

NEW BOOKS

Computational Genome Analysis - An Introduction. By Richard C. Deonier, Simon Tavaré, and Michael S. Waterman, Springer, 2005, xx+533 pp., \$79.95

The goal of computational genomics is the understanding and interpretation of information encoded and expressed from the entire genetic complement of biological organisms: the genome. This book provides an introduction to the subject, on the level of a senior or first-year graduate-level course, to students from a variety of backgrounds. It is addressed to biologists, applied mathematicians, computer scientists, and persons working in the biotechnology industry. The statistical computing environment used is *R*. The scope of the book is apparent from the chapter headings: 1. Biology in a nutshell; 2. Words; 3. Word distributions and occurrences; 4. Physical mapping of DNA; 5. Genome rearrangements; 6. Sequence alignment; 7. Rapid alignment methods: FASTA and BLAST; 8. DNA sequence assembly; 9. Signals in DNA; 10. Similarity, distance and clustering; 11. Measuring expression of genome information; 12. Inferring the past: phylogenetic trees; 13. Genetic variation in populations; 14. Comparative genomics. There is a glossary, a brief introduction to *R*, an account of internet bioinformatics resources, and a group of miscellaneous data.

Statistical Concepts and Applications in Clinical Medicine. By John Aitchison, Jim W. Kay, and Ian J. Lauder, Chapman & Hall, 2005, 339 pp.

This is a volume in the Interdisciplinary Statistics Series. The authors' expository technique is to introduce the practical problems in such an order that they provide a natural development of the relevant statistical concepts and techniques as they relate to medical applications. The natural development of the subject proceeds by medical subdivisions, as is apparent from the chapter headings (below). The problems discussed arise in medical practice as well as in medical research—the approach is problem-oriented. No particular ideology of statistical inference—Bayesian, frequentist—is preferred since each problem is approached on its own merits. Some basic knowledge of statistical concepts and techniques is assumed since the readership is assumed to include advanced undergraduates through postgraduates to consultant statisticians and research workers. Chapter headings: 1. The field of application; 2. Relating the present patient to past experience; 3. A review of statistical methodology; 4. Further statistical methodology; 5. Experience; 6. Observation and measurement; 7. Indirect measurement: assay and calibration; 8. Diagnosis; 9. Special aspects of diagnosis; 10. Prognosis and treatment; 11. Assessment.