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Nota di contenuto	Guide to ANALYSIS OF DNA MICROARRAY DATA; Contents; Preface; Acknowledgments; 1 Introduction to DNA Microarray Technology; 1.1 Hybridization; 1.2 Gold Rush?; 1.3 The Technology Behind DNA Microarrays; 1.3.1 Affymetrix GeneChip Technology; 1.3.2 Spotted Arrays; 1.3.3 Digital Micromirror Arrays; 1.3.4 Inkjet Arrays; 1.3.5 Bead Arrays; 1.3.6 Serial Analysis of Gene Expression (SAGE); 1.4 Parallel Sequencing on Microbead Arrays; 1.4.1 Emerging Technologies; 1.5 Example: Affymetrix vs. Spotted Arrays; 1.6 Summary; 1.7 Further Reading; 2 Overview of Data Analysis; 3 Image Analysis; 3.1 Gridding 3.2 Segmentation3.3 Intensity Extraction; 3.4 Background Correction; 3.5 Software; 3.5.1 Free Software for Array Image Analysis; 3.5.2 Commercial Software for Array Image Analysis; 3.6 Summary; 3.7 Further Reading; 4 Basic Data Analysis; 4.1 Normalization; 4.1.1 One or More Genes Assumed Expressed at Constant Rate; 4.1.2 Sum of Genes is Assumed Constant; 4.1.3 Subset of Genes is Assumed Constant; 4.1.4 Majority of Genes Assumed Constant; 4.1.5 Spike Controls; 4.2 Dye Bias, Spatial Bias, Print Tip Bias; 4.3 Expression Indices; 4.3.1

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	Average Difference; 4.3.2 Signal 4.3.3 Model-Based Expression Index4.3.4 Robust Multiarray Average; 4.3.5 Position Dependent Nearest Neighbor Model; 4.4 Detection of Outliers; 4.5 Fold Change; 4.6 Significance; 4.6.1 Multiple Conditions; 4.6.2 Nonparametric Tests; 4.6.3 Correction for Multiple Testing; 4.6.4 Example 1: t-Test and ANOVA; 4.6.5 Example II: Number of Replicates; 4.7 Mixed Cell Populations; 4.8 Summary; 4.9 Further Reading; 5 Visualization by Reduction of Dimensionality; 5.1 Principal Component Analysis; 5.2 Example 1: PCA on Small Data Matrix; 5.3 Example 2: PCA on Real Data; 5.4 Summary; 5.5 Further Reading 6 Cluster Analysis6.1 Hierarchical Clustering; 6.2 K-means Clustering; 6.3 Self-organizing Maps; 6.4 Distance Measures; 6.4.1 Example: Comparison of Distance Measures; 6.5 Time-Series Analysis; 6.6 Gene Normalization; 6.7 Visualization of Clusters; 6.7.1 Example: Visualization of Gene Clusters in Bladder Cancer; 6.8 Summary; 6.9 Further Reading; 7 Beyond Cluster Analysis; 7.1 Function Prediction; 7.2 Discovery of Regulatory Elements in Promoter Regions; 7.2.1 Example 1: Discovery of Proteasomal Element; 7.2.2 Example 2: Rediscovery of Mlu Cell Cycle Box (MCB); 7.3 Summary; 7.4 Further Reading 8 Automated Analysis, Integrated Analysis, and Systems Biology8.1 Integrated Analysis; 8.2 Systems Biology; 8.3 Further Reading; 9 Reverse Engineering of Regulatory Networks; 9.1 The Time-Series Approach; 9.2 The Steady-State Approach; 9.3 Limitations of Network Modeling; 9.4 Example 1: Steady-State Model; 9.5 Example 2: Steady- State Model on Bacillus Data; 9.6 Example 3: Linear Time-Series Model; 9.7 Further Reading; 10 Molecular Classifiers; 10.1 Feature Selection; 10.2 Validation; 10.3 Classification Schemes; 10.3.1 Nearest Neighbor; 10.3.2 Nearest Centroid; 10.3.3 Neural Networks 10.3.4 Support Vector Machine
5 	Written for biologists and medical researchers who don't have any special training in data analysis and statistics, Guide to Analysis of DNA Microarray Data, Second Edition begins where DNA array equipment leaves off: the image produced by the microarray. The text deals with the questions that arise starting at this point, providing an introduction to microarray technology, then moving on to image analysis, data analysis, cluster analysis, and beyond.With all chapters rewritten, updated, and expanded to include the latest generation of technology and methods, Guide to Analysis of DNA Micro