Chapter 1 – The Foundations

1.1 Cellular Foundations

The following sub-sections are important:

* Cells Are the Structural and Functional Units of All Living Organisms
* Cellular Dimensions Are Limited by Diffusion
* Organisms Belong to Three Distinct Domains of Life
* Organisms Differ Widely in Their Sources of Energy and Biosynthetic Precursors
* Eukaryotic Cells Have a Variety of Membranous Organelles, Which Can Be Isolated for Study
* The Cytoplasm Is Organized by the Cytoskeleton and Is Highly Dynamic

1.2 Chemical Foundations

The following sub-sections are important:

* Biomolecules Are Compounds of Carbon with a Variety of Functional Groups
* Cells Contain a Universal Set of Small Molecules
* Macromolecules Are the Major Constituents of Cells
* Three-Dimensional Structure Is Described by Configuration and Conformation
* Interactions between Biomolecules Are Stereospecific

1.3 Physical Foundations

The following sub-sections are important:

* Living Organisms Exist in a Dynamic Steady State, Never at Equilibrium with Their Surroundings
* Organisms Transform Energy and Matter from Their Surroundings
* Creating and Maintaining Order Requires Work and Energy
* Energy Coupling Links Reactions in Biology