
BOOK REVIEW

Methods in Enzymology, Vol. 417, Functional Glycomics

(M. Fukuda (ed.), Elsevier, Amsterdam-Boston-Heidelberg-London-New-York-Oxford-Paris,
2006, 443 pp., \$149.95)

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This is the third book of this series describing methods in glycobiology issued in 2006. It contains 23 chapters written by an international group of authors.

The first section considers functions of N-glycans demonstrated during inactivation of certain genes. The first chapter of this section deals with approaches providing mutations of genes responsible for control of processing of N-glycans (some of which are glycoprotein cytokines). The second chapter contains methodology and analysis of the role of fucosylation for growth factor receptors.

The second section discusses data on the role of glycans in neurons. It considers effects of knockout of genes encoding glycosyltransferases on the development of nervous tissue, the role of neuronal glycolipids, behavior of mice after knockout of certain genes of glycan biosynthesis, and electrophysiological methods for studies of interactions between carbohydrates and transmitter receptors in lipid bilayers.

The third section of this book describes methods as well as analysis of results obtained during studies of the role of O-glycans in cell signal transduction and changes of these processes in muscular dystrophy. Some chapters of this section deal with the role of fucosyltransferase 1 and O-linked fucose in receptor functions. Here methods for studies of glycosylation defects representing a basis for muscle dystrophy are also considered.

The fourth and the fifth sections of this book deal with studies of functions and interactions of glycolipids. There are chapters describing identification and analysis of new vertebrate brain glycolipids of by means of HPLC/mass spectrometry, the role gangliosides in changes of growth factor signaling, activation of natural killer T-cells by glycolipids, and approaches for studies of specificity of protein–glycolipid interactions.

The sixth section of this book deals with studies of galectin functions and their role in extracellular matrix, apoptosis, and signal transduction.

The seventh section describes new trends in studies of glycan functions: involvement of carbohydrates in adhesion of *Helicobacter pylori* cells and the role of glycans in resistance to bacterial toxins. This section also describes the method of detection of cytoplasmic glycosylation associated with oxyproline.

The book contains author and subject indexes, a bibliography for each chapter, and color photographs at the end of this book. This book is very informative, and is novel both in terms of problems discussed and also arsenal of new methods used for glycobiology.

This book will be very useful for glycobiologists, bioorganic chemists, as well as for researchers working in molecular biology and biotechnology. It may be also recommended for university students and their teachers as supplemental material for the above mentioned fields of science.

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