Chemiosmotic Theory.

In 1961, Peter Mitchell, a British biochemist, proposed a mechanism by which the free energy generated during electron transport drives ATP synthesis. Now widely accepted, Miitchell's model, referred to as the chemiosmotic coupling theory.

1. As electrons pass through the ETC, protons are transported from the matrix and released into the inter membrane space. As a result, an electrical potential □ and a proton gradient. **pH arise across the inner membrane. The electrochemical proton gradient is sometimes referred to as the proton motive force □P.

2. Protons, which are present in the intermembrane space great excess, can pass through the inner membrane and back into the matrix down their concentration gradient only through special channels. As the thermodynaminally favourable flow of protons occurs through a channel, each of which contains an ATP synthetase activity ATP synthesis occurs.