Tuesday, April 27, 2010
ADAPTATION OF LIFE IN HOSTILE SPACE ENVIRONMENTS
8:00 a.m. Crystal Salon E

Session covers adaptation of existing life in places where no one ever imagined and such adaptation has been stretching our understanding of life.

Chairs: **Oleg Gusev**
Gunther Kletetschka

8:00 a.m. Tirumalai M. R. * Rastogi R. Venkateswaran K. Fox G. E.
Genomic Changes that May be Responsible for the Elevated UV Resistance of Bacillus Pumilus SAFR-032 **[#5394]**
The genomes of Bacillus pumilus SAFR-032 whose spores are highly resistant to UV and the closely related B. pumilus ATCC-7061 that lacks this resistance are compared. Candidate genes are identified that may be responsible for the elevated resistance.

8:15 a.m. Robinson C. K. DiRuggiero J. *
Damage Avoidance and DNA Repair Mechanisms of Extremophiles to Ionizing Radiation **[#5556]**
The results presented here support the idea that the radiation resistance of the halophilic archaeon Halobacterium salinarum is the product of mechanisms for cellular protection and detoxification and for the repair of oxidative damage to cellular macromolecules.

8:30 a.m. Gusev O. * Kikawada T. Cornette R. Sychev V. Levinskikh M. Novikova N. Malutina L. Okuda T.
Anhydrobiotic Midge Polypedilum Vanderplanki: How an Insect can Survive over 18 Months Unprotected in Open Space **[#5249]**
In series of experiments on the outer side of ISS, we found that cryptobiotic larvae of an insect survived after 18 months of direct exposition to outer space environment.

8:45 a.m. Yokobori S. * Yang Y. Sugino T. Kawaguchi Y. Itahashi S. Fujisaki K. Fushimi H. Hasegawa S. Hashimoto H. Hayashi N. Imai E. Itoh T. Kawai H. Kobayashi K. Marumo K. Mita H. Nakagawa K. Narumi I. Okudaira K. Shimada H. Tabata M. Takahashi Y. Yabuta H. Yamashita M. Yano H. Yoshida S. Yoshimura Y. Yamagishi A.
Quest for Microorganisms Existing at High Atmosphere and Space **[#5200]**
We have tested effects of various factors in space environment on survivability of Deinococcus spp. including our newly isolated species at high altitude. In “Tanpopo” mission, we are planning to expose microorganisms such as deinococcal species.

9:00 a.m. Rebecchi L. Altiero T. Guidetti R. Cesari M. Rizzo A. M. Bertolani R. *
Resistance to Extreme Stresses in the Tardigrada: Experiments on Earth and in Space and Astrobiological Perspectives **[#5262]**
The ability of tardigrades to enter cryptobiosis al-lows them to resist to extreme stresses: very low or high temperatures, chemicals, high pressure, ionizing and UV radiations This has lead to propose tardigrades as suitable model in space research.

9:15 a.m. Best B. P. *
Cryopreservation as a Means of Suspended Animation **[#5022]**
Details of current and possible future technologies (including cryonics) for suspended animation through cryopreservation will be discussed.

9:30 a.m. Das S. * Roy B. K.
Possible Role of a Medical Microbiologist in Astrobiology **[#5073]**
Studies of microorganisms present in human body often reveal many extremophiles, silicon-utilizing microorganisms, mutation processes, coacervates etc., thus a medical microbiologist can also take a part in studies on astrobiology in this way.

9:45 a.m. Kletetschka G. * Horikawa D. Parsons A. Bodnarik J. Chervenak J.
Neutron Dose and Sub-Kelvin Resistance of the Tardigrade: Ramazzottius Varieoranatus **[#5474]**
Tardigrades have never been exposed to neutron/gamma radiation. They were also never cooled down to temperatures less than 1 K. We will show the survival data of these conditions and discuss the survival mechanisms.

10:00 a.m. BREAK