Computing for Comparative Microbial Genomics: Bioinformatics for Microbiologists (Computational Biology)

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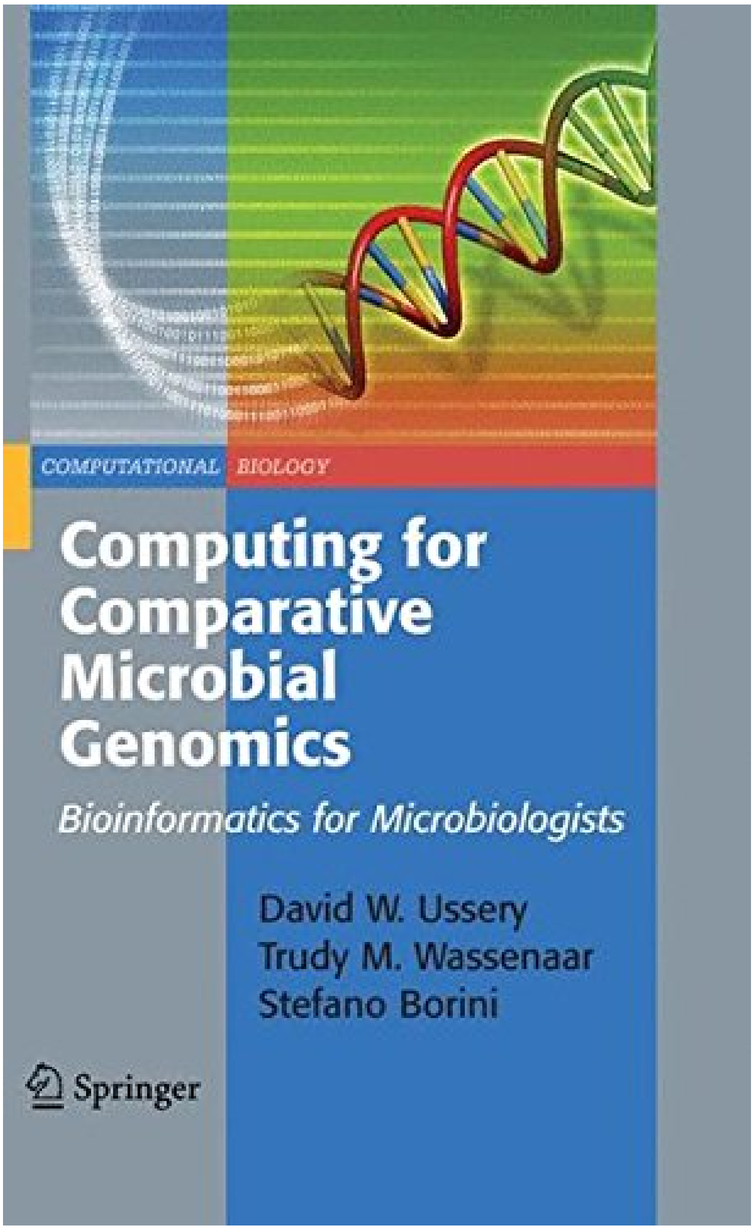

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David Wayne Ussery, Trudy M. Wassenaar, Stefano Borini : Computing for Comparative Microbial Genomics: Bioinformatics for Microbiologists (Computational Biology) before purchasing it in order to gage whether or not it would be worth my time, and all praised Computing for Comparative Microbial Genomics: Bioinformatics for Microbiologists (Computational Biology):

0 of 2 people found the following review helpful. Two StarsBy Kevin ChenMost of the contents are available from review articles

Overview and Goals This book describes how to visualize and compare bacterial genomes. Sequencing technologies are becoming so inexpensive that soon going for a cup of coffee will be more expensive than sequencing a bacterial genome. Thus, there is a very real and pressing need for high-throughput computational methods to compare hundreds and thousands of bacterial genomes. It is a long road from molecular biology to systems biology, and in a sense this text can be thought of as a path bridging these ? elds. The goal of this book is to p- vide a coherent set of tools and a methodological framework for starting with raw DNA sequences and producing fully annotated genome sequences, and then using these to build up and test models about groups of interacting organisms within an environment or ecological niche. Organization and Features The text is divided into four main parts: Introduction, Comparative Genomics, Transcriptomics and Proteomics, and ? nally Microbial Communities. The ? rst ? ve chapters are introductions of various sorts. Each of these chapters represents an introduction to a speci? c scienti? c ? eld, to bring all readers up to the same basic level before proceeding on to the methods of comparing genomes. First, a brief overview of molecular biology and of the concept of sequences as biological inf- mation are given.

From the reviews: "It is a very well-written review of genomics and proteomics of microbes, and makes convincing arguments for the practicality of applying bioinformatics to the study of communities of these species. The references are well chosen. The writing style is superb. There is an amazing amount of interesting material, in fewer than 275 pages. The book is probably more suitable as an introduction to contemporary applications of bioinformatics and microbiology for computational scientists." (Anthony J. Duben, ACM Computing s, June, 2009)From the Back CoverThe major difficulty many microbiologists face is simply that of too much information. As a result of sequencing technologies becoming so economical, there is a very real and pressing need for high-throughput computational methods to compare hundreds and thousands of bacterial genomes. This accessible text/reference provides a coherent set of tools and a methodological framework for comparing raw DNA sequences and fully annotated genome sequences, then using these to build up and test models about groups of interacting organisms within an environment or ecological niche. Easy-to-follow, this introductory textbook is built around teaching computational / bioinformatics methods for comparison of microbial genomes, and includes detailed examples of how to compare them at the level of DNA, RNA, and protein, in terms of structural and functional analysis. Topics and Features: Contains five introductory chapters each representing a specific scientific field, to bring all readers up to the same basic level Familiarizes readers with genome sequences, RNA sequences (transcriptomics), proteomics and regulation of gene expression Describes basic methods to compare genomes and visualize the results for easy interpretation Discusses microbial communities, providing a framework for analysing and comparing individual genomes or raw DNA derived from complete ecosystems Introduces various atlases, building up to the Genome Atlas Offers numerous helpful examples throughout Focuses on the use and interpretation of publicly available Web tools Provides supplemental resources, such as Web links, at http://comparativemicrobial.com Developed from a set of lectures for a course in Comparative Microbial Genomics taught since 2001, this wide-ranging foundational textbook is aimed at advanced undergraduate and graduate students in Bioinformatics and Microbiology. The authors are from diverse backgrounds complementing the interdisciplinary nature of the topic and consequently have developed a common scientific language. Readers will find this text an invaluable reference for computational and bioinformatics tools.