Electron Transport + Oxidative Phosphorylation

Produces a lot of ATP

Energy carried by electrons from **reduced coEnzymes** is used to make ATP

CoEnzymes NAD.2H and FAD.2H

Previous stages have been used to make NAD and FAD

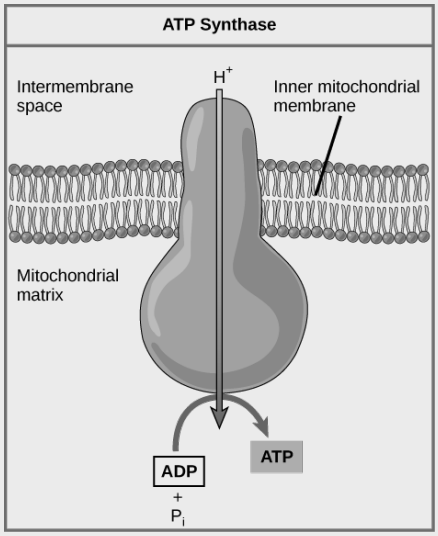
Location

Takes place in the **Inner mitochondrial membrane**

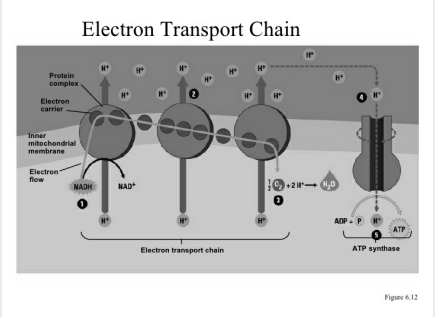
Overall Reaction

NAD.2H + 1/2 O2 + ADP+Pi = NAD + H2O + ATP

ATP Synthase



Electron Transport Chain



Oxidative Phosphorylation

Energy carried by Electrons from reduced CoEnzymes make ATP

Involves **Electron Transport Chain** and **Chemiosmosis**

Steps of Oxidative Phosphorylation

Hydrogen Atoms released from **Reduced NAD.2H and FAD.2H**

Oxidised back to NAD and FAD

H atom splits into Protons and Electrons

Electrons move down the ETC losing energy as they go

Energy is used to pump Protons from **Mitochondrial Matrix** into **Intermembrane Space**

Results in a **Concentration of Protons** form a **Electrochemical Gradient**

Protons move down electrochemical gradient via **ATP synthase** back into the Mitochondrial matrix

This drives the synthesis of ATP from ADP and Pi

ATP production driven by the movement of H+ ions across membrane is called **Chemiosmosis**

Summary

Metabolic Pathway	Located in	Starts With	Ends with
ETC/Oxidative Phosphorylation	Inner Mitochondrian Membrane	10 NAD.2H, 2 FAD.2H, 6O2	30 ATP+ 6H2O