



## Cosmic Biology: How Life Could Evolve on Other Worlds (Springer Praxis Books)

By Louis Neal Irwin, Dirk Schulze-Makuch



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This text discusses a broad range of possible environments where alien life might evolve in our universe. It also uses current knowledge of chemistry, energy and evolutionary tendencies to consider possible life forms ranging from the familiar to the exotic.

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### Editorial Review

#### Review

From the reviews:

“Cosmic Biology discusses the feasibility of life in the scorching cloud decks of Venus or within the volcanic violence of Io. ... This neat trick holds up a mirror to our own efforts at characterising the extrasolar planets we’re now discovering. ... long data tables, information dense diagrams and sections that sometimes read like expanded bullet point lists gives the volume the feel of a textbook. ... a great book to push your horizons if you’re already familiar with the themes of astrobiology ... .” (Lewis Dartnell, Sky at Night Magazine, August, 2011)

“The text, which is intended for nonscientists, are novel and distinctly important scientifically. ... The core of the book covers case history examinations of possible biological planets, moons, and exoplanets. For those who teach about the possibility of life on other planets, this book provides an excellent introduction to these alternative worlds and, in doing so, accomplishes more than the authors’ modest claims in the preface. Summing Up: Recommended. All levels/libraries.” (P. K. Strother, Choice, Vol. 48 (11), July, 2011)

#### From the Back Cover

It is very unlikely that little green humanoids are living on Mars. But what are the possible life forms that might exist in our Solar System and how might they have evolved?

This uniquely authoritative and imaginative book on the possibilities for alien life addresses the intrinsic interest that we have about life on other worlds - reinforcing some of our assumptions and reshaping others. It introduces new possibilities that will enlarge our understanding of the issue overall, in particular the enormous range of environments and planetary conditions within which life might evolve.

#### Cosmic Biology

- discusses a broad range of possible environments where alien life might have evolved;
- explains why carbon-based, water-borne life is more likely than its alternatives, but is not the only possibility;
- applies the principles of planetary science and modern biology to evolutionary scenarios on other worlds;
- looks at the future fates of living systems, including those on Earth.

#### About the Author

As a neurobiologist, Louis Neal Irwin has been a student of evolution, complexity, and behavior over a 40 year career of academic teaching and research. Irwin has published close to 60 original research articles, literature and book reviews, encyclopedia entries, and commentaries on the brain, behavior, and evolution, including one book ("Scotophobin") on the early development of neuroscience.

Ten years ago, Irwin became a Solar System Educator for NASA, originally in conjunction with the launch of the Cassini-Huygens Mission to Saturn but later as representative for all the robotic exploratory missions managed by the Jet Propulsion Lab. In that capacity he became familiar with the details of space exploration for the purpose of conducting teacher workshops. Soon thereafter, he also began a collaboration with Dirk Schulze-Makuch on research into the definition of life and the plausibility of searching for and finding life on other worlds. As NASA turned its attention to the emerging field of astrobiology, Schulze-Makuch and Irwin began to publish their research in that area, culminating in the joint authorship of "Life in the Universe: Expectations and Constraints," which many regard as the definitive work in the field of astrobiology for the technical specialist.

Dirk Schulze-Makuch

As a trained hydrogeologist Dirk Schulze-Makuch entered the field of astrobiology by studying extremophilic organisms in hot springs. Propelled by a major NASA grant Dirk then joined the Europa Focus Group and some time later the Titan Focus Group of the NASA Astrobiology Institute. Recent interests include nearly all aspects of astrobiology including mission-aligned efforts to detect life on Mars and the search for extraterrestrial intelligence.

## Users Review

### From reader reviews:

#### Lori Johnson:

Why don't make it to be your habit? Right now, try to ready your time to do the important take action, like looking for your favorite book and reading a reserve. Beside you can solve your short lived problem; you can add your knowledge by the book entitled Cosmic Biology: How Life Could Evolve on Other Worlds (Springer Praxis Books). Try to make the book Cosmic Biology: How Life Could Evolve on Other Worlds (Springer Praxis Books) as your close friend. It means that it can being your friend when you truly feel alone and beside those of course make you smarter than in the past. Yeah, it is very fortunated for you. The book makes you considerably more confidence because you can know everything by the book. So , we should make new experience in addition to knowledge with this book.

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