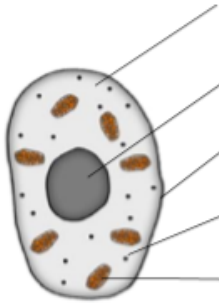
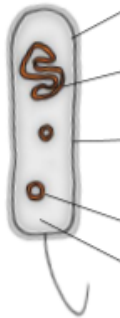


# Cell Biology and diffusion L1-7



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

animal cell



<b>cell membrane</b>	<i>site of chemical reactions in the cell</i>	gel like substance containing enzymes to catalyse the reactions
<b>bacterial DNA</b>	<i>not in nucleus floats in the cytoplasm</i>	controls the function of the cell
<b>cell wall</b>	<b>NOT</b> made of cellulose	supports and strengthens the cell
<b>plasmid</b>	<i>small rings of DNA</i>	contain additional genes
<b>cytoplasm</b>	<i>semi permeable</i>	controls the movement of substances in and out of the cell

Bacterial cells are much smaller than plant and animal cells

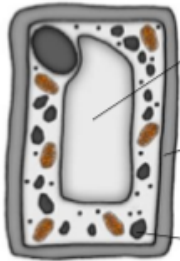
**Eukaryotes complex organisms**

**AQA Cell Structure**

**Prokaryotes simpler organisms**

plant cell

contains all the parts of animal cells plus extras



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

how a cell changes and becomes **specialised**  
Undifferentiated cells are called **STEM** cells

**Cell differentiation**

*animal cell differentiation*

*plant cell differentiation*

early stages of development only for repair and replacement

all stages of life cycle the stem cells are grouped together in meristems

**Specialised cells**

specialised animal cells	<b>nerve</b>		<i>carry electrical signals</i>	long branched connections and insulating sheath
	<b>sperm</b>		<i>fertilise an egg</i>	streamlined with a long tail acrosome containing enzymes large number of mitochondria
	<b>muscle</b>		<i>contract to allow movement</i>	contains a large number of mitochondria long
specialised plant cells	<b>root hair</b>		<i>absorb water and minerals from soil</i>	hair like projections to increase the surface area
	<b>xylem</b>		<i>carry water and minerals</i>	TRANSPIRATION - dead cells cell walls toughened by lignin flows in one direction
	<b>phloem</b>		<i>carry glucose</i>	TRANSLOCATION - living cells cells have end plates with holes flows in both directions

# Cell Biology and diffusion L1-7

Small intestines	<i>Villi – increase surface area, Good blood supply – to maintain concentration gradient, Thin membranes – short diffusion distance.</i>
Lungs	<i>Alveoli– increase surface area, Good blood supply – to maintain concentration gradient, Thin membranes – short diffusion distance.</i>
Gills in fish	<i>Gill filaments and lamella – increase surface area, Good blood supply – to maintain concentration gradient, Thin membranes – short diffusion distance.</i>
Roots	<i>Root hair cells - increase surface area.</i>
Leaves	<i>Large surface area, thin leaves for short diffusion path, stomata on the lower surface to let O<sub>2</sub> and CO<sub>2</sub> in and out.</i>

## ADAPTATIONS FOR DIFFUSION

The greater the difference in concentrations the faster the rate of diffusion.

AQA  
Cell Biology

Transport in cells

Diffusion <i>No</i> energy required	<i>Movement of particles in a solution or gas from a higher to a lower concentration</i>	E.g. O <sub>2</sub> and CO <sub>2</sub> in gas exchange, urea in kidneys. Factors that affect the rate are concentration, temperature and surface area.
--	--	---