**The Chemical Basis of Life**

**Recognize the main themes of biochemistry.**

* Macromolecules
* Energy Transformation
* Homeostatic Regulation
* Biochemical Diseases

**Identify the major classes of biological molecules.**

* List the elements found in biological molecules.
* Draw and name the common functional groups in biological molecules. (Table 1.1)
* Draw and name the common linkages in biological molecules.
* Distinguish the main structural features of carbohydrates, amino acids, nucleotides, and lipids.
* Identify the monomers and linkages in polysaccharides, polypeptides, and nucleic acids.
* Summarize the biological functions of the major classes of biological molecules. (Table 1.2)

**Explain how enthalpy, entropy, and free energy apply to biological systems.**

**ΔG = ΔH – TΔS**

* Define enthalpy, entropy, and free energy.
* Relate changes in enthalpy and entropy to the spontaneity of a process.
* Describe the energy flow that makes living systems thermodynamically possible.