

1. Record Nr.	UNINA9911020229103321
Titolo	Detection of highly dangerous pathogens : microarray methods for BSL 3 and BSL 4 agents // edited by Tanja Kostic, Patrick Butaye, and Jacques Schrenzel
Pubbl/distr/stampa	Weinheim, : Wiley-VCH, 2009
ISBN	9786612292057 9781282292055 1282292056 9783527626687 3527626689 9783527626694 3527626697
Descrizione fisica	1 online resource (193 p.)
Altri autori (Persone)	KosticTanja ButayePatrick SchrenzelJacques
Disciplina	579.165
Soggetti	Pathogenic microorganisms - Detection DNA microarrays
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Detection of Highly Dangerous Pathogens: Microarray Methods for the Detection of BSL 3 and BSL 4 Agents; Contents; This Publication is Supported by COST; Preface; List of Contributors; 1 Introduction to Microarray-Based Detection Methods; 1.1 Introduction to Microarray Technology; 1.2 Technical Aspects of Microarray Technology; 1.2.1 Probes; 1.2.1.1 Genome Fragments; 1.2.1.2 PCR Products; 1.2.1.3 Oligonucleotide Probes; 1.2.2 Substrates for Printing; 1.2.2.1 Slides with Poly-L-lysine Coating; 1.2.2.2 Slides with Amino Silane Coating; 1.2.2.3 Slides with Aldehyde Coating 1.2.2.4 Slides with Epoxy Coating1.2.2.5 Proprietary Surface Chemistries; 1.2.2.6 Probe Spacers; 1.2.3 Targets for Microarray Analysis; 1.2.3.1 Target Amplifications and Sensitivity Issues; 1.2.3.2

Labeling of the Targets; 1.2.3.3 Hybridization and Wash Conditions; 1.2.4 Classical Commercially Available Microarray Formats; 1.2.4.1 Spotting Approaches; 1.2.4.2 In Situ Synthesis; 1.2.5 Alternative Methods for Improving Microarray-Based Detection Sensitivity; 1.2.5.1 Resonance-Light Scattering (RLS); 1.2.5.2 Planar-Waveguide Technology (PWT); 1.2.5.3 Liquid Arrays 1.2.5.4 Three-Dimensional Microarray Formats 1.2.6 Marker Genes Used on MDMs; 1.3 Analysis and Quality Control Aspects; 1.4 Applications of Microarray Technology in Microbial Diagnostics; 1.4.1 Gene Expression Studies; 1.4.2 Comparative Genomic Hybridization (CGH); 1.4.3 Generic or Universal Microarrays; 1.4.4 Microarrays for Sequence Analysis; 1.4.5 Microbial Diagnostic Microarrays (MDMs); 1.5 Further Developments and New Perspectives Regarding Array Sensitivity and Specificity; 1.6 Conclusions; References; Part I: Methods; 2 Long Oligonucleotide Microarray-Based Microbial Detection 2.1 Introduction 2.2 Method; 2.2.1 DNA Extraction; 2.2.2 29 Amplification; 2.2.3 Klenow Amplification/Labeling; 2.2.4 Probe and Slide Preparation; 2.2.5 Slide Processing Protocol (for Amino Surfaces); 2.2.6 Hybridization and Slide Washing; 2.2.7 Comments; 2.3 Our Test System and Results; 2.4 Conclusions; References; 3 Sequence-Specific End-Labeling of Oligonucleotides; 3.1 Introduction; 3.2 Probe Design; 3.3 Slide Preparation (Spotting); 3.4 Slide Processing Protocol (for Aldehyde Surfaces); 3.5 DNA Extraction and PCR Amplification of the Targeted Gene 3.6 Shrimp Alkaline Phosphatase Treatment 3.7 Labeling; 3.8 Hybridization and Slide Washing; 3.9 Data Analysis; 3.10 Costs; 3.11 Microarray for Detection of Pathogenic Bacteria; References; 4 Non-Cognate Approaches for Pathogen Detection on Microarrays; 4.1 Introduction; 4.2 Non-Cognate Hybridization System; 4.2.1 Concept; 4.2.2 Definition of the Optimal Probe Length; 4.2.3 Virtual Assessment of Array Performances (in Silico Experiments); 4.2.4 Array Manufacturing and Hybridization (Wet-Lab Experiments); 4.2.5 Analysis; 4.3 Perspectives; References; 5 Patterning Techniques for Array Platforms 5.1 Introduction

---

## Sommario/riassunto

Written by leading experts in the field as part of an interdisciplinary pan-European research program funded by the EU, the results provided in this booklet provide a unique and comprehensive overview of how microarray technology can be used in safely tracking the most highly dangerous pathogens. A must-have for public health agencies focused on bioterrorism as well as all laboratories working with BSL3 and/or BSL 4 agents.

---