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Nota di contenuto	Part I Introduction to astrobiology -- 1. What is astrobiology -- Part II Physics and chemistry from space to life -- 2. Theory of universe and life -- 3. Complex organic molecules in Space -- 4. Chemical relationships among organics, water and minerals in the early Solar System -- 5. Prebiotic synthesis of bioorganic compounds by simulation experiments -- 6. RNA synthesis before the origin of life -- Part III History of life reveiled from bilology -- 7. RNA world -- 8. Common ancestor -- 9. Eukaryotes appearing -- 10. Collor of photosynthetic system -- 11. Evolution of photosynthetic system -- 12. History and evolution of intelligence on the Earth -- Part IV History of the Earth reveiled from geology -- 13. Origin of planets -- 14. Evolution of early atmosphere -- 15. Biogenic graphite in ancient rocks -- 16. Fossilized early cells and their implications for biotic diversity in the Archean -- 17. Great oxidation event -- 18. Mass extinction P-Tr -- 19. Mass extinction at K-Pg boundary -- Part V. Search for life in solar system and extra solar system -- 20. Limits of terrestrial life and

biosphere -- 21. Mars we know of -- 22. Atmosphere of Mars -- 23. Life search on Mars -- 24. Active surface and interior of Europa as a potential deep habitat -- 25. Enceladus -- 26. Titan -- 27. Panspermia hypothesis -- 28. Extra-solar planetary systems -- 29. Life in a second earth -- 30. Search for extraterrestrial intelligence -- 31. Possible impact if extraterrestrial life, if it were to be found.

Sommario/riassunto

This book provides concise and cutting-edge reviews in astrobiology, a young and still emerging multidisciplinary field of science that addresses the fundamental questions of how life originated and diversified on Earth, whether life exists beyond Earth, and what is the future for life on Earth. Readers will find coverage of the latest understanding of a wide range of fascinating topics, including, for example, solar system formation, the origins of life, the history of Earth as revealed by geology, the evolution of intelligence on Earth, the implications of genome data, insights from extremophile research, and the possible existence of life on other planets within and beyond the solar system. Each chapter contains a brief summary of the current status of the topic under discussion, sufficient references to enable more detailed study, and descriptions of recent findings and forthcoming missions or anticipated research. Written by leading experts in astronomy, planetary science, geoscience, chemistry, biology, and physics, this insightful and thought-provoking book will appeal to all students and scientists who are interested in life and space.