

WJEC (Wales) Biology A-level

Topic 3.1 - ATP

Definitions and Concepts

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Adenosine triphosphate (ATP) - The universal energy carrier found in all living cells.

ATP synthase - An enzyme found embedded in cellular membranes that phosphorylates ADP to form ATP as protons flow through it.

Chemiosmosis - The synthesis of ATP through the movement of protons down their concentration gradient across a semipermeable membrane, catalysed by ATP synthase.

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

DCPIP - An artificial hydrogen acceptor that changes colour from dark blue to colourless when reduced.

Electron transport chain (ETC) - A series of electron carrier proteins that transfer electrons in a chain of oxidation-reduction reactions.

Electron carrier - A molecule that is capable of accepting and donating electrons e.g. NAD, NADP.

Inner mitochondrial membrane - The mitochondrial membrane that segregates the matrix from the intermembrane space. It is the site of the electron transport chain.

Intermembrane space - The small space between the inner and outer mitochondrial membranes. Protons flow out of the intermembrane space across the inner membrane.

Matrix - The fluid-filled space within the inner membrane of the mitochondria which contains mitochondrial DNA and enzymes required for aerobic respiration. Protons flow across the inner membrane into the matrix.

Methylene blue - An artificial hydrogen acceptor that changes colour from dark blue to colourless when reduced.

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

Proton pump - An integral membrane protein that establishes a proton gradient for ATP synthesis across a membrane.

Stroma - The fluid interior of chloroplasts that contains the enzymes required for the light-independent reaction. Protons flow across the thylakoid membrane into the stroma.

Thylakoid membrane - The membrane that segregates the thylakoid space from the stroma. It is the site of the electron transport chain.

Thylakoid space - The space inside the membrane-bound thylakoid disks. Protons flow out of the thylakoid space across the thylakoid membrane.

TTC - An artificial hydrogen acceptor that changes from colourless to red when reduced.

