Thursday, February 13, 2014
OXIDATIVE STRESS AND DAMAGE
4:00 p.m.   Iris/Tulip

Chair: Tom Goodwin

4:00 p.m. Goodwin T. J.  McCarthy M.  Osterrieder N.  Cohrs R. J.  Kaufer B. B.
Three-Dimensional Normal Human Neural Progenitor Tissue-Like Assemblies:  A Model for Persistent Varicella-Zoster Virus Infection and Platform to Study Oxidative Stress and Damage in Multiple Hit Scenarios [#3085]
Oxidative stress and damage (OSaD) is a common denominator in most adverse events that occur in the human physiology. Causes range from mental stress to a myriad of physical maladies. Spaceflight imparts abnormal conditions that are essentially unresolvable for the human body leading to imbalance.

4:15 p.m. Globus R. K.
Space Environmental Factors:  Oxidative Stress -Relevant Mechanisms and Responses [#3135]
We hypothesize twin challenges encountered in space, microgravity and ionizing radiation, contribute to an imbalance in free radical formation and reduction, leading to the accumulation of damage in bone and vascular tissues. Animal models facilitate hypothesis testing and countermeasure development.

4:30 p.m. O’Toole M.  Eaton J.  Ehringer W.  Gobin A. S.  Keynton R.  Soucy P.
Nanoparticle Formation for Antioxidant Delivery to Mitigate Cellular Damage in Humans Exposed to Radiation [#3249]
The objective of this work is to design drug delivery systems to maximize the delivery of specific radio-protective agents to mitigate the effects of low LET radiation. Albumin and chitosan nanoparticles have been designed to release antioxidants such as curcumin and N acetyl cysteine.

4:45 p.m. Pietrofesa R. A.  Arguiir E.  Solomides C. C.  Christofidou-Solomidou M.
Novel Double-Hit In Vitro Model of Oxidative Damage Associated with Cycling Exposure to Radiation and Hyperoxia Relevant to Space Travel [#3044]
We developed a novel in vitro model of hyperoxia and radiation exposure associated with space flight and extravehicular activity (EVA) to identify and determine possible mechanism(s)of lung cell damage and evaluate countermeasures to mitigate the damage.

5:00 p.m. Tseng B. P.  Giedzinski E.  Izadi A.  Suarez T.  Lan M. L.  Tran K. K.  Acharya M. M.  Nelson G. A.  Raber J.  Limoli C. L.
Functional Consequences of Radiation-Induced Oxidative Stress in Cultured Neural Stem Cells and the Brain Exposed to Charged Particle Irradiation [#3003]
This work describes the acute and chronic CNS effects of low dose exposure to charged particle irradiation. The temporal coincidence between radiation-induced oxidative stress and behavioral impairments suggest that the former is a biochemical mechanism capable of disrupting CNS function.

5:15 p.m. Lee S. M. C.  Westby C. M.  Stenger M. B.  Smith S. M.  Zwart S.  Ploutz-Snyder R. J.  Platts S. H.
Defining the Relationship Between Biomarkers of Oxidative and Inflammatory Stress and the Risk for Atherosclerosis in Astronauts During and After Long-Duration Spaceflight [#3162]
This investigation will determine whether biomarkers of oxidative and inflammatory stress are elevated during and after long-duration spaceflight and if a relation exists between biomarker levels and atherosclerotic risk indices.