



# Glossary

<b>Term</b>	<b>Meaning</b>
Actin	A type of protein that forms part of the cytoskeleton and support the cell membrane. It helps with strength, shape and movement of the cell.
Adaptor protein	A type of intracellular protein that helps with the signal transmitting in a cell via interactions with other proteins.
Adhesion	The process of sticking.
Aerobic	The process that occurs in the presence of oxygen.
Affinity	The strength by which molecules interact or bind.
Allele	A different form of a gene
Angiogenesis	The process of how new blood vessels form from pre-existing blood vessels.
Antibody	A protein secreted by the plasma cells and recognise antigens on the surface of pathogens to induce an immune response.
Antigen	A foreign protein found on the surface of the pathogen and triggers an immune response because it is not recognised by the host.
Apoptosis	Programmed cell death
Apoptosome	A large protein that activates procaspases in response to death signals.
Archaeologist	The study of history through artefacts and other remains.
Autophagosome	A double-membrane spherical structure that will degrade damaged proteins, organelles and invading microorganisms.
Autophagy	A mechanism where the damaged organelle becomes degraded.
Basal lamina	Also known as the basement membrane. It is a layer of extracellular matrix secreted by the epithelial cells. It's a supporting structure.
Blebbing	It is a spherical, "blister-like" shape that occurs during late stage of apoptosis. It is commonly found on the plasma membrane of a cell.
CAM	A protein found in the membrane and promotes cell adhesion.
Cancer	A disease caused by genetic mutations that lead to uncontrolled cell growth.
Cascade	A series or sequence where something is passed onto another.
Caspase	An enzyme activated during apoptosis.
Catalytic subunit	It contains the active site where a chemical reaction takes place found in enzymes called protein kinases. It binds and hydrolyse ATP.
Cell	A simplest unit of a living organism.
Cell adhesion:	How cells adhere or bind together.
Cell cycle	The phases in how cells divide.
Cell cycle arrest	A stopping point of the cell cycle.



Centriole	A barrel-shaped organelle near the nucleus. It creates and anchors microtubules in the cell and is involved in the development of spindle fibres in cell division. Microtubules are a type of protein and forms part of the cytoskeleton.
Centromere	The centre of the chromosome where two sister chromatids are tightly linked. It is connected to a kinetochore protein that is involved in chromosomal sorting.
Checkpoint:	They are regulatory points in the cell cycle that determines whether the organelles and DNA has been produced appropriately before cell division and to prevent progression if there is damage.
Chromatin	It contains DNA and proteins and is part of the formation of the DNA in eukaryotes.
Chromatid	One of the two thread-like structures and is attached at the centromere.
Cleave	Split or division.
Cofactor	It is an inorganic ion that temporarily associates to the enzyme surface and induce a chemical reaction.
Colonise	To take over or control.
Complementary binding	A relationship between two structures like a lock-and-key way
Complex	A structure with different parts connected together.
Concentration	The amount of solute dissolved in a given volume of solution.
Conformational change	A change in the shape of the tertiary structure of a protein caused by environmental stress (pH, temperature) or when associating the ligand (signal) with a receptor or binding of a substrate to an enzyme.
Cyclin	A protein that facilitates the cell to go through the cell cycle by binding to a cyclin-dependent kinase.
Cyclin dependent kinase	It is an enzyme whose binding depends on cyclins to help the cell pass through the cell cycle.
Cytokines:	Proteins that help immune cells to respond in specific and non-specific responses.
Cytokinesis	The division of the cytoplasm to produce two separate daughter cells
Cytoplasm	The jelly-like structure where chemical reactions takes place.
Cytoskeleton	It is a structure that has two types of protein filaments: actin, intermediate and microtubules. Together, they help give the cell shape, protect the cell and help with motility.
Daughter cells	The product produced from the division of a single parent cell.
Degradation	To break down.
Differentiation	Changes to cell shape and function where unspecialised cells divide to become specialised for specific functions.
DNA laddering	A key feature of apoptosis where DNA is degraded by caspase-activated dnase (CAD).
DNA repair	Reverse damage to DNA before permanent mutations occur.
Domain	A defined structure or region of a protein.



Duplication	A section of the chromosome occurs a few times.
ECM	A network of material that is forms a compelix outside of cell for strength, support and organisation
Effector	A molecule that influences cellular response.
Endonuclease	An enzyme that cleaves the sugar phosphate backbone (phosphodiester bond) by separating nucleotides.
Enzyme	A type of protein responsible for speeding a chemical reaction.
Epithelial	A layer of cells that are densely packed and covers organs and lines the body.
Evading	Avoiding or bypassing,
Familial	It occurs in the family
Filament	A long chain of small subunits called monomers. For example, protein filament found in the muscle and hair.
Finite	Limited number
Fragment	Short segments or parts.
Gene	Hereditary unit and short section of DNA that helps determine characteristics of an organism.
Genome	The complete gene composition of a cell.
Germ cell	Cells that form reproductive/sex cells e.g. Egg and sperm cells.
Glycolysis	A process that breaks down glucose into pyruvate.
Growth factors	Group of proteins that stimulate cells to grow and divide.
G-strand	The terminal end of the chromosome. Also known as G-rich tail.
Hayflick limit	The number of cell divisions and the length of chromosomal telomeres before cell division stops
Heptameric	An oligomer having seven subunits
Hereditary	The passing from a parent to a child through the genes
Histone	A protein involved in the production of nucleosomes
Hydrophilic	A substance that can dissolve in water and 'water-loving'.
Hydrophobic	Water-hating or not attracted to water.
Hyperactivity	Overactivation or highly stimulated.
Hypoxia	Low levels of oxygen.
Immortality	Continuous, the ability to live forever.
Immune	To protect the body from infection.
Immune system	Invade harmful pathogens e.g. Microorganisms bacteria or abnormal cells e.g. Cancer or foreign cells.
Immunoglobulin	A Y-shaped protein that provide immunity. Antibodies are an example.
Inducer	A substance that encourages or enhances a biochemical process.
Inflammation	Local innate response towards injury or infection. It is characterised by swelling, redness or pain.
initiator	A substance that starts the process.
Integrin	A protein that acts as a cell surface receptor to connect cells and extracellular matrix.
Integrity	Undivided and strong status.



Intermediate filament	A type of protein filament that forms part of the cytoskeleton that maintains shape and strength
Intermembrane	The space between two membranes.
Interphase	It is longest phase of the cell cycle and consists of G1, S G2 phase where the cell grows, copies its DNA and prepares for mitosis.
Intracellular	Inside the cell.
Invasion	Species that spread with current spaces on their own.
Kinase	An enzyme that catalyses the transfer of a phosphate group from ATP to the target. This is known as phosphorylation.
Karyorrhexis	Fragments of nucleus and breakdown of chromatin.
Lysis	Splitting
Lysosome	An organelle that contains enzymes that digest damaged molecules and pathogens.
Macrophage	Phagocytes ingest bacteria.
Malignant	Cancer cells progressed and grew out of origin site.
Memory cells	They recognise foreign substances that attacked before.
Metastasis	The process where can migrate to other parts of the body.
Microscope	A device that allows researchers to study the structure and function of cells.
Mitochondria	An organelle that produces energy.
Mitogens	A substance that stimulates mitosis.
Mitosis	The type of cell division that involves a parental cell divide to form two daughter cells. It is needed for growth and repair.
Morphology	The shape, form and structure of plants and animals
Mutation	A random change in the DNA that affects that particular gene or chromosome.
Necrosis	The death of body cells caused by injuries, infections or diseases.
Non-specific immune response (innate)	Immune defences from birth and involve physical barriers e.g. Skin
Nucleosome	It forms part of chromosomes found in plants and animals. It consists of 8 histone proteins (octamer) wrapped in DNA.
Nucleus	Organelle that contains genetic information to control cell.
Organelle	A structure or little organ with a defined structure and function.
Oxidative phosphorylation	The process where NADH and FADH coenzymes are oxidised to produce more energy via ATP
Permeable	Allowing liquids or gases to pass through it.
Phagosome	A vesicle formed around a substance engulfed by a phagocyte via phagocytosis
Phosphorylation	A addition of phosphate group.
Proliferation	A rapid increase in number.
Protein	A large molecule containing amino acids and functions for growth and repair.
Proteolysis	Proteins are cut into smaller peptides (short protein/polypeptide chains)



Pyknosis	Also known as karyopyknosis where chromatin in the nucleus of a cell undergoing necrosis or apoptosis.
Receptor	A receptor that recognises the signal
Recombination	DNA molecule where the subject and DNA from different sources.
Replication	The copying of DNA strands occurring a few times.
Respiration	A chemical reaction where energy is released from glucose.
Restriction enzyme	An enzyme that cleaves DNA into fragments at restriction sites.
Restriction site	The sites where the sequence of bases are recognised and cut by enzymes.
Retina	A thin layer of photoreceptors at the back of the eye that detect and sensitive to light.
Retinoblastoma	An eye cancer that begins in the back of the eye (retina).
Reverse transcriptase	An enzyme that catalyses the formation of DNA from an RNA template in reverse transcription.
Senescence	Cells reached their capacity to divide anymore and breakdown.
Signal	An agent or molecule that affects the properties of the cell.
Soluble	To be dissolved in.
Somatic	Body cells except sex cells.
Spindle apparatus	A structure formed during cell division to separate sister chromatids between daughter cells.
Sporadic	Occurs at irregular intervals
Suppressors	To stop
Synthesis	To produce
Telomerase	It catalyses or speeds up the replication of telomere.
Telomere	The ends of chromosomes where DNA replication takes place.
Transduction	The process that happens within the cell for that signal to reach its target and start a response.
Transcription	The process of using DNA as a template to make an RNA molecule.
Transcription factor	The protein that helps transcribing genes by affecting RNA polymerase
Trigger	Causes something to start
Tumour	An overgrowth of cells without use.
Tumour suppressor	A gene that encodes a protein to stop cancer growth
Warburg effect	The increase in the rate of glucose uptake and production of lactate in the presence of oxygen.