

Contents

Contributors	vii
Preface	xi
Introduction	xiii
Editors-in-Chief	xvii
Volume Editors	xix

Volume 9 Modern Methods for the Investigation of Natural Products

01 Overview and Introduction	1
Lew Mander, <i>Australia National University, Canberra, ACT, Australia</i>	
02 High Performance Liquid Chromatographic Separation Methods	5
Reinhard I. Boysen and Milton T. W. Hearn, <i>Monash University, Melbourne, VIC, Australia</i>	
03 Introduction to Macromolecular X-Ray Crystallography	51
Esko Oksanen and Adrian Goldman, <i>University of Helsinki, Helsinki, Finland</i>	
04 Characterization by Circular Dichroism Spectroscopy	91
Nina Berova, George A. Ellestad, and Nobuyuki Harada, <i>Columbia University, New York, NY, USA</i>	
05 Determination of Structure including Absolute Configuration of Bioactive Natural Products	147
Kenji Mori, <i>The University of Tokyo, Tokyo, Japan</i>	
06 NMR – Small Molecules and Analysis of Complex Mixtures	169
Arthur S. Edison, <i>University of Florida, Gainesville, FL, USA</i>	
Frank C. Schroeder, <i>Cornell University, Ithaca, NY, USA</i>	
07 Biomolecular Recognition by Oligosaccharides and Glycopeptides: The NMR Point of View	197
Katalin E. Kövér, László Szilágyi, and Gyula Batta, <i>University of Debrecen, Debrecen, Hungary</i>	
Dušan Uhrín, <i>University of Edinburgh, Edinburgh, UK</i>	
Jesús Jiménez-Barbero, <i>Centro de Investigaciones Biológicas, Madrid, Spain</i>	
08 Determination of Three-Dimensional Structures of Nucleic Acids by NMR	247
Nikolai B. Ulyanov and Thomas L. James, <i>University of California, San Francisco, San Francisco, CA, USA</i>	
09 Derivation of Peptide and Protein Structure using NMR Spectroscopy	279
Glenn F. King and Mehdi Mobli, <i>The University of Queensland, St. Lucia, QLD, Australia</i>	
10 Mass Spectrometry: An Essential Tool for Trace Identification and Quantification	327
Charles H. Hocart, <i>Australian National University, Canberra, ACT, Australia</i>	
11 Applications of Modern Mass Spectrometry Techniques in Natural Products Chemistry	389
Roland D. Kersten, Michael J. Meehan, and Pieter C. Dorrestein, <i>University of California, San Diego, La Jolla, CA, USA</i>	

12	Mass Spectrometry: Structure Determination of Proteins and Peptides	457
	Chhabil Dass, <i>The University of Memphis, Memphis, TN, USA</i>	
13	Application of Mass Spectrometry to Rapid Analysis of Bacterial Polysaccharides	497
	Jianjun Li and Eleonora Altman, <i>Institute for Biological Sciences, Ottawa, ON, Canada</i>	
14	Modern Methods for the Isolation of Natural Product Receptors	513
	Peter Karuso, <i>Macquarie University, Sydney, NSW, Australia</i>	
15	Bioinformatics	569
	Yi-Ping Phoebe Chen, <i>Deakin University, Melbourne, VIC, Australia</i>	
	Elena P. Ivanova and Feng Wang, <i>Swinburne University of Technology, Melbourne, VIC, Australia</i>	
	Paolo Carloni, <i>International School for Advanced Studies, Trieste, Italy</i>	
16	Natural Products Research and Metabolomics	595
	V. Craig Trenerry and Simone J. Rochfort, <i>DPI-Werribee Centre, Werribee, VIC, Australia</i>	
17	Small Molecules as Versatile Tools for Activity-Based Protein Profiling Experiments	629
	Stephan A. Sieber, Thomas Böttcher, Isabell Staub, and Ronald Orth, <i>Ludwig-Maximilians-Universität München, Munich, Germany</i>	
18	Metabolic Studies Using the Retrobiosynthesis Concept – Theory, Technology, and Examples	675
	Adelbert Bacher and Wolfgang Eisenreich, <i>Technische Universität München, Garching, Germany</i>	
19	Bacterial Protein Overexpression Systems and Strategies	695
	C. Kinsland, <i>Cornell University, Ithaca, NY, USA</i>	
20	Directed Evolution of Enzymes	723
	Colin J. Jackson, <i>CSIRO Entomology, Black Mountain, ACT, Australia</i>	
	Elizabeth M. J. Gillam, <i>University of Queensland, St. Lucia, QLD, Australia</i>	
	David L. Ollis, <i>Australian National University, Canberra, ACT, Australia</i>	
21	Single Molecule Fluorescence Methods in Enzymology	751
	Peng Chen and Nesha May Andoy, <i>Cornell University, Ithaca, NY, USA</i>	