

1. Record Nr.	UNINA9911019632503321
Autore	Hughes William
Titolo	Origins and Synthesis of Amino Acids. Vol. 1
Pubbl/distr/stampa	[Place of publication not identified], : Wiley VCH Imprint, 2009
ISBN	3-527-63176-3
Descrizione fisica	1 online resource (xix, 701 pages)
Disciplina	547.750459
Soggetti	Amino acids - Synthesis Amino acids Peptides Proteins
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	List of Contributors XV 1 Mass Spectrometry of Amino Acids and Proteins 1 Simin D. Maleknia and Richard Johnson 1.1 Introduction 1 1.2 Basic Protein Chemistry and How it Relates to MS 21 1.3 Sample Preparation and Data Acquisition 28 1.4 Data Analysis of LC-MS/MS (or CE-MS/MS) of Mixtures 32 1.5 MS of Protein Structure, Folding, and Interactions 36 1.6 Conclusions and Perspectives 40 References 40 2 X-Ray Structure Determination of Proteins and Peptides 51 Andrew J. Fisher 2.1 Introduction 51 2.2 Growing Crystals 55 2.3 Symmetry and Space Groups 62 2.4 X-Ray Scattering and Diffraction 67 2.5 Collecting and Processing Diffraction Data 82 2.6 Solving the Structure (Determining Phases) 83 2.7 Analyzing and Refining the Structure 90 References 94 3 Nuclear Magnetic Resonance of Amino Acids, Peptides, and Proteins 97 Andrea Bernini and Pierandrea Temussi 3.1 Introduction 97 3.2 Amino Acids 101 3.3 Peptides 113 3.4 Proteins 129 3.5 Conclusions 145 References 146 4 Structure and Activity of N-Methylated Peptides 155 Raymond S. Norton 4.1 Introduction 155 4.2 Conformational Effects of N-Methylation 157 4.3 Effects of N-Methylation on Bioactive Peptides 159 4.4 Concluding Remarks 162 References 163 5 High-Performance Liquid Chromatography of Peptides and Proteins 167 Reinhard I. Boysen and Milton T.W. Hearn 5.1 Introduction 167 5.2 Basic Terms and Concepts in Chromatography

169	5.3 Chemical Structure of Peptides and Proteins	173	5.4 HPLC Separation Modes in Peptide and Protein Analysis
177	5.5 Method Development from Analytical to Preparative Scale Illustrated for HP-RPC	189	5.6 Multidimensional HPLC
198	5.7 Conclusions	206	References
207	6 Local Surface Plasmon Resonance and Electrochemical Biosensing Systems for Analyzing Functional Peptides	211	Masato Saito and Eiichi Tamiya
211	6.1 Localized Surface Plasmon Resonance (LSPR)-Based Microfluidics Biosensor for the Detection of Insulin Peptide Hormone	215	6.2 Electrochemical LSPR-Based Label-Free Detection of Melittin
218	6.3 Label-Free Electrochemical Monitoring of b-Amyloid (Ab) Peptide Aggregation	221	References
225	7 Surface Plasmon Resonance Spectroscopy in the Biosciences	225	Jing Yuan, Yinqiu Wu, and Marie-Isabel Aguilar
225	7.1 Introduction	225	7.2 SPR-Based Optical Biosensors
226	7.3 Principle of Operation of SPR Biosensors	226	7.4 Description of a SPR Instrument
228	7.5 Application of SPR in Immunosensor Design	230	7.6 Application of SPR in Membrane Interactions
234	7.7 Data Analysis	240	7.8 Conclusions
243	References	244	8 Atomic Force Microscopy of Proteins
249	Adam Mechler	249	8.1 Foreword
250	8.2 AFM	250	8.3 Bioimaging Highlights
253	8.4 Issues	261	8.5 Force Measurements
269	8.6 Liquid Imaging	269	8.7 Sample Preparation for Bioimaging
272	8.8 Outlook	274	References
275	9 Solvent Interactions with Proteins and Other Macromolecules	277	Satoshi Ohtake, Yoshiko Kita, Kouhei Tsumoto, and Tsutomu Arakawa
277	9.1 Introduction	277	9.2 Solvent Applications
280	9.3 Solvent Application for Viruses	300	9.4 Solvent Application for DNA
310	9.5 Mechanism	314	9.6 Protein-Solvent Interactions in Frozen and Freeze-Dried Systems
342	9.7 Conclusions	348	References
349	10 Role of Cysteine	361	Lalla A. Ba, Torsten Burkholz, Thomas Schneider, and Claus Jacob
361	10.1 Sulfur: A Redox Chameleon with Many Faces	361	10.2 Three Faces of Thiols: Nucleophilicity, Redox Activity, and Metal Binding
365	10.3 Towards a Dynamic Picture of Disulfide Bonds	371	10.4 Chemical Protection and Regulation via S-Thiolation
374	10.5 "Dormant" Catalytic Sites	378	10.6 Peroxiredoxin/Sulfiredoxin Catalysis and Control Pathway
379	10.7 Higher Sulfur Oxidation States: From the Shadows to the Heart of Biological Sulfur Chemistry	384	10.8 Cysteine as a Target for Oxidants, Metal Ions, and Drug Molecules
388	10.9 Conclusions and Outlook	390	References
391	11 Role of Disulfide Bonds in Peptide and Protein Conformation	395	Keith K. Khoo and Raymond S. Norton
395	11.1 Introduction	395	11.2 Probing the Role of Disulfide Bonds
396	11.3 Contribution of Disulfide Bonds to Protein Stability	396	11.4 Role of Disulfide Bonds in Protein Folding
397	11.5 Role of Individual Disulfide Bonds in Protein Structure	399	11.6 Disulfide Bonds in Protein Dynamics
401	11.7 Disulfide Bonding Patterns and Protein Topology	403	11.8 Applications
408	11.9 Conclusions	409	References
410	12 Quantitative Mass Spectrometry-Based Proteomics	419	Shao-En Ong
419	12.1 Introduction	419	12.2 Quantification in Biological MS
420	12.3 Identifying Proteins Interacting with Small Molecules with Quantitative Proteomics	430	12.4 Conclusions
433	References	434	13 Two-Dimensional Gel Electrophoresis and Protein/Polypeptide Assignment
439	Takashi Manabe and Ya Jin	439	13.1 Introduction
439	13.2 Aim of Protein Analysis and Development of 2-DE Techniques	439	13.3 Current Status of 2-DE Techniques
441	13.4 Development of Protein Assignment Techniques on 2-DE Gels and Current Status of Mass Spectrometric Techniques	452	13.5 Conclusions
460	References	460	14 Bioinformatics Tools for Detecting Post-Translational Modifications in Mass Spectrometry Data
463	Patricia M. Palagi, Erik Arhne, Markus Muller, and Frederique Lisacek	463	14.1 Introduction
463	14.2 PTM Discovery with MS	465	14.3 Database Resources for PTM Analysis
470		470	

---

Sommario/riassunto

Closing a gap in the literature, this is the only book series in 6 volumes to cover this important topic in organic and biochemistry. Drawing upon the combined expertise of the international "who's who" in amino acid research, this series is a real benchmark for amino acid chemistry, providing a comprehensive discussion of the occurrence, uses and applications of amino acids and, by extension, their polymeric forms, peptides and proteins. The practical value of each volume is heightened by the inclusion of experimental procedures.

---