

Meeting the need for a book on developing and using new methods to investigate membrane proteins, this is a cutting-edge resource for the major biophysical methods that are - or soon will be - the major techniques used in the field. Top researchers from around the world focus on the physical principles exploited in the different techniques, and provide examples of how these can bring about important new insights. Each chapter is dedicated to a specific approach, describing the method involved, highlighting the experimental procedure and/or the basic principles, offering an up-to-date understanding of what is measured, what can be deduced from the measurements, as well as the limitations of each procedure.

Following an introduction, further sections discuss structural approaches, molecular interaction and large assemblies, dynamics and spectroscopies, finishing off with an exploration of structure-function relationships in whole cells.



Eva Pebay-Peyroula is a professor in the physics department at the University of Grenoble. After obtaining her PhD in molecular physics in 1986, she started working as a scientist at the Laue-Langevin Institute and shifted her interest from physics to biology. After studying structural properties of lipid membranes mainly by neutron diffraction, she diversified into the field of protein crystallography and became interested in membrane proteins. In recent years, she has worked on light driven mechanisms achieved by bacterial rhodopsins, membrane proteins from archaeal bacteria, and more recently, on the ADP/ATP carrier, a mitochondrial membrane protein. She is heading the Institut de Biologie Structurale in Grenoble, and has been a member of the French Academy of Science since 2005.

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