

Life Sciences as Related to Space (F)
Space Radiation - Invited Cross Discipline Talks (F2.5)

ROUND TABLE DISCUSSION - PART 1: THE FUTURE OF SPACE RADIATION RESEARCH

Christine Hellweg, christine.hellweg@dlr.de
DLR - Inst. of Aerospace Medicine, Koeln, Germany
Andrea Ottolenghi, andrea.ottolenghi@unipv.it
University of Pavia, Pavia, Italy
Thomas Berger, thomas.berger@dlr.de
German Aerospace Center (DLR), Cologne, Germany
Yeqing Sun, yqsun@hit.edu.cn
Dalian Maritime University, Dalian, China

Space radiation is the "Number One Health Risk" (Chancellor et al., 2014) for long-term space missions beyond Low Earth Orbit (LEO). During space missions, astronauts are chronically exposed to galactic cosmic radiation (GCR) consisting of energetic protons, helium and heavier nuclei up to iron. This chronic exposure increases the risk for developing cancer and degenerative diseases (cataract of the eye lens, and possibly also decrements of the central nervous system (CNS) and other organ systems). The extents of these risks and the underlying mechanisms have to be further elucidated. In addition to the baseline exposure to GCR, Solar particle events (SPEs) bear the risk of acute high dose exposure, and might even provoke the acute radiation syndrome. Mitigation of the space radiation risks necessitates a multidisciplinary approach, from understanding the nature of the space radiation environment, the development of relevant radiation dosimeter systems, having the relevant tools to model the radiation environment, understanding the influence of shielding to the biological effects of space radiation, and being able to develop relevant countermeasures. The invited speakers of the cross discipline talks of the session F2.5 will discuss the upcoming challenges in the fields of space radiation physics, dosimetry, and modeling, biology and countermeasure development. References: Chancellor JC, Scott GBI,1, Sutton JP (2014) Space Radiation: The Number One Risk to Astronaut Health beyond Low Earth Orbit. *Life* (Basel). 2014 Sep; 4(3): 491-510.