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Mass Spectrometry-Based Lipidomics

Methods and Protocols

Edited by

Fong-Fu Hsu

Mass Spectrometry Resource, Division of Endocrinology, Metabolism, and Lipid Research, Department of Medicine, Washington University School of Medicine, St. Louis, MO, USA

Humana Press

Editor
Fong-Fu Hsu
Mass Spectrometry Resource
Division of Endocrinology
Metabolism, and Lipid Research
Department of Medicine
Washington University School of Medicine
St. Louis, MO, USA

ISSN 1064-3745 ISSN 1940-6029 (electronic)
Methods in Molecular Biology
ISBN 978-1-0716-1409-9 ISBN 978-1-0716-1410-5 (eBook)
https://doi.org/10.1007/978-1-0716-1410-5

Preface

Over the past decade, there have been tremendous advancements in mass spectrometric techniques in lipid identification and quantification. This book presents an account of these advances. In this issue of the *Methods in Molecular Biology* series, 20 chapters are assembled covering conventional MS-based "shotgun lipidomics" by which samples are introduced by infusion or loop injection, as well as LC-MS-based lipidomics, which are becoming increasingly important due to the ever-increasing demand for a complete and precise lipid analysis of the complex and diversified lipids in nature. This book includes protocols applying chemical reactions, online photochemical reactions combined with various MS methods for comprehensive characterization of various lipid classes, and quantification of specific and rare lipids. Methodologies with hyphenated techniques, such as ion mobility, and techniques such as offline sample purification with TLC, SPE, and semi-preparative LC for separating lipids from various biological specimens are also included. Of importance, pertinent examples that highlight the key role of the state-of-the-art MS methods employing ESI high resolution MS^n ($n = 2, 3$) mass spectrometry to profile the lipidome of the model organism from eukaryotic and bacterial systems for biological researches, and the traditional triple quadrupole and MALDI-TOF-TOF mass spectrometry for quantitative and qualitative analysis of specific lipid classes, as well as MALDI-TOF for imaging, are all covered in the book. This book is a collection of the expertise of many contributors in their fields. It is hoped that the book is useful for biochemists and mass spectroscopists who are interested in lipid studies. It is noteworthy that various nomenclature systems have been used, and the abbreviations, nomenclatures, and lipid classification published by LIPID MAPS consortium [1] with/without modification are adopted in this book.

St. Louis, MO, USA *Fong-Fu Hsu*

Reference

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Contents

Contributors

Sara Elsa Aita • *Department of Chemistry, Università di Roma "La Sapienza", Rome, Italy*

Laganà Aldo • *Department of Chemistry, Università di Roma "La Sapienza", Rome, Italy; CNR NANOTEC, Campus Ecotekne, University of Salento, Lecce, Italy*

Giuseppe Cannazza • *Department of Life Sciences, University of Modena and Reggio Emilia, Modena, Italy; CNR NANOTEC, Campus Ecotekne, University of Salento, Lecce, Italy*

Anna Laura Capriotti • *Department of Chemistry, Università di Roma "La Sapienza", Rome, Italy*

Andrea Cerrato • *Department of Chemistry, Università di Roma "La Sapienza", Rome, Italy*

Guan-yuan Chen • *Center for Translational Biomedical Research, University of North Carolina at Greensboro, Kannapolis, NC, USA; Graduate Institute of Forensic Medicine, National Taiwan University, Taipei, Taiwan*

Jianzhong Chen • *Department of Optometry and Vision Science, The University of Alabama at Birmingham, Birmingham, AL, USA*

Cinzia Citti • *Department of Life Sciences, University of Modena and Reggio Emilia, Modena, Italy; CNR NANOTEC, Campus Ecotekne, University of Salento, Lecce, Italy*

Maurizio Del Poeta • *Department of Microbiology and Immunology, Stony Brook University, Stony Brook, NY, USA; Division of Infectious Diseases, Stony Brook University, Stony Brook, NY, USA; Veterans Affairs Medical Center, Northport, NY, USA*

Abdeljalil El Habti • *Research School of Biology, Australian National University, Canberra, ACT, Australia*

Cheryl Frankfater • *Division of Endocrinology, Metabolism, and Lipid Research, Department of Medicine, Washington University School of Medicine, St. Louis, MO, USA*

Esther Xue Yi Goh • *Lee Kong Chian School of Medicine, Nanyang Technological University, Singapore, Singapore*

Xue Li Guan • *Lee Kong Chian School of Medicine, Nanyang Technological University, Singapore, Singapore*

Xianlin Han • *Barshop Institute for Longevity and Aging Studies, University of Texas Health Science Center at San Antonio, San Antonio, TX, USA; Department of Medicine—Diabetes, University of Texas Health Science Center at San Antonio, San Antonio, TX, USA*

Rachel A. Harris • *Center for Innovative Technology, Department of Chemistry, Vanderbilt Institute of Chemical Biology, Vanderbilt Institute for Integrative Biosystems Research and Education, Vanderbilt-Ingram Cancer Center, Vanderbilt University, Nashville, TN, USA*

Charles H. Hocart • *Research School of Biology, Australian National University, Canberra, ACT, Australia; Isotopomics in Chemical Biology Group, School of Chemistry and Chemical Engineering, Shaanxi University of Science and Technology, Xi'an, China*

Vinzenz Hofferek • *School of Chemistry, The University of Melbourne, Parkville, VIC, Australia*
Fong-Fu Hsu • *Mass Spectrometry Resource, Division of Endocrinology, Metabolism, and Lipid Research, Department of Medicine, Washington University School of Medicine, St. Louis, MO, USA*
Qingyuan Hu • *State Key Laboratory of Precision Measurement Technology and Instruments, Department of Precision Instrument, Tsinghua University, Beijing, China*
Gabriel O. James • *Research School of Biology, Australian National University, Canberra, ACT, Australia*
Harald C. Köfeler • *Core Facility Mass Spectrometry, Medical University of Graz, Graz, Austria*
Gérald Larrouy-Maumus • *MRC Centre for Molecular Bacteriology and Infection, Department of Life Sciences, Faculty of Natural Sciences, Imperial College London, London, UK*
Katrina L. Leaptrot • *Center for Innovative Technology, Department of Chemistry, Vanderbilt Institute of Chemical Biology, Vanderbilt Institute for Integrative Biosystems Research and Education, Vanderbilt-Ingram Cancer Center, Vanderbilt University, Nashville, TN, USA*
Meei-Hua Lin • *Division of Nephrology, Department of Medicine, Washington University School of Medicine, St. Louis, MO, USA*
Chengyuan Liu • *National Synchrotron Radiation Laboratory, University of Science and Technology of China, Hefei, China*
Xiaoxiao Ma • *State Key Laboratory of Precision Measurement Technology and Instruments, Department of Precision Instrument, Tsinghua University, Beijing, China*
Jody C. May • *Center for Innovative Technology, Department of Chemistry, Vanderbilt Institute of Chemical Biology, Vanderbilt Institute for Integrative Biosystems Research and Education, Vanderbilt-Ingram Cancer Center, Vanderbilt University, Nashville, TN, USA*
John A. McLean • *Center for Innovative Technology, Department of Chemistry, Vanderbilt Institute of Chemical Biology, Vanderbilt Institute for Integrative Biosystems Research and Education, Vanderbilt-Ingram Cancer Center, Vanderbilt University, Nashville, TN, USA*
Jeffrey H. Miner • *Division of Nephrology, Department of Medicine, Washington University School of Medicine, St. Louis, MO, USA; Department of Cell Biology and Physiology, Washington University School of Medicine, St. Louis, MO, USA*
Carmela Maria Montone • *Department of Chemistry, Università di Roma "La Sapienza", Rome, Italy*
Meixia Pan • *Barshop Institute for Longevity and Aging Studies, University of Texas Health Science Center at San Antonio, San Antonio, TX, USA*
Yang Pan • *National Synchrotron Radiation Laboratory, University of Science and Technology of China, Hefei, China*
Susy Piovesana • *Department of Chemistry, Università di Roma "La Sapienza", Rome, Italy*
Fei Qi • *Key Laboratory for Power Machinery and Engineering of Ministry of Education, Shanghai Jiao Tong University, Shanghai, China*
Chao Qin • *Barshop Institute for Longevity and Aging Studies, University of Texas Health Science Center at San Antonio, San Antonio, TX, USA*

Gavin E. Reid • *School of Chemistry, The University of Melbourne, Parkville, VIC, Australia; Department of Biochemistry and Pharmacology, The University of Melbourne, Parkville, VIC, Australia; Bio21 Molecular Science and Biotechnology Institute, The University of Melbourne, Parkville, VIC, Australia*

Bailey S. Rose • *Center for Innovative Technology, Department of Chemistry, Vanderbilt Institute of Chemical Biology, Vanderbilt Institute for Integrative Biosystems Research and Education, Vanderbilt-Ingram Cancer Center, Vanderbilt University, Nashville, TN, USA*

Stacy D. Sherrod • *Center for Innovative Technology, Department of Chemistry, Vanderbilt Institute of Chemical Biology, Vanderbilt Institute for Integrative Biosystems Research and Education, Vanderbilt-Ingram Cancer Center, Vanderbilt University, Nashville, TN, USA*

Ashutosh Singh • *Department of Biochemistry, University of Lucknow, Lucknow, Uttar Pradesh, India*

Huaqi Su • *Department of Biochemistry and Pharmacology, The University of Melbourne, Parkville, VIC, Australia; The Florey Institute of Neuroscience and Mental Health, The University of Melbourne, Parkville, VIC, Australia*

Raju V. V. Tatituri • *Division of Rheumatology, Immunology, and Allergy, Brigham and Women's Hospital, Harvard Medical School, Boston, MA, USA*

Martin Trötzmüller • *Core Facility Mass Spectrometry, Medical University of Graz, Graz, Austria*

Hay-Yan J. Wang • *Department of Biological Sciences, National Sun Yat-Sen University, Kaohsiung, Taiwan; Mass Spectrometry Resource, Division of Endocrinology, Diabetes, Metabolism, and Lipid Research, Washington University School of Medicine, St. Louis, MO, USA*

Yu Xia • *Department of Chemistry, Tsinghua University, Beijing, China*

Kai Zhang • *Department of Biological Sciences, Texas Tech University, Lubbock, TX, USA*

Qibin Zhang • *Center for Translational Biomedical Research, University of North Carolina at Greensboro, Kannapolis, NC, USA; Department of Chemistry & Biochemistry, University of North Carolina at Greensboro, Greensboro, NC, USA*

Thomas Züllig • *Core Facility Mass Spectrometry, Medical University of Graz, Graz, Austria*