1. Record Nr. UNINA9910253936803321

Titolo	The Biophysics of Cell Membranes : Biological Consequences / / edited by Richard M. Epand, Jean-Marie Ruysschaert
Pubbl/distr/stampa	Singapore : , : Springer Singapore : , : Imprint : Springer, , 2017
ISBN	981-10-6244-7
Edizione	[1st ed. 2017.]
Descrizione fisica	1 online resource (VII, 219 p. 49 illus., 32 illus. in color.)
Collana	Springer Series in Biophysics, , 0932-2353 ; ; 19
Disciplina	574.875
Soggetti	Cell membranes Biophysics Bioorganic chemistry Medical genetics Membrane Biology Biological and Medical Physics, Biophysics Bioorganic Chemistry Gene Function
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	Preparation and Physical Properties of Asymmetric Model Membrane Vesicles -- Spontaneous lipid flip-flop in membranes: A still unsettled picture from experiments and simulations -- Membrane Lipid-Protein Interactions -- Principles of mechanosensing at the membrane interface -- Lipid domains and membrane (re)shaping: from biophysics to biology -- Minimal Cellular Models for Origins-of-Life Studies and Biotechnology.
Sommario/riassunto	This volume focuses on the modulation of biological membranes by specific biophysical properties. The readers are introduced to emerging biophysical approaches that mimick specific states (like membrane lipid asymmetry, membrane curvature, lipid flip-flop, lipid phase separation) that are relevant to the functioning of biological membranes. The first chapter describes innovative methods to mimic the prevailing asymmetry in biological membranes by forming asymmetrical membranes made of monolayers with different compositions. One of the chapters illustrates how physical parameters, like curvature and

elasticity, can affect and modulate the interactions between lipids and proteins. This volume also describes the sensitivity of certain ion channels to mechanical forces and it presents an analysis of how cell shape is determined by both the cytoskeleton and the lipid domains in the membrane. The last chapter provides evidence that liposomes can be used as a minimal cellular model to reconstitute processes related to the origin of life. Each topic covered in this volume is presented by leading experts in the field who are able to present clear, authoritative and up-to-date reviews. The novelty of the methods proposed and their potential for a deeper molecular description of membrane functioning are particularly relevant experts in the areas of biochemistry, biophysics and cell biology, while also presenting clear and thorough introductions, making the material suitable for students in these fields as well.