

Darwins Natural Selection Case Studies Answer Key

Darwin's letters chronicle the beginning of his interest in natural science, relate how he collected evidence, and outline his famous theories of biological evolution, that species change over time, and that new organisms arise by the splitting of ancestral forms into two or more descendant species. However, above all, Darwin provided the mechanisms by arguing convincingly that it is by natural selection – as well as by sexual selection (as he later added) – that organisms adapt to their environment. The many discoveries since then have essentially confirmed and strengthened Darwin's central theses, with latest evidence, for example, from molecular genetics, revealing the evolutionary relationships of all life forms through one shared history of descent from a common ancestor. We have also come a long way to progressively understand more on how new species actually originate, i. e. on speciation which remained Darwin's "mystery of m-teries", as noted in one of his earliest transmutation notebooks. Since speciation is the underlying mechanism for radiations, it is the ultimate causation for the biological diversity of life that surrounds us.

The Origin of Species is a work of scientific literature by Charles Darwin which is considered to be the foundation of evolutionary biology. 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 on research, correspondence, and experimentation. The Origin of Species attracted widespread interest upon its publication. As Darwin was an eminent scientist, his findings were taken seriously and the evidence he presented generated scientific, philosophical, and religious discussion. Within two decades there was widespread scientific agreement that evolution, with a branching pattern of common descent, had occurred. In the 1930s and 1940s, Darwin's concept of natural selection became central to modern evolutionary theory, and it has now become the unifying concept of the life sciences. This cloth-bound book includes a Victorian inspired dust-jacket, and is limited to 100 copies.

An original, unpublished manuscript written before the Origin of Species which contains the references to journal articles and books that Darwin used in formulating his controversial ideas. This volume has been edited and annotated and includes a cross-indexing to the Origin.

Darwinian Populations and Natural Selection

Charles Darwin's Zoology Notes & Specimen Lists from H.M.S. Beagle

The Advancement of Science : Science without Legend, Objectivity without Illusions

The Radiation of Darwin's Finches

The Church of Liberalism

Darwin's Finches on Daphne Major Island

A Selection, 1825-1859

Bringing together conceptual obstacles and core concepts of evolutionary theory, this book presents evolution as straightforward and intuitive.

States the evidence for a theory of evolution, explains how evolution takes place, and discusses instinct, hybrids, fossils, distribution, and classification.

This text challenges the accepted theory on the genetic mechanism of evolution. The traditional neo-darwinian view is that we are at the mercy of our genes which we inherit, largely unchanged, from our parents, apart from random mutations which accumulate and lead to change over evolutionary time. The work shows that for one adaptive body system there is strong molecular genetic evidence that aspects of acquired immunities developed by parents during their lifetime may be passed on to their children. This gives new credibility to the Lamarckian heresy - the notion of the inheritance of acquired characteristics, which has, until now, been refuted.

Charles Darwin's Natural Selection*Being the Second Part of His Big Species Book Written from 1856 to 1858***Cambridge University Press**

The Evolution

How and Why Species Multiply

Being the Second Part of His Big Species Book Written from 1856 to 1858

Understanding Evolution

Volume X: Comparative Phylogeography

The Development of Theory of Natural Selection

A Story of Evolution in Our Time

Renowned evolutionary biologists Peter and Rosemary Grant have produced landmark studies of the Galapagos 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 Galapagos 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.

A highly illustrated account of Darwin's visual representations of his theories, and their influence on Victorian literature, art and culture, first published in 2006.

During the last three decades, reflections on the growth of scientific knowledge have inspired historians, sociologists, and some philosophers to contend that scientific objectivity is a myth. In this book, Kitcher attempts to resurrect the notions of objectivity and progress in science by identifying both the limitations of idealized treatments of growth of knowledge and the overreactions to philosophical idealizations. Recognizing that science is done not by logically omniscient subjects working in isolation, but by people with a variety of personal and social interests, who cooperate and compete with one another, he argues that, nonetheless, we may conceive the growth of science as a process in which both our vision of nature and our ways of learning more about nature improve. Offering a detailed picture of the advancement of science, he sets a new agenda for the philosophy of science and for other "science studies" disciplines.

This is Charles Darwin's chronicle of his five-year journey, beginning in 1831, around the world as a naturalist on the H.M.S. Beagle.

Chance in Evolution

Science without Legend, Objectivity without Illusions

Darwinism's Struggle for Survival

Creative People at Work

Psychology Primer, Volume 3: Evolution

The Galapagos Islands

Adaptation and Natural Selection

A concise introduction to Darwin's theory of evolution by natural selection. Specific case studies are reviewed including antibiotic-resistance, mating preferences, and the Cinderella effect. The volume also includes multiple-review and short-answer review questions.

In December 2006, the National Academy of Sciences sponsored a colloquium (featured as part of the Arthur M. Sackler Colloquia series) on "Adaptation and Complex Design" to synthesize recent empirical findings and conceptual approaches toward understanding the evolutionary origins and maintenance of complex adaptations. Darwin's elucidation of natural selection as a creative natural force was a monumental achievement in the history of science, but a century and a half later some religious believers still contend that biotic complexity registers conscious supernatural design. In this book, modern scientific perspectives are presented on the evolutionary origin and maintenance of complex phenotypes including various behaviors, anatomies, and physiologies. After an introduction by the editors and an opening historical and conceptual essay by Francisco Ayala, this book includes 14 papers presented by distinguished evolutionists at the colloquium. The papers are organized into sections covering epistemological approaches to the study of biocomplexity, a hierarchy of topics on biological complexity ranging from ontogeny to symbiosis, and case studies explaining how complex phenotypes are being dissected in terms of genetics and development.

After his famous visit to the Galapagos Islands, Darwin speculated that one might fancy that, from an original paucity of birds in this archipelago, one species had been taken and modified for different ends. This book is the classic account of how much we have since learned about the evolution of these remarkable birds. Based upon over a decade's research, Grant shows how interspecific competition and natural selection act strongly enough on contemporary populations to produce observable and measurable evolutionary change. In this new edition, Grant outlines new discoveries made in the thirteen years since the book's publication. *Ecology and Evolution of Darwin's Finches* is an extraordinary account of evolution in action. Originally published in 1986, The Princeton Legacy Library uses the latest print-on-demand technology to again make available previously out-of-print books from the distinguished backlist of Princeton University Press. These editions preserve the original texts of these important books while presenting them in durable paperback and hardcover editions. The goal of the Princeton Legacy Library is to vastly increase access to the rich scholarly heritage found in the thousands of books published by Princeton University Press since its founding in 1905.

Sexual selection, or the struggle for mates, was of considerable strategic importance to Darwin's theory of evolution as he first outlined it in the "Origin of Species," and later, in the "Descent of Man," it took on a much wider role. There, Darwin's exhaustive elaboration of sexual selection throughout the animal kingdom was directed to substantiating his view that human racial and sexual differences, not just physical differences but certain mental and moral differences, had evolved primarily through the action of sexual selection. It was the culmination of a lifetime of intellectual effort and commitment. Yet even though he argued its validity with a great array of critics, sexual selection went into abeyance with Darwin's death, not to be revived until late in the twentieth century, and even today it remains a controversial theory. In unfolding the history of sexual selection, Eveleen Richards brings to vivid life Darwin the man, not the myth, and the social and intellectual roots of his theory building."

The Voyage of the Beagle

In the Light of Evolution

Charles Darwin's Letters

Volume 1: Adaptation and Complex Design

Ecology and Evolution of Darwin's Finches

Case studies in Adaptive Radiation, Speciation and the Origin of Biodiversity

The Beak of the Finch

Winner of the Pulitzer Prize Winner of the Los Angeles Times Book Prize 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 dramatic story of groundbreaking scientific research, 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. With a new preface.

This transcription of notes made by Charles Darwin during the voyage of H.M.S. Beagle records his observations of animals and plants, and provides valuable insights into the intellectual development of one of the most influential scientists of all time. Darwin drew on many of these notes for his well-known *Journal of Researches* (1839), but the majority of them have remained unpublished. This volume, which includes copies of his sketches and illustrations, provides numerous examples of his impeccable accuracy in describing the wide range of animals seen in the course of his travels, and of his analytical approach toward every one of his observations. Here are to be found the initial seeds of his theory of evolution, and of the fields of behavioral and ecological study of which he was one of the founding fathers.

INTRODUCTION. The nature of the following work will be best understood by a brief account of how it came to be written. During many years I collected notes on the origin or descent of man, without any intention of publishing on the subject, but rather with the determination not to publish, as I thought that I should thus only add to the prejudices against my theory. It seemed to me sufficient to indicate, in the first edition of my 'Origin of Species,' that by this work "light would be thrown on the origin of man and his history;" and this implies that man must be included with other organic beings in any general conclusion respecting his manner of appearance on this earth. Now the case wears a wholly different aspect. When a naturalist like Carl Vogt ventures to say in his address as President of the National Institution of Geneva (1869), "personne, en Europe au moins, n'ose plus soutenir la creation independante et de toutes pieces, des especes," it is manifest that at least a large number of naturalists must admit that species are the modified descendants of other species; and this especially holds good with the younger and rising naturalists. The greater number accept the agency of natural selection; though some urge, whether with justice the future must decide, that I have greatly overrated its importance. Of the older and honoured chiefs in natural science, many unfortunately are still opposed to evolution in every form. In consequence of the views now adopted by most naturalists, and which will ultimately, as in every other case, be followed by others who are not scientific, I have been led to put together my notes, so as to see how far the general conclusions arrived at in my former works were applicable to man. This seemed all the more desirable, as I had never deliberately applied these views to a species taken singly. When we confine our attention to any one form, we are deprived of the weighty arguments derived from the nature of the affinities which connect together whole groups of organisms—their geographical distribution in past and present times, and their geological succession. The homological structure, embryological development, and rudimentary organs of a species remain to be considered, whether it be man or any other animal, to which our attention may be directed; but these great classes of facts afford, as it appears to me, ample and conclusive evidence in favour of the principle of gradual evolution. The strong support derived from the other arguments should, however, always be kept before the mind.

This book contests the general view that natural selection constitutes the explanatory core of evolutionary biology. It invites the reader to consider an alternative view which favors a more complete and multidimensional interpretation. It is common to present the 1930-1960 period as characterized by the rise of the Modern Synthesis, an event structured around two main explanatory commitments: (1) Gradual evolution is explained by small genetic changes (variations) oriented by natural selection, a process leading to adaptation; (2) Evolutionary trends and specialation events are macroevolutionary phenomena that can be accounted for solely in terms of the extension of processes and mechanisms occurring at the previous microevolutionary level.

On this view, natural selection holds a central explanatory role in evolutionary theory - one that presumably reaches back to Charles Darwin's Origin of Species - a view also accompanied by the belief that the field of evolutionary biology is organized around a profound divide: theories relying on strong selective factors and those appealing only to weak ones. If one reads the new analyses, results, and comparisons among natural communities and from the study of wild species in the landscapes where they evolved, Darwinian Agriculture reveals why it is sometimes better to slow or even reverse evolutionary trends when they are inconsistent with our present goals, and how we can glean new ideas from natural selection's marvelous innovations in wild sp.

the intellectual space is quite limited, if not non-existent, between, on the one hand, "Darwinists", who play down the central role of natural selection in evolutionary explanations, and, on the other hand, "non-Darwinists", who use it in a list of other evolutionary mechanisms. The "mechanism-centered" approach to evolutionary biology is too incomplete to fully make sense of its development. In this book the labels created under the traditional historiography - "Darwinian Revolution", "Eclipse of Darwinism", "Modern Synthesis", "Post-Synthetic Developments" - are thus re-evaluated. This book will not only appeal to researchers working in evolutionary biology, but also to historians and philosophers."

On the Origin of Species Illustrated

What Darwin Got Wrong

On the Origin of Species

The Case Against Intelligent Design

40 Years of Evolution

The Origin of Species by Means of Natural Selection, Or, The Preservation of Favored Races in the Struggle for Life

Charles Darwin's Natural Selection

The history of science is articulated by moments of discovery. Yet, these 'moments' are not simple or isolated events in science. Just as a scientific discovery illuminates our understanding of nature or of society, and reveals new connections among phenomena, so too does the history of scientific activity and the analysis of scientific reasoning illuminate the processes which follow upon such moments. Understanding discovery has not been, until recently, a major concern of modern philosophy of science. Whether the act of discovery was regarded as mysterious and inexplicable, or obvious and in no need of explanation, modern philosophy of science in effect bracketed the question. It concentrated instead on the logic of scientific explanation or on the issues of validation or justification of scientific theories or laws. The recent revival of interest in the context of discovery, indeed in the acts of discovery, on the part of philosophers and historians of science, represents no one particular methodological or philosophical orientation. It proceeds as much from an empiricist and analytical approach as from a sociological or historical one; from considerations of the logic of science as much as from the logical or extralogical contexts of scientific thought and practice. But, in general, this new interest focuses sharply on the actual historical and contemporary cases of scientific discovery, and on an examination of the act or moment of discovery in situ.

Leading paleontologist David Archibald explores the rich history of visual metaphors for biological order from ancient times to the present and their influence on human beings' perception of their place in nature. Specifically, Archibald focuses on ladders and trees, and the first appearance of trees to represent seasonal life cycles. Their use in ancient Roman decorations and genealogies was then appropriated by the early Christian Church to represent biblical genealogies. The late eighteenth century saw the idea of a tree reapropriated to visualize relationships in the natural world, sometimes with a creationist view, but in some instances suggesting evolution. Charles Darwin's On the Origin of Species (1859) exorcised the exclusively creationist view of the tree of life. His ideas sparked an explosion of trees, mostly by younger acolytes in Europe. Although Wallace's influence waned in the early twentieth century, by midcentury his ideas held sway once again in time for another and even greater explosion of tree building, generated by the development of new theories on how to assemble trees, the birth of powerful computing, and the emergence of molecular technology. Throughout his far-reaching study, and with the use of many figures, Archibald connects the evolution of tree of life iconography to our changing perception of the world and ourselves, offering uncommon insight into how we went from standing on the top rung of the biological ladder to embodying just one tiny twig on the tree of life.

A former evangelical Christian and creationist refutes the pseudoscientific arguments of proponents of Intelligent Design and explains why the scientific evidence reveals that evolution is more than just a theory and how it transforms life through the process of natural selection.

Jerry Fodor and Massimo Pigliatti-Palmarini, a distinguished philosopher and scientist working in tandem, reveal major flaws at the heart of Darwinian evolutionary theory. They do not deny Darwin's status as an outstanding scientist but question the inferences he drew from his observations.

Combining the results of cutting-edge work in experimental biology with crystal-clear philosophical argument they mount a devastating critique of the central tenets of Darwin's account of the origin of species. The logic underlying natural selection is the survival of the fittest under changing environmental pressure. This logic, they argue, is mistaken. They back up the claim with evidence of what actually happens in nature. This is a rare achievement - the short book that is likely to make a great deal of difference to a very large subject. What Darwin Got Wrong will be controversial. The authors' arguments will reverberate through the scientific world. At the very least they will transform the debate about evolution.

How Retrogenes are Changing Darwin's Natural Selection Paradigm

From Artificial to Natural Selection

Scientific Discovery: Case Studies

Charles Darwin and Victorian Visual Culture

Evolution in Action

The Development of Darwin's Theory

Aristotle's Ladder, Darwin's Tree

From the conservative spokesperson and author of *Slander and How to Talk to a Liberal* comes an all new, timely, and thought-provoking study of American politics and religion that looks at the Left's attacks on the Judeo-Christian tradition. Reprint. 300,000 first printing.

As human populations grow and resources are depleted, agriculture will need to use land, water, and other resources more efficiently and without sacrificing long-term sustainability. Darwinian Agriculture presents an entirely new approach to these challenges, one that draws on the principles of evolution and natural selection. R. Ford Denison shows how both biotechnology and traditional plant to identify promising routes for crop genetic improvement and avoid costly dead ends. Denison explains why plant traits that have been genetically optimized by individual selection—such as photosynthesis and drought tolerance—are bad candidates for genetic improvement. Traits like plant height and leaf angle, which determine the collective performance of plant communities, offer more room to improve than individual traits. For example, the ability to fix nitrogen, which can be used to grow crops in less fertile soils, is a trait that is not yet optimized by individual selection. This book shows how to use evolution to identify promising traits that have not yet been optimized by individual selection. This book is a must-read for anyone interested in agriculture, food security, and the future of our planet.

INTRODUCTION. When on board H.M.S. 'Beagle,' as naturalist, I was much struck with certain facts in the distribution of the inhabitants of South America, and in the geological relations of the present to the past inhabitants of that continent. These facts seemed to me to throw some light on the origin of species—that mystery of mysteries, as it has been called by one of our greatest philosophers, in 1837, that something might perhaps be entered on this question by patiently accumulating and reflecting on all sorts of facts which could possibly have any bearing on it. After five years' work I allowed myself to speculate on the subject, and drew up some short notes; these I enlarged in 1844 into a sketch of the conclusions, which then seemed to me probable: from that period to the same object. I hope that I may be excused for entering on these personal details, as I give them to show that I have not been hasty in coming to a decision. My work is now nearly finished; but as it will take me two or three more years to complete it, and as my health is far from strong, I have been urged to publish this Abstract. I have more especially been induced to do this, as Mr. Wallace, of the Malay archipelago, has arrived at almost exactly the same general conclusions that I have on the origin of species. Last year he sent to me a memoir on this subject, with a request that I would forward it to Sir Charles Lyell, who sent it to the Linnean Society, and it is published in the third volume of the *Journal of that Society*. Sir C. Lyell and Dr. Hooker, who both knew of my work—the latter has honoured me by thinking it advisable to publish my views. Wallace's excellent memoir, some brief extracts from my manuscripts, and a rich legacy to cherish and preserve for the future. Two urgent challenges, and opportunities, for 21st-century science are to gain deeper insights into the evolutionary processes that foster biotic diversity, and to find solutions for the regional and global crises that biodiversity currently faces. A grasp of evolutionary principles and processes is important in all other societal arenas as well, such as education, medicine, sociology, and other applied fields including agriculture, pharmacology, and biotechnology. The ramifications of evolutionary thought also extend into learned realms traditionally reserved for philosophy.

In the *Light of Evolution* (ILE) series is to promote the evolutionary sciences through state-of-the-art colloquia in the series of Arthur M. Sackler colloquia sponsored by the National Academy of Sciences and their published proceedings. Each installment explores evolutionary perspectives on a particular biological topic that is scientifically intriguing but also has special relevance to contemporary society. This tenth and final edition of the *Light of Evolution* series focuses on recent developments in phylogeographic research and their relevance to past accomplishments and future research directions.

Twelve Cognitive Case Studies

Heredity and the Hypothesis of Natural Selection

On Evolution

Darwin and the Making of Sexual Selection

The Origin of Species

Darwinian Agriculture

Lamarck's Signature

Trace the evolutionary history of fourteen different species of finches on the Galapagos Islands that were studied by Charles Darwin.

In Darwin's Origin of Species (1859), Charles Darwin put forward his theory of natural selection. Conventionally, Darwin's argument for this theory has been understood as based on an analogy with artificial selection. But there has been no consensus on how, exactly, this analogical argument is supposed to work – and some suspicion too that analogical arguments on the whole are embarrassingly weak. Drawing on new insights into the history of analogical argumentation from the ancient Greeks onward, as well as on in-depth studies of Darwin's public and private writings, this book offers an original perspective on Darwin's argument, restoring to view the intellectual traditions which Darwin took for granted in arguing as he did. From this perspective come new appreciations not only of Darwin's argument but of the metaphors based on it, the range of wider traditions the argument touched upon, and its legacies for science after the Origin.

Biological evolution is a fact—but the many conflicting theories of evolution remain controversial even today. When *Adaptation and Natural Selection* was first published in 1966, it struck a powerful blow against those who argued for the concept of group selection—the idea that evolution acts to select entire species rather than individuals. Williams's famous work in favor of simple Darwinism over group selection has become a classic of science literature, valued for its thorough and convincing argument and its relevance to many fields outside of biology. Now with a new foreword by Richard Dawkins, *Adaptation and Natural Selection* is an essential text for understanding the nature of scientific debate.

In this rich selection from Darwin's most important and relevant works, Glick and Kohn provide the reader with a map of sorts by which to navigate the ins and outs of the development of the theory of natural selection. A concise general introduction lays out Darwin's theory, which is followed up in the chapter introductions. Each chapter ends with an excerpt from Darwin's correspondence, with commentary on the work in question, its significance, impact, and reception. In addition, two essential appendices are included—the first three chapters from Malthus, On Population, which gave Darwin the idea for natural selection, and the paper by Wallace that motivated Darwin to abandon the "Big Species Book" and write Origin of Species.

The Evolution of Visual Metaphors for Biological Order

Darwin's Argument by Analogy

Godless

A Critique of Some Current Evolutionary Thought

Why Darwin Matters

The Descent of Man

Suggests and explains the theories of evolution, natural selection, and survival of the fittest, and attempts to describe humankind's place in the natural world. Reprint. TV tie-in. 15,000 first printing.

In 1859 Darwin described a deceptively simple mechanism that he called "natural selection," a combination of variation, inheritance, and reproductive success. He argued that this mechanism was the key to explaining the most puzzling features of the natural world, and science and philosophy were changed forever as a result. The exact nature of the Darwinian process has been controversial ever since, however. Godfrey-Smith draws on new developments in biology, philosophy of science, and other fields to give a new analysis and extension of Darwin's idea. The central concept used is that of a "Darwinian population," a collection of things with the capacity to undergo change by natural selection. From this starting point, new analyses of the role of genes in evolution, the application of Darwinian ideas to cultural change, and "evolutionary transitions" that produce complex organisms and societies are developed. Darwinian Populations and Natural Selection will be essential reading for anyone interested in evolutionary theory.

To demystify creative work without reducing it to simplistic formulas, Doris Wallace and Howard Gruber, one of the world's foremost authorities on creativity, have produced a unique book exploring the creative process in the arts and sciences. The book's original "evolving systems approach" treats creativity as purposeful work and integrates cognitive, emotional, aesthetic, and motivational aspects of the creative process. Twelve revealing case studies explore the work of such diverse people as William Wordsworth, Albert Einstein, Jean Piaget, Anais Nin, and Charles Darwin. The case study approach is discussed in relation to other methods such as biography, autobiography, and psychohistory. Emphasis is given to the uniqueness of each creative person; the social nature of creative work is also treated without losing the sense of the individual. A final chapter discusses the relationship between creativity and morality in the nuclear age. In addition to developmental psychologists and cognitive scientists, this study offers fascinating insights for all readers interested in the history of ideas, scientific discovery, artistic innovation, and the interplay of intuition, inspiration, and purposeful work.

A rich and wide-ranging philosophical interpretation of the history of theoretical Darwinism.

The Origin of Species (Royal Collector's Edition) (Annotated) (Case Laminate Hardcover with Jacket)

Revisiting Its Explanatory Role in Evolutionary Biology

How Understanding Evolution Can Improve Agriculture

Natural History, Natural Theology, and Natural Selection, 1838-1859

Natural Selection

In this highly acclaimed book, Ospovat shows that Darwin's views changed radically from his first formulation of evolution to the publication of the full theory in 1859.

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), published on 24 November 1859, is a work of scientific literature by Charles Darwin which is considered to be the foundation of evolutionary biology. 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.

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This illuminating volume explores the effects of chance on evolution, covering diverse perspectives from scientists, philosophers, and historians. The evolution of species, from single-celled organisms to multicellular animals and plants, is the result of a long and highly chancy history. But how profoundly has chance shaped life, and what, precisely, do we mean by chance? Bringing together biologists, philosophers of science, and historians of science, *Chance in Evolution* is the first book to untangle the far-reaching effects of chance, contingency, and randomness on the evolution of life. The book begins by placing chance in historical context, starting with the ancients and moving through Darwin to contemporary biology. It documents the shifts in our understanding of chance as Darwin's theory of evolution developed into the modern synthesis, and how the acceptance of chance in Darwinian theory affected theological resistance to it. Other chapters discuss how chance relates to the concepts of genetic drift, mutation, and parallel evolution—as well as recent work in paleobiology and the experimental evolution of microbes. By engaging in collaboration across biology, history, philosophy, and theology, this book offers a comprehensive overview both of the history of chance in evolution and of our current understanding of the impact of chance on life.