Sunday, July 8, 2012
POSTER SESSION: STUDENT POSTERS
7:00 p.m. Ambassador Ballroom

Bellone J. A. Hartman R. E. Vlkolinský R.
Low Doses of Proton Radiation Do Not Induce Spatial Learning or Memory Deficits in a Mouse Model of Alzheimer's Disease **[#8004]**
APP/PS1 mice and their wild-type littermates were exposed to low doses of proton particle radiation. Transgenic mice were found to have greater behavioral deficits than the wild-type mice, but radiation doses up to 1 Gy had no effect on performance.

Farin A. Manzo N. Terry K. Stripp B.
Modeling Cell-Intrinsic Effects of Low vs High LET Ionizing Radiation on Lung Epithelial Progenitor Cells **[#8104]**
Exposure to both low- and high-LET radiation results in a dose-dependent loss of lung epithelial progenitor cells, as modeled using 3D culture assays.

Krigsfeld G. S. Sanzari J. A. Savage A. R. Kennedy A. R.
The Mechanism and Treatment of Coagulopathy in Proton Irradiated Ferrets **[#8127]**
We have hypothesized that SPE radiation activates the coagulation cascade, leading to the SPE-induced hypocoagulable state.

Moding E. J. Woodlief L. Z. Lee C. L. Ma Y. Kirsch D. G.
Role of p53 in Lung Carcinogenesis After Exposure to Space Radiation **[#8015]**
To investigate the role of p53 in HZE radiation-induced lung cancer, we are genetically manipulating p53 levels in mice predisposed to non-small cell lung cancer and exposing them to fractionated irradiation with iron ions.

Todorova P. K. Camacho C. V. Gil del Alcazar C. R. Bachoo R. M. Burma S.
Heterozygous Deletions of p53 and PTEN Cooperate with DNA Damage Induced by Fe Ions to Trigger High Grade Gliomas in Mouse Models **[#8115]**
To evaluate the tumorigenic potential of HZE particles we are irradiating mouse GBM models with brain-specific heterozygous deletions of p53 and PTEN. In this model we find that Fe ions are significantly more transforming compared to X-rays.

Zheng X. Hudson F. Jaafar L. Dynan W. S.
Long-Term Effects of a Single Exposure of the Vertebrate Embryo to High Charge and Energy (HZE) Particle Radiation **[#8078]**
Long-term effects of exposure to the HZE particle radiation on normal tissues remain incompletely understood. Here we investigate these effects using a vertebrate model organism, the Japanese medaka (Oryzias latipes).

Adams C. J. Yu J. Mao J. H. Le P. T. DelRossario R. Hirst G. L. Wahl G. M.
Barcellos-Hoff M. H. Balmain A.
A Systems Genetic Analysis of Susceptibility to Development of Tumors Induced by High LET Radiation **[#8019]**
We are using a systems genetics approach to identify genes and pathways involved in susceptibility to high vs. low LET radiation-induced tumorigenesis, using the novel radiation-sensitive p53 ΔP mouse model.

Alwood J. S. Tran L. H. Kumar A. K. Hilton D. Choi S. Y. Torres S. Limoli C. L. Globus R. K.
Consequences of Low-Dose HZE Irradiation in the Cortical Bone of Aged Mice **[#8112]**
Whether space radiation causes later changes to cortical bone, critical to bone's mechanical integrity, is not well understood. We hypothesized that HZE radiation alters mouse cortical tissue and produces a reduced state of cortical bone remodeling.

Davis C. M. Guida P. M. Hienz R. D.
Individual Differences in Neurobehavioral Deficits Following Proton Irradiation are Related to Basal Dopamine Function **[#8079]**
The inbred Fischer 344 and Lewis rats display inherent differences in basal dopamine (DA) function and served as subjects in the current study to assess the importance of DA system function in the behavioral and molecular responses to irradiation.

Illa-Bochaca I. Gonzalez M. Tang J. Mao J-H. Costes S. V. Barcellos-Hoff M. H.
The Contribution of Non-Targeted Effects in HZE Cancer Risk **[#8076]**
Our goal is to determine the contribution of NTE as a function of radiation quality on breast cancer. We present data of two experiments recently concluded where tumor latency, tumor growth, estrogen receptor status and tumor histology were measured.

Kandimalla R. Wang T. Tang X. Wang H.
Interaction of APP(swe) Mutant and GSK3 Modulates Radiation Response in Hippocampal Neuronal Cells **[#8091]**
In neurodegenerative diseases (AD, PD, HD, and ALS) there is accumulation of DNA damage with DNA repair defects. We found APP(swe) mutant down regulates ATM and DNA-PK activity and inhibits radiation-induced DNA damage response in neuronal cells.

Kim S. B. Pandita R. K. Kaisani A. Kumar R. Wright W. E. Pandita T. K. Shay J. W.
Protective Role of Nrf2 Against Solar Particle Events-Induced Colorectal Cancer Progression **[#8012]**
Simulated SPEs significantly decreased survival and increased invasive adenocarcinomas in the CPC;Apc mice. However, CDDO-EA provided for three days before exposure protected mice from SPEs-induced cancer progression and increased overall mice survival.

La Tessa C. Berger T. Kaderka R. Schardt D. Koerner C. Ramm U. Licher J. Matsufuji N. Vallhagen-Dahlgren C. Lomax T. Reitz G. Durante M.
Out-of-Field Dose Studies with an Anthropomorphic Phantom: Comparison of X-Rays and Particle Therapy Treatments **[#8072]**
The out-of-field dose distribution following irradiation of an anthropomorphic phantom with a 3-D treatment plan was measured for several radiation types (photons, protons, carbon ions) and delivery modalities (IMRT, passive modulation, scanning).

La Tessa C. Schuy C. Rusek A. Sivertz M. Durante M.
Microdosimetry of 160 MeV/u ^{4}He and 360 MeV/u ^{16}O Beams in Water **[#8077]**
The radiation quality of 160 MeV/u ^{4}He and 360 MeV/u ^{16}O beams interacting with water have been investigated by measuring microdosimetrical spectra in-beam and out-of-field. Furthermore, the dose distributions are calculated from the spectra.

Lee C. L. Blum J. M. Moding E. J. Woodlief L. Z. Borst L. Kim Y. Kirsch D. G.
The Tumor Suppressor p53 Acts During Total-Body Irradiation to Promote Lymphoma Development **[#8023]**
We show that temporary knockdown of p53 in mice using an inducible small hairpin RNA (shRNA) during 1.8 Gy × 4 total-body irradiation with 320 kVp X-rays prevents lymphoma development by suppressing the expansion of mutant cells after irradiation.

Li Y. Qian H. Wang Y. Cucinotta F. A.
Stochastic Modeling of DNA Fragments Rejoining **[#8006]**
A stochastic model for DNA fragment rejoining is proposed to study the repair of DNA double strand breaks induced by high LET radiation. Numerical simulation agrees with data and reveals the impact factors of DNA fragments rejoining efficiency.

Manzo N. Farin A. Terry K. Stripp B.
Proliferative and Clonogenic Potential of Lung Progenitor Cells Exposed to Ionizing Radiation **[#8105]**
We show that the lung epithelium is a sensitive target for radiation, resulting increased airway epithelial progenitor cell proliferation and clonal expansion and may contribute to radiation-induced lung tissue remodeling and cancer development.

Saha J. Wang M. Hada M. Cucinotta F. A.
Investigation of Switch from ATM to ATR Signaling at the Sites of DNA Damage Induced by Low and High LET Radiation **[#8066]**
ATM and ATR kinase are responsible for the maintenance of genomic integrity. We demonstrate that transition from ATM to ATR signaling at DNA breaks leading to successful repair is inhibited by the complex type of damage induced by high LET radiation.

Tang J. Fernandez-Garcia I. Vijayakumar S. Chang J. Illa-Bochaca I. Nguyen D. H. Mao J. H. Costes S. V. Barcellos-Hoff M. H.
Systems Modeling of Stem/Progenitor Self-Renewal Promotion Following Ionizing Radiation **[#8031]**
In order to evaluate the long-term impact of radiation-induced death/senescence and stem cell self-renewal signaling in the mammary gland, we integrated agent-based computer models with *in vivo* measurements and *in vitro* cell culture data.

Tungjai M. Honikel L. Rithidech K.
Comparative Effects of ^{28}Si Ions on the Heart and the Bone Marrow of Whole-Body Irradiated Mice **[#8029]**
The data demonstrated that exposure to ^{28}Si ions can induce cell death in both the heart and BM of the same mouse. Further, chronic inflammation was found in both tissues after exposure to ^{28}Si ions at the dose range of 0.1 to 0.5 Gy.

Wang T. Tang X. Wang Y. Wang C. Wang H.
Homologous Recombination Mediates Persistent Clustered DNA Damage Processing **[#8090]**
We investigated the processing of clustered DNA damage induced by high-LET using life-imaging, Our results suggest that clustered DNA damage information is inherited after mitosis and that homologous recombination plays critical role in repairing clustered DNA damage.