Biochemistry is the study of chemical processes in living organisms, including, but not limited to, living matter. Biochemistry governs all living organisms and living processes. By controlling information flow through biochemical signaling and the flow of chemical energy through metabolism, biochemical processes give rise to the incredible complexity of life. Much of biochemistry deals with the structures and functions of cellular components such as proteins, carbohydrates, lipids, nucleic acids and other biomolecules —although increasingly processes rather than individual molecules are the main focus. Three major recurring chemical principles become evident: structure determines biological function/activity; binding reactions initiate all biological events; and chemical principles, such as dynamic equilibria (mass action, and reaction kinetics and mechanisms, derived from the study of small molecules, can be applied to the behavior of macromolecules. The order of the topics in Biochemistry Online is based on this evolving chemical logic.
3: Lipid Structure

4: Protein Structure

5: Carbohydrates

6: DNA
7: Binding

8: Transport and Kinetics

9: Catalysis

10: Oxidation
11: Metabolic and Signal Transduction

**Citric acid cycle**

- 3 NAD+ → 3 NADH
- FAD → FADH₂
- Acetyl-CoA → CO₂
- ATP → ADP

12: Metabolic Pathways

13: Origin of Life

14: Appendices
Contributors and Attributions

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