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Autore	Good Phillip I
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; 3.2.4. Adjusting for Covariates -- ; 3.2.5. Pre-Post Comparisons -- ; 3.2.6. Choosing a Statistic: Time-Course Microarrays -- ; 3.3. Recommended Approaches -- ; 3.4. To Learn More -- ; 4. Biological Background -- ; 4.1. Medical Imaging -- ; 4.1.1. Ultrasound -- ; 4.1.2. EEG/MEG -- ; 4.1.3. Magnetic Resonance Imaging -- ; 4.1.3.1. MRI -- ; 4.1.3.2. fMRI -- ; 4.1.4. Positron Emission Tomography -- ; 4.2. Microarrays -- ; 4.3. To Learn More -- ; 5. Multiple Tests -- ; 5.1. Reducing the Number of Hypotheses to Be Tested -- ; 5.1.1. Normalization -- ; 5.1.2. Selection Methods -- ; 5.1.2.1. Univariate Statistics -- ; 5.1.2.2. Which Statistic? -- ; 5.1.2.3. Heuristic Methods -- ; 5.1.2.4. Which Method? -- ; 5.2. Controlling the Over All Error Rate -- ; 5.2.1. An Example: Analyzing Data from Microarrays -- ; 5.3. Controlling the False Discovery Rate -- ; 5.3.1. An Example: Analyzing Time-Course Data from Microarrays -- ; 5.4. Gene Set Enrichment Analysis
; 5.5. Software for Performing Multiple Simultaneous Tests -- ; 5.5.1. AFNI -- ; 5.5.2. Cyber-T -- ; 5.5.3. dChip -- ; 5.5.4. ExactFDR -- ; 5.5.5. GESS -- ; 5.5.6. HaploView -- ; 5.5.7. MatLab -- ; 5.5.8. R -- ; 5.5.9. SAM -- ; 5.5.10. ParaSam -- ; 5.6. Summary -- ; 5.7. To Learn More -- ; 6. The Bootstrap -- ; 6.1. Samples and Populations -- ; 6.2. Precision of an Estimate -- ; 6.2.1. R Code -- ; 6.2.2. Applying the Bootstrap -- ; 6.2.3. Bootstrap Reproducibility Index -- ; 6.2.4. Estimation in Regression Models -- ; 6.3. Confidence Intervals -- ; 6.3.1. Testing for Equivalence -- ; 6.3.2. Parametric Bootstrap -- ; 6.3.3. Blocked Bootstrap -- ; 6.3.4. Balanced Bootstrap -- ; 6.3.5. Adjusted Bootstrap -- ; 6.3.6. Which Test? -- ; 6.4. Determining Sample Size -- ; 6.4.1. Establish a Threshold -- ; 6.5. Validation -- ; 6.5.1. Cluster Analysis -- ; 6.5.2. Correspondence Analysis -- ; 6.6. Building a Model -- ; 6.7. How Large Should The Samples Be?
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; 8.7.2. Supervised Principal Components Applied to Microarrays -- ; 8.8. Ensemble Methods -- ; 8.9. Maximally Diversified Multiple Trees -- ; 8.10. Putting It All Together -- ; 8.11. Summary -- ; 8.12. To Learn More -- Glossary of Biomedical Terminology -- Glossary of Statistical Terminology -- Appendix: An R Primer -- ; R1. Getting Started -- ; R1. 1. R Functions -- ; R1.2. Vector Arithmetic -- ; R2. Store and Retrieve Data -- ; R2.1. Storing and Retrieving Files from Within R -- ; R2.2. The Tabular Format -- ; R2.3. Comma Separated Format -- ; R3. Resampling -- ; R3.1. The While Command -- ; R4. Expanding R's Capabilities -- ; R4.1. Downloading Libraries of R Functions -- ; R4.2. Programming Your Own Functions.