

## Book review

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*Cell Surface Glycolipids*, edited by CHARLES C. SWEELEY, ACS Symposium Series 128, American Chemical Society, Washington, DC, 1979, vii + 473 pages + Subject Index, US \$44.50.

Research in the field of glycolipids has passed through several stages. Whereas the early work was primarily concerned with the isolation and characterization of different glycolipids from a wide variety of sources, we have now entered a new era in which the emphasis has shifted to the delineation of the biological function of these unique molecules. This book reflects the current interests in the field of glycosphingolipids, although the subjects of many of the chapters in this book have been treated in more detail elsewhere. The book contains twenty-seven chapters, six of which (1–4, 6, and 8) deal with the application of such special analytical techniques as high-pressure liquid chromatography, mass spectrometry, and high-resolution n.m.r. spectroscopy for the isolation and characterization of glycosphingolipids. These chapters may serve as useful starting-points for those who are not familiar with these subjects.

Six chapters (5, 6, 9–11, and 25) of this book describe the isolation and characterization of glycolipids from various tissues. It is evident from these chapters that there are many more glycolipids yet to be discovered. The concise reviews on glycosphosphoceramides from plants (Chapter 5) and galactoglycerolipids of mammalian testes, spermatozoa, and nervous tissue (Chapter 7) will be useful to those investigators who are familiar only with glycosphingolipids. The elegant work of Breimer *et al.* (Chapter 6) on the structural elucidation of glycosphingolipids in rat small intestine, with special reference to epithelial cells in relation to differentiation, reiterates the complexity of glycosphingolipids. These chapters also reflect the difficulty in ascertaining any correlation between the structure and biological function of glycosphingolipids.

From the four chapters (12, 14, 19, and 20) dealing with biosynthesis, it is evident that this facet of glycosphingolipid research is not an easy task. The investigators in this field are still at the stage of using tracer techniques to detect the transfer of very minute quantities of a glycosyl group from a suitable sugar donor to a glycolipid acceptor by a membrane-bound glycosyltransferase.

Four chapters (22, 24, 26, and 27) deal with various immunological aspects of glycosphingolipids. There is no doubt that these topics will receive greater attention in the future.

The remaining chapters (13, 15–18, and 21) deal directly or indirectly with the function of glycosphingolipids. With the possible exception of gangliosides as receptors for cholera toxin, tetanus toxin, and Sendai virus (Chapter 21), our present

understanding of the biological function of glycosphingolipids is hazy at best. Although glycosphingolipids have been implicated as playing many intriguing and important biological roles, there is still a long way to go before the function of each glycosphingolipid can be clearly pinpointed.

As a whole, this book reflects the complexities and difficulties of the field. If its only accomplishment is to serve as a guide for the direction of future research in the field of glycolipids, it will have been well worth the efforts of the editor and contributors. However, to increase its usefulness, it could have been more reasonably priced.

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