

Contents

Contributors	vii
Preface	xi
Introduction	xiii
Editors-in-Chief	xvii
Volume Editors	xix
 Volume 1 Natural Products Structural Diversity-I Secondary Metabolites: Organization and Biosynthesis	
01 Overview and Introduction	1
Craig A. Townsend, <i>Johns Hopkins University, Baltimore, MD, USA</i>	
02 Unsaturated Fatty Acids	5
Peter H. Buist, <i>Carleton University, ON, Canada</i>	
03 Prostaglandin Endoperoxide Synthases: Structure, Function, and Synthesis of Novel Lipid Signaling Molecules	35
Melissa V. Turman and Lawrence J. Marnett, <i>Vanderbilt University School of Medicine, Nashville, TN, USA</i>	
04 Mycolic Acid/Cyclopropane Fatty Acid/Fatty Acid Biosynthesis and Health Relations	65
David B. Kasrinsky, Nicholas S. McBride, Keriann M. Backus, Jason J. LeBlanc, and Clifton E. Barry, III, <i>National Institutes of Health, Bethesda, MD, USA</i>	
05 Microbial Type III Polyketide Synthases	147
Yohei Katsuyama and Sueharu Horinouchi, <i>The University of Tokyo, Bunkyo-ku, Tokyo, Japan</i>	
06 Plant Type III PKS	171
Hiroyuki Morita and Ikuro Abe, <i>The University of Tokyo, Hongo, Tokyo, Japan</i> Hiroshi Noguchi, <i>University of Shizuoka, Yada, Shizuoka, Japan</i>	
07 Type II PKS	227
Jürgen Rohr, <i>University of Kentucky, Lexington, KY, USA</i> Christian Hertweck, <i>Leibniz Institute for Natural Product Research and Infection Biology, HKI, Jena, Germany</i>	
08 Structural Enzymology of Polyketide Synthase: The Structure–Sequence–Function Correlation	305
Tyler Paz Korman, Brian Ames, and Shiou-Chuan (Sheryl) Tsai, <i>University of California, Irvine, CA, USA</i>	
09 Fungal Type I Polyketides	347
Russell J. Cox and Thomas J. Simpson, <i>University of Bristol, Bristol, UK</i>	

10	Type I Modular PKS Alison M. Hill, <i>University of Exeter, Exeter, UK</i> James Staunton, <i>University of Cambridge, Cambridge, UK</i>	385
11	NRPS/PKS Hybrid Enzymes and Their Natural Products Christopher M. Rath, Jamie B. Scaglione, Jeffrey D. Kittendorf, and David H. Sherman, <i>Life Sciences Institute University of Michigan, Ann Arbor, MI, USA</i>	453
12	Mevalonate Pathway in Bacteria and Archaea Tomohisa Kuzuyama, <i>The University of Tokyo, Tokyo, Japan</i> Hisashi Hemmi, <i>Nagoya University, Nagoya, Japan</i> Shunji Takahashi, <i>RIKEN, Advanced Science Institute, Saitama, Japan</i>	493
13	Methylerythritol Phosphate Pathway Michel Rohmer, <i>Université de Strasbourg/CNRS, Strasbourg, France</i>	517
14	Prenyltransferase Hirofumi Kurokawa and Tanetoshi Koyama, <i>Toboku University, Sendai, Japan</i>	557
15	Advances in the Enzymology of Monoterpene Cyclization Reactions Edward M. Davis, <i>Washington State University, Pullman, WA, USA</i>	585
16	Sesquiterpenes Joe Chappell, <i>University of Kentucky, Lexington, KY, USA</i> Robert M. Coates, <i>University of Illinois, Urbana, IL, USA</i>	609
17	Diterpenes Tomonobu Toyomasu and Takeshi Sassa, <i>Yamagata University, Tsuruoka, Japan</i>	643
18	Triterpenes Tetsuo Kushiro and Yutaka Ebizuka, <i>The University of Tokyo, Tokyo, Japan</i>	673
19	Bacterial Squalene Cyclase Ikuro Abe, <i>The University of Tokyo, Hongo, Tokyo, Japan</i>	709
20	Carotenoids Norihiko Misawa, <i>Kirin Holdings Co. Ltd., Nonoichi-machi, Ishikawa, Japan</i>	733
21	Sterol and Steroid Biosynthesis and Metabolism in Plants and Microorganisms Hubert Schaller, <i>Université de Strasbourg and CNRS, Strasbourg, France</i>	755
22	Isoprenoid in Actinomycetes Tohru Dairi, <i>Toyama Prefectural University, Toyama, Japan</i>	789
23	Lignans (Neolignans) and Allyl/Propenyl Phenols: Biogenesis, Structural Biology, and Biological/Human Health Considerations Daniel G. Vassão, Kye-Won Kim, Laurence B. Davin, and Norman G. Lewis, <i>Washington State University, Pullman, WA, USA</i>	815
24	Plant Phenolics: Phenylpropanoids Shin-ichi Ayabe, Hiroshi Uchiyama, Toshio Aoki, and Tomoyoshi Akashi, <i>Nihon University, Fujisawa, Japan</i>	929
25	Alkaloids Sarah E. O'Connor, <i>Massachusetts Institute of Technology, Cambridge, MA, USA</i>	977