

1: DNA Replication

DNA the carrier of genetic information of an organism in a double helix structure


Nucleotide the monomer for DNA consisting of sugar phosphate backbone and a base

Replicate make an exact copy of

Unzip in DNA replication an enzyme unzips the 2 strands of DNA

Complementary Base Pairs A-T, C-G

Chromosomes long thin strands of DNA

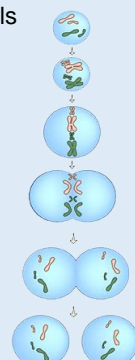


2: Mitosis

Mitosis a type of cell division that results in 2 genetically identical daughter cells

Diploid the full set of chromosomes (46 in humans)

Haploid half the set of chromosomes (23 in humans). Gametes are an example of haploid cells



3: Specialised Cells

Differentiation the process in which undifferentiated cells become specialised

Specialised Cells have adaptations to help them carry out a specific function

Adaptation a characteristic which helps the cell to carry out the required function

Function the job of the cell

Muscle Cell Adapted for muscle contraction by having a large number of mitochondria to carry out aerobic respiration

Neurone adapted for passing electrical impulses around the body by being long and having a myelin sheath to insulate the axon

Palisade Cell adapted for photosynthesis by having a large number of chloroplasts for photosynthesis

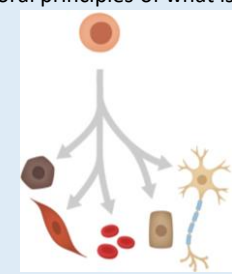
4: Stem Cells

Stem Cell a cell with the ability to develop in to a specialised cell

Adult Stem Cell found mainly in the bone marrow in limited numbers and can only differentiate into related cell types

Embryonic Stem Cell found in embryos and can differentiate into and cell type

Ethics moral principles of what is right and wrong



5: Diffusion and Osmosis

Diffusion the net movement of particles from an area of high concentration to an area of low concentration

Osmosis the net movement of water molecules from an area of high water potential (dilute) to an area of low water potential (concentrated) across a semi-permeable membrane

Semi-Permeable allowing certain substances through but not others

Gradient a measure of the steepness of a slope or difference between two concentrations

Factors that Increase the Rate of Diffusion

- Temperature
- Concentration gradient
- Surface area
- Distance

6: Osmosis Experiment

Independent Variable the concentrations of sugar/salt solutions (the variable that is changed)

Dependent Variable the change in mass and length of the tissue (the variable that is measured)

Control Variables volume of solutions, type of tissue, time the tissue is left in solution for (the variables that are kept constant)

Mass Balance required to measure the mass

Ruler required to measure the length

Percentage Increase/Decrease $(\text{final value} - \text{initial value}) / \text{initial value}$

7: Active Transport

Active Transport the net movement of particles from an area of low concentration to an area of high concentration using energy

Respiration the chemical process that releases energy for life processes

Protein Channels specialised channels in the membrane which are involved in active transport

Small Intestine the part of the digestive system where nutrients are absorbed into the bloodstream

Root Hair Cell the part of a plant where water and nutrients are absorbed from the soil

8: Exchange Surfaces

Exchange Surface an area which is adapted to make it easier for molecules to cross from one side of the surface to the other

Surface Area: Volume Ratio the relationship between the volume and surface area of an object

Alveoli the location of gas exchange in the lungs

Villi where the absorption of nutrients takes place found in the same intestine

Gills the organ in fish where the gas exchange of oxygen from water in to the bloodstream occurs

9: The Heart

Double Circulatory System blood passes through the heart twice per one full circuit of the body

Atria the two upper chambers of the heart

Ventricles the two lower chambers of the heart

Valves Prevent the backflow of blood between chambers of the heart

10: Blood Vessels

Arteries carries blood away from the heart under high pressure. Thick walls, small lumen

Veins carries blood towards the heart under low pressure. Thin walls, large lumen, valves

Capillaries very thin (only one cell thick) blood vessels where substances are exchanged between the blood and body cells

11: Blood

Red Blood Cells carry oxygen around the body. Have a biconcave disc shape to increase surface area, contain haemoglobin to carry oxygen and do not contain a nucleus

White Blood Cells help defend the body against pathogens

Platelets proteins that help clot the blood by sticking together at the site of a wound

Plasma the colourless fluid component of blood that carries substances around the body (e.g. glucose, carbon dioxide and hormones)

12: Xylem and Phloem

Root Hair Cells absorb water and mineral ions from the soil

Translocation the movement of sugars produced in photosynthesis around the plant