Sequence Comparison
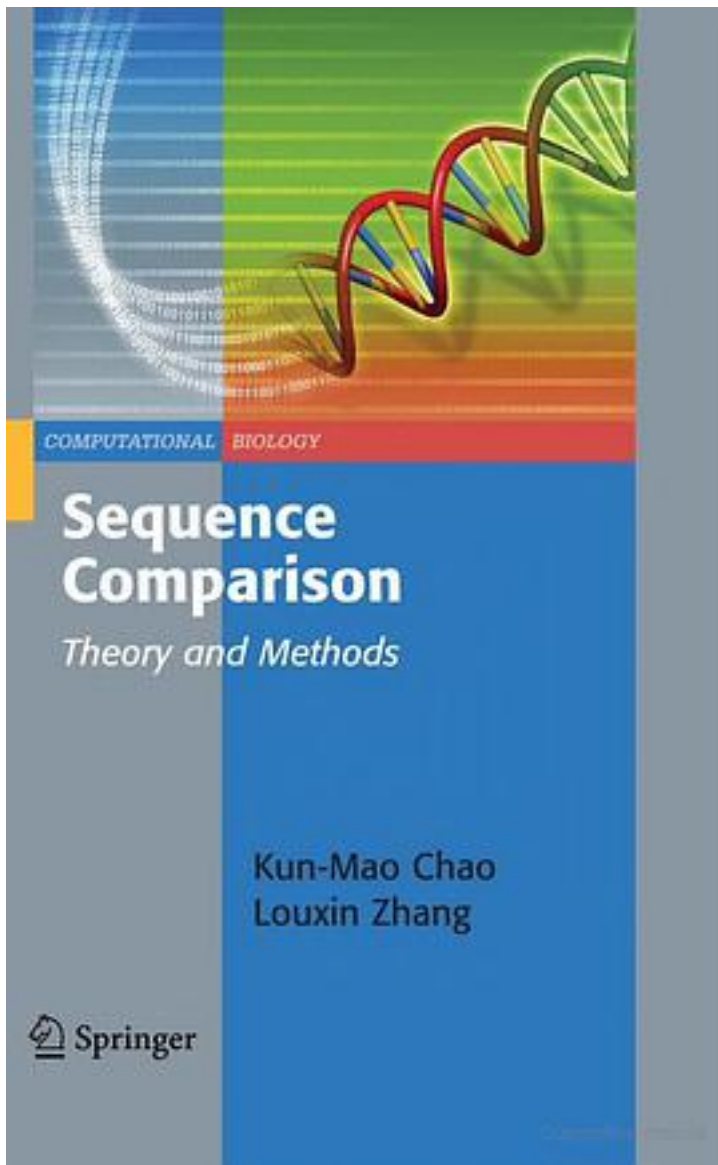
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Biomolecular sequence comparison is the origin of bioinformatics. Today, powerful sequence comparison methods, together with comprehensive biological databases, have changed the practice of molecular biology and genomics.

This in-depth, state-of-the-art study of sequence alignment and homology search, covers the full spectrum of the field - from alignment methods to the theory of scoring matrices and alignment score statistics. Following a comprehensive introduction, this useful text/reference focuses on algorithms and techniques, as well as discusses the theory. This easy-to-follow text examines alignment methods and techniques, features a new issue of sequence comparison (the spaced-seed technique), addresses several new flexible strategies for coping with various scoring schemes, and covers the theory on the significance of high-scoring segment pairs between two unalignment sequences. Useful appendices are provided for basic concepts in molecular biology, primer in statistics and software for sequence alignment. The book is written for readers with little or no knowledge of biology, algorithms and probability.

Features:

· Presents a rigorous yet reader-friendly text on the algorithmic techniques and mathematical foundations of sequence alignment and homology search

· Offers a tutorial to aid all levels of readers

· Covers the basic algorithms and methods for sequence alignment

· Introduces popular homology search programs

· Familiarizes readers with multiple sequence alignment

· Deals with the Karlin-Altschul statistics of optimal local alignment scores

· Discusses substitution matrices

· Provides end-of-chapter bibliographic notes and further reading suggestions that report related work and recent progresses

Based on lectures given to students studying bioinformatics and mathematics, this state-of-the-art study of sequence alignment and homology search is an ideal resource and toolkit for undergraduates and will appeal to biologists who wish to know how to use homology search tools more intelligently.

作者介绍:

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