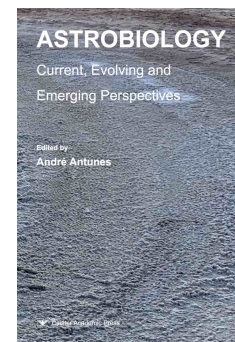


Astrobiology

Current, Evolving and Emerging Perspectives



Edited by: André Antunes

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Astrobiology is a modern cross-disciplinary research field which studies the origin and development of life in the universe and includes the search for extinct and currently existing organisms outside our planet. As part of this on-going search, astrobiology successfully combines researchers and techniques from the fields of biology, geology, chemistry and planetary sciences.

This volume includes contributions from several leading astrobiologists across the globe, providing an overview of their respective fields and highlighting current and emerging topics. Topics of note include: overview of astrobiology, the origin of life, habitability, and future exploration; planetary protection and the application of molecular methodologies for analyzing potential microbial contaminants in space missions; organic matter and biosignatures in space missions; life in impact craters; microbial exploration of terrestrial analogue sites (of Mars and the of the icy moons of the outer solar system); insights from microbiological studies in low pressure environments and in the stratosphere.

Aimed at research scientists, advanced students and other professionals, this informative and up-to-date book is an invaluable review on current research in astrobiology and is an essential acquisition for anyone involved in this cross-disciplinary field. This contribution is particularly timely given the upcoming wave of space missions focused on astrobiology and targeting Mars and the icy moons of the outer solar system.

Chapter 1. Following the Astrobiology Roadmap: Origins, Habitability and Future Exploration (*Aubrie O'Rourke, Angela Zoumplis, Paul Wilburn, Michael D. Lee, Zhi Lee, Marissa Vecina and Kysha Mercader*)

Chapter 2. Are we There Yet? Understanding Interplanetary Microbial Hitchhikers using Molecular Methods (*Alexander J. Probst and Parag Vaishampayan*)

Chapter 3. Detection of Organic Matter and Biosignatures in Space Missions (*Zita Martins*)

Chapter 4. Microbial Life in Impact Craters (*Charles S. Cockell, Gordon Osinski, Haley Sapers, Alexandra Pontefract and John Parnell*)

Chapter 5. Impact of Simulated Martian Conditions on (Facultatively) Anaerobic Bacterial Strains from Different Mars Analogue Sites (*Kristina Beblo-Vranesevic, Maria Bohmeier, Sven Schleumer, Elke Rabbow, Alexandra K. Perras, Christine Moissl-Eichinger, Petra Schwendner, Charles S. Cockell, Pauline Vannier, Viggo T. Marteinson, Euan P. Monaghan, Andreas Riedo, Pascale Ehrenfreund, Laura Garcia-Descalzo, Felipe Gómez, Moustafa Malki, Ricardo Amils, Frédéric Gaboyer, Keyron Hickman-Lewis, Frances Westall, Patricia Cabezas, Nicolas Walter and Petra Rettberg*)

Chapter 6. Exploring Deep-Sea Brines as Potential Terrestrial Analogues of Oceans in the Icy Moons of the Outer Solar System (*André Antunes, Karen Olsson-Francis and Terry J. McGenity*)

Chapter 7. Exploring Microbial Activity in Low-pressure Environments (*Petra Schwendner and Andrew C. Schuerger*)

Chapter 8. Earth's Stratosphere and Microbial Life (*Priya DasSarma, André Antunes, Marta Filipa Simões and Shiladitya DasSarma*)

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