

Book Review of Annual Review of Biochemistry. Volume 80

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The substantial Annual Reviews in Biochemistry, 2011, is notable in that it is the 80th volume of the compendium. The text contains 42 chapters divided into 6 themed sections: Prefatory, Membrane Vesicle, Membrane Protein Folding and Insertion, Biological Mass Spectrometry, Cellular Imaging, and Recent Advances in Biochemistry.

This volume contains three chapters in the Prefatory, each a fascinating read by prominent scientists Elizabeth Neufeld, Masayasu Nomura, and Julius Adler. These chapters each weave an autobiographical view of the authors' personal lives with their groundbreaking research, allowing full appreciation of their accomplishments and the unique paths each took in their scientific careers.

The Membrane Vesicle theme covers topics that include the following chapters: Protein Folding and Modification in the Mammalian Endoplasmic Reticulum, Mechanisms of Membrane Curvature Sensing, and Biogenesis and Cargo Selectivity of Autophagosomes. These chapters extensively cover protein folding factors, protein modification, the fascinating world of membrane curvature sensing and regulation, and a very extensive coverage of autophagy including pathways in yeast and mammals.

The Membrane Protein Folding and Insertion theme begins with a short introduction followed by three chapters: Assembly of Bacterial Inner Membrane Proteins, a more specific chapter Bam Complex B-Barrel Assembly, capped by a thorough review in M2 Proton Channel, Potassium Channels and Integrin Receptors as Mediators of Transmembrane Communication. These chapters, written by experts in their fields, provide extensive coverage of the topics and are highlighted with full color diagrams and figures.

A more technique oriented section of the text is covered by two separate themes: Biological Mass Spectrometry and Cellular Imaging. These themes consist of four chapters each. The Mass Spectrometry theme contains two chapters dedicated to applications and advances in the study of membrane proteins, lipids, and membranes using mass spectrometry and provide a thorough review of techniques for these complex processes. The remaining two chapters in this theme cover mass spectrometry in the postgenomic era, not only including coverage of what has been done to advance the field of MS but also enumerating major innovations and advances that need to be made in the field. The Cellular Imaging theme contains four articles covering topics from the use of reporters to track cellular signaling to development of FRET probes and fluorescent sensors for metal and small signaling molecules.

The remaining section, Recent Advances in Biochemistry, covers 24 additional topics in depth. These topics range from DNA replicases, structural study of the nuclear pore complex, protein kinase inhibitors, the glycome, communication between

O-GlcN acylation and phosphorylation, TOR activation, and many others. These chapters provide a rich treatment of the subject, with many including illustrations and diagrams. As with all chapters in the Annual Reviews volumes, they are appropriately heavily referenced.

Many chapters in this volume are decorated with definitions (in the margins) and punctuated by a listing of cogent summary points and future issues for the respective field. These points provide significant questions and hypotheses that are useful for the casual reader or for those using a chapter for advanced undergraduate or graduate reading material. These additions make each chapter a very convenient teaching tool and combine with rich full color illustrations and diagrams to provide clear explanations of complex topics.

This historic 80th volume of Annual Reviews of Biochemistry continues the tradition as both a high quality production and a review of important fundamentals of biochemistry that are presented in a fashion that is exceedingly accessible and a pleasure to read.

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■ AUTHOR INFORMATION

Notes

The authors declare no competing financial interest.