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Sommario/riassunto

This greatly expanded 2nd edition provides a practical introduction to - data processing with Linux tools and the programming languages AWK and Perl - data management with the relational database system MySQL, and - data analysis and visualization with the statistical computing environment R for students and practitioners in the life sciences. Although written for beginners, experienced researchers in areas involving bioinformatics and computational biology may benefit from numerous tips and tricks that help to process, filter and format large datasets. Learning by doing is the basic concept of this book. Worked examples illustrate how to employ data processing and analysis techniques, e.g. for - finding proteins potentially causing pathogenicity in bacteria, - supporting the significance of BLAST with homology modeling, or - detecting candidate proteins that may be redox-regulated, on the basis of their structure. All the softwaretools and datasets used are freely available. One section is devoted to explaining setup and maintenance of Linux as an operating system independent virtual machine. The author's experiences and knowledge gained from working and teaching in both academia and industry constitute the foundation for this practical approach.