

Space Radiation Program Investigators and Projects Funded during 2008 and Beyond

NASA Specialized Centers of Research (NSCOR)

Colorado State University

Robert Ullrich
Colorado State University
NSCOR: Radiation Leukemogenesis
(ends 9/30/08)

Lawrence Berkeley National Laboratory

Mary Helen Barcellos-Hoff
Lawrence Berkeley National Laboratory
NSCOR: Mechanisms of HZE Damage and Repair in Human Epithelial Cells
(ends 11/30/08)

Loma Linda University Medical Center

Gregory Nelson
Loma Linda University
NSCOR: Progressive Alterations of Central Nervous System Structure and Function Are Caused by Charged Particle Radiation
(ends 2/28/09)

Tufts University

Lynn Hlatky
Caritas St. Elizabeth's Medical Center, Tufts Univ. School of Medicine
NSCOR: Solid Tumor Risk Estimation: Incorporating Intercellular Interaction Effects
(ends 9/30/2009)

University of Texas Southwestern Medical Center

John Minna
The University of Texas Southwestern Medical Center
NSCOR: Lung Cancer Pathogenesis and HZE Particle Exposure
(ends 3/31/10)

Individual Investigators

Sally Amundson
Columbia University
HZE-induced mammary cancer development processes in murine and "humanized" models, and their influence on radiation quality functions
(new project announced August 2008; no abstract available)

John Archambeau
Loma Linda University Medical Center
Quantification Of The Dose Response Of The Microvessel Parameters In Retina, Cortex And White Matter Following Iron-56 Irradiation And Proton Irradiation
(ends 6/30/08)

Edouard Azzam
University of Medicine and Dentistry of New Jersey
The Role of Gap-Junction Communication and Oxidative Metabolism in the Biological Effects of Space Radiation
(ends 12/31/10)

Jeff Bacher
Promega Corporation
A Novel Biodosimetry Method
(ends 8/31/10)

Susan Bailey
Colorado State University
HZE Radiation: Modulation of Genetic Effects By RNA Interference Of NHEJ
(ends 6/01/09)
Telomeric proteins in the radiation/DNA damage response
(ends 12/31/11)

Janet Baulch
University of Maryland
Dose rate effects on the mechanisms of space radiation induced delayed genomic instability
(ends 8/31/10)

Joel Bedford
Colorado State University
Dose-Rate Effects and Components of Systems Governing Variations in Susceptibility for Carcinogenic and Acute Radiation Risks following Gamma-Ray, Proton, or HZE Irradiation
(ends 8/31/10)

Dan Berkowitz
The Johns Hopkins University, School of Medicine
Ionizing Radiation and its Effects on Cardiovascular Function in the Context of Space Flight
(ends 6/30/09)

Eleanor Blakely
Lawrence Berkeley National Laboratory
Early Markers of Space-Radiation Induced Human Cataractogenesis
(ends 7/31/10)

Richard Britten
Eastern Virginia Medical School
Proteomic aided investigation of the mechanistic basis for HZE-induced cognitive impairment and the development of diagnostic biomarkers
(ends 12/31/10)

Sandeep Burma
University of Texas Southwestern Medical Center at Dallas
Molecular and Cellular Effects of Heavy Ion Fragmentation due to Shielding
(ends 9/30/09)

Polly Chang
SRI International
Tissue-specific acute and late molecular surveillance of particle radiation effects
(ends 10/31/10)

Benjamin Chen
University of Texas Southwestern Medical Center
The Impact of HZE Particles on Adult Neural Stem Cells and Neurogenesis
(ends 8/31/11)

David Chen
University of Texas, Southwestern Medical Center
DNA Damage Responses Induced By HZE Particles In Human Cells
(ends 9/30/08)
Mechanisms of the Repair of HZE Induced DNA Double-Strand Breaks in Human Cells
(ends 9/30/11)

Leo Chylack, Jr.
Harvard Medical School, Brigham & Women's Hospital
Precise Assessment of Prevalence and Progression of Lens Opacities in Astronauts as a Function of Radiation Exposure During Space Flight and Development of Improved Routine Clinical Assessment of Ocular Lens Status
(ends 11/30/08)

Michael Cornforth
University of Texas Medical Branch
Structural Chromosome Aberrations Formed in Response to Changes in Proton Energy and Dose Rate
(ends 8/31/10)

Francis Cucinotta
NASA Johnson Space Center
Space Radiation Risk Assessment
(ends 5/31/11)

Michael Dingfelder
East Carolina University
Patterns of Energy Deposition by HZE Particles in Cellular Targets
(ends 12/31/08)

Joseph Dynlacht
Indiana University
Effects of Estrogen on Cataract Induction After Exposure to High LET Radiation
(ends 8/31/09)

John Fike
University of California, San Francisco
Inflammation in the brain after particulate irradiation predisposes the hippocampus to a heightened vulnerability after a secondary insult
(ends 5/31/09)
Use of a molecular marker of learning and memory to assess effects of ⁵⁶Fe irradiation on hippocampus-dependent cognition and neurogenesis
(new project announced August 2008; no abstract available)

Albert Fornace
Georgetown University
Mouse models approach for intestinal tumorigenesis estimates by space radiation
(ends 3/31/11)

Charles Geard
Columbia University
Human endothelial cells in 2-D and 3-D systems; non-cancer effects and space-related radiations
(ends 9/30/09)

Ruth Globus
NASA Ames Research Center
Simulated Microgravity and Radiation-Induced Bone Degeneration: Oxidative Stress- and p53-Dependent Mechanisms
(ends 9/30/09)

Eric Hall
Columbia University
Individual Genetic Susceptibility
(ends 5/31/09)
Mechanisms of Ocular Cataracts
(ends 9/30/09)

Kathryn Held
Massachusetts General Hospital

Mechanisms for Induction of Bystander Effects by High Energy Particles in Cells and Tissues
(ends 6/30/11)

Lynn Hlatky
Caritas St. Elizabeth's Medical Center, Tufts Univ. School of Medicine
Computational Modeling of Chromosome Aberrations Produced by HZE Particles
(ends 6/1/08)

David Hoel
Medical University of South Carolina
The Analysis of the Potential Health Risks from High LET Radiation
(ends 5/31/08)

Jian Zhi Hu
Battelle Memorial Institute-Pacific Northwest Division
Early Detection of Inflammatory Response and the Subsequent Health Outcomes Due to High LET Particle Radiation: An Integrated Metabolomics Study
(ends 9/30/08)

Fiorenza Ianzini
University of Iowa
Role of high-LET radiation-induced mitotic catastrophe in mutagenesis: implication for carcinogenesis
(ends 11/30/09)

Amy Kronenberg
Lawrence Berkeley National Laboratory
Comparative Analysis of Charged Particle-Induced Autosomal Mutations in Murine Tissues and Cells
(ends 3/31/11)

Chuan-Yuan Li
University of Colorado Health Sciences Center
Mechanisms of HZE Particle-Induced Genetic Instability/Oncogenic Transformation and Their Prevention--U CO HSC
(ends 11/30/08)
A mechanistic investigation of space radiation-induced carcinogenesis
(new project announced August 2008; no abstract available)

Charles Limoli
University of California
High LET Radiation and Neurogenesis: Implications and Mechanisms Underlying Cognitive Impairment--UC Irvine Grant
(ends 2/28/08)
Mechanisms of High LET Radiation Induced Genomic Instability In The CNS --UC Irvine grant
(ends 2/28/09)
Dose-rate and mixed field effects of protons and HZE nuclei on oxidative injury and stem cell plasticity in the CNS
(ends 2/28/09)
Oxidative stress as a mechanism for altering acute and chronic functional changes in the CNS exposed to low dose, low dose rates, and mixed fields of protons and HZE nuclei
(new project announced August 2008; no abstract available)

William Morgan
University of Maryland, Baltimore
Mitigating High Z Radiation Induced Genomic Instability by Non-Protein Thiols
(ends 5/31/09)

Gregory Nelson
Loma Linda University
Epigenetic Control of Radiogenic Damage Processing in *C. elegans*
(ends 12/31/10)

M. Kerry O'Banion
University of Rochester Medical Center

HZE Radiation Effects on Neuroinflammation: Role of COX-2

(ends 6/1/08)

Local CNS and systemic inflammatory effects following proton and mixed particle exposure

(new project announced August 2008; no abstract available)

Andre Obenaus

Loma Linda University

Non-Invasive Assessment of Neuropathology Following CNS Radiation Exposure

(ends 6/30/08)

Janice Pluth

Lawrence Berkeley National Laboratory

Fundamental Biological Studies of Protein Phosphorylation Profiles After HZE Exposure

(ends 12/31/08)

Elucidating the relationship between the effects of various radiation qualities and cancer development processes using novel flow-based assays

(new project announced August 2008; no abstract available)

Jacob Raber

Oregon Health & Science University

Neurogenesis and cognition in human apoE transgenic mice following ⁵⁶Fe radiation

(ends 8/31/09)

Bernard Rabin

University of Maryland, Baltimore County

Neurochemical and Behavioral Effects of Exposure to Heavy Particles--NNJ06HD93G

(ends 12/31/08)

Individual Differences in the Neurochemical and Behavioral Response to Exposure to Protons

(ends 5/17/11)

J. Leslie Redpath

University of California Irvine

High energy proton dose-rate and mixed field effects on neoplastic transformation in vitro

(ends 12/31/10)

Kanokporn Rithidech

State University New York at Stony Brook

Dose-rate effects of protons on the induction of genomic instability in vivo

(ends 8/31/11)

Robert Schiestl

University of California, Los Angeles, Pathology Dept

Effects of Space Radiation on Degenerative Tissue Disease, Genetic Instability and Oxidative DNA Damage in Ataxia

Telangiectasis Deficient Mice

(ends 8/14/09)

Jerry Shay

UT Southwestern Medical Center

Risk Assessment of Space Radiation-Enhanced Colon Tumorigenesis

(ends 9/30/08)

Risk assessment of Space Radiation-Enhanced Colon Tumorigenesis

(new project announced August 2008; no abstract available)

Lubomir Smilenov

Columbia University

miRNA profiling of radiation response: A systems biology approach to understanding regulation of proton and heavy ion dose effects

(ends 9/30/10)

Betsy Sutherland

Brookhaven National Laboratory

DNA Damage Clusters in Human Cell Transformation Induced by Single or Multiple Space Radiation Ion Exposures
(ends 5/31/11)

Stefan Tafrov

Brookhaven National Laboratory

Histone Acetyltransferases and the Cellular Response to DNA Damage
(ends 3/31/09)

Huichen Wang

Emory University

Molecular basis of DNA repair and protection from apoptosis in neuronal progenitors exposed to space radiation
(new project announced August 2008; no abstract available)

Ya Wang

Thomas Jefferson University

Checkpoint Reduced Cell Sensitivity to High Energy Particles-Induced Killing
(ends 6/30/08)

The mechanism of excess relative risk on carcinogenesis induced by high-LET radiation
(ends 8/31/10)

Jeffrey Ware

University of Pennsylvania School of Medicine

The Role Of Free Radicals In Space Radiation-Induced Malignant Transformation
(ends 8/31/08)

Claudia Wiese

Lawrence Berkeley National Laboratory

A role for homologous recombination in complex DSB repair after HZE particles
(ends 9/30/09)

Honglu Wu

NASA Johnson Space Center

Cytogenetic Study of Heavy Ion-Induced Chromosomal Damage in Human Cells
(ends 6/30/08)

Yongjia Yu

University of Texas Medical Branch

Impact of HZE Particles Exposure on Proliferation and Differentiation of Human Neural System Cells
(ends 5/31/09)

Yongliang Zhao

Columbia University

Functional Role of The Betaig-H3 Gene In High-Energy Heavy Ions-Induced Carcinogenesis
(ends 6/30/08)