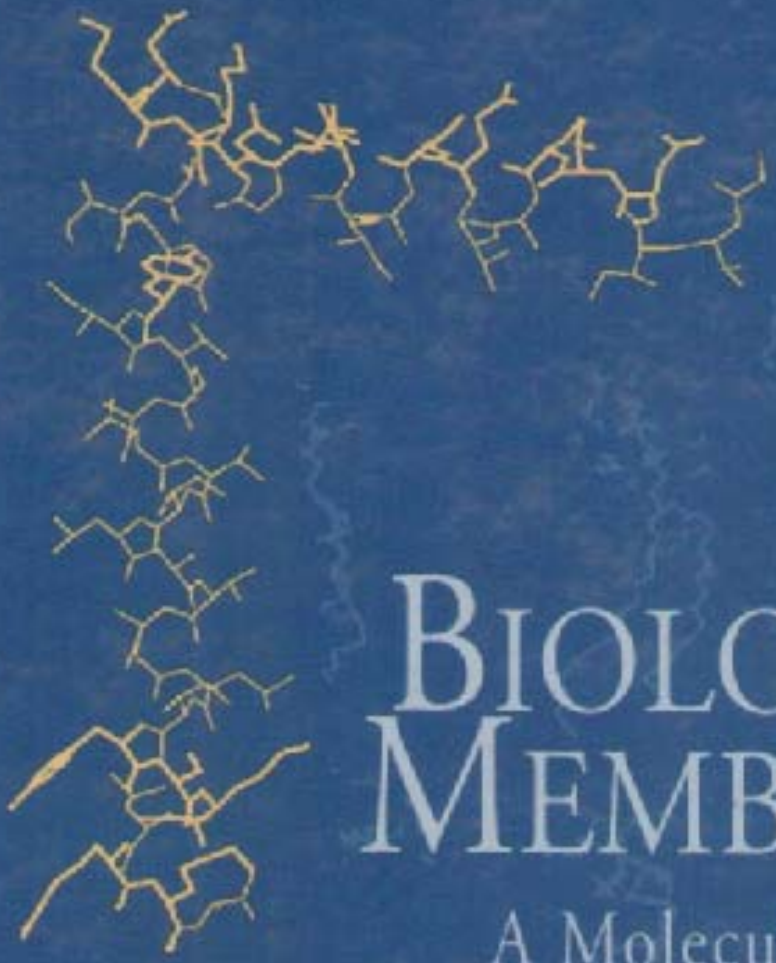

BIOLOGICAL MEMBRANES

A Molecular Perspective from Computation and Experiment

Kenneth M. Merz, Jr. and Benoît Roux, *Editors*

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The interface between a living cell and the surrounding world plays a critical role in numerous biological processes of significant complexity. An understanding of the factors responsible for the function of biomembranes requires a better characterization at the molecular level of how proteins interact with lipid molecules, of how lipids affect protein structure and of how lipid molecules might regulate protein function. Computer simulations of detailed atomic models based on realistic microscopic interactions represent a powerful approach to gain insight into the structure and dynamics of complex macromolecular systems such as biomembrane. Extension of current computational methodologies to simulate biomembrane systems still represents a major challenge.

It is the goal of the present volume to provide a concise overview of theoretical and experimental advances in the understanding of lipid bilayers and protein/lipid interactions at the microscopic level. Topics covered include: lipid force field development; basic theoretical methodologies including molecular dynamics and Monte Carlo methods; the use of macroscopic lipid models versus microscopic models; the use of NMR, IR and X-ray techniques in biomembrane studies; thermodynamics and structural aspects of protein/peptide interactions; and future directions in this rapidly growing field.

Discover the most promising techniques for unraveling the mysteries of biomembrane structure, function and dynamics. This book should be required reading for all molecular biologists, pharmaceutical chemists and protein chemists interested in biomembranes and their biotechnological applications.

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