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Nota di contenuto	Protein Microarray Technology; Preface; Contents; List of Authors; Colour Plates; 1 Protein Microarrays: From Fundamental Screening to Clinical Diagnostics; 1.1 Potential Need for Protein Microarrays; 1.1.1 Protein Therapeutics; 1.1.2 Clinical Diagnostics; 1.1.3 National Security; 1.2 Current Applications of Protein Microarrays; 1.3 Problems and Challenges; 1.3.1 Sample Preparation and Handling (Probe and Target); 1.3.2 Microarray Platform; 1.3.3 Detection Technologies; 1.3.4 Data Analysis; 1.4 Potential Solutions: Enabling Technologies and Advancements; References 2 Protein Microarray Surface Chemistry and Coupling Schemes 2.1 Introduction; 2.1.1 Background and Current State of Biomolecule Libraries; 2.2 Microarray Based of Class Substrates; 2.2.1 Surface Modification; 2.2.2 Current State of Glass-Based Protein Microarrays; 2.3 Microarrays based of Gold Substrates; 2.3.1 Surface Modifications; 2.3.2 Current State of Gold-based Protein Microarrays; 2.4 Microarrays based on Polymer Substrates; 2.4.1 Surface Modifications; 2.5 Special Formats: Microfluidic Devices and Integrated Semiconductor Chips; 2.6

## Chemical Immobilization Techniques for Proteins

2.6.1 Covalent Chemical Coupling; 2.6.2 Photochemical Cross-Coupling; 2.6.3 Tagged Proteins; 2.6.4 Site-Specific Immobilization of Antibodies; 2.7 Conclusions; References; 3 Optimization of a Protein Microarray Platform Based on a Small-molecule Chemical Affinity System; 3.1 Introduction; 3.2 Experimental; 3.2.1 Reagents and Materials; 3.2.2 Comparison of the Intrinsic Fluorescence and Non-Specific Protein Binding of 2-D and 3-D SHA-Coated Glass Slides; 3.2.2.1 Preparation of 2D SHA-Coated Glass Surfaces; 3.2.2.2 Preparation of PDBA-modified Bovine Serum Albumin; 3.2.2.3 Preparation of PDBA-modified Human IgG; 3.2.2.4 Printing and Development of 2-D and 3-D SHA-coated Glass Slides; 3.2.2.5 Comparison of the Intrinsic Fluorescence of Unmodified, 2-D and 3-D SHA-coated Glass Slides; 3.2.2.6 Determination of the Non-Specific Protein Binding of 2-D and 3-D SHA-coated Glass Slides; 3.2.3 Immunoassay Using a 3-D SHA-coated Glass Slide; 3.2.3.1 Preparation of PDBA-Cy3-modified Bovine Serum Albumin, PDBA-Human IgG, PDBA-Goat anti Human IgG; 3.2.3.2 Printing the Array and Analyzing the Data; 3.2.4 Stability of the PDBA-Protein Conjugates Immobilized on 3-D-SHA-coated Glass Slides; 3.2.4.1 Preparation of PDBA-modified Goat Anti-rabbit Fc-specific IgG, PDBA-modified Goat Anti-rabbit Fc-specific F(ab)(2), PDBA-modified Goat Anti-human F(ab)(2), and PDBA-modified Goat Anti-mouse Fc-specific F(ab)(2); 3.2.4.2 Printing and Reading the Array; 3.3 Results and Discussion; 3.3.1 Comparison of the Intrinsic Fluorescence and Non-specific Protein Binding of 2-D and 3-D SHA-coated Glass Slides; 3.3.2 Immunoassay on a 3-D SHA-coated Slide; 3.3.3 Stability of PDBA-Protein Conjugates Immobilized on 3-D SHA-coated Glass Slides

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### Sommario/riassunto

This book is the first of its kind in the field of protein microarrays and addresses novel strategies for constructing highly functional and biocompatible microarrays for screening proteins. The list of authors consisting of world leading experts provide a roadmap for solving the complex challenges that are currently faced while monitoring protein-protein interactions over a wide range of microarray platforms. In doing so, they also offer a comprehensive overview of microarray surface chemistry, detection technologies, fabrication options for array development, and data analysis of numerous

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