
BOOK REVIEW

Methods in Molecular Biology, Vol. 347, Glycobiology Protocols

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This book is a practical textbook on one of the most intensively developing and widely used methods of studies of complex carbohydrates and carbohydrate-containing compounds. This book containing 24 chapters has been written by a large international group of authors.

Chapter 1 describes fluorescence methods of investigation of dolichol pyrophosphate oligosaccharides in cell cultures and animal tissues. The main approach employed in these studies is the method of separation of fluorescently labeled carbohydrates and their derivatives by means of electrophoresis.

Chapter 2 describes a method for partial purification of mannosyl phosphoryl undecaprenol synthase (MPUS) from *Micrococcus luteus*. This enzyme is used in biosynthetic reactions of formation of mannosyl phosphoryl-polyisoprenol derivatives.

Chapter 3 deals with reconstitution of dolichol phosphomannose synthase in a lipid matrix.

Chapter 4 describes the method of O-mannosylation in mammalian cells. Two enzymes involved into this process have been identified and characterized. These are: protein-O-mannosyl- β -1,2-N-acetylglucosaminyl transferase and protein-O-mannosyl transferase 1.

Chapter 5 describes method of analysis of unusual forms of O-glycosylation: formation of O-fucosyl- and O-glucosyl carbohydrate structures.

Chapter 6 deals with methods of analysis of natural sialic acids. Now more than 62 compounds of this family have been identified.

Chapter 7 describes non-radioactive methods of screening of *trans*-sialidases based on fluorescent indication.

Chapter 8 deals with methods for determination of O-glycan structure by means of tandem mass-spectrometry.

Chapter 9 describes protocols of structural analysis of N-glycans, which are cleaved from glycoproteins by exoglycosidases. This analysis is based on SDS-PAGE and HPLC.

Chapter 10 describes approaches to molecular modeling of glycosyl transferases.

Chapter 11 is devoted to methods of analysis of expression of β -galactoside- α -2,6-sialyl transferases in animal cells. Asialotransferrin and N-acetylglucosamine are used as the main high and low molecular weight acceptor substrate, respectively.

Chapter 12 describes methodological approaches for visualization of intracellular distribution and activity of β 1,6-N-acetylglucosaminyl transferase-1 in animal tissues.

Analysis of methods of gene expression responsible for glycosylation with emphasis on polymerase chain reaction is considered in chapter 13. This chapter contains a wide table of genetic primers for genes encoding glycosyl transferases.

Chapter 14 is devoted to analysis of glycodynamic processes in primary osteoblasts and bone cancer cells. Major attention is paid to the methods registering biosynthesis of cell surface glycoproteins.

Chapter 15 considers micromethods for analysis of lipopolysaccharides of bacterial cells.

Chapter 16 contains protocols for analysis of activity of galactosyl transferase involved into biosynthesis of structural repeats of O7 antigen of *Escherichia coli*.

Chapter 17 describes methods of quantitative determination of anionic glycoconjugates by means of cationic dyes.

Chapter 18 describes a method for quantitative analysis of mucins from mucosal secretions by means of ELISA.

Chapters 19 and 20 describe molecular organization of mouse *zona pellucida* and soluble adamantly glycosphingolipid analogs, which provide an important tool for better understanding of biological functions of natural glycosphingolipids.

Chapter 21 deals with diagnostics of Crabbe disease by means of labeled natural substrate, galactosyl ceramide.

Chapter 22 describes methods for evaluation of functions of calnexin and calreticulin, which are the lectin chaperones of endoplasmic reticulum.

Chapter 23 is devoted to quantitative analysis of selectin–ligand interactions.

The last chapter (24) describes methods used for analysis of binding and inhibition of siglecs, immunoglobulin like lectins recognizing sialic acids.

I am confident that this is a very valuable handbook for a wide audience of specialists involved in studies of carbohydrates and carbohydrate-containing biopolymers:

glycobiologists, biochemists, bioorganic chemists, and molecular and cell biologists.

Each chapter contains a description of principle of a considered method, a list of required chemicals, sequential steps of the assay procedure, remarks for each step, and bibliography. Thus, this book helps rapid and effective setup of glycobiological methods and their successful employment in practice.

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