

## Philosophy Of Biology

*A guide to some of the developments that have occurred in the philosophy of biology. Covering such issues as evolutionary theory, creationism, teleology, nature versus nurture and sociobiology, this book provides an overview of the current state of play in this rapidly-changing discipline.*

*No student or colleague of Marjorie Grene will miss her incisive presence in these papers on the study and nature of living nature, and we believe the new reader will quickly join the stimulating discussion and critique which Professor Grene steadily provokes. For years she has worked with equally sure knowledge in the classic domain of philosophy and in modern epistemological inquiry, equally philosopher of science and metaphysician. Moreover, she has the deeply sensible notion that she should be a critically intelligent learner as much as an imaginatively original thinker, and as a result she has brought insightful expository readings of other philosophers and scientists to her own work. We were most fortunate that Marjorie Grene was willing to spend a full semester of a recent leave here in Boston, and we have on other occasions sought her participation in our colloquia and elsewhere. Now we have the pleasure of including among the Boston Studies in the Philosophy of Science this generous selection from Grene's philosophical inquiries into the understanding of the natural world, and of the men and women in it. Boston University Center for the R. S. COHEN Philosophy and History of Science M. W. ARTOFSKY April 1974 PREFACE This collection spans - sportily - years from 1946 ('On Some Distinctions between Men and Brutes') to 1974 ('On the Nature of Natural Necessity').*

*Proceedings of the conference on Problems of reduction in biology held at the Study and Conference Center of the Rockefeller Foundation in Bellagio, Italy, from 9 to 16 September 1972.*

*This volume provides a broad overview of issues in the philosophy of behavioral biology, covering four main themes: genetic, developmental, evolutionary, and neurobiological explanations of behavior. It is both interdisciplinary and empirically informed in its approach, addressing philosophical issues that arise from recent scientific findings in biological research on human and non-human animal behavior. Accordingly, it includes papers by professional philosophers and philosophers of science, as well as practicing scientists. Much of the work in this volume builds on presentations given at the international conference.*

*"Biological Explanations of Behavior: Philosophical Perspectives", held in 2008 at the Leibniz Universität Hannover in Germany. The volume is intended to be of interest to a broad range of audiences, which includes philosophers (e.g., philosophers of mind, philosophers of biology, and metaethicists), as well as practicing scientists, such as biologists or psychologists whose interests relate to biological explanations of behavior.*

*Philosophy Of Biology*

*Towards a Processual Philosophy of Biology*

*Contemporary Debates in Philosophy of Biology*

*Essays in Philosophy of Biology*

*Sex and Death*

**No Marketing Blurb**

Comprised of essays by top scholars in the field, this volume offers detailed overviews of philosophical issues raised by biology. Brings together a team of eminent scholars to explore the philosophical issues raised by biology Addresses traditional and emerging topics, spanning molecular biology and genetics, evolution, developmental biology, immunology, ecology, mind and behaviour, neuroscience, and experimentation Begins with a thorough introduction to the field Goes beyond previous treatments that focused only on evolution to give equal attention to other areas, such as molecular and developmental biology Represents both an authoritative guide to philosophy of biology, and an accessible reference work for anyone seeking to learn about this rapidly-changing field

This book offers to the international reader a collection of original articles of some of the most skillful historians and philosophers of biology currently working in Latin American universities. During the last decades, increasing attention has been paid in Latin America to the history and philosophy of biology, but since many local authors prefer to write in Spanish or in Portuguese, their ideas have barely crossed the boundaries of the continent. This volume aims to remedy this state of things, providing a good sample of this production to the English speaking readers, bringing together contributions from researchers working in Brazilian, Argentinean, Chilean,

Colombian and Mexican universities. The stress on the regional provenance of the authors is not intended to suggest the existence of something like a Latin American history and philosophy of biology, supposedly endowed with distinctive features. On the contrary, the editors firmly believe that advances in this field can be achieved only by stimulating the integration in the international debate. Based on this assumption, the book focuses on two topics, life and evolution, and presents a selection of contributions addressing issues such as the history of the concept of life, the philosophical reflection on life manipulation and life extension, the structure and

development of evolutionary theory as well as human evolution. Life and Evolution – Latin American Essays on the History and Philosophy of Biology will provide the international reader with a rather complete picture of the ongoing research in the history and philosophy of biology in Latin America, offering a snapshot of this dynamic community. It will also contribute to contextualize and develop the debate concerning life and evolution, and the relation between the two phenomena.

The emergence of systems biology raises many fascinating questions: What does it mean to take a systems approach to problems in biology? To what extent is the use of mathematical and computational modelling changing the life sciences? How does the availability of big data influence research practices? What are the major challenges for biomedical research in the years to come? This book addresses such questions of relevance not only to philosophers and biologists but also to readers interested in the broader implications of systems biology for science and society. The book features reflections and original work by experts from across the disciplines including systems biologists, philosophers, and interdisciplinary scholars investigating the social and educational aspects of systems biology. In response to the same set of questions, the experts develop and defend their personal perspectives on the distinctive character of systems biology and the challenges that lie ahead. Readers are invited to engage with different views on the questions addressed, and may explore numerous themes relating to the philosophy of systems biology. This edited work will appeal to scholars and all levels, from undergraduates to researchers, and to those interested in a variety of scholarly approaches such as

systems biology, mathematical and computational modelling, cell and molecular biology, genomics, systems theory, and of course, philosophy of biology.

**An Introduction to the Philosophy of Biology**

**Reduction and Related Problems**

**History And Philosophy Of Biology**

**Philosophy of Biology: A Very Short Introduction**

**An Episodic History**

The papers collected in this 2001 volume focus on Aristotle's systematic investigation of animals.

This major new series in the philosophy of science aims to provide a new generation of textbooks for the subject. The series will not only offer fresh treatments of core topics in the theory and methodology of scientific knowledge, but also introductions to newer areas of the discipline. Furthermore, the series will cover topics in current science that raise significant foundational issues both for distinct questions of its own not only for philosophy of science, but for metaphysics, epistemology and ethics. This comprehensive new textbook for a rapidly growing field of study provides students new to the subject with an up-to-date presentation of the key philosophical issues. Care is taken throughout to keep the technicalities accessible to the non-biologist but without sacrificing the philosophical challenges posed by evolution and evolutionary biology, beginning with Darwin's central argument in the Origin of the Species. Individual chapters cover natural selection, the selfish gene, alternative units of selection, developmental systems theory, adaptationism and issues in macroevolution. The second part of the book examines philosophical questions arising in connection with biological traits. It

part of the book examines metaphysical questions, biology's relation with the traditional concerns of philosophy of science, and how evolution has been introduced into epistemological debates. The final part considers the relevance of biology to questions about ethics, religion and human nature.

A collection of original essays by major thinkers, addressing how the biological sciences inform and inspire philosophical research. Evolution, Explanation, Ethics and Aesthetics: Towards a Philosophy of Biology focuses on the dominant biological topic of evolution. It deals with the prevailing philosophical themes of how to explain the adaptation of organisms, the interplay of chance and necessity, and the recurrent topics of emergence, reductionism, and progress. In addition, the extensively treated topic of how to explain hu

issues of the foundations of morality and the brain-to-mind transformation is discussed. The philosophy of biology is a rapidly expanding field, not more than half a century old at most, and to a large extent is replacing the interest in the philosophy of physics that prevailed in the first two-thirds of the twentieth century. Few texts available have the benefit of being written by an eminent biologist, a useful resource for seminar courses and college courses on the philosophy of biology. Researchers, academics, and students in evolutionary biology, behavior, genetics, and biodiversity will also be interested in this work, as will those in human biology and issues such as ethics, religion, and the human mind, along with professional philosophers of science and those concerned with such issues as morality comes from. Presents the unique perspective of a distinguished biologist with extensive experience in the field who has published much about the subject in a wide variety of journals and edited volumes Covers the philosophical issues related to evolution and biology in an approachable and readable style Includes the most up-to-date treatment of this burgeoning, exciting field within bi

students in evolutionary biology, behavior, genetics, and biodiversity

Everything Flows

Aristotle's Philosophy of Biology

The Philosophy of Biology

Towards a Philosophy of Biology

Observations of an Evolutionist

**"The majority of the papers herein originated at the workshop 'Process Philosophy of Biology' ... held in Exeter in November 2014."--Page vii.**

**Examines how the philosophy of biology has evolved to our current understanding.**

**Emphasizing connections between biological theories and other areas of philosophy, and carefully explaining both philosophical and biological terms, Peter Godfrey-Smith discusses the relation between philosophy and science; examines the role of laws, mechanistic explanation, and idealized models in biological theories; describes evolution by natural selection; and assesses attempts to extend Darwin's mechanism to explain changes in ideas, culture, and other phenomena.**

**The philosophy of biology is one of the most exciting new areas in the field of philosophy and one that is attracting much attention from working scientists. This Companion, edited by two of the founders of the field, includes newly commissioned essays by senior scholars and up-and-coming younger scholars who collectively examine the main areas of the subject - the nature of evolutionary theory, classification, teleology and function, ecology, and the problematic relationship between biology and religion, among other topics. Up-to-date and comprehensive in its coverage, this unique volume will be of interest not only to professional philosophers but also to students in the humanities and researchers in the life sciences and related areas of inquiry.**

**How Biology Shapes Philosophy**

**The Understanding of Nature**

**Trees of Life**

**Philosophy of Biology Before Biology**

**A Companion for Educators**

The classic series to bring you important recent writings in major areas of philosophical inquiry, selected from a variety of sources, mostly periodicals, which may not be conveniently available to the university student or the general reader. The editors of each volume contribute an introductory essay on the items chosen and on the questions with which they deal. A selective bibliography is appended as a guide to further reading. The philosophy of biology today is one of the most exciting areas of philosophical inquiry. Drawing on work of the past decade, this volume brings together articles from the philosophy, history, and sociology of science, as well as many branches of the biological sciences, to consider issues including the nature of evolutionary theory, biology and ethics, the challenge from religion, and the social implications of biology today (in particular the Human Genome Project). The 35 articles in this collection are divided into 10 parts, each with an introduction by the editors. Spanning issues from epistemology across to ethics, the volume delves into the latest theoretical controversies as well as burning questions of contemporary social importance. Throughout the volume an attempt is made to offer positions from different perspectives, so that the reader will be challenged as well as informed. The Philosophy of Biology will be essential and fascinating reading for students of philosophy and biology as well as the general reader with an interest in the natural sciences and evolution.

This volume contains papers presented by New Zealand and American philosophers of biology during a recent visit to New Zealand by Elliott Sober. Some of the papers reveal a unique local perspective on current debates. Robin Craw's highly original contribution to the 'evolutionary' philosophy of science initiated by David Hull, applies to intellectual evolution the strongly biogeographic approach to the evolution of life that is recognised New Zealand speciality. Other papers reflect past intellectual exchange between the two countries. Susan Oyama and Russell Gray's papers on the 'developmental systems' approach to evolution, for example, are the outcome of several years of fruitful exchange. The remaining papers in the volume cover a wide range of topics. In addition to Sober's own discussion of post-sociobiological treatments of cultural evolution the volume includes Kim Sterelny's evaluation of 'macroevolution', Paul Griffiths' study of adaptation and vestigiality, John Moss on the notion of ontogeny and Timothy Shanahan on the concept of drift.

*Philosophy of Biology* Princeton University Press

History and Philosophy of Biology summarizes the major philosophical ideas that have attended the development of science in general and of biology in particular. The book then explores how the techniques and the concepts of the physical sciences have impacted biology. A reductionist approach to biology — anatomy, physiology, genetics — complements the study of evolution by natural selection and an ecological perspective. The final section of the book explores several examples of the influence of science on society, and of society on science.Each of 46 chapters of History and Philosophy of Biology has been or could be the topic of a major tome. The book is unique in that it explores the web of interactions among issues of philosophy, techniques and concepts of the physical sciences, fields of biology, and the diverse relationships between society and science. The book should appeal to readers of Scientific American or the New York Review of Books even if they are not trained biologists. It is a good text, or additional reading, for an advanced undergraduate course treating history and/or philosophy of biology or of science in general.

A Companion to the Philosophy of Biology

Philosophy of Biology

An Anthology

Philosophy of Biological Science

**This is a concise, comprehensive, and accessible introduction to the philosophy of biology written by a leading authority on the subject. Geared to philosophers, biologists, and students of both, the book provides sophisticated and innovative coverage of the central topics and many of the latest developments in the field. Emphasizing connections between biological theories and other areas of philosophy, and carefully explaining both philosophical and biological terms, Peter Godfrey-Smith discusses the relation between philosophy and science; examines the role of laws, mechanistic explanation, and idealized models in biological theories; describes evolution by natural selection; and assesses attempts to extend Darwin's mechanism to explain changes in ideas, culture, and other phenomena. Further topics include functions and teleology, individuality and organisms, species, the tree of life, and human nature. The book closes with detailed, cutting-edge treatments of the evolution of cooperation, of information in biology, and of the role of communication in living systems at all scales. Authoritative and up-to-date, this is an essential guide for anyone interested in the important philosophical issues raised by the biological sciences.**

Over the last forty years the philosophy of biology has emerged as an important sub-discipline of the philosophy of science. Covering some of science's most divisive topics, such as philosophical issues in genetics, it also encompasses areas where modern biology has increasingly impinged on traditional philosophical questions, such as free will, essentialism, and nature vs nurture. In this Very Short Introduction Samir Okasha outlines the core issues with which contemporary philosophy of biology is engaged. Offering a whistle-stop tour of the history of biology, he explores key ideas and paradigm shifts throughout the centuries, including areas such as the theory of evolution by natural selection; the concepts of function and design; biological individuality; and the debate over adaptationism. Throughout Okasha makes clear the relevance of biology for understanding human beings, human society, and our place in the natural world, and the importance of engaging with these issues. ABOUT THE SERIES: The Very Short Introductions series from Oxford University Press contains hundreds of titles in almost every subject area. These pocket-sized books are the perfect way to get ahead in a new subject quickly. Our expert authors combine facts, analysis, perspective, new ideas, and enthusiasm to make interesting and challenging topics highly readable.

This collection of specially commissioned essays puts top scholarshead to head to debate the central issues in the lively and fastgrowing field of philosophy of biology Brings together original essays on ten of the most hotlydebated questions in philosophy of biology Lively head-to-head debate format sharply defines the issuesand paves the way for further discussion Includes coverage of the new and vital area of evolutionary developmental biology, as well as the concept of a unified species, the role of genes in selection, the differences between micro- andmacro-evolution, and much more Each section features an introduction to the topic as well as suggestions for further reading Offers an accessible overview of this fast-growing and dynamicfield, whilst also capturing the imagination of professionalphilosophers and biologists

Biological accounts of art typically start with evolutionary, psychological or neurobiological theories. These approaches might be able to explain many of the similarities we see in art behaviors within and across human populations, but they don't obviously explain the differences we also see. Nor do they give us guidance on how we should engage with art, or the conceptual basis for art. A more comprehensive framework, based also on the ecology of art and how art behaviors get expressed in engineered niches, can help us better understand the full range of art behaviors, their normativity and conceptual basis.

**The Biology of Art**

**Shapes in the Origins of Life Science**

**Philosophy of Behavioral Biology**

**Philosophy of Systems Biology**

**The Cambridge Companion to the Philosophy of Biology**

Is life a purely physical process? What is human nature? Which of our traits is essential to us? In this volume, Daniel McShea and Alex Rosenberg – a biologist and a philosopher, respectively – join forces to create a new gateway to the philosophy of biology; making the major issues accessible and relevant to biologists and philosophers alike. Exploring concepts such as supervenience; the controversies about geneticism and genetic determinism; and the debate about major transitions central to contemporary thinking about macroevolution; the authors lay out the broad terms in which we should assess the impact of biology on human capacities, social institutions and ethical values.

A short and accessible introduction to philosophy of science for students and researchers across the life sciences.

The use of the term "biology" to refer to a unified science of life emerged around 1800 (most prominently by scientists such as Lamarck and Treviranus, although scholarship has indicated its usage at least 30–40 years earlier). The interplay between philosophy and natural science has also accompanied the constitution of biology as a science. *Philosophy of Biology Before Biology* examines biological and proto-biological writings from the mid-eighteenth century to the early nineteenth century (from Buffon to Cuvier; Kant to Oken; and Kilmeyer) with two major sets of questions in mind: What were the distinctive conceptual features of the move toward biology as a science? What were the relations and differences between the "philosophical" focus on the nature of living entities, and the "scientific" focus? This

insightful volume produces a fresh but also systematic perspective both on the history of biology as a science and on the early versions of, in the 1960s in a post-positivist context, the philosophy of biology. It will appeal to students and researchers interested in fields such as history of science, philosophy of science and biology.

John Dupré explores recent revolutionary developments in biology and considers their relevance for our understanding of human nature and society. He reveals how the advance of genetic science is changing our view of the constituents of life, and shows how an understanding of microbiology will overturn standard assumptions about the living world.

**Life and Evolution**

**Essays in the Philosophy of Biology**

**Perspectives from Scientists and Philosophers**

**A Contemporary Introduction**

**Bringing Biology to Life**

Philosophy of Biology is a rapidly expanding field. It is concerned with explanatory concepts in evolution, genetics, and ecology. This collection of 25 essays by leading researchers provides an overview of the state of the field. These essays are wholly new, none of them could have been written even ten years ago. They demonstrate how philosophical analysis has been able to contribute to sometimes contested areas of scientific theory making. Written by internationally acknowledged leaders in the field. Entries make original contributions as well as summarizing state of the art discoveries in the field. Easy to read and understand

By combining excerpts from key historical writings with editors' introductions and further reading material, *Philosophy of Biology: An Anthology* offers a comprehensive, accessible, and up-to-date collection of the field's most significant works. Addresses central questions such as "What is life?" and "How did it begin?", and the most current research and arguments on evolution and developmental biology Editorial notes throughout the text define, clarify, and qualify ideas, concepts and arguments Includes material on evolutionary psychology and evolutionary developmental biology not found in other standard philosophy of biology anthologies Further reading material assists novices in delving deeper into research in philosophy of biology

John Dupré explores recent revolutionary developments in biology and considers their relevance for our understanding of human nature and human society. Epigenetics and related areas of molecular biology have eroded the exceptional status of the gene and presented the genome as fully interactive with the rest of the cell. Developmental systems theory provides a space for a vision of evolution that takes full account of the fundamental importance of developmental processes. Dupré shows the importance of microbiology for a proper understanding of the living world, and reveals how it subverts such basic biological assumptions as the organisation of biological kinds on a branching tree of life, and the simple traditional conception of the biological organism. These topics are considered in the context of a view of science as realistically grounded in the natural order, but at the same time as pluralistic and inextricably integrated within a social and normative context. The volume includes a section that recapitulates and expands some of the author's general views on science; a section addressing a range of topics in biology, including the significance of genomics, the nature of the organism and the current status of evolutionary theory; and a section exploring some implications of contemporary biology for humans, for example on the reality or unreality of human races, and the plasticity of human nature.

This book brings together for the first time philosophers of biology to write about some of the most central concepts and issues in their field from the perspective of biology education. The chapters of the book cover a variety of topics ranging from traditional ones, such as biological explanation, biology and religion or biology and ethics, to contemporary ones, such as genomics, systems biology or evolutionary developmental biology. Each of the 30 chapters covers the respective philosophical literature in detail and makes specific suggestions for biology education. The aim of this book is to inform biology educators, undergraduate and graduate students in biology and related fields, students in teacher training programs, and curriculum developers about the current state of discussion on the major topics in the philosophy of biology and its implications for teaching biology. In addition, the book can be valuable to philosophers of biology as an introductory text in undergraduate and graduate courses.

Latin American Essays on the History and Philosophy of Biology

The Oxford Handbook of Philosophy of Biology

Philosophy of Evolutionary Biology

Evolution, Explanation, Ethics and Aesthetics

An Introduction to Philosophy of Biology

Provides a philosophical analysis of such biological concepts as natural selection, adaptation, speciation, and evolution

The impact of evolutionary theory on the philosophy of science has been no less profound than its impact on the science of biology itself. Advances in this theory provide a rich set of examples for thinking about the nature of scientific explanation and the structure of science. Many of the developments in our understanding of evolution resulted from contributions by both philosophers and biologists engaging over theoretical questions of mutual interest. This volume traces some of the most influential exchanges in this field over the last few decades. Focal topics include the nature of biological functions, adaptationism as an explanatory and methodological doctrine, the levels of selection debate, the concepts of fitness and drift, and the relationship of evolutionary to developmental biology.

This handbook covers the history of philosophy of biology then moves on to evolutionary theory. It continues with discussions of molecular biology and ecology, and covers biology and ethics as well as biology and religion. Bringing Biology to Lifes a guided tour of the philosophy of biology, canvassing three broad areas: the early history of biology, from Aristotle to Darwin; traditional debates regarding species, function, and units of selection; and recent efforts to better understand the human condition in light of evolutionary biology. Topics are addressed using no more technical jargon than necessary, and without presupposing any advanced knowledge of biology or the philosophy of science on the part of the reader. Discussion questions are also provided to encourage reader reflection.

Philosophy of Science for Biologists

Processes of Life

New Foundations for Naturalism

Toward a New Philosophy of Biology

Studies in the Philosophy of Biology

Is the history of life a series of accidents or a drama scripted by selfish genes? Is there an "essential" human nature, determined at birth or in a distant evolutionary past? What should we conserve—species, ecosystems, or something else? Informed answers to questions like these, critical to our understanding of ourselves and the world around us, require both a knowledge of biology and a philosophical framework within which to make sense of its findings. In this accessible introduction to philosophy of biology, Kim Sterelny and Paul E. Griffiths present both the science and the philosophical context necessary for a critical understanding of the most exciting debates shaping biology today. The authors, both of whom have published extensively in this field, describe the range of competing views—including their own—on these fascinating topics. With its clear explanations of both biological and philosophical concepts, *Sex and Death* will appeal not only to undergraduates, but also to the many general readers eager to think critically about the science of life.