

Fiscal Year:	FY 2009	Task Last Updated:	FY 08/07/2009
PI Name:	Ullrich, Robert Ph.D.		
Project Title:	NSCOR: NASA Specialized Center of Research on Radiation Carcinogenesis		
Division Name:	Human Research		
Program/Discipline:	HUMAN RESEARCH		
Program/Discipline--Element/Subdiscipline:	HUMAN RESEARCH--Radiation health		
Joint Agency Name:		TechPort:	No
Human Research Program Elements:	(1) SR :Space Radiation		
Human Research Program Risks:	(1) Cancer :Risk of Radiation Carcinogenesis		
Space Biology Element:	None		
Space Biology Cross-Element Discipline:	None		
Space Biology Special Category:	None		
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Zip Code:	77555-5302	Congressional District:	14
Comments:	NOTE: PI moved to UTMB from Colorado State University in late 2008 (6/2009)		
Project Type:	Ground	Solicitation / Funding Source:	2008 NSCOR Space Radiation NNJ08ZSA003N
Start Date:	06/01/2009	End Date:	05/31/2014
No. of Post Docs:		No. of PhD Degrees:	
No. of PhD Candidates:		No. of Master' Degrees:	
No. of Master's Candidates:		No. of Bachelor's Degrees:	
No. of Bachelor's Candidates:		Monitoring Center:	NASA JSC
Contact Monitor:		Contact Phone:	
Contact Email:			
Flight Program:			
Flight Assignment:			
Key Personnel Changes/Previous PI:			
COI Name (Institution):	Le Beau, Michelle (University of Chicago) Bacher, Jeff (Promega Corporation) Yu, Yongjia (University of Texas Medical Branch) Hogan, Christopher (University of Colorado Denver) Story, Michael (University of Texas Southwestern Medical Center at Dallas) Bedford, Joel (Colorado State University) Weil, Michael (Colorado State University) Ray, F (Colorado State University) Ding, Lianghao (University of Texas Southwestern Medical Center at Dallas) Xie, Yang (University of Texas Southwestern Medical Center) Borak, Thomas (Colorado State University) Brenner, David (Columbia University)		
Grant/Contract No.:	NNX09AM08G		
Performance Goal No.:			
Performance Goal Text:			

Task Description:	<p>The goal of this NSCOR is to provide the information required to develop a rational scientific basis for estimation of risks for carcinogenesis in humans from exposure to radiation during space flight. Previous results from this Program found an unexpectedly low RBE value for acute myeloid leukemia (AML) induction by 1 GeV 56Fe ions. Systematic cytogenetic analyses suggested both microdosimetric factors related to the track structure of 1 GeV 56Fe ions and biological factors could account for this observation. In addition, these studies found an unexpected increase in hepatocellular carcinoma (HCC) at doses as low as 0.1 Gy of 1 GeV 56Fe ions but very little, if any, increase following gamma-ray exposure. These data suggest that processes associated with expansion and progression of initiated cells may play a more prominent role in HCC. If this is the case, it is possible that there are qualitative differences as well as quantitative in the effects of HZE irradiations. To expand on these results and to address the overall goal of this NSCOR a series of coordinated activities will be conducted in 5 Projects and 3 Cores aimed at: (1) providing quantitative animal tumorigenesis data on the relative effectiveness of specific HZE particles and SPE protons compared with gamma-rays in mouse models of AML and HCC; (2) providing a better understanding of the impact of radiation exposure on the processes involved in the initiation and in the progression of initiated cells toward the neoplastic phenotype; (3) delineating potential differences between low LET radiation and high LET radiation such as those encountered in space travel on these processes; (4) developing links between animal data and radiation-induced effects for AML in humans; and (5) developing biologically-based modeling approaches which are critical to link these biological effects to risks in humans.</p>
Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	
Task Progress:	New project for FY2009.
Bibliography Type:	Description: (Last Updated: 06/10/2025)