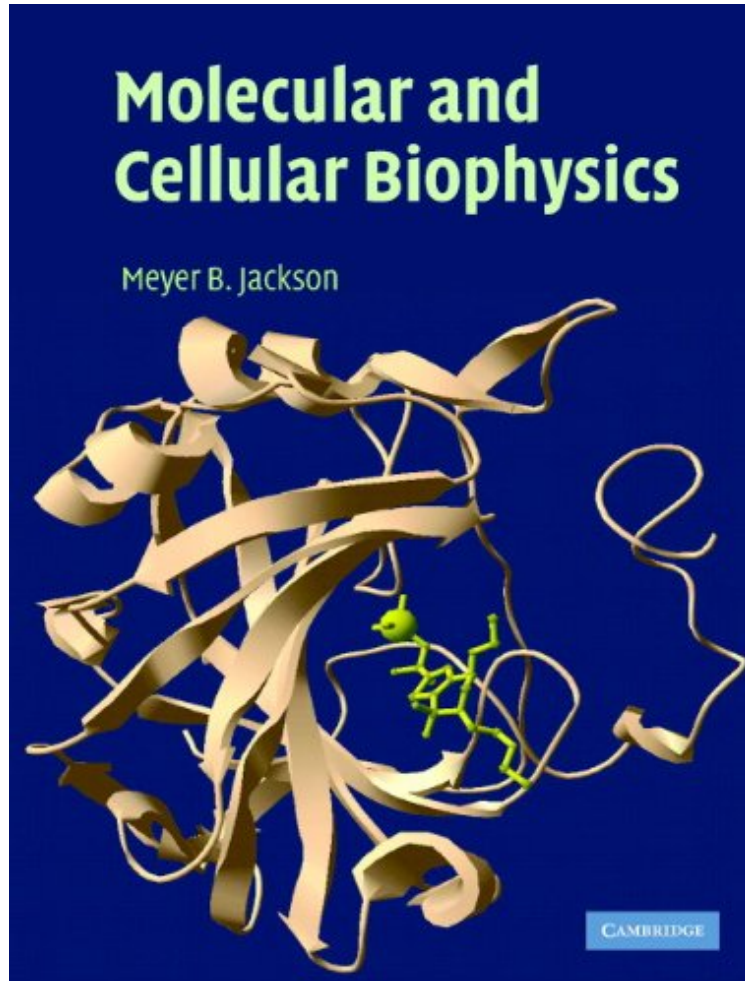


# Molecular and Cellular Biophysics

Meyer B. Jackson

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graduate student a solid foundation in the basic concepts of molecular and cellular biophysics. I would suggest that this course be given prerequisites in physical chemistry and a very solid math background. To cover the math background the author has added six appendices to the book covering: expansions and series, matrix algebra, Fourier analysis, gaussian integrals, hyperbolic functions, polar and spherical coordinates. All of this is covered in only 16 pages. You would have to be a lot better than I was to learn Fourier analysis in only four pages. In undergraduate school I had full semester course in Fourier analysis, and it was by no means the first math class that I took. Perhaps I was just slower than today's students. But in my mind learning all this math from the appendices while studying the rest of the material in this book would be asking a lot of an undergraduate student. More important than the math, the author says, is having some knowledge of physical chemistry to include thermodynamics, kinetics, and statistical mechanics. And finally he assumes that the student has had some exposure to biochemistry. Having gotten that out of the way, the central theme of the book is of course what it says in the title. This is an excellent and very inclusive text. The author ranges far and wide to bring up as many different aspects of biophysics as possible. It is very current in its coverage of material on subjects not found in other texts.

Molecular and Cellular Biophysics provides advanced undergraduate and graduate students with a foundation in the basic concepts of biophysics. Students who have taken physical chemistry and calculus courses will find this book an accessible and valuable aid in learning how these concepts can be used in biological research. The text provides a rigorous treatment of the fundamental theories in biophysics and illustrates their application with examples. Conformational transitions of proteins are studied first using thermodynamics, and subsequently with kinetics. Allosteric theory is developed as the synthesis of conformational transitions and association reactions. Basic ideas of thermodynamics and kinetics are applied to topics such as protein folding, enzyme catalysis and ion channel permeation. These concepts are then used as the building blocks in a treatment of membrane excitability. Through these examples, students will gain an understanding of the general importance and broad applicability of biophysical principles to biological problems.

"The language used in the book is extremely clear.... The approach is very thoughtful.... This book is aimed at advanced undergraduates and beginning graduate students ... [and] would be a valuable addition to the library of any research lab at the physical end of biochemistry." Chemistry World  
About the Author MEYER B. JACKSON is Professor of Physiology at the University of Wisconsin Medical School. He has been teaching graduate level biophysics for nearly 25 years.