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3.3.5. Interpreting the Scanned Image  
 3.4. Multichannel cDNA Microarrays; 3.5. Oligonucleotide Arrays; 3.6. Bead-Based Arrays; 3.7. Confirmation of Microarray Results; Supplementary Reading and Electronic References; Exercises; 4. Processing the Scanned Image; 4.1. Converting the Scanned Image to the Spotted Image; 4.1.1. Gridding; 4.1.2. Segmentation; 4.1.3. Quantification; 4.2. Quality Assessment; 4.2.1. Visualizing the Spotted Image; 4.2.2. Numerical Evaluation of Array Quality; 4.2.3. Spatial Problems; 4.2.4. Spatial Randomness; 4.2.5. Quality Control of Arrays; 4.2.6. Assessment of Spot Quality  
 4.3. Adjusting for Background; 4.3.1. Estimating the Background; 4.3.2. Adjusting for the Estimated Background; 4.4. Expression Level Calculation for Two-Channel cDNA Microarrays; 4.5. Expression Level Calculation for Oligonucleotide Arrays; 4.5.1. The Average Difference; 4.5.2. A Weighted Average Difference; 4.5.3. Perfect Matches Only; 4.5.4. Background Adjustment Approach; 4.5.5. Model-Based Approach; 4.5.6. Absent-Present Calls; Supplementary Reading; Exercises; 5. Preprocessing Microarray Data; 5.1. Logarithmic Transformation; 5.2. Variance Stabilizing Transformations; 5.3. Sources of Bias; 5.4. Normalization; 5.5. Intensity-Dependent Normalization; 5.5.1. Smooth Function Normalization; 5.5.2. Quantile Normalization; 5.5.3. Normalization of Oligonucleotide Arrays; 5.5.4. Normalization of Two-Channel Arrays; 5.5.5. Spatial Normalization; 5.5.6. Stagewise Normalization; 5.6. Judging the Success of a Normalization; 5.7. Outlier Identification; 5.7.1. Nonresistant Rules for Outlier Identification; 5.7.2. Resistant Rules for Outlier Identification; 5.8. Assessing Replicate Array Quality; Exercises; 6. Summarization; 6.1. Replication

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Sommario/riassunto

A cutting-edge guide to the analysis of DNA microarray data Genomics is one of the major scientific revolutions of this century, and the use of microarrays to rapidly analyze numerous DNA samples has enabled scientists to make sense of mountains of genomic data through statistical analysis. Today, microarrays are being used in biomedical research to study such vital areas as a drug's therapeutic value-or toxicity-and cancer-spreading patterns of gene activity. Exploration and Analysis of DNA Microarray and Protein Array Data answers the need for a comprehensive, cutting-edge overview of th

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