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Mass Spectrometry-Based Lipidomics

Methods and Protocols

Edited by

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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 MSⁿ ($n = 2, 3$) 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

1. Fahy E et al (2005) A comprehensive classification system for lipids. *J Lipid Res* 46(5):839–861

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