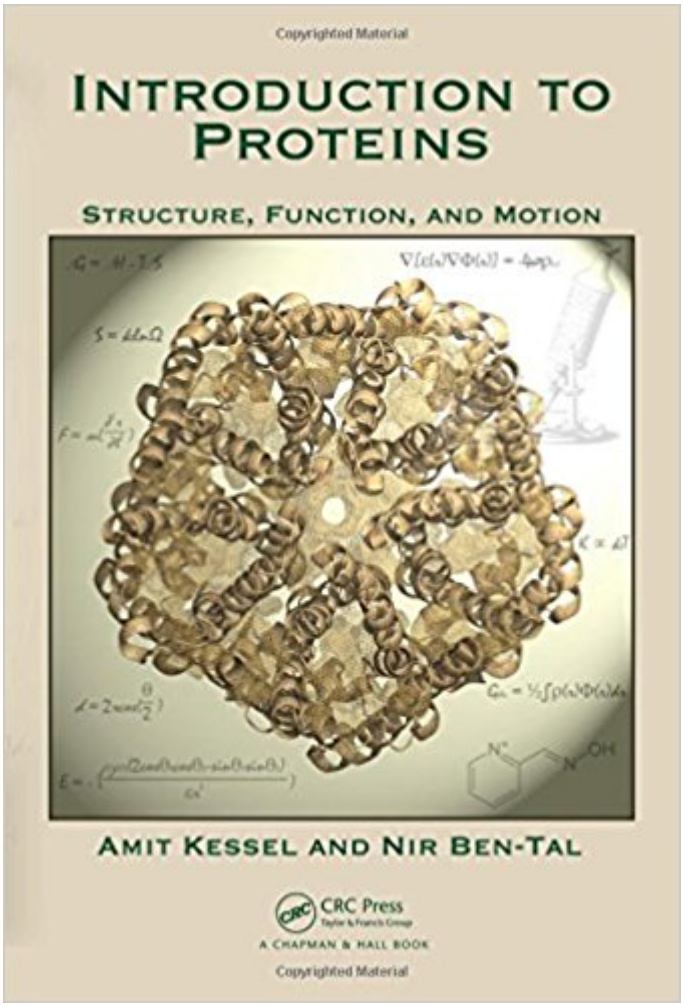
Introduction To Proteins: Structure, Function, And Motion (Chapman & Hall/CRC Mathematical And Computational Biology)



Synopsis

As the tools and techniques of structural biophysics assume greater roles in biological research and a range of application areas, learning how proteins behave becomes crucial to understanding their connection to the most basic and important aspects of life. With more than 350 color images throughout, Introduction to Proteins: Structure, Function, and Motion presents a unified, in-depth treatment of the relationship between the structure, dynamics, and function of proteins. Taking a structuralÃ¢â ¬â œbiophysical approach, the authors discuss the molecular interactions and thermodynamic changes that transpire in these highly complex molecules. The text incorporates various biochemical, physical, functional, and medical aspects. It covers different levels of protein structure, current methods for structure determination, energetics of protein structure, protein folding and folded state dynamics, and the functions of intrinsically unstructured proteins. The authors also clarify the structureÃ¢â ¬â œfunction relationship of proteins by presenting the principles of protein action in the form of guidelines. This comprehensive, color book uses numerous proteins as examples to illustrate the topics and principles and to show how proteins can be analyzed in multiple ways. It refers to many everyday applications of proteins and enzymes in medical disorders, drugs, toxins, chemical warfare, and animal behavior. Downloadable questions for each chapter are available at CRC Press Online.

Book Information

Series: Chapman & Hall/CRC Mathematical and Computational Biology (Book 36)
Hardcover: 654 pages
Publisher: CRC Press; 1 edition (December 17, 2010)
Language: English
ISBN-10: 1439810710
ISBN-13: 978-1439810712
Product Dimensions: 10.2 x 7.2 x 1.3 inches
Shipping Weight: 3.4 pounds (View shipping rates and policies)
Average Customer Review: 4.7 out of 5 stars 11 customer reviews
Best Sellers Rank: #299,695 in Books (See Top 100 in Books) #72 inÃ Â Books > Science & Math > Agricultural Sciences > Crop Science #81 inÃ Â Books > Textbooks > Medicine & Health Sciences > Medicine > Basic Sciences > Biochemistry #390 inÃ Â Books > Engineering & Transportation > Engineering > Bioengineering > Biochemistry

Customer Reviews

"IÃ¢â ¬â„¢ve just lately used this textbook for a presentation on electrostatics. Although I have an organic background, I discovered that the explanations of electrostatic interactions are very clear and informative. The language isnÃ¢â ¬â„¢t too technical and may be easily understood by biology students. The textbook covers numerous examples and colorful illustrations, which made it easy to understand the principles discussed. The book is well organized in chapters for all the fundamental topics. I feel this book would be appropriate for any undergraduate and graduate scholar whoÃ¢â ¬â„¢s keen on proteins. Ã¢â ¬Â¦ ItÃ¢â ¬â„¢s complete, easy to observe and (something I at least discover uncommon for textbooks) pleasing to read. The authors donÃ¢â ¬â„¢t shrink back from any subjects, but clarify things in a straightforward method supported by ample examples. Highly recommended."Ã¢â ¬â ¢Physics Book Reviews at dowdawgs.com, May 2013 Introduction to Proteins is an excellent, state-of-the-art choice for students, faculty, or researchers needing a monograph on protein structure. Ã¢â ¬Â¦The book is clear, well organized, aptly illustrated in color, and a pleasure to read. The first two chapters are an impressive textbook unto themselves Ã¢â ¬Â¦ The book is thoroughly documented with citations to the literature gathered at the end of each chapter. Ã¢â ¬Â¦ Overall, this is an immensely informative, thoroughly researched, up-to-date text, with broad coverage and remarkable depth. Introduction to Proteins would provide an excellent basis for an upper level or graduate course on protein structure, and a valuable addition to the libraries of professionals interested in this centrally important field.Ã¢â ¬â ¢Eric Martz, Biochemistry and Molecular Biology Education, Vol. 40, 2012 This is an important book. Ã¢â ¬Â¦ This book captures in a very accessible way a growing body of literature on the structure, function and motion of proteins, and links this to more established paradigms such as a reader might find in a mainstream biochemistry text. Ã¢â ¬Â¦ The text is littered with excellent examples of the wider relevance of the material covered Ã¢â ¬Â¦ . The book is exceptionally well written Ã¢â ¬Â¦ I learned new things from each chapter. Ã¢â ¬Â¦ a superb publication that would be very useful to undergraduates, graduate students, postdoctoral researchers and instructors involved in structural biology or biophysics courses or in research on protein structureÃ¢â ¬â œfunction relationships. I would recommend it highly.Ã¢â ¬â ¢David Sheehan, ChemBioChem, 2011 The book by Kessel and Ben-Tal offers a unique combination of structure, thermodynamics and biology. I was impressed both by the breadth of the topics covered and by the depth in which they are treated. General principles are made intuitively clear based on well-chosen examples, many of them having relevance to disease. The book could fit well as a textbook in structural biology and molecular biophysics courses.Ã¢â ¬â ¢Barry Honig, Columbia University, New York, New York, USA Ã¢â ¬Â¦ the book provides general guidelines for understanding protein structure and demonstrates how we

can use the structure to phrase testable hypotheses about biological function. Ã¢â ¬Â¦ The repeated use of the same example makes it easier for the reader to grasp the general principles. The book gives a coherent picture of each topic Ã¢â ¬Â¦ [and] includes ample references, making it possible for the interested reader to dig deeply into various topics. The book also covers structural aspects of intrinsically unstructured proteins and how this property facilitates their biological function. Ã¢â ¬Â¦ The book provides background in cell biology, basic chemistry and thermodynamics, making it useful for newcomers to the protein structure field who want to catch up quickly. Ã¢â ¬Â¦ it [is also] easy for experts to dive into the more specialized aspects quickly. Ã¢â ¬Â¦ The book provides references to user-friendly web tools in the field. The publisherÃ¢â ¬â„¢s website provides exercises on both theory and practice. Sample solutions and PowerPoint presentations are available for qualified teachers. These make the book attractive as the main textbook in an undergraduate course on protein structure. Perhaps also for parts of freshman biochemistry. Ã¢â ¬Â¦ useful as supplement for many undergraduate and graduate courses.Ã¢â ¬â ¢Burkhard Rost, Technische UniversitÃƒÂ¤t MÃƒÂ nchen, Germany

Amit Kessel is co-founder of Es-is Technologies Ltd., which designs biocatalysts for the pharmaceutical industry. He also teaches protein biochemistry and biophysics at the Tel Aviv-Yaffo Academic College. During his postdoctoral research at Columbia University, Dr. Kessel focused on various physicochemical aspects of proteinÃ¢â ¬â œprotein interactions at the molecular level. Nir Ben-Tal is a professor in the Department of Biochemistry and Molecular Biology at Tel-Aviv University. His research in computational biology has involved predicting the three-dimensional structures of transmembrane proteins and developing the ConSurf web server for the detection of functional regions by mapping evolutionary data on protein structures.

See title. This book is very reader-friendly, and everything is written so that it’s suuuuper easy to understand if you’re having problems getting through your biochemistry class. I bought this to supplement my required textbook and it was SO useful to clarify some of the muddy concepts in the other book I was using (although that was a great textbook as well! Lehninger :))

Boring book but printed well and easy to read.

The book aims to provide the reader with a detailed background and current understandings in the field of protein structure and dynamics from the biophysical approach.As someone who has recently

entered the research field of protein dynamics and felt a bit lacking in the necessary background knowledge (especially thermodynamics and thermo-statistics) I really appreciated how broad-based the book is but at the same time manages to stay on point and only introduce relevant principals that apply directly to a better understanding in the field of protein structure and dynamics.The problem I have with other books in this area is that they usually tackle the subject from a narrow aspect (strictly biochemical or cell-biology) and I could not find a book (or course at my university for that matter) that really managed to integrate all the necessary background and knowledge sources together.I found the book to be well structured covering the different topics in a logical founded order beginning with explaining what proteins are in general continuing to cover fundamental topics in chemistry and thermodynamics and finally integrating it all into current understating.Every topic introduced in the book is accompanied with relevant biological examples and color images greatly facilitating comprehension, even the math parts which are detrimental to the understanding of the physics (and unfortunately usually avoided in biology text books) are broken down into easy to digest steps and accompanied with detailed explanationsThe book manages to walk the fine line of dealing and explaining sometimes complex topics in an easy to follow manner without being shallow and over simplistic, so both the complete novice and the more experienced reader can find their requirements met.In short, This book can make a great text book to accompany a protein structure course or, if your are like me taking your first steps in this field or just plain curious an excellent introductory book.

I have read this book with great interest and have decided to use this textbook in my classes on Structural Bioinformatics at the University of Southern California. Kessel and Ben-Tal have succeeded in putting material together, which I was not able to find in any other textbook. Focused on protein structure, the book combines aspects of structural and computational biology, which makes this a unique contribution. As for the level of detail provided in the book, complicated structural and biophysical aspects are well explained both in words and graphical illustrations. This textbook can therefore be used both in undergraduate and graduate student teaching. The book provides a comprehensive overview on what is known about general principles that determine protein structure, globular proteins, disordered proteins, protein-protein interactions, and in complex with various ligands. It provides guidelines for understanding the energetics of protein folding and stability; it describes models of molecular recognition and allostery as a basis ’for understanding protein-ligand interactions; and it explains biological functionality in these terms.’ The book covers protein structure from water-soluble to membrane proteins, from globular to fibrilar proteins and from

’well behaved’ to ’natively unstructured’ proteins.’ The book provides a deep understanding of protein structure, dynamics, ’and function. General principles are made intuitively clear based on ’specific examples. Each example is ’discussed within various contexts throughout the book and eventually ’the reader obtains a wide view on these carefully selected cases.’ One interesting feature of the book is the emphasis on diseases. ’This includes explanations of the effects of genetic mutations on ’protein folding, stability, and dynamics as well as a brief introduction to rational drug discovery.’ The book connects complicated aspects of structural biology to trivia as much as possible, without deviating too much from the main rout, making it a ’nice read. I can tell that my students liked it a lot.Dr. Remo Rohs, Assistant Professor of Biological Sciences, University of Southern California, Los Angeles, United States

Topics in Computational Molecular Biology (Computational Molecular Biology) Access Control, Security, and Trust: A Logical Approach (Chapman & Hall/CRC Cryptography and Network Security Series)