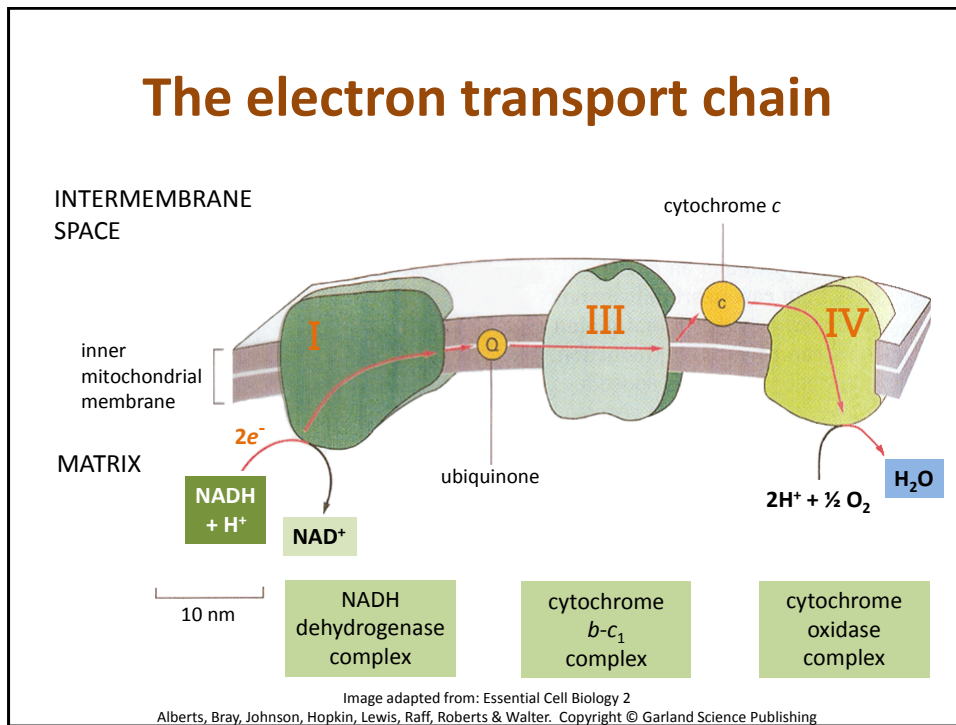
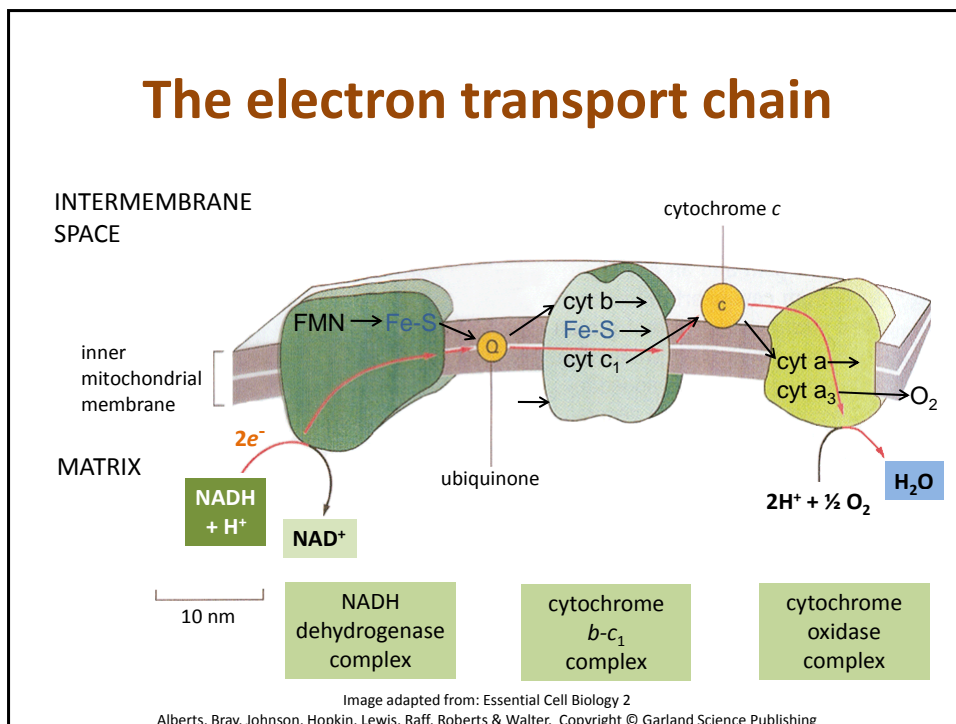


# The electron transport chain



# The electron transport chain



## The electron transport chain

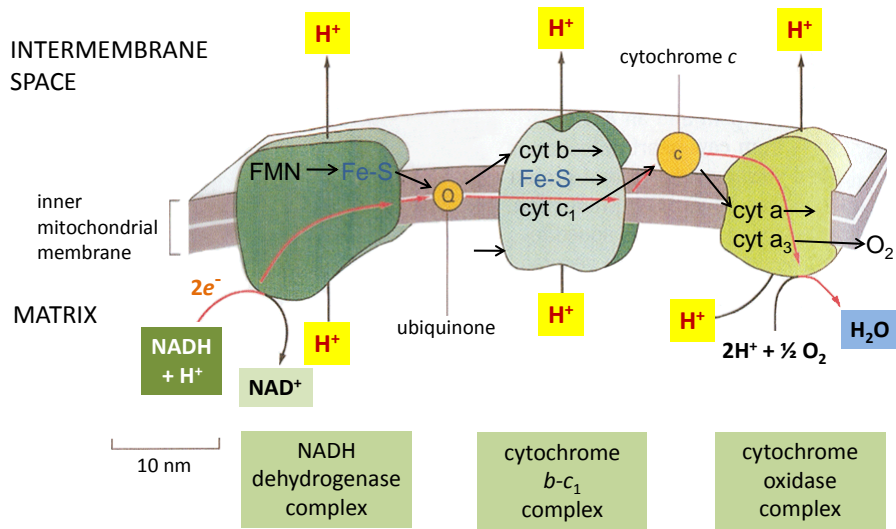
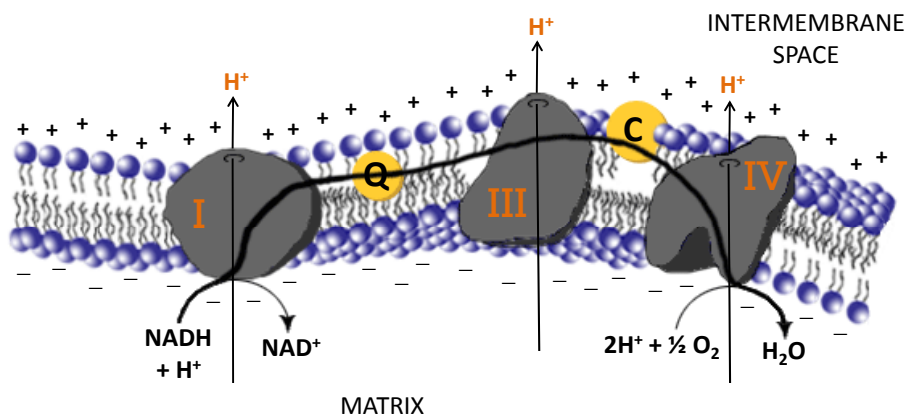
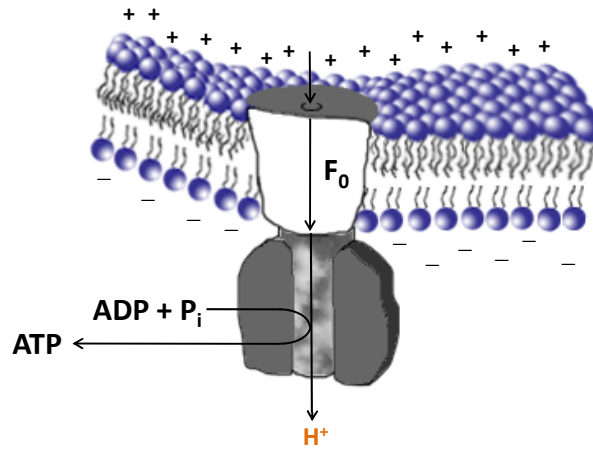


Image adapted from: Essential Cell Biology 2  
 Alberts, Bray, Johnson, Hopkin, Lewis, Raff, Roberts & Walter. Copyright © Garland Science Publishing

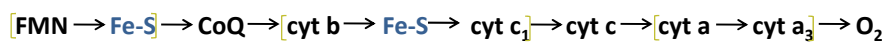
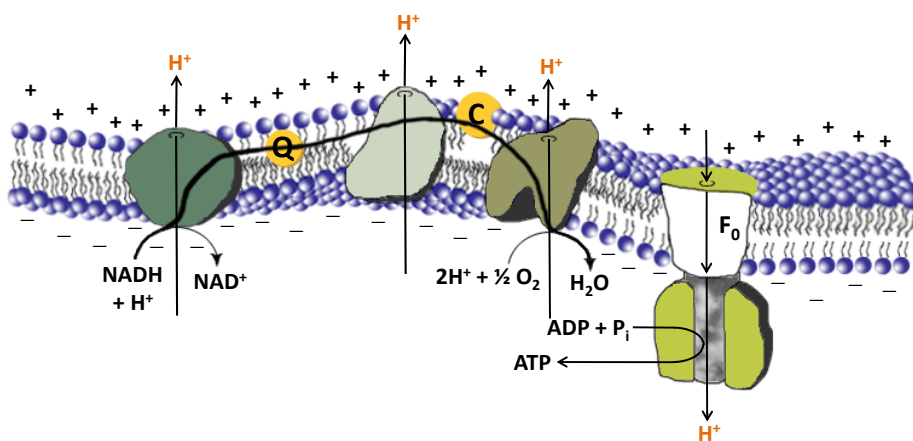
## Transfer of protons across the membrane



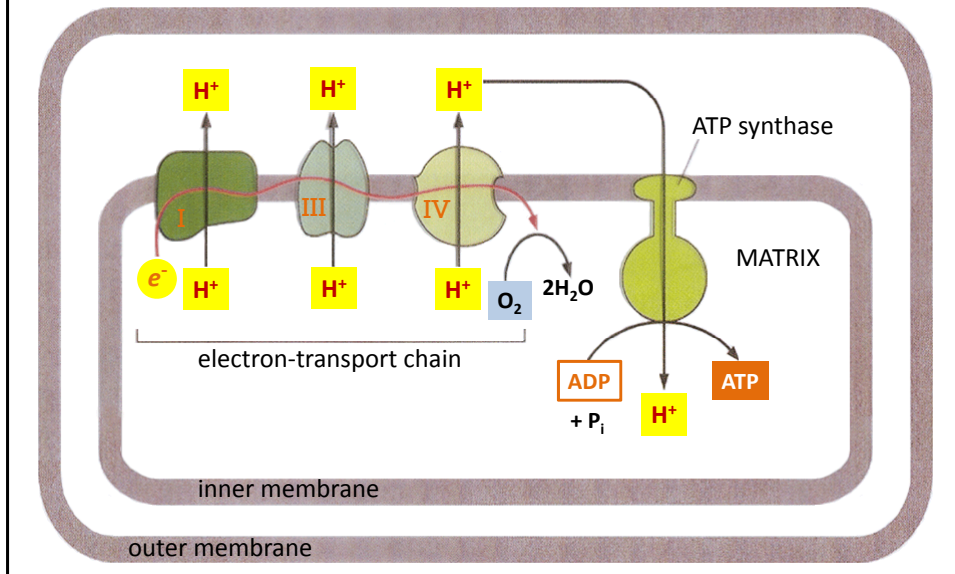
## ATP generation



## Summary of Electron Transport Chain



## Mechanism of ATP synthesis



## Flavin Cofactor Reoxidation

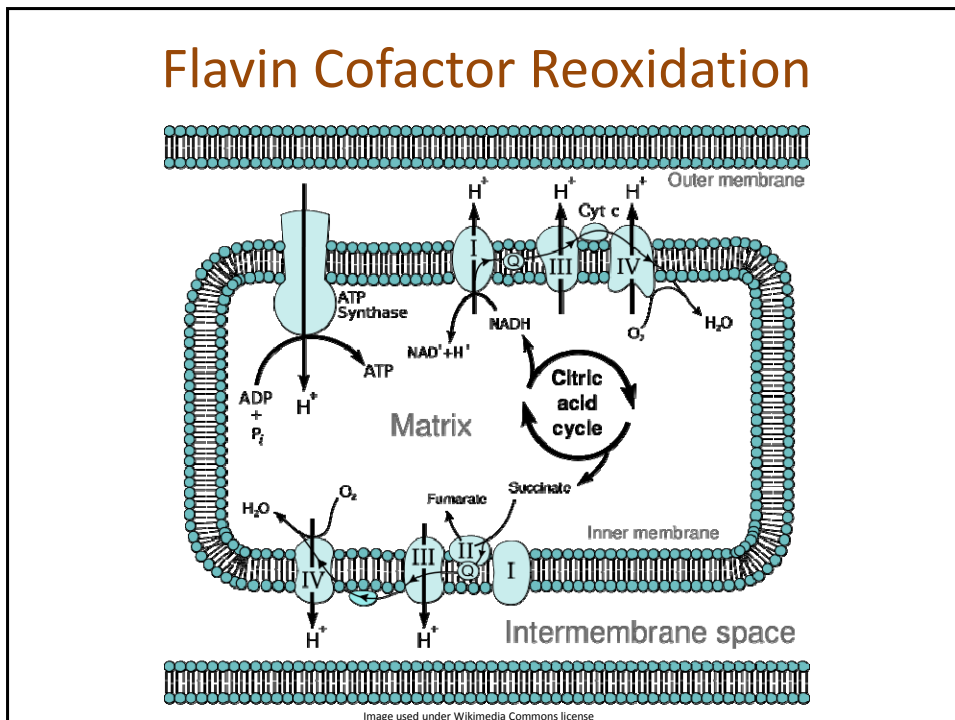


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## Summary of oxidative phosphorylation

| ATP yields:       | P:O ratios  |
|-------------------|-------------|
| NADH reoxidised   | 3 ATP (2.5) |
| FADH <sub>2</sub> | 2 ATP (1.5) |

### Control:

increased [ADP] increases rate of O<sub>2</sub> uptake  
increased [ATP] decreases O<sub>2</sub> uptake

## Summary of oxidative phosphorylation

|                   |  |
|-------------------|--|
| <b>Inhibitors</b> | CN <sup>-</sup> , rotenone, CO                                   |
| <b>Uncouplers</b> | dinitrophenol (DNP), thermogenin protein in brown adipose tissue |