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BOOK REVIEW

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## **Methods in Molecular Biology, Vol. 194, Posttranslational Modifications of Proteins. Tools for Functional Proteomics**

**(Walker, J. M., Ser. ed., Kannicht, C., ed.,  
Humana Press, Totowa, New Jersey, 2002, 322 p., \$99.50)**

This book includes descriptions of many methods used in studies of various types of translation and post-translational modification of proteins. During the 2-3 recent decades impressive progress has been achieved in this field. Protein modification in biological systems is accompanied by changes in their physicochemical properties, conformation, stability, enzymatic activity, and other parameters. Moreover, certain types of protein modification can induce new properties of the modified protein molecule, and these properties are successfully used in biotechnology and pharmacology.

This book consists of 21 chapters that have been written by internationally distinguished experts. Analysis of protein modifications includes description of methods of detection of disulfide bonds by chemical degradation and mass spectrometry, determination of carbohydrate composition of glycoproteins using highly sensitive fluorescent detection, directed enzymatic hydrolysis of glycoproteins for preparation of N-glycans, their fluorescent labeling, and HPLC separation and determination of carbohydrate sequence. Some chapters of this book deal with immunological detection of O-GlcNAc carbohydrate-peptide bond in glycoproteins, analysis of specific glycosylation sites, and methods of fluorescent labeling of glycoproteins used as therapeutic agents. Other sections of this book describe methods of structural analysis and metabolic labeling of glycosylphosphatidylinositols from parasitic protozoa. Some chapters describe methods for analysis of S-acylation, methylation, phosphorylation, hydroxylation, and other types of post-ribosomal protein modification. The final chapter 21 deals with two-dimensional SDS gel electrophoresis of proteins. This method allows evaluating the charge and molecular mass changes of protein molecules after sialation/desialation or glycosylation/deglycosylation.

A large part of this book was reserved for description of methods for analysis of glycosylation/deglycosylation. Good evidence exists that this type of posttranslational modification is the most widespread type of protein modification, and it is functionally important for the appearance of new properties of protein molecules, which are effectively realized in many biological processes in cells and whole organisms. The importance of glycosylation/deglycosylation for properties of a protein molecules (such as half-life time, intercellular recognition, receptor and antigenic specificity) is also emphasized by a photograph of 2D-electrophoregram illustrating the effect of N-glycosylation on a protein molecule which the Editor, Dr. C. Kannicht, and Humana Press put on the cover of this book.

Each chapter of this book contains a short introduction, detailed protocol of certain methods, important remarks on each step of the described method, and bibliography that helps the reader find original descriptions of practical use of such method. Reproduction of each method is facilitated by the fact that all protocols include information on commercial firms and companies supplying reagents and equipment required for a particular analysis.

In conclusion I should say that this book is basically the first desk methodical handbook for studies of post-translational protein modification. It will definitely find appreciative readers among a wide audience of glycobiologists, biochemists, molecular biologists, biotechnologists, and researchers specializing in pharmacology and molecular medicine. This book will be a very useful tool for teachers and students of universities and institutes. Some chapters of this book can be recommended for a practical course for students specializing in the above mentioned fields.

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