The Enzymes of Biological Membranes

SECOND EDITION

Volume 1

Membrane Structure and Dynamics

Edited by

Anthony N. Martonosi

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Preface to the Second Edition

In the first edition of *The Enzymes of Biological Membranes*, published in four volumes in 1976, we collected the mass of widely scattered information on membrane-linked enzymes and metabolic processes up to about 1975. This was a period of transition from the romantic phase of membrane biochemistry, preoccupied with conceptual developments and the general properties of membranes, to an era of mounting interest in the specific properties of membrane-linked enzymes analyzed from the viewpoints of modern enzymology. The level of sophistication in various areas of membrane research varied widely; the structures of cytochrome *c* and cytochrome b_5 were known to atomic detail, while the majority of membrane-linked enzymes had not even been isolated.

In the intervening eight years our knowledge of membrane-linked enzymes expanded beyond the wildest expectations. The purpose of the second edition of *The Enzymes of Biological Membranes* is to record these developments. The first volume describes the physical and chemical techniques used in the analysis of the structure and dynamics of biological membranes. In the second volume the enzymes and metabolic systems that participate in the biosynthesis of cell and membrane components are discussed. The third and fourth volumes review recent developments in active transport, oxidative phosphorylation and photosynthesis.

The topics of each volume represent a coherent group in an effort to satisfy specialized interests, but this subdivision is to some extent arbitrary. Several subjects of the first edition were omitted either because they were extensively reviewed recently or because there was not sufficient new information to warrant review at this time. New chapters cover areas where major advances have taken place in recent years. As a result, the second edition is a fundamentally new treatise that faithfully and critically reflects the major transformation and progress of membrane biochemistry in the last eight years. For a deeper insight into membrane function, the coverage includes not only well-defined enzymes, but several membrane proteins with noncatalytic functions.

We hope that *The Enzymes of Biological Membranes* will catalyze the search for general principles that may lead to better understanding of the structure and function of membrane proteins. We ask for your comments and criticisms that may help us to achieve this aim.

My warmest thanks to all who contributed to this work.

Anthony N. Martonosi

Syracuse, New York

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