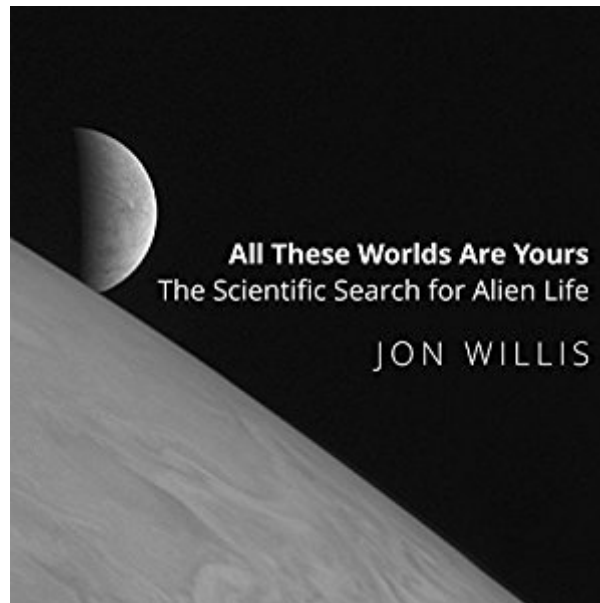




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All These Worlds Are Yours: The Scientific Search For Alien Life



Synopsis

Long before space travel was possible, the idea of life beyond Earth transfixed humans. In this fascinating book, astronomer Jon Willis explores the science of astrobiology and the possibility of locating other life in our own galaxy. Describing the most recent discoveries by space exploration missions, including the Kepler space telescope, the Mars Curiosity rover, and the New Horizons probe, Willis asks listeners to imagine - and choose among-five scenarios for finding life. He encourages us to wonder whether life might exist within Mars' subsoil ice. He reveals the vital possibilities on the water-ice moons Europa and Enceladus. He views Saturn's moon Titan through the lens of our own planet's ancient past. And, he even looks beyond our solar system, investigating the top candidates for a "second Earth" in a myriad of exoplanets and imagining the case of a radio signal arriving from deep space. Covering the most up-to-date research, this accessibly written book provides listeners with the basic knowledge necessary to decide where they would look for alien life.

Book Information

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Customer Reviews

All These Worlds Are Yours: The Scientific Search for Alien Life, by Jon Willis, is structured around a simple proposition: if you had four billion dollars to spend (Willis explains why that number late in the book) to seek out non-terrestrial life, where would it make the most sense to spend it? Willis gives his readers a head start by narrowing their choices at the outset to five "plausible scenarios": Mars (of course) Europa Enceladus Titan An exoplanet Willis begins by offering up a relatively quick but sufficiently detailed overview of the conditions that apparently were necessary

for life on Earth (liquid water, magnetic field, atmosphere, plate tectonics, a basic shared biochemistry, and a few others), though he is careful to remind us multiple times throughout the book that we should not close our minds to the possibility of other forms of life, though he is realistic in the difficulty of discovering/recognizing such. After covering the famed Miller-Urey experiment (throw together some early-Earth chemicals, add some "lightning," see what happens), he then explores in general terms the same or similar elements in non-Earth terms, discussing for instance the "habitable zone" and the amount of energy from the sun each planet receives (deciding in what may come as a surprise to readers that "there does not appear to be any point or boundary beyond which we can state definitively that the sun is too weak to support photosynthetic life") From there Willis moves into a detailed tour of the four possibilities within our solar system, clearly explaining the the most up-to-date science and recent discoveries regarding each planet/moon, delving as well into the histories and details of the various missions/probes that gave us the science. Among these are Pioneer, Voyager, Cassinni, New Horizons, and others. After going into great detail on the possible conditions for life present on each such as the presence of liquid water (covering as well exactly how such things have been discovered/measured), he runs through just how we might try to learn more about each planet/moon's potential. Willis is no starry-eyed romantic here; his "missions" are wholly grounded in reality, not simply by the laws of physics or the limitations of current technology, but also by fiscal and political reality. Nor does he ever undersell the difficulty of missions such as digging through the surface of another planet/moon or trying to fly through a moon's geysers to take a sample of what is being expelled into space and then return the sample to Earth. He points to both past successes and failures: lost probes, successful sample returns, such as NASA's Stardust and the Japanese Space Agency's Hay Abusa which were able to bring back samples of comets/asteroids). One of the more interesting requirements he names is a joint lab devoted to ensuring any material brought back from space can be safely examined without risk of either contamination or, in a worst-case scenario, an Andromeda Strain-like release into our environment. Finally, Willis leaves our solar system and offers up a nearly infinite set of possible worlds--the billions upon billions of exo-planets that we know exist out there thanks to recent discoveries via Kepler and other mostly space-based telescopes. Missions to these planets are of course impossible--the distances are simply far too great--but Willis explains how we can use better telescopes, some of which are soon to come on-line, to examine the planets' atmospheres, which may give us some markers of life. Willis holds off until the end to give us his own choice, neutrally and methodically laying out the pros and cons of each mission. I won't spoil it; you'll have to read the book to find out. Which I happily recommend doing. Besides the up-to-date science clearly

explained (he does a particularly nice job selecting easy to follow analogies to convey concepts) Willis has an engaging voice throughout that even if it sometimes feels like he's trying perhaps a little too hard for a light touch carries you along smoothly through even the most complex points. I also appreciated his focus via the five options and the limited budget. Perhaps the best recommendation for *All These Worlds Are Yours* (a quote from a Clarke *Odyssey* novel that also earns Willis some props) is that by the very end, you want to fund all five options. And do so tomorrow. See you on Titan! originally appeared on fantasyliterature.com

Jon Willis's book is first rate. While there have been many books written on the search for life in the universe this author really delivers the goods. The subject is up-to-date and comprehensive. The science good and it is a breezy, easy read. The writing style, at times a bit quirky, but it keeps you thoroughly engaged in the topic. From the author's writing style you can tell he is a very engaging teacher in the classroom. The chapter titles and subtitles are very creative with references to SF books and movies. The subtitles are bit sized and easy to digest. What's missing? I would liked to have seen a discussion on the possibility that we may have been visited before by ET, and that an advanced alien civilization may be purposely avoiding contact with us until we are ready to become a member of the galactic club. No mention of UFO's is made (which in the reviewer's opinion is a good thing). After reading my books, I usually give them to others, or Friends of the Library, but this book will have a permanant home in my library.

On our tour of the five most likely, or "plausible", places where extraterrestrial life might be found we learn a good deal about the markers for life and the technology that makes it possible to search for those markers. There's as much "biology" as there is "astro" in this treatment, which was fine by me. Our tour includes not only Mars, (the only real candidate among the planets), but also Europa, Enceladus, Titan, and the exoplanets. This book presents a very informative and thorough update on what we know about each of those bodies, and for that alone I was pleased with the substance of this book. My one caveat is that the book is awfully chirpy. All of the cute questions directed to the reader and the gee whiz tone of the responses is just a bit wearing after a while. I get that authors tend to think that popular science requires an element of entertainment, but here we go right up to the edge. It's not anywhere near the condescending humor of "Dummies" style books, though; just a bit too heavy on the enthusiasm. That said, there's a lot to learn here and a good deal to think about. If this isn't your field, it's still accessible and informative. and that works for me. (Please note that I received a free advance ecopy of this book without a review requirement, or any influence regarding

review content should I choose to post a review. Apart from that I have no connection at all to either the author or the publisher of this book.)

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