3rd International Conference and Exhibition on

Satellite & Space Missions

May 11-13, 2017 Barcelona, Spain

Is there life on planets and satellites? Examples from extremophilic candidates on earth

Joseph Seckbach Hebrew University of Jerusalem, Israel

Tormally life occurs everywhere; however, there are some habitats of life that have very severe environmental conditions that host microorganisms can tolerate these harsh conditions. The organisms living and thriving in these habitats are termed extremophiles and polyextremophiles (under more than one category of stress). Among the microbial extremophiles who live in stress conditions are prokaryotes (archaea, bacteria and cyanobacteria) and eukaryotes (algae protozoa, and micro-animal such as, tardigrades). Among these harsh conditions are high salt media (halophiles), high and low level of temperatures (thermophiles 45-1220C vs. cryophiles of -150C and lower, various pH levels (acidophilic vs. alkalophilic members), thermoacidophiles (growing at 45->800C with pH of below 3), high-deep pressure (barophiles or piezophiles) in deep ocean trenches or deep terrestrial subsurface, anaerobes (without oxygen), cryptoendoliths (living in microscopic spaces with in rocks, hypoliths (living under rocks in cold deserts), xerophiles (in extreme dry desiccated conditions as in Atacama desert), metallotolerant (tolerating toxic heavy levels of heavy metals), osmophiles (growing in environment of high sugar concentration), radio-resistant microorganisms, hyper gravity of tolerant bacteria; lichen survived adaptation to condition of Mars, and other organisms tolerate space conditions. In our presentation, we will cover only part of the above factors. While these environments are considered severe habitats from our anthropocentric point of view, the extremophiles consider their own environments, as a 'Garden of Eden' and our 'normal' habitat may be lethal for them. We consider these extremophiles as models or analogues for extra-terrestrial life. We are aware that some Solar System planets and satellites may contain sub icy layers of large oceans of salty water, which may bear life. The above topic is currently of high interest with the recent discovery of an exo-solar system Sun with its seven planets. It is believed that among these planets some may bear life as in our planet.

Biography

Joseph Seckbach is the Founder and Editor-in-Chief of Cellular Origins, Life in Extreme Habitats and Astrobiology Seroes. He completed his PhD at University of Chicago and Post-doctorate at Caltech, and then headed a group at UCLA studying extraterrestrial life possibilities. Later, he was appointed to the Hebrew University and spent sabbaticals at UCLA and Harvard. During 1997-98, he served at LSU, Baton Rouge, as the first selected Chair for the Louisiana Sea Grant. He published ~140 scientific articles including Hebrew-language Chemistry Lexicon. His research interest is in "Enigmatic microorganisms, life in extreme environments and astrobiology". He has given seminars at numerous universities.

Joseph.seckbach@mail.huji.ac.il

Notes: