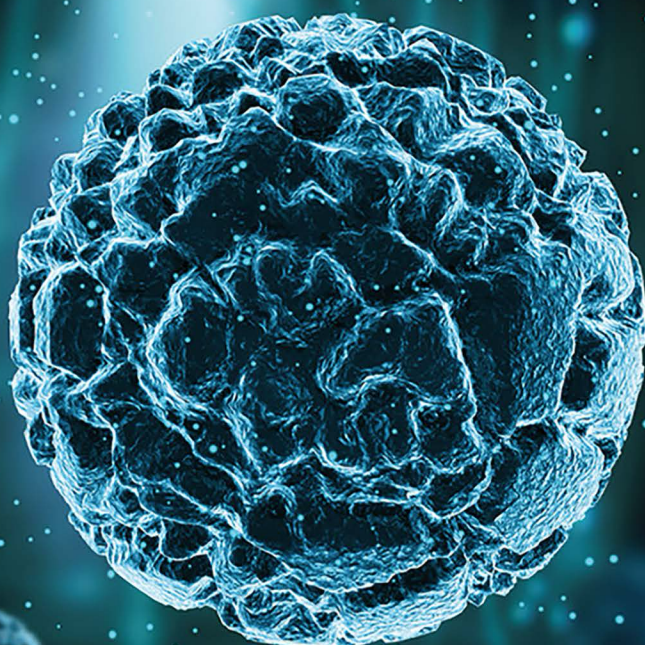
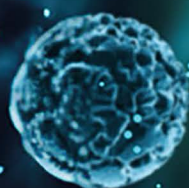


ADIL DENİZLİ SERIES

PROTEOMICS



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PREFACE

In recent years, significant advancements in biotechnology, genetics, and medicine have propelled scientific research toward greater depth and complexity. As molecular biology continues to evolve, the field of proteomics has emerged as a critical area of study, following the progress made in genomics. Proteins serve as fundamental components of biological systems, playing essential roles in cellular functions and regulatory mechanisms. By investigating the structure, function, interactions, and dynamic alterations of proteins, proteomics provides invaluable insights into biological processes, disease mechanisms, and therapeutic strategies.

With its expanding role in biomedical research, proteomics has become indispensable in modern medicine. Its applications facilitate early disease detection, more effective treatment strategies, and the advancement of precision medicine. Contemporary proteomic methodologies are proving instrumental in the diagnosis and treatment of various critical health conditions, including cancer, neurodegenerative disorders, autoimmune diseases, and infectious illnesses. Given its profound impact on healthcare and life sciences, a comprehensive understanding of proteomics is now essential for scientists engaged in biomedical and clinical research.

This volume presents a thorough examination of proteomics, encompassing fundamental principles, cutting-edge methodologies, and emerging applications in medicine. The opening chapter, “Proteomics and General Principles,” introduces core concepts, methodologies, and the significance of protein analysis in biological research. The subsequent chapter, “Proteomics in Medicine: Emerging Techniques and Applications,” explores innovative proteomic technologies and their implications for disease diagnosis and therapeutic interventions.

A crucial aspect of proteomic research involves the separation and identification of proteins. “Analytical Methods in Proteomics Analysis: Methodology for Separation and Identification of Proteins and Their Interactions” provides a detailed discussion of advanced techniques for protein fractionation, characterization, and interaction studies. Additionally, “Affinity Capillary Electrophoresis for Proteomics” offers an in-depth analysis of capillary electrophoresis and its utility in proteomic investigations.

With the increasing emphasis on personalized medicine, proteomics plays a pivotal role in tailoring medical treatments to individual patient profiles. “Recent Proteomics Applications Towards Personalized/Precision Medicine” examines the latest developments in proteomic approaches and their contributions to the field

of precision medicine. Furthermore, “Protein Depletion Studies for Proteomics” underscores the importance of protein depletion techniques in enhancing the accuracy and reliability of proteomic analyses.

Biosensor technology has emerged as a powerful tool in proteomic research, offering high sensitivity and specificity in protein detection. “Biosensor Applications for Proteomic Analysis” explores the applications of biosensors in proteomics, outlining their advantages and future potential. Additionally, detecting low-abundance proteins remains a significant challenge in proteomic studies. “Detection of Low Abundance Proteins” addresses this issue by presenting advanced methodologies for identifying and quantifying scarce proteins.

The integration of nanotechnology into biomedical research has opened new frontiers for proteomic analysis. “Quantum Dots for Proteomics Analysis” examines the utilization of quantum dots in proteomic studies, highlighting their unique properties and potential applications. Lastly, “Immuno-Affinity Chromatography for Antibody Depletion” provides a comprehensive discussion on immuno-affinity chromatography and its role in antibody depletion techniques employed in proteomic investigations.

This book serves as a valuable resource for researchers, academics, medical professionals, and biotechnology specialists who seek to expand their knowledge of proteomics. As proteomics continues to redefine the landscape of biomedical research and clinical applications, this volume aims to provide both foundational insights for emerging scientists and advanced technical knowledge for experienced professionals.

It is our hope that this work will contribute to the advancement of proteomic science, fostering new research endeavors in biomedical sciences, biotechnology, and precision medicine. May it serve as a valuable reference for all those engaged in proteomic research and inspire further innovation in this rapidly evolving field.

Adil Denizli

Nilay Bereli

Denizli Türkmen

Contents

CHAPTER 1-PROTEOMICS AND GENERAL PRINCIPLES	1-7
Bilgen Osman ¹ and Adil Denizli ²	
¹ Uludağ University, Department of Chemistry, Bursa, Turkey.	
² Hacettepe University, Department of Chemistry, Beytepe, Ankara, Turkey.	
CHAPTER 2-PROTEOMICS IN MEDICINE: EMERGING TECHNIQUES AND APPLICATIONS	9-34
Rüstem Keçili ¹ and Adil Denizli ²	
¹ Anadolu University, Yunus Emre Vocational School of Health Services, Department of Medical Services and Techniques, Eskişehir, Turkey.	
² Hacettepe University, Department of Chemistry, Beytepe, Ankara, Turkey.	
CHAPTER 3-AFFINITY CAPILLARY ELECTROPHORESIS FOR PROTEOMICS	35-108
İlgım Göktürk ¹ , Süleyman Aşır ² , Fatma Yılmaz ³ , Deniz Türkmen ¹ , Adil Denizli ¹	
¹ Hacettepe University, Department of Chemistry, Beytepe, Ankara, Turkey.	
² Near East University, Department of Materials Science and Nanotechnology. Engineering, Nicosia, North Cyprus, Turkey.	
³ Abant İzzet Baysal University, Chemistry Technology Division, Bolu, Turkey.	
CHAPTER 4-ANALYTICAL METHODS IN PROTEOMICS ANALYSIS: METHODOLOGY FOR SEPARATION AND IDENTIFICATION OF PROTEINS AND THEIR INTERACTIONS	109-144
Dilek Battal ^{1,2}	
¹ Mersin University, Faculty of Pharmacy, Department of Toxicology, Mersin, Turkey.	
² Near East University, Faculty of Pharmacy, Department of Toxicology, Nicosia, Cyprus.	
CHAPTER 5-RECENT PROTEOMICS APPLICATIONS TOWARDS PERSONALIZED/ PRECISION MEDICINE	145-153
Merve Çalışır and Adil Denizli	
Hacettepe University, Department of Chemistry, Beytepe, Ankara, Turkey	
CHAPTER 6-PROTEIN DEPLETION STUDIES FOR PROTEOMICS	155-173
Sevgi Aslıyüce ¹ , Neslihan Idil ² , Bo Mattiasson ^{3,4}	
¹ Hacettepe University, Department of Chemistry, Beytepe, Ankara, Turkey.	
² Hacettepe University, Department of Biology, Ankara, Turkey.	
³ Lund University, Division of Biotechnology, Lund, Sweden.	
⁴ Indienz AB, Annebergs Gärd, Billeberga, Sweden.	
CHAPTER 7-BIOSENSOR APPLICATIONS FOR PROTEOMIC ANALYSIS	175-187
Sinem Diken Gür ¹ , Monireh Bakhshpour ² , Adil Denizli ³	
¹ Hacettepe University, Department of Biology, Beytepe, Ankara, Turkey.	
² Uludağ University, Department of Chemistry, Görükle, Bursa, Turkey.	
³ Hacettepe University, Department of Chemistry, Beytepe, Ankara, Turkey.	
CHAPTER 8-DETECTION OF LOW ABUNDANCE PROTEINS	189-206
Duygu Çimen and Adil Denizli	
Hacettepe University, Department of Chemistry, Beytepe, Ankara, Turkey.	
CHAPTER 9-QUANTUM DOTS FOR PROTEOMICS ANALYSIS	207-221
Aykut Arif Topçu ¹ , Erdoğan Özgür ² , Nilay Bereli ²	
¹ Aksaray University, Medical Laboratory Program, Vocational Scholl of Health Service, Aksaray, Turkey.	
² Hacettepe University, Department of Chemistry, Beytepe, Ankara, Turkey.	
CHAPTER 10-IMMUNO-AFFINITY CHROMATOGRAPHY FOR ANTIBODY DEPLETION	223-234
Semra Akgönüllü, Nilay Bereli, Handan Yavuz, Adil Denizli	
Hacettepe University, Department of Chemistry, Beytepe, Ankara, Turkey.	
INDEX	235-252