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Nota di contenuto	Contents; Introduction; Symbols and abbreviations; 1 What is life? Why water?; What is life?; Why water?; Summary; 2 The universe from the perspective of biology; Some special units of measurement used in astronomy; Time; Biologically significant events occurring in the universe; Stars; Galaxies; Planets of other star systems; Comets and asteroids; A brief survey of some other denizens of the universe; Galactic and Circumstellar Habitable Zones; Summary; 3 The Solar System and life on Earth: I; Main components of the Solar System; Our star, the Sun; The heliosphere and solar wind The Sun's short-wave EM radiationSolar radiation and the temperature balance of the Earth's surface; Solar radiation and photosynthesis; Short-wave solar radiation, signals, and vision; The concept of a Circumstellar Habitable Zone (CHZ); Planets of the Solar System and life on Earth; Some extraterrestrial sites in the Solar System which may support life; Summary; 4 The Solar System and life on Earth: II; Comets and asteroids; Planetary satellites and life; Earth-a unique planet of the Solar System; Cosmic radiation and the solar wind; Summary 5 Early and present Earth and its circumnavigation of the SunEarly Earth; Motions of Earth in its circumnavigation of the Sun; Significance

of the Moon to life on Earth; Jupiter-Earth's guardian angel (perhaps); Summary; 6 Origin of life and photosynthesis; What do we know, what can we know of the origin of life?; Panspermia; The empirical 'bottom-up' approach to understanding the 'rapid' appearance of life. Can we produce life in a test tube?; Some conjectures; Hypotheses concerning the origin of life on Earth; The origin of photosynthesis; The evolution of photosynthesis

Consequences of lack of birth control in plants Summary; 7 Setting the stage for the evolution of life on a tumultuous planet; Earth's 'third atmosphere'; Oxygen, UV radiation, and early ice ages; Some biological effects of the oxygen revolution; Carbon dioxide in Earth's third atmosphere; Composition of Earth's atmosphere in the late Quaternary period; Major stress factors which affected the evolution of life; Mass extinctions in the fossil record: local and planet-wide catastrophes; Conclusions; Summary; 8 Mechanisms of evolution: from first cells and extremophiles to complex life

The dating problem Timing of the main events in evolution; Some early ideas about evolution; Some recent theories of the mechanism of evolution; The continuing coevolution of molecular biology and evolutionary theory; Extremophiles; Summary; 9 The evolution of humans and their interaction with the biosphere; Human origins; Human population; Homo sapiens sapiens (horribilis horribilis?) and the biosphere; Politically correct environmental science; How many people can the world support?; A note on land and energy resources; Summary; 10 In search of extraterrestrial life
A short history of the origins of astrobiology

Sommario/riassunto

The study of life in our universe has been given the name 'astrobiology'. It is a relatively new subject, but not a new discipline since it brings together several mature fields of science including astronomy, geology, biology, and climatology. An understanding of the singular conditions that allowed the only example of life that we know exists to emerge and survive on our turbulent planet is essential if we are to seek answers to two fundamental questions facing humanity: will life (and especially human life) continue on Earth, and does life exist elsewhere in the universe? Astrobiology of Ear
