

By Lynn Margulis Kingdoms And Domains An Illustrated Guide To The Phyla Of Life O 2009 02 10 Hardcover

A groundbreaking look at Gaia theory's intersections with neocybernetic systems theory. Often seen as an outlier in science, Gaia has run a long and varied course since its formulation in the 1970s by atmospheric chemist James Lovelock and microbiologist Lynn Margulis. *Gaian Systems* is a pioneering exploration of the dynamic and complex evolution of Gaia's many variants, with special attention to Margulis's foundational role in these developments. Bruce Clarke assesses the different dialects of systems theory brought to bear on Gaia discourse. Focusing in particular on Margulis's work—including multiple pieces of her unpublished Gaia correspondence—he shows how her research and that of Lovelock was concurrent and conceptually parallel with the new discourse of self-referential systems that emerged within neocybernetic systems theory. The recent Gaia writings of Donna Haraway, Isabelle Stengers, and Bruno Latour contest its cybernetic status. Clarke engages Latour on the issue of Gaia's systems description and extends his own systems-theoretical synthesis under what he terms "metabiotic Gaia." This study illuminates current issues in neighboring theoretical conversations—from biopolitics and the immunitary paradigm to NASA astrobiology and the Anthropocene. Along the way, he points to science fiction as a vehicle of Gaian thought. Delving into many issues not previously treated in accounts of Gaia, *Gaian Systems* describes

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the history of a theory that has the potential to help us survive an environmental crisis of our own making.

The monograph examines the evolution of microorganisms and the importance of symbiosis as a mechanism of evolution. Initial chapters discuss serial endosymbiosis theory, diversity, and cell evolution in perspective. The period from prebiotic times through the development of symbiosis is examined in chapters about the Earth before cells, evolution before oxygen, atmospheric oxygen from photosynthesis, and symbiogenesis. Symbiotic evolution is examined in chapters about nuclei, mitosis, and undulipodia; undulipodia from spirochetes; mitochondria; and plastids. The work is summarized with a look at consequences of these theories in the Phanerozoic era.

Five KingdomsAn Illustrated Guide to the Phyla of Life on EarthHenry Holt

How do new species evolve? Although Darwin identified inherited variation as the creative force in evolution, he never formally speculated where it comes from. His successors thought that new species arise from the gradual accumulation of random mutations of DNA. But despite its acceptance in every major textbook, there is no documented instance of it. Lynn Margulis and Dorion Sagan take a radically new approach to this question. They show that speciation events are not, in fact, rare or hard to observe. Genomes are acquired by infection, by feeding, and by other ecological associations, and then inherited. Acquiring Genomes is the first work to integrate and analyze the overwhelming mass of evidence for the role of bacterial and other symbioses in the creation of plant and animal diversity. It provides the most powerful explanation of speciation yet given.

Describes how scientists classify living organisms into groups known as kingdoms, and the

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characteristics of each.

Tireless, controversial, and hugely inspirational to those who knew her or encountered her work, Lynn Margulis was a scientist whose intellectual energy and interests knew no bounds. Best known for her work on the origins of eukaryotic cells, the Gaia hypothesis, and symbiogenesis as a driving force in evolution, her work has forever changed the way we understand life on Earth. When Margulis passed away in 2011, she left behind a groundbreaking scientific legacy that spanned decades. In this collection, Dorion Sagan, Margulis's son and longtime collaborator, gathers together the voices of friends and colleagues to remark on her life and legacy, in essays that cover her early collaboration with James Lovelock, her fearless face-off with Richard Dawkins during the so-called "Battle of Balliol" at Oxford, the intrepid application of her scientific mind to the insistence that 9/11 was a false-flag operation, her affinity for Emily Dickinson, and more. Margulis was elected to the National Academy of Sciences in 1983, received the prestigious National Medal of Science in 1999, and her papers are permanently archived at the Library of Congress. Less than a month before her untimely death, Margulis was named one of the twenty most influential scientists alive - one of only two women on this list, which include such scientists as Stephen Hawking, James Watson, and Jane Goodall.

Although Charles Darwin's theory of evolution laid the foundations of modern biology, it did not tell the whole story. Most remarkably, *The Origin of Species* said very little about, of all things, the origins of species. Darwin and his modern successors have shown very convincingly how inherited variations are naturally selected, but they leave unanswered how variant organisms come to be in the first place. In *Symbiotic Planet*, renowned scientist Lynn Margulis shows that

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symbiosis, which simply means members of different species living in physical contact with each other, is crucial to the origins of evolutionary novelty. Ranging from bacteria, the smallest kinds of life, to the largest -- the living Earth itself -- Margulis explains the symbiotic origins of many of evolution's most important innovations. The very cells we're made of started as symbiotic unions of different kinds of bacteria. Sex -- and its inevitable corollary, death -- arose when failed attempts at cannibalism resulted in seasonally repeated mergers of some of our tiniest ancestors. Dry land became forested only after symbioses of algae and fungi evolved into plants. Since all living things are bathed by the same waters and atmosphere, all the inhabitants of Earth belong to a symbiotic union. Gaia, the finely tuned largest ecosystem of the Earth's surface, is just symbiosis as seen from space. Along the way, Margulis describes her initiation into the world of science and the early steps in the present revolution in evolutionary biology; the importance of species classification for how we think about the living world; and the way "academic apartheid" can block scientific advancement. Written with enthusiasm and authority, this is a book that could change the way you view our living Earth. This collection of linked stories by internationally renowned evolutionist Lynn Margulis reveals science from the inside--its thrills, disappointments, and triumphs. A largely fictional account, it draws on her decades of experience to portray the poor judgment, exhaustion, and life-threatening dedication of real scientists--their emotional preoccupations, sexual distractions, and passions for research. The esoteric, demanding, sometimes exhilarating world of science emerges from the shadows of its passive narrative into the sunlight of the personal voice of those who attempt to wrench secrets directly from nature. All of us who struggle to balance family, professional, and social commitments with intellectual quest will be intrigued by the

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humanity of these tales.

What determines whether complex life will arise on a planet, or even any life at all? Questions such as these are investigated in this groundbreaking book. In doing so, the authors synthesize information from astronomy, biology, and paleontology, and apply it to what we know about the rise of life on Earth and to what could possibly happen elsewhere in the universe. Everyone who has been thrilled by the recent discoveries of extrasolar planets and the indications of life on Mars and the Jovian moon Europa will be fascinated by Rare Earth, and its implications for those who look to the heavens for companionship.

This text provides a rich understanding and appreciation of the world's biodiversity by presenting examples of each of the some 100 major groups (phyla) illustrated in their natural habitats. Includes: - Introduction - Monera - Protoctista - Fungi - Animalia - Plantae - Appendix classification - Glossary

At the crossroads of philosophy and science, the sometimes-dry topics of evolution and ecology come alive in this new collection of essays--many never before anthologized. Learn how technology may be a sort of second nature, how the systemic human fungus *Candida albicans* can lead to cravings for carrot cake and beer, how the presence of life may be why there's water on Earth, and many other fascinating facts. The essay "Metametazoa" presents perspectives on biology in a philosophical context, demonstrating how the intellectual librarian, pornographer, and political agitator Georges Bataille was influenced by Russian mineralogist Vladimir Vernadsky and how this led to his notion of the absence of meaning in the face of the sun--which later influenced Jacques Derrida, thereby establishing a causal chain of influence from the hard sciences to topics as abstract as deconstruction and post-modernism. In

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"Spirochetes Awake" the bizarre connection between syphilis and genius in the life of Friedrich Nietzsche is traced. The astonishing similarities of the Acquired-Immune-Deficiency-Syndrome symptoms with those of chronic spirochete infection, it is argued, contrast sharply with the lack of evidence that "HIV is the cause of AIDS". Throughout these readings we are dazzled by the intimacy and necessity of relationships between us and our other planetmates. In our ignorance as "civilized" people we dismiss, disdain, and deny our kinship with the only productive life forms that sustain this living planet.

For all the discussion in the media about creationism and 'Intelligent Design', virtually nothing has been said about the evidence in question - the evidence for evolution by natural selection. Yet, as this succinct and important book shows, that evidence is vast, varied, and magnificent, and drawn from many disparate fields of science. The very latest research is uncovering a stream of evidence revealing evolution in action - from the actual observation of a species splitting into two, to new fossil discoveries, to the deciphering of the evidence stored in our genome. Why Evolution is True weaves together the many threads of modern work in genetics, palaeontology, geology, molecular biology, anatomy, and development to demonstrate the 'indelible stamp' of the processes first proposed by Darwin. It is a crisp, lucid, and accessible statement that will leave no one with an open mind in any doubt about the truth of evolution. An all-inclusive catalogue of the world's living diversity, Five Kingdoms defines and describes the major divisions, or phyla, of nature's five great kingdoms - bacteria, protocists, animals, fungi, and plants - using a modern classification scheme that is consistent with both the fossil record and molecular data. Generously illustrated and remarkably easy to follow, it not only allows readers to sample the full range of life forms inhabiting our planet but to familiarize

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themselves with the taxonomic theories by which all organisms' origins and distinctive characteristics are traced and classified.

Scientists elucidate the astounding collective sensory capacity of Earth and its evolution through time.

A look at the sexual impulse that is at the root of our very biological existence includes scientific discussions on the origins of gender, sexual strategies of life forms from mitochondria to humans, and the language of sexuality. 15,000 first printing.

Chronicles the evolution of life on Earth, focusing on the microcosm researchers believe life began with.

In this New York Times bestseller and longlist nominee for the National Book Award, “our greatest living chronicler of the natural world” (The New York Times), David Quammen explains how recent discoveries in molecular biology affect our understanding of evolution and life’s history. In the mid-1970s, scientists began using DNA sequences to reexamine the history of all life.

Perhaps the most startling discovery to come out of this new field—the study of life’s diversity and relatedness at the molecular level—is horizontal gene transfer (HGT), or the movement of genes across species lines. It turns out that HGT has been widespread and important; we now know that roughly eight percent of the

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human genome arrived sideways by viral infection—a type of HGT. In *The Tangled Tree*, “the grandest tale in biology....David Quammen presents the science—and the scientists involved—with patience, candor, and flair” (*Nature*). We learn about the major players, such as Carl Woese, the most important little-known biologist of the twentieth century; Lynn Margulis, the notorious maverick whose wild ideas about “mosaic” creatures proved to be true; and Tsutomu Wantanabe, who discovered that the scourge of antibiotic-resistant bacteria is a direct result of horizontal gene transfer, bringing the deep study of genome histories to bear on a global crisis in public health. “David Quammen proves to be an immensely well-informed guide to a complex story” (*The Wall Street Journal*). In *The Tangled Tree*, he explains how molecular studies of evolution have brought startling recognitions about the tangled tree of life—including where we humans fit upon it. Thanks to new technologies, we now have the ability to alter even our genetic composition—through sideways insertions, as nature has long been doing. “*The Tangled Tree* is a source of wonder....Quammen has written a deep and daring intellectual adventure” (*The Boston Globe*).

Lehrbücher, Florenwerke, Fauna, Fungi, Prokaryonten.

"Lynn Margulis is one of the most successful synthetic thinkers in modern biology. This collection of her work, enhanced by essays co-authored with Dorion

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Sagan, is a welcome introduction to the full breadth of her many contributions." EDWARD O. WILSON, AUTHOR OF THE DIVERSITY OF LIFE "An important contribution to the history of the 20th century. Read it and you will taste the flavor of real science." JAMES LOVELOCK, AUTHOR OF GAIA: A NEW LOOK AT LIFE ON EARTH "Truly inspirational and of fundamental importance. This thoughtful series of essays on some of the largest questions concerning the nature of life on earth deserves careful study." PETER RAVEN, MISSOURI BOTANICAL GARDEN

Explores the complex factors and long line of "ancestors" that have contributed to human sexuality and human sexual behavior

Nearly thirty million species of organisms are believed to now live on Earth. In addition to accumulating evidence from classical biology, paleontology and earth science, the recent progress of molecular biology has provided new insights into understanding how present-day organisms have evolved with such tremendous diversity. Molecular biological studies show us that all living forms, including *E. coli* and human beings, derive from a single ancestor that emerged some 4 billion years ago on Earth. This volume aims to discuss the motifs of organismic evolution from the viewpoints of biogeo-interactions and diversification of the genetic systems. Based on these fundamental understandings, the last section of

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this volume is devoted to human evolution that includes phylogeny of man as well as evolution of human culture. Such comprehensive discussion will give us a synthesized view of the evolution of life, that is undoubtedly one of the most important problems not only for science but also for human culture in general. The Third Domain is the untold story of how the discovery of a new form of life -- first ridiculed, then ignored for the past thirty years by mainstream scientists -- is revolutionizing science, industry, and even our search for extraterrestrial life. Classification is a serious issue for science: if you don't know what you're looking at, how can you interpret what you see? Starting with Carolus Linnaeus in the 17th century, scientists have long struggled to order and categorize the many forms of life on Earth. But by the early 20th century the tree of life seemed to have stabilized, with two main domains of life at its roots: single-celled and multi-celled organisms. All creatures fit into one of these two groups. Or so we thought. But in 1977, a lone scientist named Carl Woese determined that archaea -- biochemically and genetically unique organisms that live and thrive in some of the most inhospitable environments on Earth -- were a distinct form of life, unlike anything seen on Earth before. This shocking discovery was entirely incompatible with the long-standing classification of life as we know it. But as it turned out, archaea were not life as we know it, and the tree of life had to be uprooted once

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again. Now, archaea are being hailed as one of the most important scientific revelations of the 20th century. The Third Domain tells the story of their strange potential and investigates their incredible history to provide a riveting account of an astonishing discovery.

Five Kingdoms: An Illustrated Guide to the Phyla of Life on Earth was a groundbreaking work when first published in 1982 and this sweeping perspective of life's diversity has now been updated to include information on the impact of molecular biol.

Defines and describes the major divisions, or phyla, of nature's five great kingdoms--bacteria, protoctists, animals, fungi, and plants.

Transcending the various formal concepts of life, this captivating book offers a unique overview of life's history, essences, and future. "A masterpiece of scientific writing. You will cherish "What Is Life?" because it is so rich in poetry and science in the service of profound philosophical questions".--Mitchell Thomashow, "Orion". 9 photos. 11 line illustrations.

"This extraordinary, all inclusive catalogue of the world's living organisms describes the diversity of the major groups, or phyla, of nature's most inclusive taxa. Developed after consultation with specialists, this modern classification scheme is consistent both with the fossil record and with recent molecular,

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morphological and metabolic data. Generously illustrated, now in full color, Kingdoms and Domains is remarkably easy to read. It accesses the full range of life forms that still inhabit our planet and logically and explicitly classifies them according to their evolutionary relationships. Definitive characteristics of each phylum are professionally described in ways that, unlike most scientific literature, profoundly respect the needs of educators, students and nature lovers. This work is meant to be of interest to all evolutionists as well as to conservationists, ecologists, genomicists, geographers, microbiologists, museum curators, oceanographers, paleontologists and especially nature lovers whether artists, gardeners or environmental activists."--Jacket.

1. Paleobiology of the Precambrian: The Age of Blue-Green Algae.- Morphology and Classification of Cyanophytes.- Assessment of the Cyanophytic Fossil Record.- Quantity of Fossil Evidence.- Quality and Geological Distribution of Fossil Evidence.- Conclusions.- Origin of Blue-Green Algae.- Mode of Origin.- Paleobiological Evidence.- Phylogeny of the Cyanophyta.- Coccoid Line ("Cocogoneae").- Filamentous Line ("Hormogoneae").- Evolutionary Conservatism in the Cyanophyta.- Summary.- References.- 2. Five-Kingdom Classification and the Origin and Evolution of Cells.- Plants and Animals: Botanists a.

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This sophisticated coloring book is a beautifully detailed illustration of the world's living diversity. It is written for science students, teachers, and anyone else who is curious about the extraordinary variety of living things that inhabit this planet. It opens with an introduction to the classification systems, distinctions between prokaryotic and eukaryotic cells, an introduction to life cycles, Earth history, and an explanation of how to best use this coloring book. The next section is organized by communities in which the organisms live. The final section details the variety of major groupings - phyla - within each kingdom and shows how the organisms in each are distinguished from one other. This coloring book gives a visual understanding of the enormous diversity of life on this planet and will be an enlightening and educational resource for students from a variety of backgrounds.

Now published by Academic Press and revised from the author's previous Five Kingdoms 3rd edition, this extraordinary, all inclusive catalogue of the world's living organisms describes the diversity of the major groups, or phyla, of nature's most inclusive taxa. Developed after consultation with specialists, this modern classification scheme is consistent both with the fossil record and with recent molecular, morphological and metabolic data. Generously illustrated, now in full color, Kingdoms and Domains is remarkably easy to read. It accesses the full range of life forms that still inhabit our planet and logically and explicitly classifies them according to their evolutionary relationships. Definitive characteristics of each phylum are

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Evolution.

This text describes the evidence for how life moved from sea to land, beginning more than 400 million years ago, employing the concept of Hypersea which is the idea that the barren land surfaces of the Earth could only have been colonized by multicellular organisms working in concert.

Fifteen distinguished scientists discuss the effects of life—past and present—on planet Earth.

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