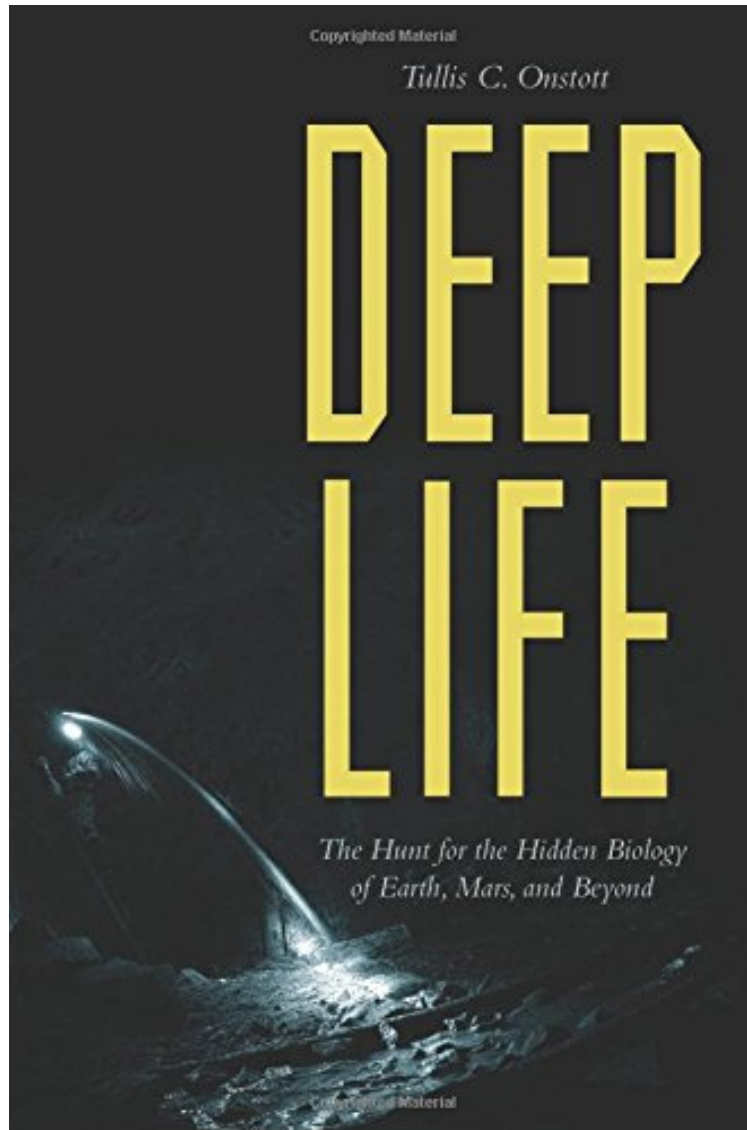


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# Deep Life: The Hunt for the Hidden Biology of Earth, Mars, and Beyond

*Tullis C. Onstott*

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**Tullis C. Onstott : Deep Life: The Hunt for the Hidden Biology of Earth, Mars, and Beyond** before purchasing it in order to gage whether or not it would be worth my time, and all praised Deep Life: The Hunt for the Hidden Biology of Earth, Mars, and Beyond:

1 of 1 people found the following review helpful. Important but hard-going for the non-expertBy Brian HuntThis is a book about a very interesting subject that only came into existence some 30 years ago: Microbial life in the deep

geological layers of the Earth. It was a surprise to scientists when life there was discovered and it would probably be a surprise to many people today to know that life can be found at depths of thousands of feet in what appear to be infertile, solid rock layers laid down up to 250 million years ago. However, the work of Professor Onstott and others have shown conclusively that such life does exist. Once accepted, the concept immediately raises questions. For example, have the life forms traveled into the Earth from its surface in recent times or were they trapped in the rock when it was first formed? If traveled, by what mechanism? Can we be sure that they were not introduced by human contamination as part of the sampling techniques? What are the energy sources for these microbes? Are they still reproducing? How old are the individual microbes? Do these discoveries change or add to our knowledge of how evolution works? Do these discoveries change the likelihood of finding life on Mars and/or on other planets? Dr. Onstott tackles all these questions and others. Much of the book concerns the field work that Dr. Onstott has been engaged in, where an interesting mix of geologists, microbiologists, drilling roughnecks, and miners converge. The book conveys very vividly the difficult environments and numerous setbacks that must be overcome while doing this work in oil fields and gold mines with conditions that range from extreme heat to arctic cold. The major problem that I had with the book is that, despite the inherent great interest of the subject, it is not at all reader-friendly. A blizzard of jargon and acronyms appear either with no definitions or far removed from the point where they are defined and, worse, there is no glossary. For the non-expert, it seems that there is a choice of two ways to read the book. The first is to painstakingly note down every unfamiliar term and acronym when it first appears. The second is to plough on in ignorance hoping that some understanding will rub off. I chose the second approach. The structure of the book, which is that of a personal fieldwork journal, is also not helpful because it is hard to keep straight which drill-site we are currently talking about. A final criticism is that, after pages of quite interesting detail on collecting samples under the extreme difficulties posed by deep mines, one would like to know what the subsequent analysis has taught us about deep life. Unfortunately, there is no careful summary of the scientific outcomes. As far as I know this is the only book on this subject intended for a general readership and, for that reason, reading it is worth the effort, even if a lot remains obscure. But it is to be hoped that a more reader-friendly book will appear or that Dr. Onstott will take pity on us and at least add a glossary of terms and acronyms in the second edition.

3 of 3 people found the following review helpful. Science made simple! By Rawlings Akondi  
Deep life: The hunt for the Hidden Biology of Earth, Mars, and Beyond by Tullis C. Onstott  
A quite engaging book! This book is a must-read for anyone interested in the evolution of life in our universe as a whole. It is simple to read, easy to understand, and interesting. It is written in storytelling, entertaining manner; even a non-scientist will find it enjoyable. I am a geologist by training, although now, I am working on microbial lipid profiles in geologic sediments. So the book will surely be my companion for a very long time. It is a great book to keep in our lab library. I guess my geology background and my interest in deep subsurface life, probably increased my enthusiasm for the book. However, give it a try, and you won't regret you did. If you're looking for a book to give you the scientific knowledge and at the same time introduce you to the behind-the-curtains of scientific research, then you should read this book. In case you're just a book-lover, you will as well be glad you read this one. What I liked most is that complex microbial reactions were made quite simple and easy to understand.

2 of 2 people found the following review helpful. Deeply Informative By Winston Stairs  
Finally..! A 'science writer' who doesn't underestimate his audience or feel the need to dummy down, spoon feed, over-explain or analogize difficult concepts thank you!  
Mr. Onstott has written a deeply informative and interesting book in a subject area most would normally give little consideration or thought too. What a fascinating read and pleasure it was to be intellectually challenged for a change. Admittedly there is much in the material and the way it is presented that may challenge the average person. However, I found the extensive Notes section at the back of the book extremely valuable in further explaining and providing additional detail to aid in understanding. What I wasn't able to obtain from there, I gladly sought out from other resources. Just like being back in college. Invigorating!

Deep Life takes readers to uncharted regions deep beneath Earth's crust in search of life in extreme environments and reveals how astonishing new discoveries by geomicrobiologists are helping the quest to find life in the solar system. Tullis Onstott, named one of the 100 most influential people in America by Time magazine, provides an insiders look at the pioneering fieldwork that is shining vital new light on Earth's hidden biology a thriving subterranean biosphere that scientists once thought to be impossible. Come along on epic descents two miles underground into South African gold mines to experience the challenges that Onstott and his team had to overcome. Join them in their search for microbes in the ancient seabed below the desert floor in the American Southwest, and travel deep beneath the frozen wastelands of the Arctic tundra to discover life as it could exist on Mars. Blending cutting-edge science with thrilling scientific adventure, Deep Life features rare and unusual encounters with exotic life forms, including a bacterium living off radiation and a hermaphroditic troglodytic worm that has changed our understanding of how complex subsurface life can really be. This unforgettable book takes you to the absolute limits of life the biotic fringewhere today's scientists hope to discover the very origins of life itself.

"Onstott so beautifully conveys his excitement that laypeople and scientists alike will find [Deep Life] a worthwhile

read."--Publishers Weekly"Deep Life tackles one of the most mysterious, sexiest questions in science today: Is there life beyond Earth? . . . Onstott's argument is both profound--we can't understand life on other planets without understanding life on our own--and surprising, pleasing any amateur extraterrestrial beep hunter."--Sarah Sloat, Inverse"Extreme environments beneath Earth's surface could well be the crucible where life was forged, and studying the weird creatures that live in such locales could well shed light on how life could endure in Mars' deep crust or Europa's hidden ocean. Geoscientist Tullis C. Onstott brings you along on the hunt."--Alan Boyle, GeekWire"Life can thrive in the most inhospitable places. And finding out just how inhospitable has been the lifes work of Tullis Onstott. . . . While rooted in the earth, the study may also help in the quest to find life in the solar system and beyond. This amazing journey takes us from deep in a South African gold mine, to the ancient seabed below a desert floor to travel deep beneath the frozen Arctic tundra."--Cosmos Magazine"Tullis Onstott has been at the forefront of the exploration of [the Earth's] subterranean mysteries. If you had to compare him to an iconic figure, I don't think you'd go far wrong seeing him as a microbiologist Indiana Jones, clambering through dimly lit mining tunnels far below the surface, sampling tubes in hand. . . . Along the way, he addresses some of the deepest questions--if you'll excuse the pun--in modern biology. . . . [This book] offers great insights for science historians or students in the discipline."--Lewis Dartnell, Times Higher Education"Deep Life is both gripping and powerful in its immediacy, so much so that no matter your background, if you have any concern for the future of this planet and its place in the universe, it is well worth spending some time considering the bearing that Onstotts propositions and implications might have on your own future."--Lois C. Henderson, Bookpleasures.com"Onstott takes us on a journey to discover and understand the limits of life beneath the surface of our planet. . . . The author, a brilliant geomicrobiologist, shares his passion for this relatively new field of research. It is difficult to ignore the infectious enthusiasm that permeates the narrative."--Lisa Kaaki, Arab NewsFrom the Back Cover"Onstott is truly a bold front-runner in deep subsurface microbiology and a great role model for anyone in geology who aspires to become a successful geomicrobiologist. Reading this book makes me feel lucky to have witnessed some of these explorations firsthand. I am also amazed by their vivid descriptions, which sometimes read like science fiction."--Chuanlun Zhang, Tongji University"The discovery of deep biosphere is a fascinating chapter in the history of astrobiology, and Onstott was at the bottom of it all--literally, when he and his team were searching for life in the deepest mines on Earth. This detailed and well-written book explains the importance of the subsurface biosphere and why those of us interested in the search for life on Mars are so interested in life deep underground."--Chris McKay, NASA Ames Research Center"Deep Life is an engaging historical account of the discovery and exploration of Earth's newest known biome, the deep subsurface. Onstott vividly chronicles the emergence of this new field by transporting the reader to the drill rigs, mines, and laboratories where fundamental discoveries that have changed our understanding of the nature of life itself and its relationship to our planet--and possibly others--were made."--Duane Moser, Desert Research Institute"Onstott takes readers on a journey of discovery, weaving his personal reflections on his exploits in the field with just the right amount of science. He shows how field science is challenging, exciting, and full of adventure."--Gordon Southam, University of QueenslandAbout the AuthorTullis C. Onstott is professor of geosciences at Princeton University. He lives in Stockton, New Jersey.