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Titolo	Introduction to Evolutionary Genomics [[electronic resource] /] / by Naruya Saitou
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ISBN	3-319-92642-X
Edizione	[2nd ed. 2018.]
Descrizione fisica	1 online resource (XXV, 504 p. 234 illus., 38 illus. in color.)
Collana	Computational Biology, , 1568-2684 ; ; 17
Disciplina	570.285
Soggetti	Bioinformatics Systems biology Microbial genetics Microbial genomics Plant genetics Animal genetics Computational Biology/Bioinformatics Systems Biology Microbial Genetics and Genomics Plant Genetics and Genomics Animal Genetics and Genomics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Part I: Basic Processes of Genome Evolution -- Replication, Transcription, and Translation -- Proteins -- Mutation -- Phylogeny -- Neutral Evolution -- Natural Selection -- Part II: Evolving Genomes -- A Brief History of Life -- Prokaryote Genomes -- Eukaryote Genomes -- Virus Genomes -- Vertebrate Genomes -- The Human Genome -- Part III: Methods for Evolutionary Genomics -- Genome and Transcriptome Sequencing -- Omic Worlds and their Databases -- Homology Search and Multiple Alignment -- Evolutionary Distances -- Phylogeny Construction -- Human Population Genomics.
Sommario/riassunto	This authoritative textbook/reference presents a comprehensive introduction to the field of evolutionary genomics. The opening

chapters describe the fundamental concepts in molecular biology and genome evolution for readers without any prior background in this area. This is followed by a detailed examination of genome evolution in various different groups of organisms. The text then concludes with a review of practical methods essential to researchers in the field. This updated and revised new edition also features historical perspectives on contributions to evolutionary genomics from related fields such as molecular evolution, genetics, and numerical taxonomy. Topics and features: Introduces the basics of molecular biology, covering protein structure and diversity, as well as DNA replication, transcription, and translation Examines the phylogenetic relationships of DNA sequences, and the processes of mutation, neutral evolution, and natural selection Presents a brief evolutionary history of life, surveying the key features of the genomes of prokaryotes, eukaryotes, viruses and phages, vertebrates, and humans Reviews the various biological “omic” databases, and discusses the analysis of homologous nucleotide and amino acid sequences Provides an overview of the experimental sequencing of genomes and transcriptomes, and the construction of phylogenetic trees Describes methods for estimating of evolutionary distances, and performing studies of population genetics Supplies additional supporting material at an associated website Serving as an indispensable textbook for graduate and advanced undergraduate courses on evolutionary genomics, this accessible overview will also prove invaluable to researchers from both computer science and the biological sciences seeking a primer on the field. Dr. Naruya Saitou is a Professor in the Division of Population Genetics at the National Institute of Genetics, and a Professor in the Department of Genetics at the Graduate University for Advanced Studies, Mishima, Japan. He is also a Professor in the Department of Biological Sciences at the University of Tokyo, Japan.
