

Key Points

- **Definition:** process for the transfer of H atoms to oxygen
- **Location:** mitochondria
- **Tissues:** most tissues & cell types (not red blood cells)
- **Functions:** 'energy trapping'
direct phosphorylation of ADP to produce ATP

Mitochondrial Compartments

Oxidative phosphorylation takes place in association with the inner compartments of the mitochondria

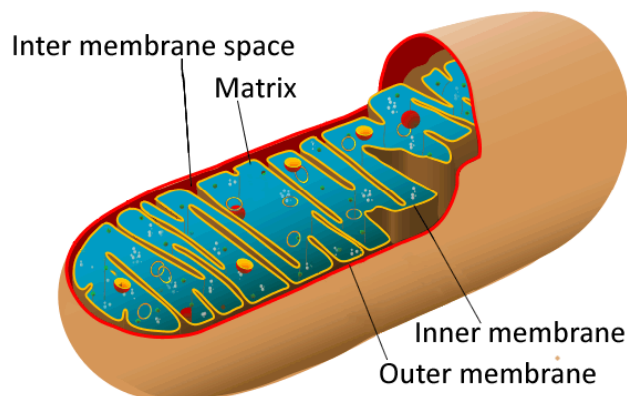
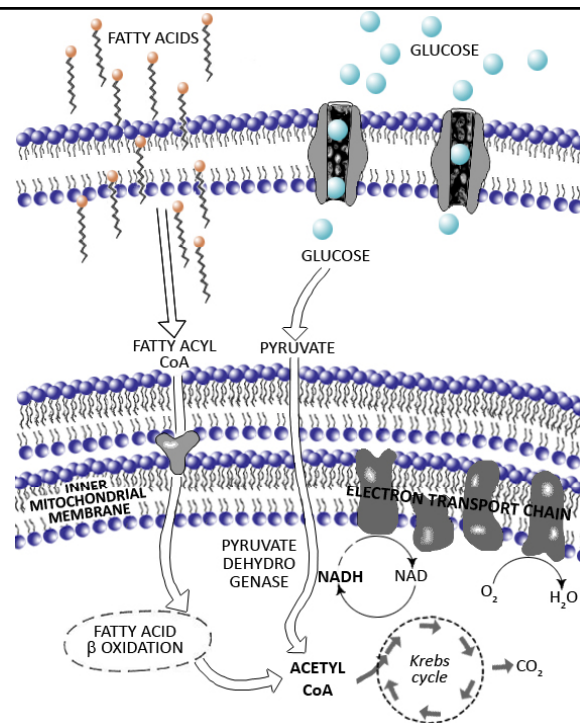
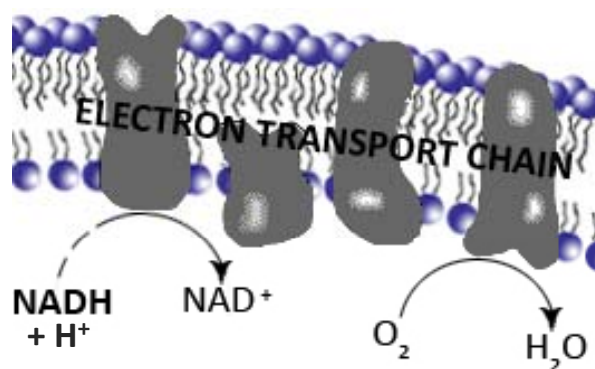


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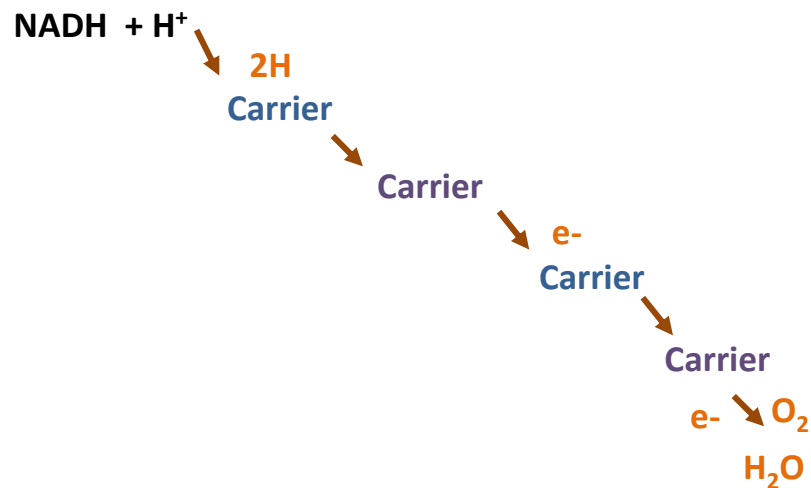
Cell Structure



Components of the cytochrome chain are 'buried' in the membrane



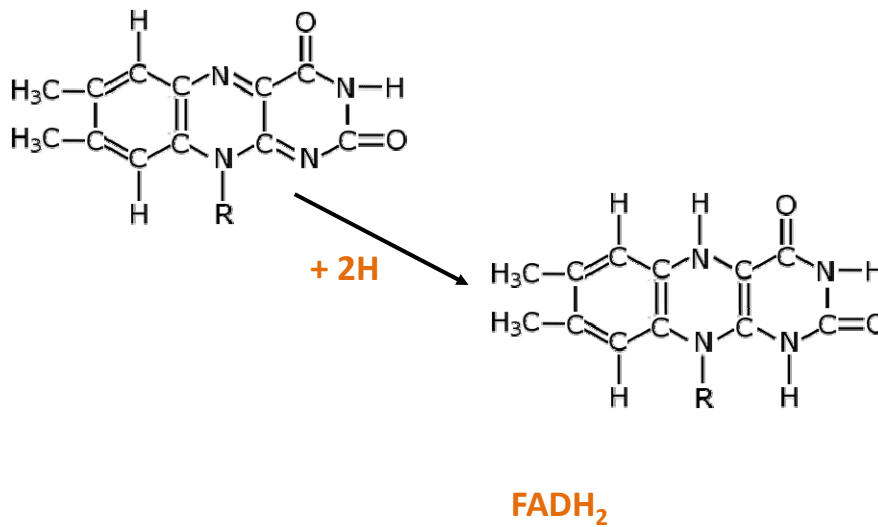
Stepwise transfer of H atoms to O₂



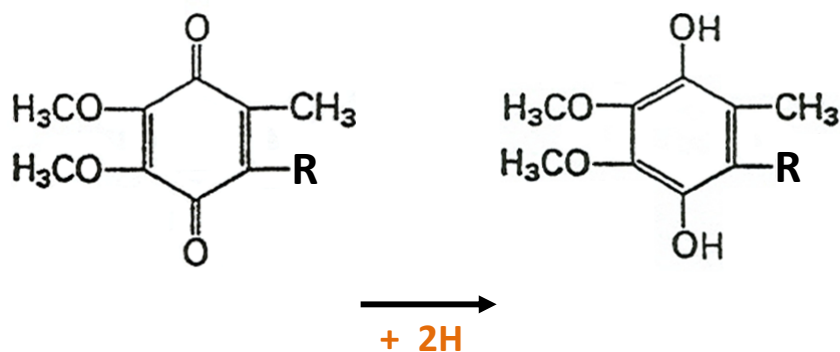
Components of the electron transport chain

- H pair acceptors:
 - Flavin cofactors
 - Coenzyme Q CoQ
- Electron acceptors:
 - Iron sulphur proteins
 - Cytochrome proteins

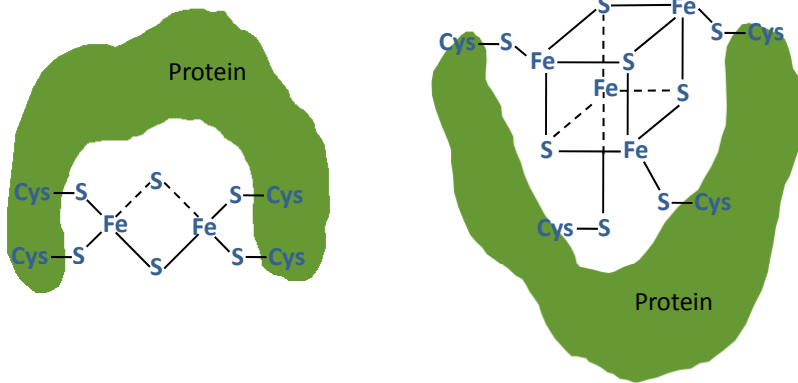
Flavins act as H acceptors



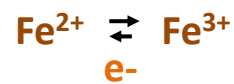
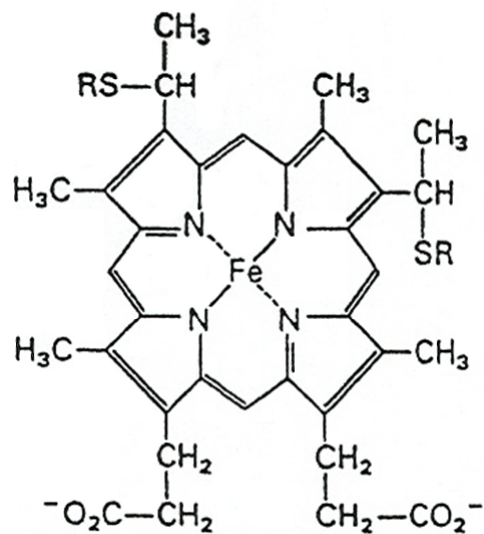
Role of CoQ as H acceptor



Iron-sulphur proteins (FeS proteins)



HAEM ring of a cytochrome protein (electron acceptor)



Redox carriers

- Every cofactor involved in oxidation / reduction reactions can be assigned a value known as its oxido-reduction potential (or redox potential) E_0'
- This redox potential describes the ability of the carrier to donate its electrons to another electron acceptor molecule
- Electrons 'flow' from a carrier with a negative E_0' value to a carrier with a more positive E_0' value

Redox values

