

## CHAPTER OVERVIEW

### 1: Acid–Base Reactions



As we will see, organic reactions can be classified using a small set of reaction types—the largest and most all-encompassing of which are those involving acid–base reactions. Understanding acid–base reactions, therefore, provides a broadly useful conceptual framework within which to consider a wide range of organic reactions. Although it is likely that you have already been introduced to acid–base reactions (especially if you used the CLUE general chemistry curriculum<sup>[1]</sup>), we are going to review this class of reactions in order to emphasize their general features. Our goal is that you learn how to recognize their role in a range of reaction mechanisms; understanding how and why acid–base reactions occur will give you to a set of tools to understand phenomena as diverse as why most drugs are usually administered as in their salt form (a conjugate acid or base), why biological systems are buffered to specific pH levels (and why different pH levels are found in different cellular and organismic compartments), and why molecular oxygen ( $O_2$ ) transport systems require a metal ion complex (within the proteins involved, e.g. myoglobin, hemoglobin, cytochromes). As we will see, acid–base reactions are by far the most common types of reactions in biological systems.

[1.1: A Quick Review of the Models of Acid-Base Reactions.](#)

[1.2: Acid-Base Reaction Direction and Position of Equilibrium](#)

[1.3: Effect of pH on Acid Base Reactions](#)

[1.4: Lewis Acids and Bases, Electrophiles and Nucleophiles](#)

[1.5: In-Text References](#)

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