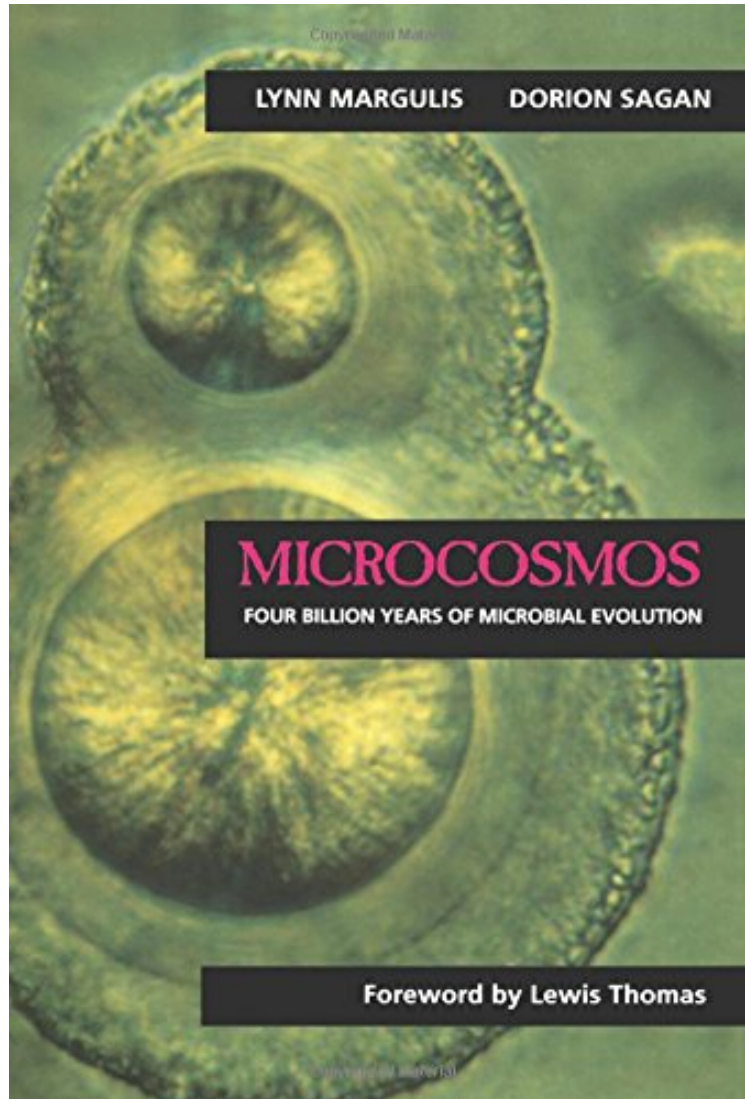


(Mobile book) Microcosmos: Four Billion Years of Microbial Evolution

Microcosmos: Four Billion Years of Microbial Evolution

Lynn Margulis, Dorion Sagan

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Lynn Margulis, Dorion Sagan : Microcosmos: Four Billion Years of Microbial Evolution before purchasing it in order to gage whether or not it would be worth my time, and all praised Microcosmos: Four Billion Years of Microbial Evolution:

6 of 7 people found the following review helpful. On microbes: the real rulers of the planet.By Ruth Henriquez LyonMicrocosmos is a natural history of the unseen beings upon whom we depend every moment for survival: the microbes. Margulis, who is currently Distinguished University Professor in the Department of Geology at the University of Massachusetts, did undergraduate work in biology and received her PhD in Genetics. She worked with

James Lovelock on developing the Gaia theory, which posits that the earth can be regarded as a sort of super-organism. In *Microcosmos* we see all aspects of her education and sensibilities -- a close attention to scientific detail and a "big picture" approach to how living entities coexist. In the introduction she lays out her philosophy about life on earth, for which she was roundly criticized by many reductionist scientists. In the past, she writes, all life on Earth was traditionally studied as being merely a prelude to the appearance of humans. Now, overwhelming evidence suggests that microbes (one-celled organisms) not only inhabit every known living thing on earth, they are also indispensable to the survival of all living things. They, not human beings, are the most important beings on the planet. Furthermore, in opposition to one of the most accepted tenets of Neo-Darwinism, Margulis states that life did not colonize the planet by competition so much as by networking. Cooperation between one-celled creatures led, over billions of years, to the evolution of beings such as ourselves, who possess the capability for self-conscious awareness. Our human consciousness, of which we are so proud, "may have been born of the concerted capacities of millions of microbes that evolved symbiotically to become the human brain." Strong words! Yet, Margulis sets forth compelling evidence in the remainder of her book to support her bio-philosophical ideas. Along the way, we learn many amazing things. For instance, we get a perspective on what upstart newcomers we are: the continents we inhabit now appeared in their present locations only in the last tenth of a percent of Earth's history. We learn that bacteria invented genetic engineering. Thus, when ultraviolet light damaged early microbes' DNA, the creatures produced repair enzymes to remove the damaged portions and copy new replacement DNA. This is a natural form of gene splicing. Sometimes, the DNA used in gene splicing was borrowed from neighboring bacteria of different strains, thus affording these critters a prodigious adaptability. This borrowing still goes on today. Through intermediaries, two very different bacteria can share genetic information. Why is this important? Because it allows the distribution of genetic information in the microcosm with a speed "approaching that of modern telecommunications--if the complexity and biological value of the information being transferred is factored in." This speed makes bacteria the biosphere's first responders in dealing with planetary changes. In responding to change, bacteria end up altering and shaping their environments. Few people realize that the entire earth's atmosphere, which we depend on for our life's breath, was created, and is maintained, by microbes. This is a good thing to remember next time you feel like spraying down your bathroom or kitchen with anti-microbial spray. Our fear of bacteria is misplaced. Yes, some are harmful to us, but most are beneficial. Indeed they are a lot more helpful to us than we are to the rest of the planet! This book isn't an easy read, but it will broaden one's outlook on our place in the natural world. Even if bacteria are not in the end responsible for the intricacies of our human brain and consciousness, we still owe them many debts. This book unveils the smallness of humans before the vast and minute workings of nature, and encourages a sense of humility before the greater Life that surrounds us. 1 of 1 people found the following review helpful. Four Stars By Mary O'Neill This history of life on this planet is very enlightening to say the least. Talk about getting perspective! 1 of 1 people found the following review helpful. A must read. This book brings the history of ... By Jonathan Ursin A must read. This book brings the history of life alive!

BACK IN PRINT WITH A REVISED PREFACE *Microcosmos* brings together the remarkable discoveries of microbiology of the past two decades and the pioneering research of Dr. Margulis to create a vivid new picture of the world that is crucial to our understanding of the future of the planet. Addressed to general readers, the book provides a beautifully written view of evolution as a process based on interdependency and their interconnectedness of all life on the planet.

From Publishers Weekly A century after Darwin theorized that we descended from ape-like ancestors, science has in just the last two decades contrived an awesome description of our even more primordial development from microbes. Boston University biologist Margulis and science writer Sagan here produce a stunning, complex chronicle of those four billion years, from Hadean and Archaean aeons when matter became "animated" and the mysteries we now call DNA and RNA became "the language of nature," to the first appearances of plant and animal life, including hominids. So immensely detailed is this elucidation of the developing microcosm (with its emphasis on natural selection and symbiosis in the bacterial world) that even advanced science readers will find the book difficult. But it is an important one, a comprehensive, popularized treatment of evolutionary microbiology spelling out a dimension that Darwin possibly never imagined, and proposing that only an understanding of the microcosm from which life sprang can make possible our ultimate leap beyond Earth into a human-devised supercosm. Photos. First serial to *The Sciences*. (June) Copyright 1986 Reed Business Information, Inc. From *Library Journal* Beginning with the chemistry of "minimal life," Margulis details the contributions of the microbial world to the evolution of life on our planet. Much of this book focuses on the role of symbiosis in cell evolution, one of the most important contemporary evolutionary concepts. Concluding chapters discuss man's place in our present ecosystem, our continued dependence on microorganisms, and our debt to our humble microbial origins for the way our physiology functions. No other book for the lay reader or interested professional interprets this material as thoroughly or accurately. Margulis, a respected authority in this field, is the author of *Symbiosis in Cell Evolution*, an advanced text. Highly recommended. Frank Reiser, Biology Dept., Nassau Community Coll., Garden City, N.Y. Copyright 1986 Reed Business Information, Inc. "A stunning, complex

chronicle. . . proposing that only an understanding of the microcosm from which life sprang can make possible our ultimate leap beyond Earth into a human-devised supercosm."--"Publishers Weekly