

Selective permeability: is controlling traffic into and out of the cell through plasma membrane thus allows some substances to cross it more easily than others therefore its function is to protect the integrity of the interior of the cell.

Phospholipids: The most abundant lipids in most membranes which arranged as bilayer. It has both hydrophilic head areas which face the outside and inside of the cell where water is found and a hydrophobic **tail** areas which face away from the cytosol and outside of the cell; they face each other.

Integral proteins: The embedded integrin proteins in plasma membrane which mostly protrude from both surfaces of bilayer membrane. They can be attached to protein fibres of cytoskeleton (inside cell) and fibres of the extracellular matrix (outside cell), thereby giving stability to the structure of the cell and contributing to possible movement and shape change in cells as well.

Peripheral protein: A loosely protein that bound only on the surface of cytoplasmic side of the plasma membrane. It can be attached to protein fibres of cytoskeleton (inside cell) thereby giving stability to the structure of the cell and contributing to possible movement and shape change in cells as well.

Fluid mosaic model: The currently accepted model which describes the arrangement of molecules in the plasma membrane structure. It defines the membrane as a mosaic of protein molecules drifting laterally in a fluid bilayer of phospholipids.

Membrane Carbohydrate chains: Carbohydrate groups present in the extracellular side of plasma membrane. It helps cell – cell recognition.

Extracellular matrix: A substance which present only in the outer side of animal cells. It contains various protein fibres and also very large and complex carbohydrate molecules. It has various functions, from lending support to the plasma membrane to assisting communication between cells.

Collagen: The most abundant glycoprotein in the extracellular matrix of most animal cells, which forms strong fibres outside the cells and resists stretching.

Proteoglycan complex: A large molecule consisting of a network collagen protein fibres with many carbohydrate chains attached, found in the extracellular matrix of animal cells. It looks like a bottle brush. This fibre resists compression.

Fibronectin: An extracellular glycoprotein secreted by animal cells. It is an adhesive and helps them attach to the extracellular matrix.

Channel proteins: are involved in the passage of molecules through the plasma membrane. They have a channel that allows a substance such as hydrogen ions to simply move across the membrane.

Carrier proteins: are involved in the passage of molecules through the plasma membrane. They combine with a substance such as sodium and potassium ions and help it move across the membrane.

Cell recognition proteins: are glycoproteins in the plasma membrane and help the body recognise when it is being invaded by pathogens so that an immune response can occur.

Receptor proteins: They present in in the plasma membrane and have a shape that allows a specific molecule to bind to it. The binding of this molecule causes the protein to change its shape and thereby bring about a cellular response.

Enzymatic proteins: they carry out metabolic reactions directly in the plasma membrane.

Junction proteins: Proteins in the plasma membrane which involved in forming various types of junctions between animal cells.

Tight junction: A type of intercellular junction that bound plasma membrane of neighbouring animal cells together by a row of specific proteins forming continuous seals that prevents the leakage of material through the space between cells.

Desmosomes: A type of intercellular junction in animal cells that functions as a rivet, fastening cells together into strong sheets. Intercellular filaments made of sturdy keratin proteins anchor desmosomes in the cytoplasm.

Gap junctions: A type of intercellular junction in animal cells that provide cytoplasmic channels from one cell to an adjacent cell allows sugars, amino acids, and other small molecules to pass between cells.

Cytoskeleton: is a network of cytoplasmic filaments that are responsible for the movement of the cell and give the cell its shape.

Microtubule: A hollow rod composed of tubulin proteins that makes up part of the cytoskeleton in all eukaryotic cells and is present in the cytoplasm, centriole, cilia and flagella. Microtubules function as compression-resisting girders of the cytoskeleton.

Microfilament: A solid helical rod composed of actin proteins of almost every eukaryotic cell, making up part of the cytoskeleton. Microfilaments function is to bear tension (pulling forces). It plays a role in cell movement and with myosin protein which is a part of the contractile mechanism of skeletal muscle.

Intermediate filament: A ropelike filament composed of keratin protein and it is part of cytoskeleton. Specialised for bearing tension.

Peroxisome: A specialised metabolic organelle that have roughly spherical and often have a granular or crystalline core that is thought to be a dense collection of enzyme molecules. These enzymes whose actions result in hydrogen peroxide (H_2O_2) which used in oxidation reaction in the cell.

Glyoxysome: A Specialised peroxisomes found in the fat-storing tissues of plant seeds. These organelles contain enzymes that initiate the conversion of fatty acids to sugar, which the emerging seedling uses as a source of energy and carbon until it can produce its own sugar by photosynthesis.

Centrosome: The structural organising centre in cytoplasm, located near the nucleus, where all microtubules originate, therefore it regards as microtubule organizing centre. Each centrosome contains two centrioles.

Centriole: A pair of short cylinder, composed of nine triplet microtubules in a ring with pattern (9+0); found at the center of a centrosome; divides and organises spindle fibers for chromosome movement during animal cell division.

Cilia: Short, hair-like projection from plasma membrane, specialised for movement or moving fluid past the cell; it is formed from a core of nine outer doublet microtubules and two inner single microtubules (9+2 arrangement), occurring usually in larger numbers.

Flagella: Long, whip-like projection from plasma membrane, specialised for movement. Eukaryotic flagella have a core with nine outer doublet microtubules and two inner single microtubules (9+2 arrangement). Cell may have a single or few flagella.

Basal body: Organelle that lies at the base of cilia and flagella and may direct the organisation of microtubules within these structures. It has the same circular arrangement of microtubule triplets as centrioles (without central microtubule, 9+0 pattern). Each triplet microtubule of basal body joins doublet microtubule of a cilium or flagellum.

Motor protein: Protein that interacts with the cytoskeleton (microtubule and microfilament) and other cell components, producing movement of the whole cell or parts of the cell. It converts chemical energy into mechanical work by the hydrolysis of ATP.

Dynein: Type of motor protein that performs basic transportation tasks in the cell. Converts chemical energy stored in an ATP molecule into mechanical energy that moves material through the cell microtubules. It helps move chromosomes during cell division and also plays a part in the movement of eukaryotic flagella and cilia.

Kinesin: Type of motor protein, plays essential roles in intracellular transport such movements of vesicles. It binds a transport vesicle and moves (pull) it along microtubule from centrosome toward the periphery of the cell (plasma membrane).

Heredity is the transmission of traits from parents to offspring.

Variation is the production of differences among the traits of different individuals.

Catabolism is a metabolic process that breaks down large molecules into smaller ones by cleavage of chemical bonds to recover energy stored in them.

Anabolism is a chemical reaction in which smaller molecules (monomers) are combined to form larger molecules (polymers) such as synthesis of carbohydrates, lipids, nucleic acids, and proteins.

Development describes the characteristic changes that an organism undergoes from its origin (usually the fertilisation of an egg by sperm) to its final adult form.

Adaptations are modifications that make organisms better able to function in a particular environment.