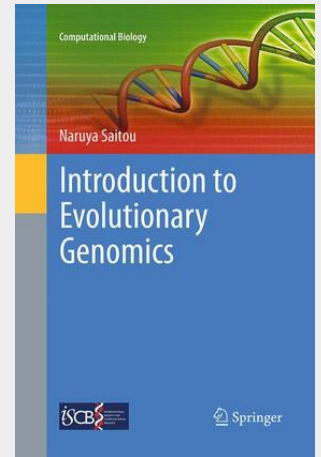


Introduction to Evolutionary Genomics

This book is the first of its kind to explain the fundamentals of evolutionary genomics. The comprehensive coverage includes concise descriptions of a variety of genome organizations, a thorough discussion of the methods used, and a detailed review of genome sequence processing procedures. The opening chapters also provide the necessary basics for readers unfamiliar with evolutionary studies. Features: introduces the basics of molecular biology, DNA replication, mutation, phylogeny, neutral evolution, and natural selection; presents a brief evolutionary history of life from the primordial seas to the emergence of humans; describes the genomes of prokaryotes, eukaryotes, vertebrates, and humans; reviews methods for genome sequencing, phenotype data collection, homology searches and analysis, and phylogenetic tree and network building; discusses databases of genome sequences and related information, evolutionary distances, and population genomics; provides supplementary material at an associated website.

Evolutionary genomics is a new discipline that bridges the fields of molecular evolution, bioinformatics and genomics in order to provide a unique perspective on the history of life. This easy-to-follow textbook is the first of its kind to explain the fundamentals of evolutionary genomics. The comprehensive coverage includes concise descriptions of a variety of genome organizations, a thorough discussion of the methods used, and a detailed review of genome sequence processing procedures. The opening chapters also provide the necessary basics for readers unfamiliar with evolutionary studies. Topics and features: introduces the basics of molecular biology, DNA replication, mutation, phylogeny, neutral evolution, and natural selection; presents a brief evolutionary history of life from the primordial seas to the emergence of modern humans; describes the genomes of prokaryotes, eukaryotes, vertebrates, and humans; reviews methods for genome sequencing, phenotype data collection, homology searches and analysis, and phylogenetic tree and network building; discusses databases of genome sequences and related information, evolutionary distances, and population genomics; provides supplementary material at the website http://www.saitou-naruya-laboratory.org/Evolutionary_Genomics/. This essential text/reference provides an easy-to-read introduction to the field for undergraduate and graduate students, post-doctoral fellows, and established researchers from both computer science and the biological sciences.



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