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Approach; 3.5.4 Targeted LC-MS Lipidomics; 3.6 Data Processing and Evaluation; 3.7 Lipidomic Workflows; 3.8 Conclusions and Future Perspectives; References; 4 Multidimensional Mass Spectrometry-Based Shotgun Lipidomics; 4.1 Introduction; 4.2 Multidimensional Mass Spectrometry-Based Shotgun Lipidomics; 4.2.1 Intrasource Separation; 4.2.2 The Principle of Multidimensional Mass Spectrometry; 4.2.3 Variables in Multidimensional Mass Spectrometry; 4.2.3.1 Variables in Fragment Monitoring by Tandem MS Scans 4.2.3.2 Variables Related to the Infusion Conditions 4.2.3.3 Variables under Ionization Conditions; 4.2.3.4 Variables under Collision Conditions; 4.2.3.5 Variables Related to the Sample Preparations; 4.3 Application of Multidimensional Mass Spectrometry-Based Shotgun Lipidomics for Lipidomic Analysis; 4.3.1 Identification of Lipid Molecular Species by 2D Mass Spectrometry; 4.3.1.1 Identification of Anionic Lipids; 4.3.1.2 Identification of Weakly Anionic Lipids; 4.3.1.3 Identification of Charge Neutral but Polar Lipids; 4.3.1.4 Identification of Sphingolipids 4.3.1.5 The Concerns of the MDMS-Based Shotgun Lipidomics for Identification of Lipid Species 4.3.2 Quantification of Lipid Molecular Species by MDMS-Based Shotgun Lipidomics; 4.3.2.1 The Principle of Quantification of Individual Lipid Species by MS; 4.3.2.2 Quantification by Using a Two-Step Procedure in MDMS-Based Shotgun Lipidomics; 4.3.2.3 Quantitative Analysis of PEX7 Mouse Brain Lipidome by MDMS-Based Shotgun Lipidomics; 4.4 Conclusions; References; 5 Targeted Lipidomics: Sphingolipidomics; 5.1 Introduction; 5.2 Sphingolipids Description and Nomenclature 5.3 Sphingolipids Analysis via Targeted LC-MS/MS

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#### Sommario/riassunto

Focusing on the practical applications, this user-oriented guide presents current technologies and strategies for systems-level lipid analysis, going beyond basic research to concentrate on commercial uses of lipidomics in biomarker and diagnostic development, as well as within pharmaceutical drug discovery and development. The editor and authors have experience of the most recent analytical instruments and techniques, allowing them to provide here first-hand practical experience for newcomers to the field. The first half of the book covers current methodologies, ranging from global to tar

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