Chapter 11 – The Composition and Architecture of Membranes

11.1 Composition Architecture of Membranes

The following sub-sections are important:

- The Introduction
- The Lipid Bilayer is Stable in water.
- Bilayer Architecture Underlies the Structure and Function of Biological Membranes
- The Endomembrane System is Dynamic and Functionally Differentiated
- Membrane Proteins are Receptors, Transporters and Enzymes
- Membrane Proteins Differ in the Nature of Their Association with the Membrane Bilayer
- Covalently Attached Lipids Anchor Some Membrane Proteins

11.2 Membrane Dynamics

The following sub-sections are important:

- The Introduction
- Acyl Groups in the Bilayer Interior Are Ordered to Varying Degrees
- Transbilayer Movement of Lipids Requires Catalysis
- Lipid and Proteins Diffuse Laterally in the Bilayer
- Spingolipids and Cholesterol Cluster Together in Membrane Rafts

11.3 Solute Transport Across Membranes

The following sub-sections are important:

- The Introduction
- Transport May Be Passive or Active
- Transports and Ion Channels Share Some Structural Properties But Have Different Mechanisms
- The Glucose Transporter of Erythrocytes Mediates Passive Transport. You do not need to know all the kinetics that are discussed in the text of this section, it is more important that you understand the importance of the structure of the protein to its function. Therefore, pay the most attention to Figure 11-32 and 11-33.
- The Chloride-Bicarbonate Exchanger Catalyzes Electroneutral Cotransport of Anions Across the Plasma Membrane
- Active Transport Results in Solute Movement against a Concentration or Electrochemical Gradient. Just the first part of this section is important, don't worry about all the thermodynamics in the worked examples at the end. Really just understand the difference between primary and secondary active transport, Figure 11-36.
- Ion Gradients Provide the Energy for Secondary Active Transport. You don't need to know all the information in this section, just the part regarding the Na+-glucose symporter (pg. 402 & Figure 11.45)
- Aquaporins From Hydrophilic Transmembrane Channels for the Passage of Water
- Ion-Selective Cannels Allow Rapid Movement of Ions across Membranes