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Nota di contenuto	APTAMERS IN BIOANALYSIS; CONTENTS; PREFACE; CONTRIBUTORS; I INTRODUCTION; 1 APTAMERS: LIGANDS FOR ALL REASONS; 1.1 Introduction; 1.2 The Power of Selection and Aptamer Refinement; 1.3 The Chemistry Drives the Shape; 1.4 Aptaregulators; 1.5 Aptasensors; 1.6 Prospects; References; 2 SELEX AND ITS RECENT OPTIMIZATIONS; 2.1 Introduction; 2.2 Aptamers and Their Selection by SELEX; 2.3 Modifications of SELEX Technology; 2.4 Advantages and Limitations of Aptamers and Their Selection Technology; 2.5 Applications of Aptamers Being Developed for the Market; 2.6 Future Perspectives; References II BIOSENSORS3 ELECTROCHEMICAL APTASENSORS; 3.1 Introduction; 3.2 Electrochemical Aptasensor Based on Redox-Active Aptamer Monolayers Linked to Electrodes; 3.3 Enzyme-Based Amplified Electrochemical Aptasensors; 3.4 Amplified Electrochemical Aptasensors Based on Nanoparticles; 3.5 Label-Free Electrochemical Aptasensors; 3.6 Field-Effect Transistor-Based Aptasensors; 3.7 Conclusions and Perspectives; References; 4 APTAMERS: HYBRIDS BETWEEN NATURE AND TECHNOLOGY; 4.1 Introduction; 4.2 Specific Features of Aptamers; 4.3 Electrochemical Detection of Nucleic Acids 4.4 Cytochrome c Binding by Aptamers4.5 DNA Machines and Aptamers; References; 5 DETECTION OF PROTEIN-APTAMER INTERACTIONS BY MEANS OF ELECTROCHEMICAL INDICATORS AND TRANSVERSE SHEAR MODE METHOD; 5.1 Introduction; 5.2 Immobilization of Aptamers on a Solid Support; 5.3 Detection of Aptamer-Ligand Interactions; 5.3.1 Electrochemical Methods; 5.3.2 Acoustic Methods; 5.4 Conclusions; References; 6 BIOSENSORS USING THE APTAMERIC ENZYME SUBUNIT: THE USE OF APTAMERS IN THE ALLOSTERIC CONTROL OF ENZYMES; 6.1 Aptamers as Molecular Recognition Elements of Biosensors 6.1.1 Comparing Aptamers to Antibodies6.1.2 Signaling Aptamers; 6.2 Homogeneous Sensing; 6.2.1 Biosensor Systems That Do Not Require Bound-Free Separation; 6.2.2 Aptameric Enzyme Subunit; 6.3 Evolution-mimicking Algorithm for the Improvement of Aptamers; References; 7 NANOMATERIAL-BASED LABEL-FREE APTASENSORS; 7.1 Introduction; 7.2 Label-Free Electrochemical Aptasensors; 7.3 Field-Effect Transistor-Based Aptasensors; 7.4 Label-Free Aptasensors Based on Localized Surface Plasmon Resonance; 7.5 Forthcoming Challenges and Concluding Remarks; References 8 APTAMER-BASED BIOANALYTICAL ASSAYS: AMPLIFICATION STRATEGIES8.1 Introduction; 8.2 Bioanalytical Assays Based on Aptamer-Functionalized Nanoparticles; 8.3 Aptamers and Quantum Dot-Based Assays; 8.4 Aptazymes and Aptamer-Based Machines; 8.5 Polymerase Chain Reaction as an Amplification Method in Aptamer-Based Assays; 8.6 Conclusions; References; III APPLICATIONS; 9 KINETIC CAPILLARY ELECTROPHORESIS FOR SELECTION, CHARACTERIZATION, AND ANALYTICAL UTILIZATION OF APTAMERS; 9.1 Introduction; 9.1.1 Kinetic Capillary Electrophoresis; 9.1.2 The Concept of NECEEM and ECEEM 9.2 Selection of Aptamers Using KCE Methods for Partitioning and Affinity Control
Sommario/riassunto	This is the first book to detail bioanalytical technologies and methods that have been developed using aptamers in analytical, medical, environmental, and food science applications. After an introduction to

aptamers, aptamer targets, and their general uses, it discusses different applications with particular attention to the comparison between aptamer-based biosensors and methods versus the corresponding immunosensors. Examples of aptamer-based diagnostic techniques include whole-cell protein profiling (proteomics) and medical diagnostics for the distinction of diseased versus healthy states.