

PREFACE

The first edition of *Membrane Structural Biology* met a need for a comprehensive presentation of the explosion of information about the structure and organization of biological membranes. It also acknowledged how new techniques and whole new methodologies had changed both how we acquired knowledge of the membrane and how we viewed it. With a foundation derived from basic physical and life sciences, advances in structural biology were depicted through the molecular details of membrane components provided by sophisticated diffraction analysis of fluid lipid bilayers and by high-resolution structures of a variety of membrane proteins. As the book moved from basic membrane biochemistry to detailed examples, it covered a wide range of material at a level appropriate for both students and scientists in the field. I am gratified with the responses from membrane scientists all over the world.

This new edition has been expanded to include over 20 additional membrane proteins visualized in atomic detail. Discovery of superfamilies based on the protein folds shows relationships among membrane proteins, while capture of multiple states begins to disclose mechanisms. Some new topics have been introduced, other topics updated, and yes, sadly, some interesting new findings had to be left out. I hope readers will jump into the literature from the key references provided to learn about the exciting new findings, to study these topics in more detail, and to tackle the larger and more complex systems at the frontiers of membrane research.

While I am responsible for the omissions and any errors, I am indebted to many people who have been generous with their time, reviewing new parts of this edition, as well as those who did so for the first edi-

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