

"Nanostructures in Biological Systems is a marvellous scientific appraisal of the state of the art of membrane biophysics. By building a strong bridge between physics and biological sciences, the authors succeed in accomplishing something that is exceptionally rare in scientific literature. Enjoy to be introduced into the wonder world of biological surfaces and experience their continuous conversions, such as in the fusion of lipid vesicles or as observed in direct cell-to-cell communication."

Prof. Michael Rappolt
University of Leeds, UK

"Nanostructures in Biological Systems will become a cornerstone reference for membrane biophysicists. It covers the gap between two scientific worlds: one originating from physics, focussing on model membrane systems with controlled composition and environment, and the second from biology, working with membranes from living cells. It introduces the readers to the complex but fascinating study of natural or model membrane systems and is a wonderful opportunity for both communities working in biophysics. They will gain a common knowledge in a field where interdisciplinarity should be highly valuable."

Prof. Philippe Méléard
ENSC-Rennes, France

This book is a survey on the theoretical as well as experimental results on nanostructures in biological systems. It shows how a unifying approach starting from single-particle energy, deriving free energy of the system and determining the equilibrium by minimizing the free energy, can be applied to describe electrical and elastic phenomena. It helps the readers to use this basic, transparent, and simple approach to develop additional new systems and interactions and describes the theoretical and experimental aspects together so that they support each other in broadening the knowledge on biological systems. It suggests potential use of this knowledge in clinically relevant phenomena such as hemostasis, inflammation, and spreading of cancer and describes some applications in nanotoxicology, such as the interactions between biological membranes and inorganic nanostructures.



Aleš Iglič is professor of biophysics and head of the Laboratory of Biophysics, Faculty of Electrical Engineering, University of Ljubljana, Slovenia. His research interests are in electrostatics, biomechanics, and statistical physics of biological membranes and lipid nanostructures.



Veronika Kralj-Iglič is professor of biophysics and biomechanics and head of the Laboratory of Clinical Biophysics, Faculty of Health Sciences, University of Ljubljana. Her research interests are in electrostatics, biomechanics, and statistical physics of biological membranes and membrane nanostructures.



Damjana Drobne is professor of environmental toxicology and zoology and head of the group for nanobiology and nanotoxicology, University of Ljubljana. She has more than 20 years expertise in toxicity testing with environmental organisms. She has co-authored and authored more than 90 original scientific publications so far.



PAN STANFORD PUBLISHING

www.panstanford.com

V096

ISBN 978-961-4267-20-5



9 789814 267205