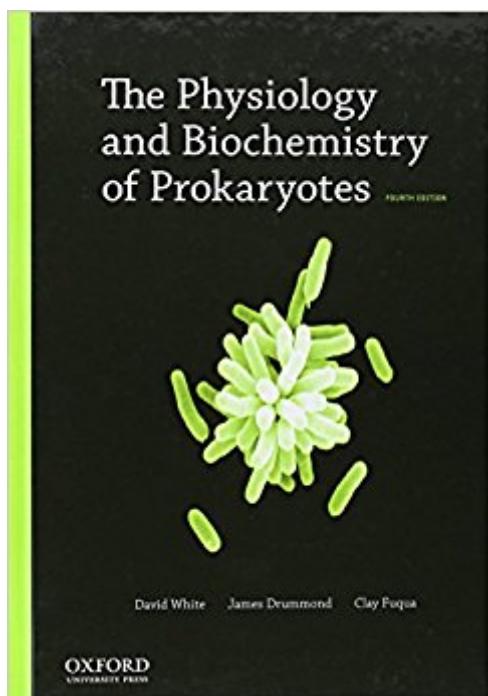


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# The Physiology And Biochemistry Of Prokaryotes



## Synopsis

The Physiology and Biochemistry of Prokaryotes covers the basic principles of prokaryotic physiology, biochemistry, and cell behavior. The fourth edition features comprehensive updates that integrate the latest developments in the field, including genomics, microbial diversity, systems biology, cell-to-cell signaling, and biofilms. The book also presents microbial metabolism in the context of the chemical and physical problems that cells must solve in order to grow. Written in a clear, straightforward manner, the fourth edition adds two new coauthors, Jim Drummond and Clay Fuqua, each a highly respected scholar in his field. The text is organized by topic rather than by organism; this innovative structure will help you to better understand the general principles of physiology and metabolism. Each chapter ends with a summary, thought-provoking study questions, and an extensive list of references to outside research literature that you can access for more information and detailed explanations of material in the text.

## Book Information

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## Customer Reviews

David White is Professor Emeritus of Biology at Indiana University. He has taught numerous courses in the areas of microbiology, biochemistry, human biology, and biology. James Drummond is Associate Professor of Molecular and Cellular Biochemistry at Indiana University. Clay Fuqua is Professor of Biology and Associate Chair of Research at Indiana University.

"The Physiology and Biochemistry of Prokaryotes" (4th Edition) is a textbook covering prokaryotic physiology and biochemistry intended for use in upper-level undergraduate and beginning-level

graduate courses. I can't imagine many people buying this book for reasons other than class requirements, but it is one of the few textbooks I really used on a regular basis. While many classes can be undertaken by notes alone, I found this textbook easy to read and extremely helpful to the understanding of prokaryotic physiology and biochemistry; the mechanisms are not only explained, but easy-to-follow images and illustrations are included to further augment conceptual understanding. All chapters are subdivided into sections and conclude with a chapter summary, study questions, references, and notes. I appreciate the layout of this textbook as it focuses on the physiological and metabolic processes first, and then the specific organisms secondly, rather than the reverse order which can lead to confusion and scatter information all over the board. The topics covered can be summarized as: biochemistry, bacterial development, cellular structure, adaptation to changes in the environment/life-cycles, and cellular signaling interactions. If you are unsure if the 4th Edition is appropriate for your course, the Preface on page xvi outlines the additions made from previous editions; they can be summarized as: additional coauthors, added chapters (11, 21, and 22), revision to chapters from previous editions, and new themes intended to more thoroughly address molecular machinery and energetics. "The Physiology and Biochemistry of Prokaryotes"--4th Edition Authors: David White, James Drummond, and Clay Fuqua--all of Indiana University ISBN: 978-0-19-539304-0 (alk. paper) The text includes the following sections: v. Brief Contents vii. Contents xiii. Boxed Material xv. Preface xvii. Symbols xix. Conversion Factors, Equations, and Units of Energy xxi. Definitions 1. Chapter 1: Structure and Function 55. Chapter 2: Growth and Cell Division 77. Chapter 3: Chromosome Replication and Partitioning of Chromosomes 111. Chapter 4: Membrane Bioenergetics: The Proton Potential 146. Chapter 5: Electron Transport 175. Chapter 6: Photosynthesis 199. Chapter 7: The Regulation of Metabolic Pathways 207. Chapter 8: Bioenergetics in the Cytosol 222. Chapter 9: Central Metabolic Pathways 255. Chapter 10: Metabolism of Lipids, Nucleotides, Amino Acids, and Hydrocarbons 281. Chapter 11: RNA and Protein Synthesis 316. Chapter 12: Cell Wall and Capsule Biosynthesis 335. Chapter 13: Inorganic Metabolism 358. Chapter 14: C(1) Metabolism 383. Chapter 15: Fermentations 403. Chapter 16: Responses to Environmental Stress 432. Chapter 17: Solute Transport 452. Chapter 18: Protein Transport and Secretion 482. Chapter 19: Responses to Environmental Cues 534. Chapter 20: Chemotaxis, Photoresponse, Aerotaxis 551. Chapter 21: Microbial Biofilms--Structured Multicellular Assemblies 566. Chapter 22: Cell-Cell Communication Mechanisms 587. Chapter 23: Bacterial Development 613. index

A wonderful text. Fully referenced with in text citations but not bogged down with extraneous

information. Think of it almost like wikipedia..if you want a deeper explanation then the text links you to it.I will be reading this ( I hope ) for years to come.

Great experience!

Excellent book!

This book was required by my microbial metabolism course. It has a lot of great photos that are easy to understand. Most of the data in the examples and charts are fake date and I wish they used real data to teach instead. Overall this is a very effective book and it goes into a lot of depth. It is definitely more math and statistics based than a lot of other books out there.

To start off, I will mention that this is not an entry-level book, which the authors mentions that the book should be used for an upper-undergraduate or graduate level course. Knowledge of microbiology and organic chemistry is somewhat of a prerequisite, or at least it was for the class I took. Otherwise, you might spend looking over the same pages quite a bit, but not because the book is horrible, but simply because the concepts in this book expands on many topics by giving very descriptive and important details for a researcher. For example, Chapter 6: Photosynthesis 6.1 The Phototrophic Bacteria 6.2 The Purple Photosynthetic Bacteria 6.3 The Green Sulfur Bacteria 6.4 Cyanobacteria and Chloroplasts 6.5 Efficiency of Photosynthesis 6.6 Photosynthetic Pigments 6.7 The Transfer of Energy from Light-Harvesting Pigments to the Reaction Center 6.8 The structure of Photosynthetic Membranes in Bacteria 6.9 Summary So while the author does include basic concepts, it is mixed in with plenty of detail that may make it difficult for someone new to the subject to dissect the key concepts from minute concepts, albeit important to a course. I assure you that photosynthesis (as a process) is explained, but the mere concept is only the base for a more detailed topic. With that being said, the book is mostly text, well detailed images, and no color. However, the images are straight to the point - something I really like. You won't find any false-color, or artist renditions in here. Personally, I highlighted images to differentiate parts. One could even scan the images and practice labeling or coloring them in for studying. The book is very technical and a great addition to anyone who has more than covered basic concepts.

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