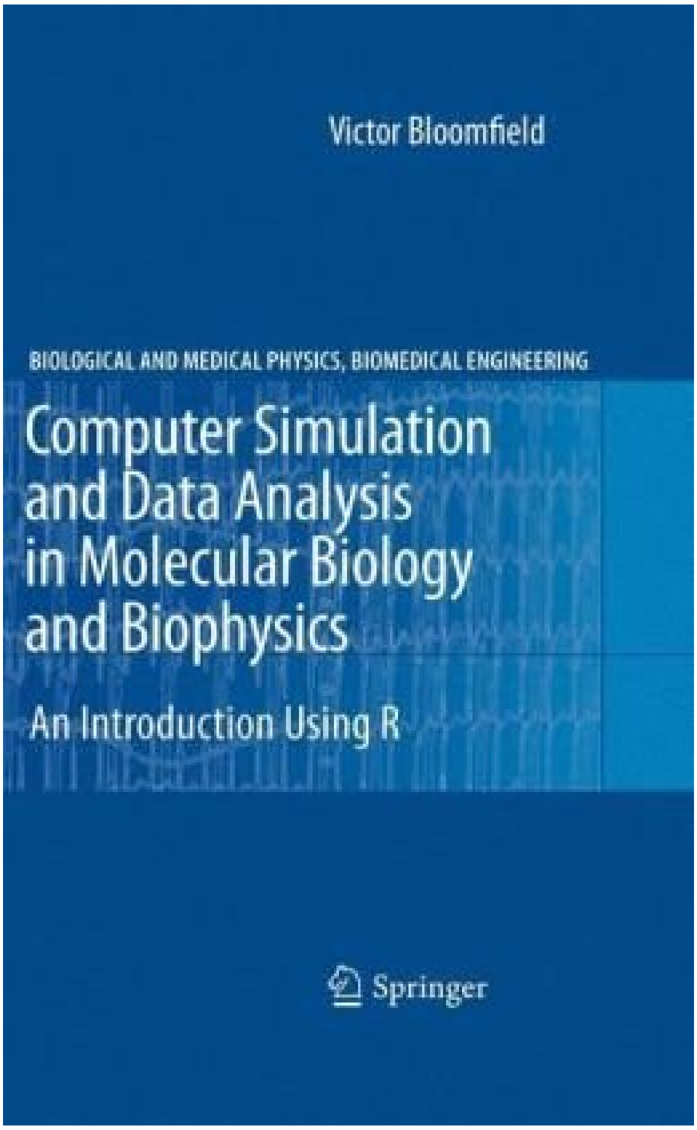
Computer Simulation and Data Analysis in Molecular Biology and Biophysics



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出版者:

出版时间:

装帧:

isbn:9781441900845

This book provides an introduction, suitable for advanced undergraduates and beginning graduate students, to two important aspects of molecular biology and biophysics: computer simulation and data analysis. It introduces tools to enable readers to learn and use fundamental methods for constructing quantitative models of biological mechanisms, both deterministic and with some elements of randomness, including complex reaction equilibria and kinetics, population models, and regulation of metabolism and development; to understand how concepts of probability can help in explaining important features of DNA sequences; and to apply a useful set of statistical methods to analysis of experimental data from spectroscopic, genomic, and proteomic sources. These quantitative tools are implemented using the free, open source software program R. R provides an excellent environment for general numerical and statistical computing and graphics, with capabilities similar to MatlabA(R). Since R is increasingly used in bioinformatics applications such as the BioConductor project, it can serve students as their basic quantitative, statistical, and graphics tool as they develop their careers.

作者介绍:

目录:

标签

科普

数据处理

R

评论

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