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Ontogeny and Phylogeny Jan 24 2021 “Ontogeny recapitulates phylogeny” was Haeckel’s answer—the wrong one—to the most vexing question of nineteenth-century biology: what is the relationship between individual development (ontogeny) and the evolution of species and lineages (phylogeny)? In this, the first major book on the subject in fifty years, Stephen Jay Gould documents the history of the idea of recapitulation from its first appearance among the pre-Socratics to its fall in the early twentieth century. Mr. Gould explores recapitulation as an idea that intrigued politicians and theologians as well as scientists. He shows that Haeckel’s hypothesis—that human fetuses with gill slits are, literally, tiny fish, exact replicas of their water-breathing ancestors—had an influence that extended beyond biology into education, criminology, psychoanalysis (Freud and Jung were devout recapitulationists), and racism. The theory of recapitulation, Gould argues, finally collapsed not from the weight of contrary data, but because the rise of Mendelian genetics rendered it untenable. Turning to modern concepts, Gould demonstrates that, even though the whole subject of parallels between ontogeny and phylogeny fell into disrepute, it is still one of the great themes of evolutionary biology. Heterochrony—changes in developmental timing, producing parallels between ontogeny and phylogeny—is shown to be crucial to an understanding of gene regulation, the key to any rapprochement between molecular and evolutionary biology. Gould argues that the primary evolutionary value of heterochrony may lie in immediate ecological advantages for slow or rapid maturation, rather than in long-term changes of form, as all previous theories proclaimed. Neoteny—the opposite of recapitulation—is shown to be the most important determinant of human evolution. We have evolved by retaining the juvenile characters of our ancestors and have achieved both behavioral flexibility and our characteristic morphology thereby (large brains by prolonged retention of rapid fetal growth rates, for example). Gould concludes that “there may be nothing new under the sun, but permutation of the old within complex systems can do wonders. As biologists, we deal directly with the kind of material complexity that confers an unbounded potential upon simple, continuous changes in underlying processes. This is the chief joy of our science.”

Genetics of Speciation Sep 26 2023 The nature of populations, races, subspecies, and species. Genetic basis of isolation. Origin of isolation - theoretical. Origin of isolation - experimental. The nature of the speciation process.

Geographic Variation, Speciation, and Clines May 03 2024 Following a review of the diverse and scattered literature on gene flow and population differentiation, the author discusses the relationships among gene flow, dispersal, and migration. He then summarizes the factors which limit the geographic extent of gene flow, and those which allow steep clines to develop in the absence of barriers to gene flow. His analysis draws on examples from the field, experiments, and single- and multiple-locus models.

Systematics and the Origin of Species May 30 2021

IIT JAM Biotechology [BT] Question Bank 3000+ Questions Based on Exam Format MCQ/NAT/Written Type Oct 16 2022 IIT JAM [Code- BT] Practice Sets 3000 + Question Answer [MCQ/NAT/writtenType] Highlights of Question Answer – Covered All 24 Chapters of Biology,Chemistry,Physics,Math Based MCQ/NAT/MSQ As Per Syllabus In Each Chapter[Unit] Given 125+ MCQ/NAT/Written Type In Each Unit You Will Get 125 + Question Answer Based on [Multiple Choice Questions (MCQs) Numerical Answer Type [NAT] & Writtern Type Questions Total 3000 + Questions Answer with Explanation Design by Professor &

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The Ecology and Evolution of Heliconius Butterflies Jul 01 2021 The Heliconius butterflies are one of the classic systems in evolutionary biology and have contributed hugely to our understanding of evolution over the last 150 years. Their dramatic radiation and remarkable mimicry has fascinated biologists since the days of Bates, Wallace, and Darwin. The Ecology and Evolution of Heliconius Butterflies is the first thorough and accessible treatment of the ecology, genetics, and behaviour of these butterflies, exploring how they offer remarkable insights into tropical biodiversity. The book starts by outlining some of the evolutionary questions that Heliconius research has helped to address, then moves on to an overview of the butterflies themselves and their ecology and behaviour before focussing on wing pattern evolution, and finally, speciation. Richly illustrated with 32 colour plates, this book makes the extensive scientific literature on Heliconius butterflies accessible to a wide audience of professional ecologists, evolutionary biologists, entomologists, and amateur collectors.

Biology for AP ® Courses Oct 28 2023 Biology for AP® courses covers the scope and sequence requirements of a typical two-semester Advanced Placement® biology course. The text provides comprehensive coverage of foundational research and core biology concepts through an evolutionary lens. Biology for AP® Courses was designed to meet and exceed the requirements of the College Board's AP® Biology framework while allowing significant flexibility for instructors. Each section of the book includes an introduction based on the AP® curriculum and includes rich features that engage students in scientific practice and AP® test preparation; it also highlights careers and research opportunities in biological sciences.

On the Origin of Species by Means of Natural Selection Jun 11 2022

Systematics and the Origin of Species from the Viewpoint of a Zoologist Dec 06 2021 Introduction by Theodosius Dobzhansky; The methods and principles of systematics; Taxonomic characters and their variation; Phenomena of geographic variation; Some aspects of geographic variation; The systematic categories and the new species concept; The polytypic species, in nature and in systematics; The species in evolution; Nongeographic speciation; The biology of speciation; The higher categories and evolution.

Evolution Aug 26 2023 Evolutionary Biologist, Douglas Emlen and Science Writer, Carl Zimmer continue to improve their widely-praised evolution textbook. Emlen, an award-winning evolutionary biologist at the University of Montana, has infused Evolution: Making Sense of Life with the technical rigor and conceptual depth that today's biology majors require. Zimmer, an award-winning New York Times columnist, brings compelling storytelling to the book, bringing evolutionary research to life through a narrative sure to capture the attention of evolution students. With riveting stories about evolutionary biologists at work everywhere from the Arctic to tropical rainforests to hospital wards, the book is a reading adventure designed to grab the imagination of students, showing them exactly why it is that evolution makes such brilliant sense of life. The new edition of Evolution: Making Sense of Life is now supported in SaplingPlus. Created and supported by the author and other educators, SaplingPlus's instructional online homework drives student success and saves educators' time. Automatically graded homework problem contains hints, answer-specific feedback, and solutions to ensure that students find the help they need.

Speciation in Birds Jul 13 2022 In Speciation in Birds, Trevor Price, a University of Chicago professor and leading expert in the field, has written the most authoritative and modern synthesis on the subject to date. In clear and engaging prose and through beautiful illustrations, Price shows us why the field is as exciting and vibrant as ever. He evaluates the roles of natural selection and sexual selection. He asks how speciation contributes to some of the great patterns in species diversity such as the large number of species in the tropics, and the many endemic species on isolated islands. Throughout the book, Price emphasizes the integration of behavior, ecology, and genetics.

Evolution and Speciation Aug 14 2022 This 1981 collection of papers focuses on a wide range of topics in the general field of

evolutionary biology. It will be of interest to scientists and advanced students concerned with cytogenetics and evolution. The authors are distinguished workers in their field who have been associated with Professor M. J. D. White, who was the world authority on chromosomal evolution and speciation, to whom this volume was presented on the occasion of his seventieth birthday. Their contributions cover hybrid zones, speciation and chromosomal evolution in various groups of insects, lizards and mammals.

Animal Species and Evolution Mar 28 2021 Evolutionary biology. Species concepts and their application. Morphological species characters and sibling species. Biological properties of species. Isolating mechanisms. The breakdown of isolating mechanisms (Hybridization). The population, Its variation and genetics. Factors reducing the genetic variation of populations. Storage and protection of genetic variation. The unity of the genotype. Geographic variation. The polytypic species of the taxonomist. The population structure of species. Kinds of species. Multiplication of species. Geographic speciation. The genetics of speciation. The ecology of speciation. Species and transpecific evolution. Man as a biological species.

Speciation and Its Consequences Dec 30 2023 *Species Evolution* Apr 21 2023 What are species? What are the factors involved in their evolution? Dr Max King presents an up-to-date synthesis of theoretical, experimental and descriptive perspectives on speciation in higher organisms. The book provides a fresh insight into the processes involved in speciation utilizing the multi-dimensional databases now available. The author clearly and concisely analyses the most recent research in plant and animal populations, concentrating on the evolutionary processes, the role of chromosomes and the genetic mechanisms involved in speciation. This book will be essential reading for research workers in genetics, evolutionary studies, botany and zoology, as well as being of interest to advanced students entering the field.

Speciation May 23 2023 The origin of species, or speciation, the "mystery of mysteries", as Charles Darwin called it, is an issue at the very heart of evolutionary biology, critical to understanding the mechanisms behind the great diversity of life around us. This book is centred around three major research areas: (1) biodiversity patterns in relation to speciation scenarios; (2) mechanisms that produce pre- and postzygotic reproductive isolation and adaptive divergence; as well as (3) genetics, epigenetics, and genomics of speciation. Being a mishmash of new ideas, reviews, conventional and nonconventional case studies, this collection demonstrates more than anything how research can benefit from integration of traditionally divergent disciplines, such as biogeography, paleontology, taxonomy, molecular genetics, proteomics, and genomics.

Geographic Variation, Speciation, and Clines Jan 19 2023

The Behavior, Ecology and Evolution of Cichlid Fishes Mar 09 2022 This volume constitutes the most recent and most comprehensive consideration of the largest family of bony fishes, the Cichlidae. This book offers an integrated perspective of cichlid fishes ranging from conservation of threatened species to management of cichlids as invasive species themselves. Long-standing models of taxonomy and systematics are subjected to the most recent applications and interpretations of molecular evidence and multivariate analyses; and cichlid adaptive radiations at different scales are elucidated. The incredible diversity of endemic cichlid species in African lakes is revisited as possible examples of sympatric speciation and as serious cases for management in complex anthropogenic environments. Extreme hydrology and bathymetry as driver of micro-allopatric speciation is explored in the African riverine hotspot of diversity of the lower Congo River. Dramatic new molecular evidence draws attention to the complex taxonomy and systematics of Neotropical cichlids including the crater lakes of Central America. Molecular genetics, genomics, imaging tools and field study techniques assess the roles of natural, sexual and kin selection in shaping cichlid traits and beyond. The complex behavioral adaptations of cichlids are considered from a number of sub-disciplines including sensory biology, neurobiology, development, and evolutionary ecology. Most importantly, this volume puts forth a wealth of new interpretations, explanatory hypotheses and proposals for practical management and applications that will

shape the future for these remarkable fishes in nature as well as their use as models for the study of biology.

Speciation Nov 16 2022 Over the last two decades, the study of speciation has expanded from a modest backwater of evolutionary biology into a large and vigorous discipline. Speciation is designed to provide a unified, critical and up-to-date overview of the field. Aimed at professional biologists, graduate students and advanced undergraduates, it covers both plants and animals and deals with all relevant areas of research, including biogeography, field work, systematics, theory, and genetic and molecular studies. It gives special emphasis to topics that are either controversial or the subject of active research, including sympatric speciation, reinforcement, the role of hybridization in speciation, the search for genes causing reproductive isolation, and mounting evidence for the role of natural and sexual selection in the origin of species.

40 Years of Evolution Feb 05 2022 An important look at a groundbreaking forty-year study of Darwin's finches Renowned evolutionary biologists Peter and Rosemary Grant have produced landmark studies of the Galápagos finches first made famous by Charles Darwin. In How and Why Species Multiply, they offered a complete evolutionary history of Darwin's finches since their origin almost three million years ago. Now, in their richly illustrated new book, 40 Years of Evolution, the authors turn their attention to events taking place on a contemporary scale. By continuously tracking finch populations over a period of four decades, they uncover the causes and consequences of significant events leading to evolutionary changes in species. The authors used a vast and unparalleled range of ecological, behavioral, and genetic data—including song recordings, DNA analyses, and feeding and breeding behavior—to measure changes in finch populations on the small island of Daphne Major in the Galápagos archipelago. They find that natural selection happens repeatedly, that finches hybridize and exchange genes rarely, and that they compete for scarce food in times of drought, with the remarkable result that the finch populations today differ significantly in average beak size and shape from those of forty years ago. The authors' most spectacular discovery is the initiation and establishment of a new lineage that now behaves as a new species, differing from others in size, song, and other characteristics. The authors emphasize the immeasurable value of continuous long-term studies of natural populations and of critical opportunities for detecting and understanding rare but significant events. By following the fates of finches for several generations, 40 Years of Evolution offers unparalleled insights into ecological and evolutionary changes in natural environments.

Genetics of Speciation Oct 04 2021

How and Why Species Multiply Mar 01 2024 Charles Darwin's experiences in the Galápagos Islands in 1835 helped to guide his thoughts toward a revolutionary theory: that species were not fixed but diversified from their ancestors over many generations, and that the driving mechanism of evolutionary change was natural selection. In this concise, accessible book, Peter and Rosemary Grant explain what we have learned about the origin and evolution of new species through the study of the finches made famous by that great scientist: Darwin's finches. Drawing upon their unique observations of finch evolution over a thirty-four-year period, the Grants trace the evolutionary history of fourteen different species from a shared ancestor three million years ago. They show how repeated cycles of speciation involved adaptive change through natural selection on beak size and shape, and divergence in songs. They explain other factors that drive finch evolution, including geographical isolation, which has kept the Galápagos relatively free of competitors and predators; climate change and an increase in the number of islands over the last three million years, which enhanced opportunities for speciation; and flexibility in the early learning of feeding skills, which helped species to exploit new food resources. Throughout, the Grants show how the laboratory tools of developmental biology and molecular genetics can be combined with observations and experiments on birds in the field to gain deeper insights into why the world is so biologically rich and diverse. Written by two preeminent evolutionary biologists, How and Why Species Multiply helps to answer fundamental questions about evolution--in the

Galápagos and throughout the world.

The Beak of the Finch May 11 2022 PULITZER PRIZE WINNER • A dramatic story of groundbreaking scientific research of Darwin's discovery of evolution that "spark[s] not just the intellect, but the imagination" (Washington Post Book World). “Admirable and much-needed.... Weiner’s triumph is to reveal how evolution and science work, and to let them speak clearly for themselves.”—The New York Times Book Review On a desert island in the heart of the Galapagos archipelago, where Darwin received his first inklings of the theory of evolution, two scientists, Peter and Rosemary Grant, have spent twenty years proving that Darwin did not know the strength of his own theory. For among the finches of Daphne Major, natural selection is neither rare nor slow: it is taking place by the hour, and we can watch. In this remarkable story, Jonathan Weiner follows these scientists as they watch Darwin's finches and come up with a new understanding of life itself. The Beak of the Finch is an elegantly written and compelling masterpiece of theory and explication in the tradition of Stephen Jay Gould.

The Origin of Species by Means of Natural Selection. 6th Edition Jan 07 2022 The Origin of Species by Means of Natural Selection, published in 1859 sold out on its first day. It is considered to be the foundation of evolutionary biology and is based on Darwins experiences while onboard the H. M. S. Beagle. The sixth edition is often considered the definitive work and contains many additions and corrections to the original book.

Genes, Categories, and Species Jul 25 2023 In Genes, Categories and Species, Jody Hey provides an enlightening new solution to one of biology's most ironic and perplexing puzzles. When Darwin showed that life evolves, and that it does so by natural selection, he transformed our understanding of living things. But the very question Darwin addressed-the nature of species-continues to pose an awkward conundrum for biologists. Despite enormous efforts by a great many scholars, biologists still cannot agree on how to identify species or even how to define the word "species." Genes, Categories, and Species is not like other books on the species problem, for it does not begin by asking, "What is a species?" Instead, it focuses on the very fact that biologists are stumped by species and their curious behavior in coping with that uncertainty. Faced with a persistent conundrum-and no lack of data on the subject-biologists who ponder the species problem have ceased to ask the most essential of scientific questions: "What new information do we need to resolve the problem?" This is the question that motivates this book and leads to the discoveries it reveals. The answer to the species problem lies not with the processes and patterns of biological diversity, Hey contends, but rather in the way the human mind perceives and categorizes that diversity. The promise of this book is twofold. First, it allows biologists to understand the causes of the species problem and to use this knowledge to avoid the major confusions that arise over species. Second, with its explanation of the species problem, it gives scholars and students of human nature a humbling example of how ill-suited the human mind is for certain kinds of scientific questions.

AP Biology Prep Plus 2018-2019 Mar 21 2023 Kaplan's AP Biology Prep Plus 2018-2019 is completely restructured and aligned with the current AP exam, giving you concise review of the most-tested content to quickly build your skills and confidence. With bite-sized, test-like practice sets and customizable study plans, our guide fits your schedule. Personalized Prep. Realistic Practice. Two full-length Kaplan practice exams with comprehensive explanations Online test scoring tool to convert your raw score into a 1–5 scaled score Pre- and post-quizzes in each chapter so you can monitor your progress Customizable study plans tailored to your individual goals and prep time Online quizzes and workshops for additional practice Focused content review on the essential concepts to help you make the most of your study time Test-taking strategies designed specifically for AP Biology Expert Guidance We know the test—our AP experts make sure our practice questions and study materials are true to the exam We know students—every explanation is written to help you learn, and our tips on the exam structure and question formats will help you avoid surprises on Test Day We invented test prep—Kaplan (www.kaptest.com) has been helping students for 80 years, and more than 95% of our students get into their top-

choice schools

On the Origin of Species Illustrated Jun 23 2023 On the Origin of Species (or, more completely, On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life), [3] published on 24 November 1859, is a work of scientific literature by Charles Darwin which is considered to be the foundation of evolutionary biology.[4] Darwin's book introduced the scientific theory that populations evolve over the course of generations through a process of natural selection. It presented a body of evidence that the diversity of life arose by common descent through a branching pattern of evolution. Darwin included evidence that he had gathered on the Beagle expedition in the 1830s and his subsequent findings from research, correspondence, and experimentation

The Origin of Species by Means of Natural Selection Nov 04 2021 States the evidence for a theory of evolution, explains how evolution takes place, and discusses instinct, hybrids, fossils, distribution, and classification.

Philosophers of Our Times Aug 02 2021 Eighteen of the world's most eminent philosophers of recent years tackle central questions of philosophy in this collection of the prestigious annual lectures given at the Royal Institute of Philosophy in London. The line-up of authors is stellar: Simon Blackburn, Ned Block, Tyler Burge, David Chalmers, Noam Chomsky, Jerry Fodor, Jürgen Habermas, Anthony Kenny, Christine Korsgaard, John McDowell, Alasdair MacIntyre, Thomas Nagel, Derek Parfit, T. M. Scanlon, John Searle, Sir Peter Strawson, Bernard Williams, and Mary Warnock. There are six pieces on questions to do with mind, perception, and action; four on reason and morality; six range over freedom, identity, religion, and politics; and the last two take a step back to look at philosophy itself and how it works. The best way to learn about philosophy is to read philosophy at its best: that is what this fascinating anthology offers.

Ecological Speciation Sep 14 2022

Studies on Speciation Feb 25 2021

Systematics and the Origin of Species, from the Viewpoint of a Zoologist Dec 18 2022

Being, Freedom, and Method Apr 29 2021 John Keller presents a set of new essays on ontology, time, freedom, God, and philosophical method. Our understanding of these subjects has been greatly advanced, since the 1970s, by the work of Peter van Inwagen. In this volume leading philosophers engage with his work, and van Inwagen himself offers selective responses.

Genome Chaos Sep 02 2021 Genome Chaos: Rethinking Genetics, Evolution, and Molecular Medicine transports readers from Mendelian Genetics to 4D-genomics, building a case for genes and genomes as distinct biological entities, and positing that the genome, rather than individual genes, defines system inheritance and represents a clear unit of selection for macro-evolution. In authoring this thought-provoking text, Dr. Heng invigorates fresh discussions in genome theory and helps readers reevaluate their current understanding of human genetics, evolution, and new pathways for advancing molecular and precision medicine. Bridges basic research and clinical application and provides a foundation for re-examining the results of large-scale omics studies and advancing molecular medicine Gathers the most pressing questions in genomic and cytogenomic research Offers alternative explanations to timely puzzles in the field Contains eight evidence-based chapters that discuss 4d-genomics, genes and genomes as distinct biological entities, genome chaos and macro-cellular evolution, evolutionary cytogenetics and cancer, chromosomal coding and fuzzy inheritance, and more

Concepts of Species Apr 09 2022

Concepts of Biology Feb 17 2023 Concepts of Biology is designed for the single-semester introduction to biology course for non-science majors, which for many students is their only college-level science course. As such, this course represents an important opportunity for students to develop the necessary knowledge, tools, and skills to make informed decisions as they continue with their lives. Rather than being mired down with facts and vocabulary, the typical non-science major student needs information presented in a way that is easy to read and understand. Even more importantly, the content should be meaningful. Students do much better when they understand why biology is relevant to their everyday lives. For these reasons, Concepts of Biology is grounded on an

evolutionary basis and includes exciting features that highlight careers in the biological sciences and everyday applications of the concepts at hand.We also strive to show the interconnectedness of topics within this extremely broad discipline. In order to meet the needs of today's instructors and students, we maintain the overall organization and coverage found in most syllabi for this course. A strength of Concepts of Biology is that instructors can customize the book, adapting it to the approach that works best in their classroom. Concepts of Biology also includes an innovative art program that incorporates critical thinking and clicker questions to help students understand--and apply--key concepts.

Speciation Jan 31 2024

Endless Forms Jun 04 2024 Speciation is one of the great themes of evolutionary biology. It is the process through which new species are born and diversity generated. Yet for many years our understanding of the process consisted of little more than a perception that if populations are isolated geographically, they will diverge genetically and may come to form new species. This situation began to change in the 1960s as an increasing number of biologists challenged the exclusivity of allopatric speciation and began to probe more deeply into the actual process by which divergence occurs and reproductive isolation is acquired. This focus on process led to many new insights, but numerous questions remain and speciation is now one of the most dynamic areas of research in modern evolutionary biology. This volume presents the newest research findings on speciation bringing readers up to day on species concepts, modes of speciation, and the nature of reproductive barriers. It also discusses the forces that drive divergence of populations, the genetic control of reproductive isolation, and the role played by hybrid zones and hybridization in speciation.

Modes of Speciation Nov 28 2023

Adaptive Speciation Apr 02 2024 First published in 2004, this book by internationally recognized leaders in the field clarifies how adaptive processes, rather than geographic isolation, can cause speciation.

- Endless Forms
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