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Definitions and Concepts for AQA Biology A-Level

Topic 2 - Cells

Active immunity: A form of immunity provided by the immune response of the body upon detection of a pathogen.

Active transport: The active movement of substances from a low concentration to a higher concentration (up their concentration gradient) with the use of energy in the form of ATP.

Agglutination: The clumping together of cells or particles caused by antibodies which assists phagocytosis.

Antibody: A protein found in the blood that is produced by plasma cells which binds to antigens as a part of the immune response.

Antigen: Marker molecules that can be detected by antibodies and trigger an immune response.

Binary fission: The method of cell division used by prokaryotes involving replication of the circular DNA and plasmids followed by cytoplasmic division.

Cell cycle: The series of stages preparing the cell for division consisting of interphase and mitosis.

Cell-surface membrane: A phospholipid bilayer studded with proteins that surrounds cells and separates them from their environment.

Cell vacuole: A membrane bound structure found in plant cells that contains cell sap.

Cell wall: A permeable layer that surrounds plant, algae and fungi cells made of polysaccharides which provides strength to the cell.

Chloroplast: An organelle found in plants and algae that is the site of photosynthesis.

Clonal expansion: The production of many genetically identical daughter cells through cell division of the activated B or T lymphocyte after clonal selection.

Clonal selection: The process of matching the antigens on an antigen presenting cells with the antigen receptors on B and T lymphocytes.

Co-transport: A method of membrane transport where two substances are both transported across a membrane at the same time either in the same direction or opposite directions.

Cytokinesis: Division of the cytoplasm to produce two new cells.

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Facilitated diffusion: The passive movement of substances from a high concentration to a lower concentration (down their concentration gradient) through transport proteins without the use of energy.

Flagella: A whip-like structure found on bacterial cells that is used for cell movement.

Fluid-mosaic model: A model that describes membrane structure as a sea of mobile phospholipids studded with various proteins.

Golgi apparatus: An organelle found in eukaryotic cells that is involved in the modification and packaging of proteins.

Helper T cell: A type of T cell in the immune system that stimulates cytotoxic T cells, B cells and phagocytes.

Herd immunity: A type of disease immunity that occurs when a large proportion of a population are vaccinated against a disease which prevents the spread of the disease to unvaccinated individuals.

Human Immunodeficiency Virus (HIV): A virus that attacks T cells in the immune system and can lead to AIDS (acquired immune deficiency syndrome).

Lysosomes: Membrane-bound vesicles found in the cytoplasm that contain a hydrolytic enzyme called lysozyme.

Magnification: How much bigger an image appears compared to the original object calculated using the following formula:

$$\text{Image size} = \text{Actual size} \times \text{Magnification}$$

Mitochondrion: An organelle found in eukaryotic cells that is the site of aerobic respiration.

Mitosis: The part of the cell cycle in which a eukaryotic cell divides to produce two daughter cells, each with identical copies of DNA.

Monoclonal antibodies: Identical antibodies that have been produced by an immune cell that has been cloned from a parent cell.

Nucleus: An organelle found in eukaryotic cells that stores the genetic information of the cell as chromosomes and is surrounded by a membrane called the nuclear envelope.

Osmosis: The passive diffusion of water molecules from a region of high water potential to a region of lower water potential (down a water potential gradient) through a selectively permeable membrane without the use of energy.

Passive immunity: A form of immunity provided by the introduction of antibodies to a disease into the body.


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Phagocytosis: The process where phagocytes engulf and destroy material.

Plasmids: A circular loop of DNA found in the cytoplasm of bacterial cells.

Primary immune response: The response produced by the immune system when it encounters a pathogen for the first time.

Resolution: The ability to distinguish two different points in a specimen.

Ribosomes: Organelles found either free in the cytoplasm or membrane bound that are involved in the synthesis of proteins.

Rough endoplasmic reticulum (RER): A membrane-bound organelle that is involved in the synthesis and packaging of proteins.

Secondary immune response: The response produced by the immune system when it recognises a pathogen that it has encountered before.

Simple diffusion: The passive spreading out of substances from a high concentration to a lower concentration (down their concentration gradient) without the use of energy.

Smooth endoplasmic reticulum (SER): A membrane-bound organelle involved in lipid synthesis.

Vaccine: The introduction of dead or inactive pathogens to stimulate an immune response and provide long term immunity.