

## Chapter 19 – Oxidative Phosphorylation

### 19.1 Electron-Transfer Reactions in Mitochondria

The following sub-sections are important:

- Electrons Are Funneled to Universal Electron Acceptors
- Electrons Pass Through A Series of Membrane-Bound Carriers
- Electron Carriers Function in Multienzyme Complexes. Make sure you understand what is occurring at each complex
- Mitochondrial Complexes Associate in Respirasomes
- Other Pathways Donate Electrons to the Respiratory Chain via Ubiquinone

### 19.2 ATP Synthesis

The following sub-sections are important:

- The Introduction
- ATP Synthase Has Two Functional Domains,  $F_0$  and  $F_1$
- The Proton Gradient Drives the Release of ATP from the Enzyme Surface
- Each  $\beta$ -Subunit of the ATP Synthase Can Assume Three Different Conformations
- Rotational Catalysis Is Key to the Binding-Change Mechanism for ATP Synthesis
- How Does Proton Flow Through the  $F_0$  Complex Produce Rotary Motion?
- The Proton-Motive Force Energizes Active Transport
- Shuttle Systems Indirectly Convey Cytosolic NADH into Mitochondria for Oxidation