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BOOK REVIEW

The Structure of Biological Membranes

(2nd Edn., Yeagle, P. L. (ed.) CRC Press, Boca Raton-London-New York-Singapore, 2005, 540 p., $169.95)

DOI: 10.1134/S0006297906030175

This second edition of a handbook on the structure of biological membranes has been completely revised and supplemented with new data. It consists of 16 chapters written mainly by American, Canadian, and Swiss scientists representing academic institutes including the US National Institutes of Health (NIH).

Chapter 1 describes structure and classification of various types of natural lipids, their stereochemistry, and lipid composition of biological membranes. It also considers structure of complex lipids (glycerophospholipids, sphingolipids, and glycolipids including lipopolysaccharides) and results of X-ray analysis of crystal structure of various lipids.

Chapters 2-4 consider features of lipids in biological membranes: their orientation in lipid membrane bilayer, mobility, and interaction with other macromolecules of biological membranes.

Chapters 5 and 6 characterize non-lamellar lipid phases and forces acting between bilayer membranes and hydrophilic sites of phospholipid assemblies, respectively.

Chapter 7 highlights the role of cholesterol in cell biology.

Chapters 8-11 describe problems related to fusion of lipid membranes, formation of microdomains inside the membrane layer, passive and active intramembrane transport, and dynamic state of intramembrane proteins.

Chapters 12 and 13 describe translational diffusion of membrane proteins and characterization of inorganic anion transporter AE1.

Chapter 14 considers structures of G-protein coupled receptors and chapter 15 underlines the role of membrane lipids in modulation of membrane bound enzyme activity.

Chapter 16 considers mechanisms responsible for virus-induced membrane fusion. The major attention is paid to processes of membrane fusion induced by influenza virus glycoprotein, hemagglutinin.

This book requires basic knowledge in chemistry, biochemistry, biophysics, and thermodynamics. Each chapter ends with a large list of references. The book has an alphabetical index and many figures, schemes, and photographs.

I am confident that this book will be useful for students of chemical, biological, and bioorganic faculties of universities, and also to a wide audience of biochemists, molecular and cell biologists, and biotechnologists.

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