

Integrated Molecular and Cellular Biophysics

This book integrates concepts and methods from physics, biology, biochemistry, and physical chemistry into a standalone, unitary text of biophysics that aims to provide a quantitative description of structures and processes occurring in living matter. The book introduces graduate physics students and physicists interested in biophysics research to „classical“ as well as emerging areas of biophysics. Advanced undergraduate physics students and the scientists are also invited to join in, by building on their knowledge of basic physics. Essential notions of biochemistry and biology are introduced, as necessary, throughout the book, while the reader's familiarity with basic physics is assumed. Topics covered include interactions between biological molecules, physical chemistry of association of phospholipids into bilayer membranes, DNA and protein structure and folding, passive and active electrical properties of the cell membrane, classical as well as fractal aspects of reaction kinetics and diffusion in biological systems, structural and functional aspects of molecular machines (including channels, ion pumps, and light-harvesting antenna), as well as fundamental aspects of association of proteins in solutions and in living cells.

ISBN 978-1-4020-8267-2



9 781402 082672