

Meeting Summary

The combined 3rd International Workshop on Space Radiation Research and 15th International Space Radiation Health Investigator's Meeting was held on May 16-20, at Port Jefferson, New York. The meeting was attended by 187 scientists from 11 countries. The participants contributed 128 abstracts for platform or poster presentations. Manuscripts submitted at the meeting will undergo scientific review for possible publication in a Supplemental Issue to the journal *Radiation Research*.

Research highlights from the meeting included the first results from experiments performed at the NASA Space Radiation Laboratory at BNL during the NSRL-0 (July, 2003), NSRL-1 (October-November, 2003) and NSRL-2 (March-April, 2004) experimental campaigns with proton, carbon, silicon, titanium, and iron beams. In less than one-year of operation the NSRL has nearly doubled the number of ion species that had been studied at the BNL Alternating Gradient Synchrotron (AGS) during its use by NASA from 1996-2002. Presentations addressed many Critical Path Roadmap questions related to predicting and mitigating the risks of carcinogenesis, damage to the central nervous system, and cataractogenesis, and the development of new materials and radiation shielding analysis tools. Several talks discussed results from spaceflight measurements on the ISS and the Odyssey spacecraft orbiting Mars, and on predictions of doses for exploration missions. Dr. Terri Lomax of OBPR gave an overview of NASA's plans for space exploration, and for possible research opportunities on the Lunar Reconnaissance Orbiter (LRO).

Highlights of the presentations included results that demonstrated new understanding of risks to the CNS from space radiation, the development of models of individual radiation sensitivity for carcinogenesis, and studies of biological countermeasures. Researchers from the CNS NSCOR at Loma Linda U. and U. San Francisco presented preliminary results demonstrating that heavy ions produce LET, dose, and time dependent reductions in the number of proliferating neuronal cells including immature neuronal cells, and that indicators of neurogenesis are associated with changes in microvasculature, inflammatory responses and oxidative stress. These results provide mechanistic evidence that may validate earlier NASA funded observations of cognitive changes in rats exposed to iron particles. Dr. Eric Hall of Columbia U. and Dr. Peter Demant of the Roswell Institute discussed new approaches and results of the importance of genetic background on the risk of carcinogenesis. Several speakers discussed promising preliminary results from experiments at NSRL, which showed that supplemental dietary anti-oxidants are effective countermeasures in biological models of CNS risks or neoplastic transformation.