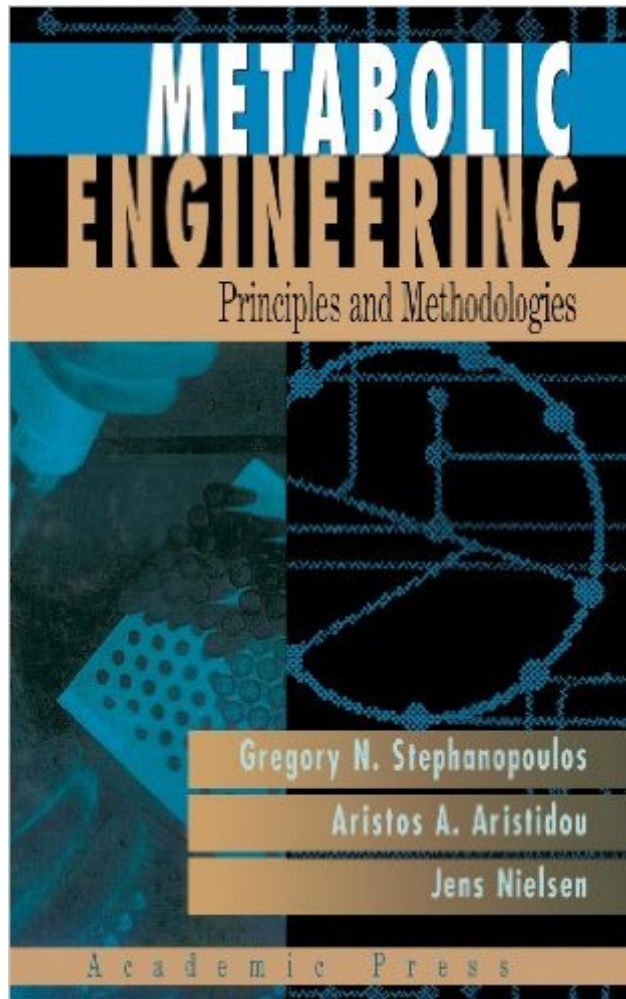


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# Metabolic Engineering: Principles And Methodologies



## Synopsis

Metabolic engineering is a new field with applications in the production of chemicals, fuels, materials, pharmaceuticals, and medicine at the genetic level. The field's novelty is in the synthesis of molecular biology techniques and the tools of mathematical analysis, which allow rational selection of targets for genetic modification through measurements and control of metabolic fluxes. The objective is to identify specific genetics or environmental manipulations that result in improvements in yield and productivities of biotechnological processes. Key features of the book are pathway integration and the focus on metabolic flux as a fundamental determinant of cell physiology. The book keeps mathematical complexity to a minimum, and provides a glossary of biological terms to facilitate use of the book by a broader spectrum of readers. A web page exists to communicate updates of the codes and homework problems.

**Key Features\***

- Demonstrates metabolic engineering in action with numerous examples of pathway modification
- \* Includes methods for identifying key enzymes in metabolic networks
- \* Contains a comprehensive review of metabolic biochemistry
- \* Discusses metabolic regulation at the gene, enzyme, operon, and cell levels
- \* Explains concepts of stoichiometry, kinetics, and thermodynamics of metabolic pathways
- \* Minimizes mathematical complexity
- \* Links to a Web page to communicate updates of the software code and homework problems

## Book Information

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## Customer Reviews

This book was a very pleasant surprise. It is rigorous yet accessible enough to provide a very clear

picture of the metabolic pathway engineering field. Complicated topics like metabolic control and flux analysis (MCA) are very well treated. The examples are usually relevant and well explained, however, some need pen and paper to work up some jumps in the reasoning train. The first chapter is just an introduction whereas the second chapter is a review of cellular metabolism that may result too dense for most people (including myself). Most biologists can probably do away skipping it (although some examples involving transport where quite interesting). I am glad I didn't put the book away because on chapter 3 things get really exciting. If you are interested in understanding how metabolic pathways are organized and what analytical tools are there available to model them (and eventually "reconfigure") this book for you. Note: the book is meant to be understood and it is nice to see MCA depleted of the hoopla many authors insist on surrounding it with.

The book is a must for those who wish to understand the power of biotechnology to change the world. All the fundamental concepts are explained in depth with a very didactic approach.

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