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Population Genetics Principles of Population Genetics Genetics of Populations Integrated View of Population Genetics An Introduction to Population Genetics Theory Introduction to Population Genetics Theoretical Aspects of Population Genetics. (MPB-4), Volume 4 Genetics of Populations Population Genetics Outline of Population Genetics A Primer of Population Genetics Population Genetics Population Genetics and Microevolutionary Theory A Primer of Population Genetics and Genomics An Introduction to Population Genetics Population Genetics Theories of Population Variation in Genes and Genomes Evolution and the Genetics of Populations, Volume 2 Population Genetics, Molecular Evolution, and the Neutral Theory Forward-Time Population Genetics Simulations The Foundations of Population Genetics Population Genetics and Evolution Population Genetics Research Progress Progress in Population Genetics and Human Evolution The Origins of Theoretical Population Genetics Human Population Genomics Theory of Population Genetics and Evolutionary Ecology Human Population Genetics An Introduction to Population Genetics Theory Introduction to Theoretical Population Genetics Modern Developments in Theoretical Population Genetics An Introduction to Population Genetics Theory Population Genetics Stochastic Models in Population Genetics Introduction to Population Genetics Geographical Genetics (MPB-38) E-Government ICT Professionalism and Competences Service Science Mammalian Dispersal Patterns Primer Of Population Biology Foundations of Mathematical Genetics

Population Genetics 2004-08-06 publisher description

Principles of Population Genetics 1989 darwinian evolution in mendelian populations random genetic drift mutation and the neutral theory natural selection inbreeding and other forms of nonrandom mating population subdivision and migration molecular population genetics evolutionary genetics of quantitative characters ecological genetics and speciation

Genetics of Populations 2011-08-24 the fourth edition of genetics of populations is the most current comprehensive and accessible introduction to the field for advanced undergraduate and graduate students and researchers in genetics evolution conservation and related fields in the past several years interest in the application of population genetics principles to new molecular data has increased greatly and dr hedrick s new edition exemplifies his commitment to keeping pace with this dynamic area of study reorganized to allow students to focus more sharply on key material the fourth edition integrates coverage of theoretical issues with a clear presentation of experimental population genetics and empirical data drawing examples from both recent and classic studies and using a variety of organisms to illustrate the vast developments of population genetics this text provides students and researchers with the most comprehensive resource in the field

Integrated View of Population Genetics 2019-03-20 population genetics is the basis of evolutionary studies and has been widely used in several researches this recent field of science has important applications for the management of populations natural and domesticated as well as for evolutionary studies of the various factors that affect gene frequencies over time and spatial distribution in this work presented in three sections population and quantitative genetics genetic diversity in crop management population genetics for conservation studies the reader will find cutting edge information in carefully selected and revised works this book is intended for all researchers academics and students who are interested in the intriguing area of population genetics

An Introduction to Population Genetics Theory 2017-01-01 this text book originally published in 1970 presents the field of population genetics starting with elementary concepts and leading the reader well into the field it is concerned mainly with population genetics in a strict sense and deals primarily with natural populations and less fully with the rather similar problems that arise in breading live stock and cul t i vat ed plans the emphasis is on the behavior of genes and population attributes under natural selection where the most important measure is darwinian fitness this text is intended for graduatestudents and advanced undergraduates in genetics and population biology this book steers a middle course between completely verbal biological arguments and the rigor of the mathematician the first two thirds of the book do not require advanced mathematical background an ordinary knowledge of calculus will suffice the latter parts of the book which deal with population stochastically use more advanced methods

Introduction to Population Genetics 2004 making the theory of population genetics relevant to readers this book explains the related mathematics with a logical organization it presents the quantitative aspects of population genetics and employs examples of human genetics medical evolution human evolution and endangered species for an introduction to and understanding of population genetics

Theoretical Aspects of Population Genetics. (MPB-4), Volume 4 2020-03-31 to show the importance of stochastic processes in the change of gene frequencies the authors discuss topics ranging from molecular evolution to two locus problems in terms of diffusion models throughout their discussion they come to grips with one of the most challenging problems in population genetics the ways in which genetic variability is maintained in mendelian populations r a fisher j b s haldane and sewall wright in pioneering works confirmed the usefulness of mathematical theory in population genetics the synthesis their work achieved is recognized today as mathematical genetics that branch of genetics whose aim is to investigate the laws governing the genetic structure of natural populations and consequently to clarify the mechanisms of evolution for the benefit of population geneticists without advanced mathematical

training professors kimura and ohta use verbal description rather than mathematical symbolism wherever practicable a mathematical appendix is included

Genetics of Populations 1983 the hardy weinberg law selection and mutation the fundamental teorem of natural selection stochastic treatment discrete processes diffusion approximations applications results derived from branching processes two locus behaviour linkage dominance

Population Genetics 1969-02-28 this is a concisely presented and precise outline of the subjects matter of population genetics addressed to all those who are concerned and have interest in this rich subject the topics covered in the book include importance of genes in the continuity of a population and the gene frequency analysis deviation from the infinitely large sample sie of the population leading to various types and forms of random genetic drift neutral genes and the problem of panmixia method of detecting inbreeding intensities and their effects gene flow and changes in genetic structure of the population the process of natural selection and the idea of in clusive fitness and affecting the social life of animals and men pointing out the irrelevance of social darwinism in science use of population genetics in the study of classical genetics pedigree analyses and changes and genetics of complex variations and the principles of quantitative genetics glossary certain statistical formations the use of x2 test t test analysis of variance or f test relative ratios and that of correlation and the concept of randomness the discussion is brief and often critical making this book outshine many contemporary textbooks found in the market it is expected that readers will develop a clear and thorough understanding of the foundation of this subject of study and associated statistical analysis after going through the book

Outline of Population Genetics 2007-06-06 the use of molecular methods to study genetic polymorphisms has made a familiarity with population genetics essential for any biologist whose work is at the population level a primer of population genetics third edition provides a concise but comprehensive introduction to population genetics the four chapters of the book address genetic variation the causes of evolution molecular population genetics and the genetic architecture of complex traits chapter end problems reinforce ideas and while there are some equations the emphasis is on explanation rather than derivation

A Primer of Population Genetics 1988 now updated for its second edition population genetics is the classic accessible introduction to the concepts of population genetics combining traditional conceptual approaches with classical hypotheses and debates the book equips students to understand a wide array of empirical studies that are based on the first principles of population genetics featuring a highly accessible introduction to coalescent theory as well as covering the major conceptual advances in population genetics of the last two decades the second edition now also includes end of chapter problem sets and revised coverage of recombination in the coalescent model metapopulation extinction and recolonization and the fixation index

Population Genetics 2021-02-09 the advances made possible by the development of molecular techniques have in recent years revolutionized quantitative genetics and its relevance for population genetics population genetics and microevolutionary theory takes a modern approach to population genetics incorporating modern molecular biology species level evolutionary biology and a thorough acknowledgment of quantitative genetics as the theoretical basis for population genetics logically organized into three main sections on population structure and history genotype phenotype interactions and selection adaptation extensive use of real examples to illustrate concepts written in a clear and accessible manner and devoid of complex mathematical equations includes the author s introduction to background material as well as a conclusion for a handy overview of the field and its modern applications each chapter ends with a set of review questions and answers offers helpful general references and internet links

Population Genetics and Microevolutionary Theory 2006-09-29 this accessible primer has been completely revised and updated to provide a concise but comprehensive introduction to the basic concepts of population genetics and genomics

A Primer of Population Genetics and Genomics 2020 this textbook provides an authoritative introduction to both classical and coalescent approaches to population genetics written for graduate students and advanced undergraduates by one of the world s leading authorities in the field the book focuses on the theoretical background of population genetics while emphasizing the close interplay between theory and empiricism traditional topics such as genetic and phenotypic variation mutation migration and linkage are covered and advanced by contemporary coalescent theory which describes the genealogy of genes in a population ultimately connecting them to a single common ancestor effects of selection particularly genomic effects are discussed with reference to molecular genetic variation the book is designed for students of population genetics bioinformatics evolutionary biology molecular evolution and theoretical biology as well as biologists molecular biologists breeders biomathematicians and biostatisticians contains up to date treatment of key areas in classical and modern theoretical population genetics provides in depth coverage of coalescent theory discusses genomic effects of selection gives examples from empirical population genetics incorporates figures diagrams and boxed features throughout includes end of chapter exercises speaks to a wide range of students in biology bioinformatics and biostatistics

An Introduction to Population Genetics 1948 these volumes discuss evolutionary biology through the lense of population genetics

Population Genetics 2022 one of this century s leading evolutionary biologists motoo kimura revolutionized the field with his random drift theory of molecular evolution the neutral theory and his groundbreaking theoretical work in population genetics this volume collects 57 of kimura s most important papers and covers forty years of his diverse and original contributions to our understanding of how genetic variation affects evolutionary change kimura s neutral theory first presented in 1968 challenged the notion that natural selection was the sole directive force in evolution arguing that mutations and random drift account for variations at the level of dna and amino acids kimura advanced a theory of evolutionary change that was strongly challenged at first and that eventually earned the respect and interest of evolutionary biologists throughout the world this volume includes the seminal papers on the neutral theory as well as many others that cover such topics as population structure variable selection intensity the genetics of quantitative characters inbreeding systems and reversibility of changes by random drift background essays by naoyuki takahata examine kimura s work in relation to its effects and recent developments in each area

Theories of Population Variation in Genes and Genomes 2014-11-23 the only book available in the area of forward time population genetics simulations applicable to both biomedical and evolutionary studies the rapid increase of the power of personal computers has led to the use of serious forward time simulation programs in genetic studies forward time population genetics simulations presents both new and commonly used methods and introduces simupop a powerful and flexible new program that can be used to simulate arbitrary evolutionary processes with unique features like customized chromosome types arbitrary nonrandom mating schemes virtual subpopulations information fields and python operators the book begins with an overview of important concepts and models then goes on to show how simupop can simulate a number of standard population genetics models with the goal of demonstrating the impact of genetic factors such as mutation selection and recombination on standard wright fisher models the rest of the book is devoted to applications of forward time simulations in various research topics forward time population genetics simulations includes an overview of currently available forward time simulation methods their advantages and shortcomings an overview and evaluation of currently available software a simupop tutorial applications in population genetics applications in genetic epidemiology statistical genetics and mapping complex human diseases the only book of its kind in the field today forward time population genetics simulations will appeal to researchers and students of population and statistical genetics

Evolution and the Genetics of Populations, Volume 2 1984-06-15 an accessible but

rigorous treatment of the theoretical foundations of population genetics population genetics the branch of evolutionary biology concerned with understanding how and why populations genetic compositions change over time rests on a well developed theoretical foundation that draws on genetics mathematics and computer science this textbook provides an approachable but rigorous treatment for advanced undergraduate and graduate students interested in building a quantitative understanding of the genetics of evolution existing texts either assume very mathematically advanced readers or avoid much of the underlying theory instead focusing on current methods of data analysis in contrast the foundations of population genetics develops the theory from first principles requiring only confidence in algebra this self contained student friendly book illustrates the conceptual framework terminology and methods of mathematical modeling it progressively introduces concepts from genetics as needed while emphasizing biological implications throughout as a result readers come away with a deep understanding of the structure of population genetics without needing to master its mathematics connects theory with the most recent genetic data better than existing texts features engaging real world examples and extensive original figures provides dozens of carefully scaffolded questions that deepen the reader s understanding of key concepts ideal as a succinct reference for established scientists in biology medicine and computer science instructor resources available

Population Genetics, Molecular Evolution, and the Neutral Theory 1994 self contained and reader friendly this volume provides a balanced blend of evolutionary theory population genetics and systematics with an emphasis on the experimental approach

Forward-Time Population Genetics Simulations 2012-01-25 population genetics is the study of the allele frequency distribution and change under the influence of the four evolutionary forces natural selection genetic drift mutation and gene flow it also takes account of population subdivision and population structure in space this book presents the latest research in the field from around the globe

The Foundations of Population Genetics 2023-08-29 this book is devoted to the collection interpretation and analysis of population genetic data among the topics included here are studies on human evolutionary history molecular techniques for generating data statistical and computational techniques for the interpretation of such data and stochastic models for genealogy and population structure the chapters reflect the close interaction between experimental molecular biologists and theoreticians the book will be useful for specialists in the area as well as mathematicians statisticians computer scientists and biologists wanting a brief overview of current problems in the field

Population Genetics and Evolution 1988 tracing the development of population genetics through the writings of such luminaries as darwin galton pearson fisher haldane and wright william b provine sheds light on this complex field as well as its bearing on other branches of biology

Population Genetics Research Progress 2008 this textbook provides a concise introduction and useful overview of the field of human population genomics making the highly technical and contemporary aspects more accessible to students and researchers from various fields over the past decade there has been a deluge of genetic variation data from the entire genome of individuals from many populations these data have allowed an unprecedented look at human history and how natural selection has impacted humans during this journey simultaneously there have been increased efforts to determine how genetic variation affects complex traits in humans due to technological and methodological advances progress has been made at determining the architecture of complex traits split in three parts the book starts with the basics followed by more advanced and current research the first part provides an introduction to essential concepts in population genetics which are relevant for any organism the second part covers the genetics of complex traits in humans the third part focuses on applying these techniques and concepts to genetic variation data to learn about demographic history and natural selection in humans this new textbook

aims to serve as a gateway to modern human population genetics research for those new to the field it provides an indispensable resource for students researchers and practitioners from disparate areas of expertise

Progress in Population Genetics and Human Evolution 1997-02-27 this is a reprint of a classic which synthesizes population genetics and population genetics to form one of the first books on evolutionary ecology written by one of the foremost authorities in the field it is designed as an introduction useful to readers at various levels from diverse backgrounds it features balanced readable coverge of both elementary and advanced topics that are essential to those interested in evolutionary biology ecology animal behavior sociobiology and paleobiology

The Origins of Theoretical Population Genetics 2020-07-24 introductory guide to human population genetics and microevolutionary theory providing an introduction to mathematical population genetics human population genetics gives basic background on the mechanisms of human microevolution this text combines mathematics biology and anthropology and is best suited for advanced undergraduate and graduate study thorough and accessible human population genetics presents concepts and methods of population genetics specific to human population study utilizing uncomplicated mathematics like high school algebra and basic concepts of probability to explain theories central to the field by describing changes in the frequency of genetic variants from one generation to the next this book hones in on the mathematical basis of evolutionary theory human population genetics includes helpful formulae for learning ease graphs and analogies that make basic points and relate the evolutionary process to mathematical ideas glossary terms marked in boldface within the book the first time they appear in text citations that act as reference points for further research exemplary case studies topics such as hardy weinberg equilibrium inbreeding mutation genetic drift natural selection and gene flow human population genetics solidifies knowledge learned in introductory biological anthropology or biology courses and makes it applicable to genetic study note errata for the first edition can be found at the author s website employees oneonta edu relethjh hpg errata pdf

Human Population Genomics 2021-03-13 this book covers those areas of theoretical population genetics that can be investigated rigorously by elementary mathematical methods i have tried to formulate the various models fairly generally and to state the biological as sumptions quite explicitly i hope the choice and treatment of topics will en able the reader to understand and evaluate detailed analyses of many specific models and applications in the literature models in population genetics are highly idealized often even over idealized and their connection with observation is frequently remote further more it is not practicable to measure the parameters and variables in these models with high accuracy these regrettable circumstances amply justify the use of appropriate lucid and rigorous approximations in the analysis of our models and such approximations are often illuminating even when exact solu tions are available however our empirical and theoretical limitations justify neither opaque incomplete formulations nor unconvincing inadequate analy ses for these may produce uninterpretable misleading or erroneous results intuition is a principal source of ideas for the construction and investigation of models but it can replace neither clear formulation nor careful analysis fisher 1930 1958 pp x 23 24 38 not only espoused similar ideas but he recognized also that our concepts of intuition and rigor must evolve in time the book is neither a review of the literature nor a compendium of results the material is almost entirely self contained the first eight chapters are a thoroughly revised and greatly extended version of my published lecture notes nagylaki 1977a

Theory of Population Genetics and Evolutionary Ecology 1979 this book contains chapters by leading population genetics that summarize many of the recent developments in population genetics theory and its application to genetic data the book was inspired by a meeting in honour of the late french population geneticist gustave malecot held at the ecole normale superieure in paris france in the summer of 1999 malecot was along with r a fisher j b s haldane and s wright among the

founders of theoretical population genetics the meeting demonstrated both the great interest in malecot s work and its relevance to the recent development of the theory of coalescents and the application of that theory to genetic variation observed at the level of dna sequence the introductory papers in the book review malecot s life and his contributions to the theory of population genetics later chapters present recent developments in population genetics with particular emphasis on the theory of coalescents they include discussions of methods for inferring past changes in population size and patterns of genetic exchange for inferring the ages of individual mutations and for analysing the relationships among closely linked genes

Human Population Genetics 2012-03-27 list of fish taxa preface introduction an overview of classical and molecular genetics measurement of genetic variation allozyme variation chromosomal variation mitochondrial dna nuclear dna population geneticprocesses natural selection random genetic drift inbreeding coadaptation and outbreeding depression quantitative genetics practical applications of population genetics genetic stock identification and risk assessment genetic guidelines for hatchery supplementation programs genetic impacts of fish introductions genetic marking forensics population viability analysis glossary index p v

An Introduction to Population Genetics Theory 2013 population genetics has made great strides in applying statistical analysis and mathematical modeling to understand how genes mutate and spread through populations over time but real populations also live in space streams mountains and other geographic features often divide populations limit migration or otherwise influence gene flow this book rigorously examines the processes that determine geographic patterns of genetic variation providing a comprehensive guide to their study and interpretation geographical genetics has a unique focus on the mathematical relationships of spatial statistical measures of patterns to stochastic processes it also develops the probability and distribution theory of various spatial statistics for analysis of population genetic data detailing exact methods for using various spatial features to make precise inferences about migration natural selection and other dynamic forces the book also reviews the experimental literature on the types of spatial patterns of genetic variation found within and among populations and it makes an unprecedented strong connection between observed measures of spatial patterns and those predicted theoretically along the way it introduces readers to the mathematics of spatial statistics applications to specific population genetic systems and the relationship between the mathematics of space time processes and the formal theory of geographical genetics written by a leading authority this is the first comprehensive treatment of geographical genetics it is a much needed guide to the theory techniques and applications of a field that will play an increasingly important role in population biology and ecology

Introduction to Theoretical Population Genetics 2013-03-12 this book constitutes the refereed proceedings of industry oriented conferences held at ifip 20th world computer congress in september 2008 the ifip series publishes state of the art results in the sciences and technologies of information and communication the scope of the series includes foundations of computer science software theory and practice education computer applications in technology communication systems systems modeling and optimization information systems computers and society computer systems technology security and protection in information processing systems artificial intelligence and human computer interaction proceedings and post proceedings of refereed international conferences in computer science and interdisciplinary fields are featured these results often precede journal publication and represent the most current research the principal aim of the ifip series is to encourage education and the dissemination and exchange of information about all aspects of computing

Modern Developments in Theoretical Population Genetics 2002 mammalian dispersal patterns examines the ways that social structure affects population genetics and in turn rates of evolution in mammalian groups it brings together fieldwork in animal behavior and wildlife biology with theoretical work in demography and population

genetics the focus here is dispersal whether how and when individuals leave the areas where they are born theoretical work in population genetics indicates that such social factors as skewed sex ratios restrictive mating patterns and delayed age of first reproduction will lower the reproductive variability of a population by reducing the number of genotypes passed from one generation to the next field studies have shown that many mammalian species do exhibit many such social characteristics among horses elephant seals and a number of primates the majority of females are inseminated by only a fraction of the males in pacts of wolves and mongooses usually only the highest ranking male and female breed in a given season although socially restricted mating tends to lower genetic variability in isolated populations it actually tends to increase genetic variability in subdivided populations with low rates of migration between subunits among some species there is little dispersal and thus little gene flow between subpopulations other species travel far afield before mating the contributors to this volume examine actual data from populations of mammals the way patterns of dispersal correlate with the genetic structure of individuals and populations and mathematical models of population structure this interdisciplinary approach has an important bearing on work in conservation of both wildlife and zoo populations for it shows that the home range and the population size needed to maintain genetic variability can differ greatly from one species to the next the volume also offers a fruitful model for future research

An Introduction to Population Genetics Theory 1970 how to learn population biology population genetics ecology biogeography species equilibrium theory

Population Genetics 2003 a definitive account of the origins of modern mathematical population genetics first published in 2000

Stochastic Models in Population Genetics 1977

Introduction to Population Genetics 2001-02-02

Geographical Genetics (MPB-38) 2003-08-11

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Mammalian Dispersal Patterns 1987

Primer Of Population Biology 1971

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