Biodata of **Giora Shaviv**, author of the "***Introduction***" to ***Life on Earth and other planetary bodies***.

Giora Shaviv is a Professor of Physics, at the Technion (Israel) and holds the chair of Shwartzmann-Medvedi in Space Sciences. He obtained his B.Sc. in 1959 from the Technion, Physics, and his D.Sc. in 1965 also at the Technion (his thesis was on Fast Reactors Physics). Dr. Shaviv worked for 5 years in the Israel Atomic Energy Commission, then Cal-Tech, Cornell, Oxford, Heidelberg, and Tel Aviv University. He has been the Chairman at Tel Aviv University, Physics and Astronomy, Dean Technion, Department of Physics, Head of the Asher Space Research Institute, Director Wise Observatory, and Director Technion computing center. Giora Shaviv conceived, developed, and launched the Technion satellite TechSat-Gurwin I. He served as the Head of the Committee for Planning Astrophysical Research in Israel, under the auspices Israel Academy of Sciences. Professor Shaviv was the Vice President and President of the Israel Physical Society, and the Head, Minerva Center for Non Linear Phenomena. Among the awards he obtained are as follows: the von Humbolt Prize for research (Germany – 1995), Landau Prize (Israel) 2008, and Elected Member International Astronautical Academy. He initiated astrophysics research in Israel (Tel Aviv University, Technion) and his fields of interest are theoretical astrophysics, fundamental processes in stellar evolution nuclear astrophysics, radiative transfer in stellar atmospheres and planetary atmospheres, evolution of Earth-like planets.

Dr. Shaviv has published over 250 papers in the international professional literature.

Shaviv is the author of several books among them The Life of Stars (the history of the theory of stellar evolution) and The Synthesis of the Element (how the elements were formed and what they tell us about the Universe). Both books were published by Springer.

E-mail: **gioras@physics.technion.ac.il**

A. Hanslmeier et al. (eds.), *Life on Earth and other Planetary Bodies*,
Cellular Origin, Life in Extreme Habitats and Astrobiology 24, 9–12
DOI 10.1007/978-94-007-4966-5_2, © Springer Science+Business Media Dordrecht 2012

INTRODUCTION

GIORA SHAVIV
Department of Physics, Israel Institute of Technology, Haifa, Israel

Astrobiology, as a scientific viable discipline, is a fast growing and emerging science. This is so because of the fantastic increase in technological means and methods to discover extra solar planets. Our space age, which provides us with incredible and powerful satellites like CoRot and Kepler, allows the detection of planetary systems in which not only giant gaseous planets revolve around a central star but also Earth-like planets (ELPs) covered with a significant fraction of their area with liquid (not necessarily water). On one hand, several planetary systems containing few planets were discovered. On the other hand, over a thousand planets discovered so far, some tens appear to be ELPs and several systems with a number of planets were discovered. What can we expect from such planets? What kind of worlds there are? In particular, can we find planets the temperature and atmospheric pressure on which are close to the triple point of a certain molecule to facilitate unfamiliar and may be never speculated forms of life?

The discovery of any form of life on an extraterrestrial planet will be one of the most fantastic and extraordinary discoveries of mankind and is bound to have profound impact on all facets of life as we know them on our planet. The search for life on ELPs and the evolution of ELPs toward the formation of habitable zones (HZ) is what this compilation of papers is all about. The collection spans from the discovery of ELPs to esoteric forms of life, found under extreme conditions, to the structure of young planets and the planetary evolution toward the creation of a HZ and its eventual disappearance.

While the list of covered topics is long, it may not be everything relevant and the complexity of the problem may still be beyond us. For example, the role of the Greenhouse Effect, greenhouse gases emitted naturally, etc., are still not clear. Why Venus is so hot? Long time evolution of planets insolated by main sequence stars of different types, etc., to name just few examples.

Astrobiology and the search for extraterrestrial life may sound as subjects detached from our daily life here on Mother Earth. This is a very wrong perception. It is during these times that we witness how whatever goes on the Earth is intimately connected to astronomical phenomena, the sun (which does not serve only as an energy source), and the galaxy at large. Understanding our evolution on a timescale of decades and potential fate on much longer timescales is closely

related to the questions posed in this compilation of papers. Where will global warming bring mankind? How global warming is connected and affected by cosmic phenomena and what mankind can and should do to preserve life on our planet in this corner of the Milky Way galaxy.