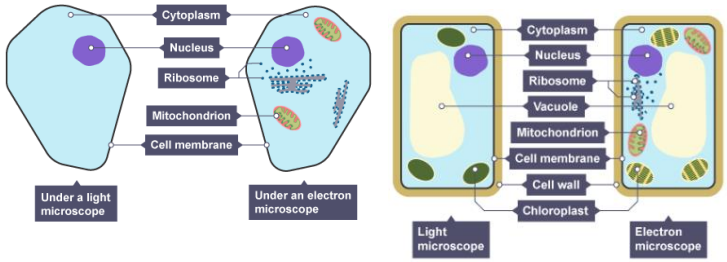
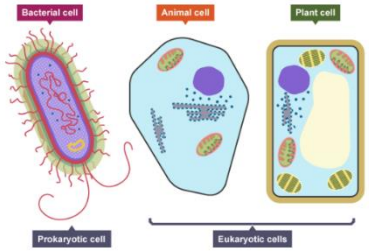
Cells – Structure and Function



	Function
Cytoplasm	A jelly-like material that contains dissolved nutrients and salts and structures called organelles. It is where many of the chemical reactions happen.
Nucleus	Contains genetic material, including DNA, which controls the cell's activities.
Cell membrane	Its structure is permeable to some substances but not to others. It therefore controls the movement of substances in and out of the cell.
Mitochondria	Organelles that contain the enzymes for respiration, and where most energy is released in respiration.
Ribosomes	A tiny organelle where protein synthesis occurs.
Chloroplast	Organelles that contains the green pigment, chlorophyll, which absorbs light energy for photosynthesis. Contains the enzymes needed for photosynthesis.
Cell wall	Made from cellulose fibres and strengthens the cell and supports the plant.
Permanent vacuole	Filled with cell sap to help keep the cell turgid.



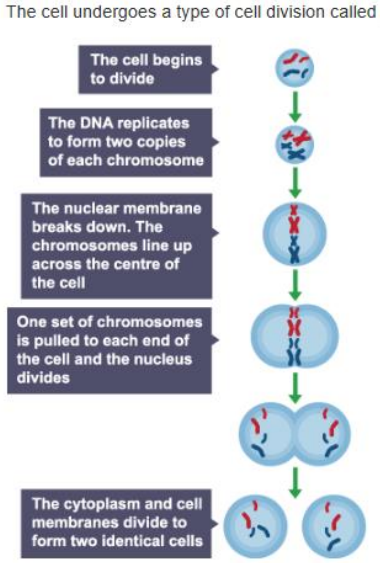
	Eukaryotic Cell	Prokaryotic Cell
Types	Plant and animal	bacteria
Size	Larger	Smaller
DNA	In the nucleus	Free in cytoplasm

BU1 Cell Biology

Cell Division

Chromosomes carry genetic information in a molecule called DNA.

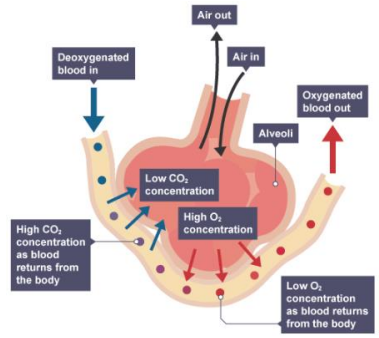
DNA exists in a cell's nucleus within structures called **chromosomes**. Each section of a chromosome that contains the code for the production of a particular protein is called a **gene**.

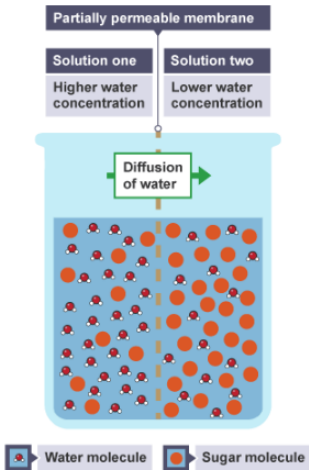


Specialised Cells	Function	Adaptation
Sperm	Contains male DNA. Travels to the egg	Long tail, Streamlined head, lots of mitochondria, enzymes in head.
Nerve	Carry electrical signals	Long, branched to connect to other nerve cells
Muscle	Contact for movement	Long, lots of mitochondria
Root Hair cell	Absorb water	Large surface area
Xylem	Transport water	Hollow cells, form long tubes
Phloem	Transport food	Few structures so food can flow through

Transport Methods

Diffusion – movement of particles from a high to a low concentration. Examples – gas exchange in leaves, gas exchange in lungs, absorption of small food particles in digestive system.





Osmosis – movement of WATER molecules from a high to a low concentration through a partially permeable membrane

Active Transport – Movement of substances from a LOW to a HIGH concentration, uses energy from respiration.