

# WJEC (Eduqas) Biology A-level

## Topic 1.1 - Importance of ATP

### Definitions and Concepts

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

**ATP synthetase** - 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.

