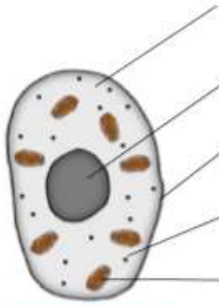
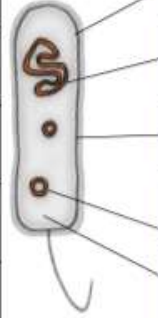


Cell Biology and diffusion L1-7



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



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
cell wall	NOT made of cellulose	supports and strengthens the cell
plasmid	<i>small rings of DNA</i>	contain additional genes
cytoplasm	<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

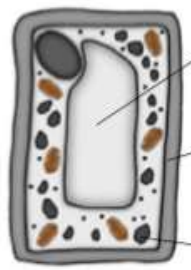
Eukaryotes complex organisms

AQA Cell Structure

Prokaryotes simpler organisms

plant cell

contains all the parts of animal cells plus extras



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

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

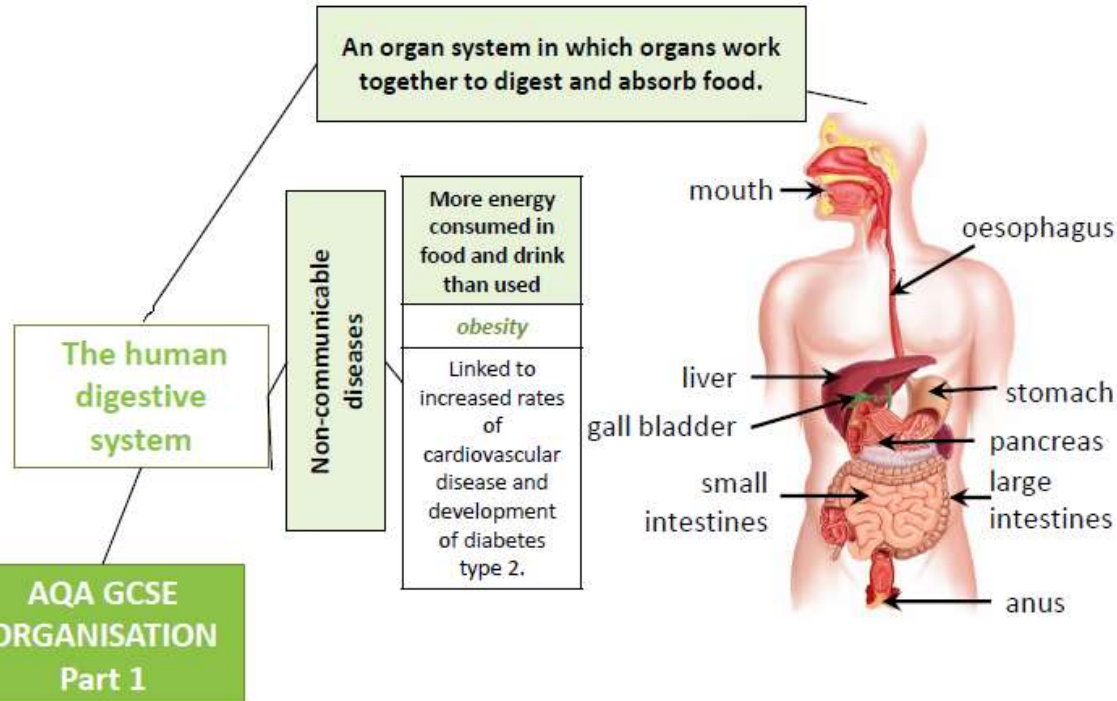
nerve		<i>carry electrical signals</i>	long branched connections and insulating sheath
sperm		<i>fertilise an egg</i>	streamlined with a long tail acrosome containing enzymes large number of mitochondria
muscle		<i>contract to allow movement</i>	contains a large number of mitochondria long

specialised plant cells

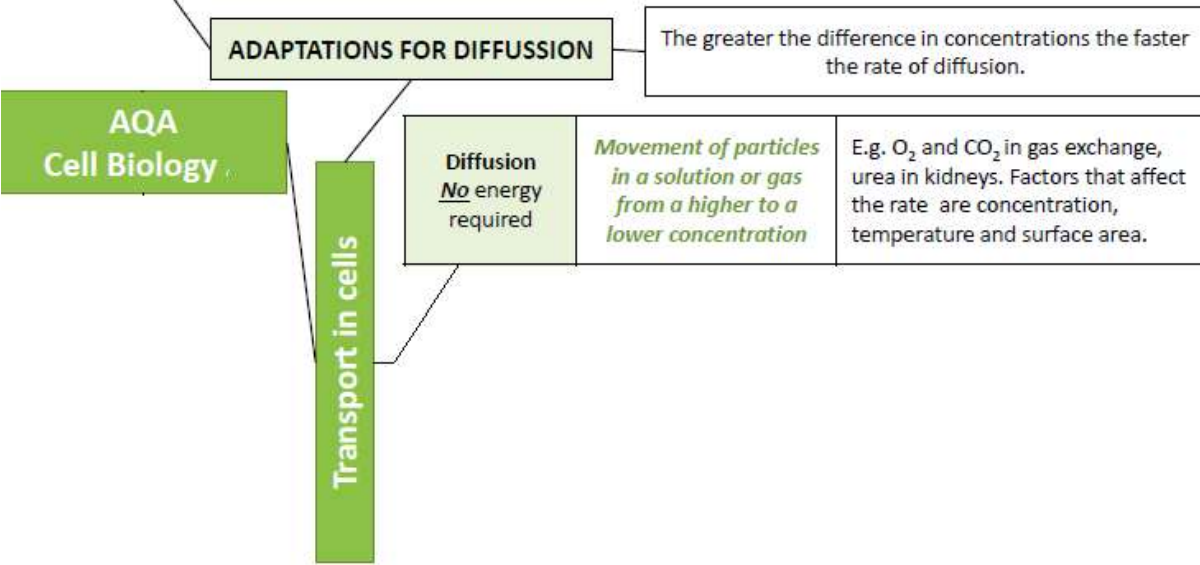
root hair		<i>absorb water and minerals from soil</i>	hair like projections to increase the surface area
xylem		<i>carry water and minerals</i>	TRANSPIRATION - dead cells cell walls toughened by lignin flows in one direction
phloem		<i>carry glucose</i>	TRANSLOCATION - living cells cells have end plates 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 O₂ and CO₂ in and out.</i>



Tissues and organs L8-10



Cells, tissues, organs and systems

Cells		<i>e.g. muscle cells</i>	The basic building blocks of all living organisms.
Tissues		<i>e.g. muscle tissue</i>	A group of cells with a similar structure and function.
Organs		<i>e.g. the heart</i>	Aggregations (working together) of tissues performing a specific function.
Organ systems		<i>e.g. the circulatory system</i>	Organs working together to form organ systems, which work together to form an organism.