

Respiration

Cells release energy from Glucose by

Respiration

This is used to power all biological process in the cell

2 Types

Aerobic Respiration Anaerobic Respiration

With Oxygen

Without Oxygen

ATP

Cells can't get energy from glucose

Energy released from glucose is used to make ATP

ATP = Adenosine Triphosphate

ATP synthesized from ADP and inorganic phosphate via a condensation reaction

Diffuses to parts of cell that need energy

Glucose Oxidation

Stage 1 Glycolysis

Stage 2 Link Reaction

Stage 3 TCA Cycle/The Krebs Cycle

Stage 4 Electron Transport and oxidative phosphorylation

Locations of Glucose Oxidation Stages

Glycolysis = Cytosol gel like liquid in cell

Link Reaction=Mitochondrion=Matrix

TCA/Krebs cycle=Mitochondrion=Matrix

Electron T and Ox

Phos=Mitochondrion=Inner Membrane**

CoEnzymes

CoEnzymes used in respiration are

NAD

CoEnzyme A

FAD

NAD and FAD transfer hydrogen from one molecule to another

Reduce or Oxidise

Respiration is a Exothermic Reaction

Energy is given out to the surroundings

Efficiency

Glucose oxidised to CO₂ and Water large amount of Energy is released

Energy is released piecemeal in series of small steps

Complete oxidation of glucose produces around 30 moles ATP

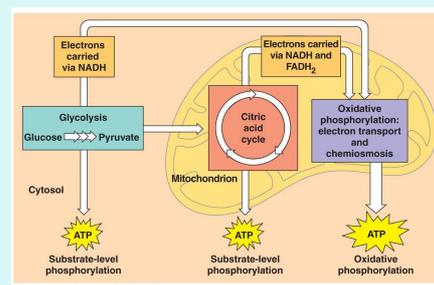
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Overview Image



Stage 1 Glycolysis

Brings about the splitting of each **6 Carbon glucose molecule** to 2 molecules of 3 Carbon intermediate **Pyruvate**

Stage 2 Link Reaction

Converts each **Pyruvate** to a 2 carbon molecule and releases a 1 Carbon CO₂

Stage 3 TCA Cycle/Krebs Cycle

Completes the Breakdown into Carbon chain into Carbon dioxide (1C)

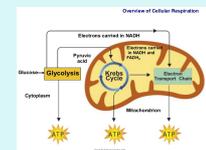
S4 Electron Trans & Oxidative Phosphorylation

Produces a lot of ATP

Energy carried by electrons from reduced co-enzymes is used to make ATP

Involves a **Electron Transport chain** and **Chemiosmosis**

Location image



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