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Nota di contenuto	Single Cell Analysis: Technologies and Applications; Contents; Foreword; Preface; List of Contributors; Part I Single Cell Analysis: Imaging; 1 Single Molecule Fluorescence Monitoring in Eukaryotic Cells: Intranuclear Dynamics of Splicing Factors; 1.1 Motivation; 1.2 Experimental Approach; 1.3 Single Particle Tracking within Living Cells; 1.4 Pre-Messenger RNA Splicing; 1.5 Intranuclear Splicing Factor Tracking; 1.6 Intranuclear U1 snRNP Splicing Factor Binding; 1.7 Events in Speckles; 1.8 Intranuclear U1 snRNP Mobility; 1.9 Perspectives of Single Molecule Microscopy; References 2 Gene Classification and Quantitative Analysis of Gene Regulation in Bacteria using Single Cell Atomic Force Microscopy and Single Molecule Force Spectroscopy; 2.1 Introduction; 2.2 AFM on Paracrystalline Cell Surface Layers of <i>C. glutamicum</i> : Protein Sequence Information and Morphology; 2.3 Imaging of Living <i>C. glutamicum</i> Cells with Molecular Resolution: Genes, Transcriptional Regulation and Morphology; 2.4 Single Molecule Force Spectroscopy on Specific Protein-DNA

Complexes: Transcriptional Regulation in *S. meliloti*

2.5 Effector-Induced Protein-DNA Binding on the Single Molecule Level: Quorum Sensing in *S. meliloti* 2.6 Conclusion; References; 3 Cellular Cryo-Electron Tomography (CET): Towards a Voyage to the Inner Space of Cells; 3.1 Introduction; 3.2 Tomography with the Electron Microscope - a Practical Perspective; 3.2.1 Sample Preparation; 3.2.2 Instrumental and Technical Requirements; 3.2.3 Alignment, Reconstruction and Visualization; 3.3 Molecular Interpretation of Cellular Tomograms; 3.4 Outlook: The Future is Bright; References; Part II Single Cell Analysis: Technologies; 4 Single Cell Proteomics 4.1 Introduction 4.2 The Challenge; 4.3 Single Cell Proteomics: Mass Spectrometry; 4.4 Single Cell Separations; 4.5 Ultrasensitive Protein Analysis: Capillary Electrophoresis with Laser-Induced Fluorescence Detection; 4.6 Capillary Sieving Electrophoresis of Proteins from a Single Cancer Cell; 4.7 Cell Cycle-dependent Single Cell Capillary Sieving Electrophoresis; 4.8 Tentative Identification of Proteins in Single Cell Electropherograms; 4.9 Capillary Micellar and Submicellar Separation of Proteins from a Single Cell; 4.10 Two-Dimensional Capillary Electrophoresis of Proteins in a Single Cell 4.11 Single Copy Detection of Specific Proteins in Single Cells 4.12 Conclusion; References; 5 Protein Analysis of Single Cells in Microfluidic Format; 5.1 Introduction; 5.2 Microfluidic Single Cell Analysis Concept; 5.2.1 Single Cell Selection and Trapping; 5.2.2 Single Cell Lysis; 5.3 Single Cell Electrophoretic Separation and Detection of Proteins; 5.3.1 Label-Based Fluorescence Detection; 5.3.2 Label-Free Fluorescence Detection; 5.3.2.1 UV-LIF in Quartz Microfluidic Devices; 5.3.2.2 UV-LIF in PDMS Microfluidic Devices; 5.3.2.3 Single Cell UV-LIF Electrophoretic Analysis 5.4 Future Directions in Single Cell Analysis

Sommario/riassunto

The first-ever comprehensive overview of the methods used in this key technology in modern biology provides the latest working knowledge needed by every scientist entering this growing field. It covers all the current technology and application areas, from microscopy and spectroscopy to proteomics and microfluidics.
