

Preface

Biosynthesis, i.e., chemical synthesis occurring in biological contexts, is a term most often referring to multi-step, enzyme-catalyzed processes where chemical substances absorbed as nutrients (or previously converted through biosynthesis) serve as enzyme substrates, with conversion by the living organism either into simpler or more complex products. Examples of biosynthetic pathways include those for the production of amino acids, lipid membrane components, and nucleotides, but also for the production of all classes of biological macromolecules, and of acetyl-coenzyme A, adenosine triphosphate, nicotinamide adenine dinucleotide and other key intermediate and transactional molecules needed for metabolism. Thus, in biosynthesis, any of an array of compounds, from simple to complex, are converted into other compounds, and so it includes both the catabolism and anabolism (building up and breaking down) of complex molecules (including macromolecules). Biosynthetic processes are often represented via charts of metabolic pathways. A particular biosynthetic pathway may be located within a single cellular organelle (e.g., mitochondrial fatty acid synthesis pathways), while others involve enzymes that are located across an array of cellular organelles and structures (e.g., the biosynthesis of glycosylated cell surface proteins).¹

In the present book, eleven typical literatures about biosynthetic pathways published on international authoritative journals were selected to introduce the worldwide newest progress, which contains reviews or original researches on biosynthetic pathways. We hope this book can demonstrate advances in biosynthetic pathways as well as give references to the researchers, students and other related people.

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¹ <https://en.wikipedia.org/wiki/Biosynthesis>