10^{-12}$

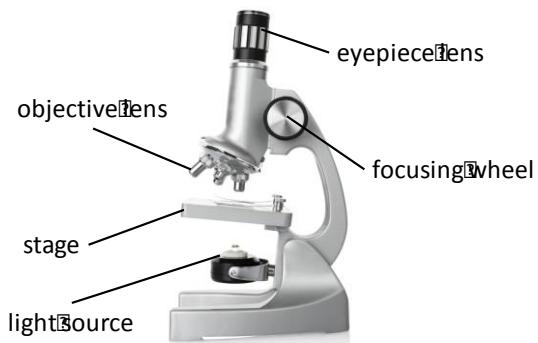
decreasing size and scale

Microscopy

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

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.

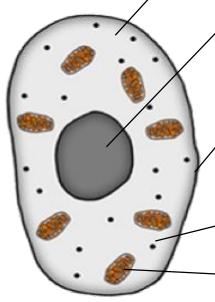


Estimates can be useful when you only have a sample of what you are counting e.g. the number of red blood cells in a blood sample

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

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

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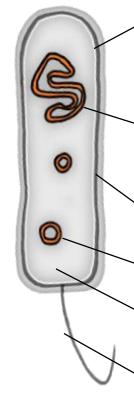
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	<i>site of respiration</i>	where energy is released for the cell to function

animal cell

plant cell

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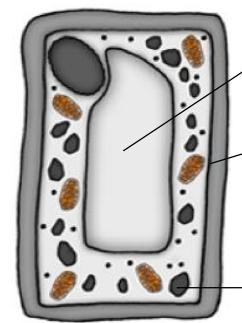
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Specialised cells

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decreasing size and scale

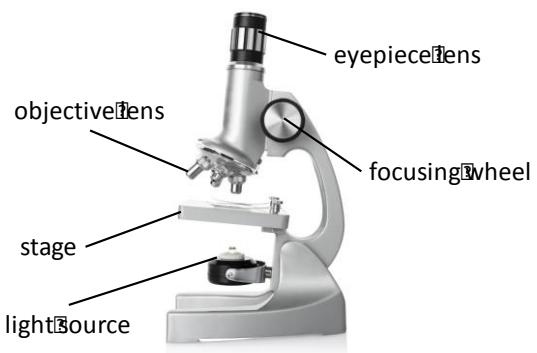
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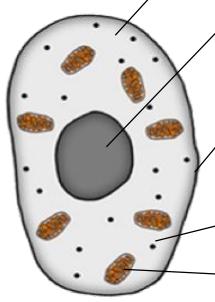
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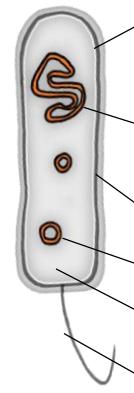
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animal cell

plant cell

Eukaryotes complex organisms

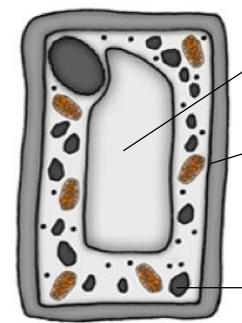
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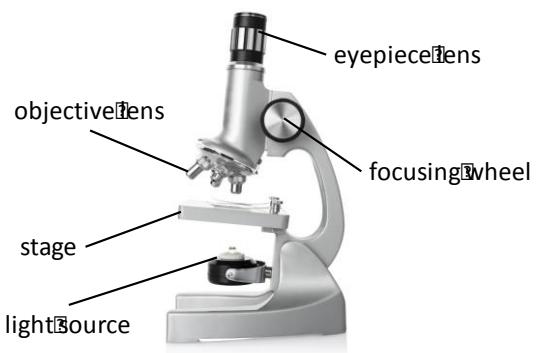
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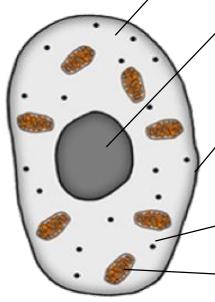
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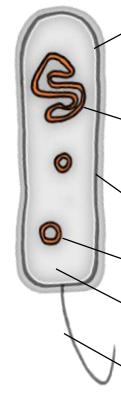


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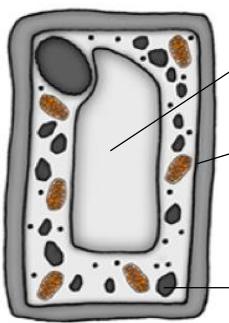
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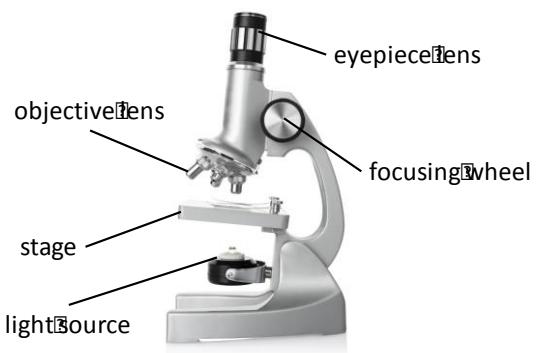
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