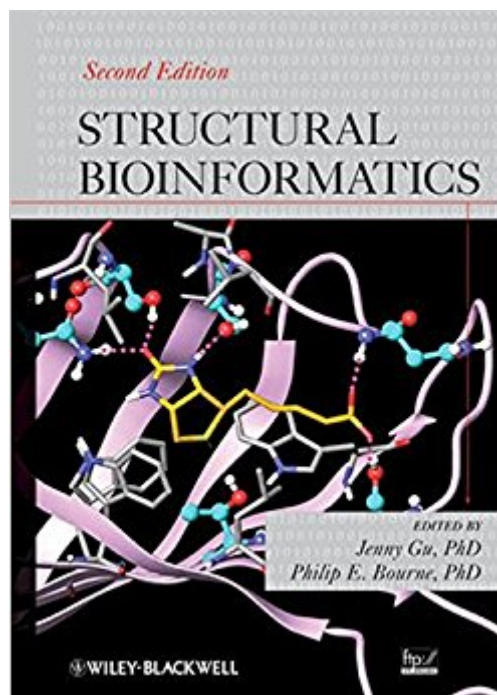


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# Structural Bioinformatics



## Synopsis

Structural Bioinformatics was the first major effort to show the application of the principles and basic knowledge of the larger field of bioinformatics to questions focusing on macromolecular structure, such as the prediction of protein structure and how proteins carry out cellular functions, and how the application of bioinformatics to these life science issues can improve healthcare by accelerating drug discovery and development. Designed primarily as a reference, the first edition nevertheless saw widespread use as a textbook in graduate and undergraduate university courses dealing with the theories and associated algorithms, resources, and tools used in the analysis, prediction, and theoretical underpinnings of DNA, RNA, and proteins. This new edition contains not only thorough updates of the advances in structural bioinformatics since publication of the first edition, but also features eleven new chapters dealing with frontier areas of high scientific impact, including: sampling and search techniques; use of mass spectrometry; genome functional annotation; and much more. Offering detailed coverage for practitioners while remaining accessible to the novice, Structural Bioinformatics, Second Edition is a valuable resource and an excellent textbook for a range of readers in the bioinformatics and advanced biology fields. Praise for the previous edition: "This book is a gold mine of fundamental and practical information in an area not previously well represented in book form." —•Biochemistry and Molecular Education "... destined to become a classic reference work for workers at all levels in structural bioinformatics...recommended with great enthusiasm for educators, researchers, and graduate students." —•BAMBED "...a useful and timely summary of a rapidly expanding field." —•Nature Structural Biology "...a terrific job in this timely creation of a compilation of articles that appropriately addresses this issue." —•Briefings in Bioinformatics

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## Customer Reviews

"Offering a detailed coverage for practitioners but remaining accessible to the novice, Structural Bioinformatics, Second Edition is a valuable and excellent textbook for readers in the bioinformatics and advanced biology fields, and on the best way to become a classic reference for all interested parties (educators, researchers and graduate students.)" (Advances in Food Sciences, 2011)

The emerging discipline of structural bioinformatics comprises the development of computational technologies for methods of storage, retrieval, and analysis of the three-dimensional structure of biological macromolecules. Edited by Philip Bourne and Helge Weissig, this groundbreaking text provides a thorough understanding of the theories, associated algorithms, resources, and tools used in structural bioinformatics. Structural Bioinformatics begins with chapters on the fundamentals of protein structure, DNA/RNA structure, carbohydrates, and techniques including X-ray crystallography, NMR, cryo-electron microscopy, and molecular visualization. The next section addresses data representation and databases, followed by information on structure classification of proteins (SCOP) and class, architecture, topology, and homology (CATH) classification. Later chapters cover structure-function assignment, protein interactions, and proteins as drug targets. Structural Bioinformatics also:

- \* Covers the theory, biology, resources, and practical applications for computational approaches to biomolecular structural studies
- \* Provides broad-based, concise coverage with a consistent direction
- \* Offers detailed coverage for practitioners while remaining accessible to the novice
- \* Presents computational analysis of growing masses of structural data as the key to advances in pharmacogenomics

The book concludes with several chapters on structure prediction methods, and discussion of the future of high-throughput structure determination in drug design. Readers will gain the ability to make effective use of protein, DNA, RNA, carbohydrate, and complex structures to better understand biological function. Molecular biologists, biochemists, biophysicists, and bioinformaticians in basic and clinical research, as well as undergraduate and graduate students in biology, medicine, and computer science, will find Structural Bioinformatics to be an essential addition to their professional and academic libraries.

this is a excellent book. Has the most important topic in structural bioinformatic and is very useful for

teaching. very recommendable

This book provides an excellent resource for anyone interested in structural biology and/or structural bioinformatics. One of the best structural biology related books I have read. The chapters are well organized and comprehensive, and I highly recommend this book. A+

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