

AQA GCSE Topic 1 Cell Biology - Cell Structure & Cell Division Key Words

Key Word	Definition
Cells	They are the building blocks of all living things (organisms)
Eukaryotic	More complex cells that contain lots of sub-cellular structures e.g. animal and plant cells
Prokaryotic	These are cells that are smaller and simpler than plant and animal cells e.g. bacterial cells
Eukaryote	Animals and plants are eukaryotes as they are made of eukaryotic cells
Prokaryote	A single-celled organism made from a prokaryotic cell e.g. bacteria
Sub-cellular structures	Cell organelles or the components within cells e.g. nucleus, ribosomes, mitochondria etc.
Nucleus	Contains the DNA and controls the cell activities
Cytoplasm	Where most of the chemical reactions happen, it contains enzymes, it's a gel-like substance
Cell membrane	Controls what substances can go into and out of the cells and holds the cell together
Mitochondria	Where aerobic respiration takes place
Aerobic respiration	All organisms respire. The chemical reaction where energy is released from glucose: glucose + oxygen → water + carbon dioxide
Ribosomes	Where proteins are made
Cell wall	For plant cells it contains cellulose which supports and strengthens the cell
Permanent vacuole	For plant cells it contains the cell sap (sugar solution) which keeps the cell full for cell strength
Chloroplasts	Where photosynthesis happens, many chloroplasts are found in the palisade cells of the leaf
Chlorophyll	The pigment inside the chloroplasts which absorbs the light energy for photosynthesis to happen
Photosynthesis	The chemical reaction where glucose is produced by a plant: carbon dioxide + water → glucose + oxygen

Bacterial cells	Are prokaryotic cells, they contain a cell wall, cell membrane and cytoplasm but they do not have a nucleus (their DNA strand floats around in the cytoplasm and there may be plasmids as well as this)
Plasmids	Small rings of DNA found in bacteria cells
Microscopes	Allow us to see small objects that we can't see with the naked eye
Light microscope	Uses light to form an image, they let you see individual cells and larger sub-cellular structures e.g. nucleus
Electron microscope	Uses electrons to form an image, they have a higher magnification and a higher resolution than light microscopes. You can see inside the larger sub-cellular structures e.g. mitochondria, and you can also see sub-cellular structures such as ribosomes
Magnification	To magnify is to make an image look bigger than the real object Magnification = image size/real size
Resolution	The ability to distinguish between 2 points that are close together, high resolution gives a sharper image
Stains	Used to highlight objects on a microscope slide by adding colour to them e.g. iodine solution to stain starch in plant cells
Specialised cell	A cell that has a specific function and therefore has a particular shape or structure e.g. nerve, sperm, leaf (palisade) cells
Differentiation	When an undifferentiated cell changes into a specialised cell with a particular function
Stem cells	Undifferentiated cells that can turn into different cell types. They have massive potential medically as they can be grown in a lab to produce clones (identical cells) which have the potential to differentiate into specialised cell types for use in medicine
Adult stem cells	Human adults have stem cells in certain places e.g. bone marrow, that can turn into certain cell types
Embryonic stem cells	Stem cells found in early embryos can turn into any cell type
Therapeutic cloning	When an embryo is made to have the same genetic information as the patient needing new, healthy cells. The stem cells from the embryo would therefore not be rejected by the patient's body

Meristems	Where stem cells are found in plants. These are the parts of the plant where growth happens (tips of roots and shoots). Stem cells in meristems can differentiate into any type of plant cells
Nerve cell	Long body so the electrical messages can be sent along long distances, lots of branched connections for fast electrical impulses
Muscle cell	Contains lots of mitochondria as muscles need energy to contract
Root hair cells in plants	Long projections stick out into the soil for a large surface area to absorb as much water and minerals as possible
Phloem cells in plants	Transport sugar, cells form long tubes for transport
Xylem cells in plants	Transport water, cells form long, hollow tubes for transport
Chromosomes	Long, coiled molecules of DNA found in the nucleus
Genes	A gene is a short section of DNA that controls a particular characteristic e.g. hair colour. Each chromosome contains many genes
The cell cycle	The cell cycle starts when a cell has been produced by cell division and ends with the cell dividing to produce two identical cells
Mitosis	It's a type of cell division where two genetically identical daughter cells are produced from one parent cell. Mitosis happens to repair damaged cells or for growth
Binary fission (TRIPLE)	Type of cell division carried out by bacteria cells where two daughter cells are produced from one parent cell. The two daughter cells will have an identical copy of the circular strand of DNA found in the parent bacteria cell but may have different numbers of plasmids to each other and to the parent cell
Culture medium (TRIPLE)	Nutrients needed for bacteria (and other microorganisms) to grow containing sugars, proteins, minerals and vitamins.
Zones of inhibition (TRIPLE)	Inhibition zones are used to compare the effectiveness of antibiotics or antiseptics. The larger the inhibition zone the more bacteria has been killed by the antibiotic or antiseptic. The inhibition zone can be measured with a ruler to calculate the area of the zone