Record Nr. UNINA9910133840603321 BSL3 and BSL4 agents [[electronic resource]]: proteomics, glycomics, **Titolo** and antigenicity / / edited by Jiri Stulik ... [et al.] Pubbl/distr/stampa Weinheim,: Wiley-Blackwell, c2011 **ISBN** 1-283-83535-5 3-527-63820-2 3-527-63821-0 3-527-63819-9 Descrizione fisica 1 online resource (258 p.) Altri autori (Persone) StulikJiri Disciplina 579.165 Soggetti Pathogenic microorganisms - Analysis **Proteomics Glycomics Antigens** 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 BSL3 and BSL4 Agents: Proteomics, Glycomics, and Antigenicity: Contents: Preface: List of Contributors: 1: Introduction: Application of Proteomic Technologies for the Analysis of Microbial Infections; 1.1 Introduction: 1.2 Search for New Factors of Virulence and Potential Diagnostic Markers; 1.3 Search for New Vaccine Candidates; 1.4 Analysis of Post-Translational Modifications of Bacterial Proteins and Protein-Protein Interactions; 1.5 Conclusions; References; Part One: Basic Proteomic Methods; 2: Separation of Proteins and Peptides; 2.1 Introduction; 2.1.1 Gel-Based Separation 2.1.1.1 One-Dimensional Electrophoresis2.1.1.2 Two-Dimensional Electrophoresis; 2.1.1.3 Protein Staining and Image Analysis; 2.1.1.4 2-DE Limitations; 2.1.2 In Solution-"Gel Free" Proteomics; 2.1.3 Column Chromatography; 2.1.3.1 Size Exclusion Chromatography; 2.1.3.2 Reversed-Phase Liquid Chromatography; 2.1.3.3 Hydrophilic Interaction Liquid Chromatography; 2.1.3.4 Ion Exchanger Chromatography; 2.1.3.5 Affinity Chromatography; 2.1.3.6

Multidimensional Chromatography; 2.1.4 Liquid Phase IEF and

Electrophoresis; 2.1.5 Alternative Separation Technologies; Acknowledgment; References

3: Basic Mass Spectrometric Approaches 3.1 Introduction; 3.2 Ionization; 3.2.1 Matrix-Assisted Laser Desorption/Ionization; 3.2.2 Electrospray Ionization; 3.3 Mass Analyzers; 3.3.1 Time of Flight; 3.3.2 Reflectron TOF; 3.3.3 Quadrupole and Ion Trap; 3.3.4 Fourier Transformation Ion Cyclotron; 3.3.5 Tandem Mass Analyzers; 3.3.6 Ion Detection; 3.4 Protein Identification; 3.4.1 Combination of 2-DE and MS: 3.4.2 Peptide Mass Fingerprinting: 3.4.3 Peptide Sequencing (PMF): 3.4.4 Shotgun Proteomics; 3.5 Conclusion; Acknowledgments; References; 4: Quantitative Mass Spectrometric Approaches 4.1 Introduction4.1.1 Gel-Based Quantitative Proteomic Methods; 4.1.2 Shotgun Quantitative Proteomic Methods; 4.1.3 Labeling Methods; 4.1.3.1 Metabolic Incorporation of Stable Isotopes; 4.1.3.2 Enzymatic Incorporation of Stable Isotopes: 4.1.3.3 Chemical Incorporation of Stable Isotopes: 4.2 iTRAQ Analysis of Bacterial Pathogens: 4.2.1 Bacterial Cell Disruption and Protein Extraction; 4.2.2 Determination of Protein Concentration: 4.2.3 Protein Digestion: 4.2.4 Peptide Labeling with iTRAQ Tags; 4.2.5 Protocol for iTRAQ Analysis of Bacterial Proteins: References

5: BN-PAGE of Microbial Protein Complexes5.1 Introduction; 5.2 Methods for Studying Protein-Protein Interactions; 5.3 Blue Native Polyacrylamide Gel Electophoresis; 5.3.1 Sample Preparation; 5.3.1.1 Non-Denaturing Conditions; 5.3.1.2 Selection of Detergent and Its Optimal Concentration; 5.3.1.3 Membrane and Cytosolic Fraction Separation; 5.3.2 1D BN-PAGE; 5.3.3 2D BN/SDS-PAGE; 5.4 Evaluation of BN-PAGE-Staining, MS, Western Blotting; 5.4.1 Staining; 5.4.1.1 Silver Staining; 5.4.1.2 Fluorescent Staining; 5.4.1.3 Coomassie Staining; 5.4.2 Mass Spectrometry; 5.4.3 Western Blotting 5.4.4 Other Methods of Visualization

## Sommario/riassunto

Unique coverage of proteomic and glycomic approaches to better distinguish highly dangerous pathogens, as well as using these to explore novel treatment and prevention options. The editors and authors are either part of a specialized European network initiated to develop fast and reliable detection and therapy options, or are associated with the core military research complex of the United States. With its description of the methods, their advantages and limitations, as well as the principle outcomes, this is a must-have resource for all professionals dealing with BSL3 and/or BSL 4 agen