

<b>Fiscal Year:</b>	FY 2016	<b>Task Last Updated:</b> FY 10/18/2016	
<b>PI Name:</b>	Brenner, David Ph.D.		
<b>Project Title:</b>	Physical and Biological Modulators of Space Radiation Carcinogenesis: Mechanistically- Based Model Development for Space Radiation Risk Assessment		
<b>Division Name:</b>	Human Research		
<b>Program/Discipline:</b>			
<b>Program/Discipline--Element/Subdiscipline:</b>	HUMAN RESEARCH--Radiation health		
<b>Joint Agency Name:</b>	<b>TechPort:</b>	<b>Yes</b>	
<b>Human Research Program Elements:</b>	(1) <b>SR</b> :Space Radiation		
<b>Human Research Program Risks:</b>	(1) <b>Cancer</b> :Risk of Radiation Carcinogenesis		
<b>Space Biology Element:</b>	None		
<b>Space Biology Cross-Element Discipline:</b>	None		
<b>Space Biology Special Category:</b>	None		
<b>PI Email:</b>	<a href="mailto:djb3@cumc.columbia.edu">djb3@cumc.columbia.edu</a>	<b>Fax:</b>	FY
<b>PI Organization Type:</b>	UNIVERSITY	<b>Phone:</b>	(212) 305-5660
<b>Organization Name:</b>	Columbia University		
<b>PI Address 1:</b>	Center for Radiological Research		
<b>PI Address 2:</b>	630 W. 168th St.		
<b>PI Web Page:</b>			
<b>City:</b>	New York	<b>State:</b>	NY
<b>Zip Code:</b>	10032	<b>Congressional District:</b>	13
<b>Comments:</b>			
<b>Project Type:</b>	GROUND	<b>Solicitation / Funding Source:</b>	Directed Research
<b>Start Date:</b>	08/26/2016	<b>End Date:</b>	08/25/2020
<b>No. of Post Docs:</b>	<b>No. of PhD Degrees:</b>		
<b>No. of PhD Candidates:</b>	<b>No. of Master' Degrees:</b>		
<b>No. of Master's Candidates:</b>	<b>No. of Bachelor's Degrees:</b>		
<b>No. of Bachelor's Candidates:</b>	<b>Monitoring Center:</b> NASA JSC		
<b>Contact Monitor:</b>	Simonsen, Lisa	<b>Contact Phone:</b>	
<b>Contact Email:</b>	<a href="mailto:lisa.c.simonsen@nasa.gov">lisa.c.simonsen@nasa.gov</a>		
<b>Flight Program:</b>			
<b>Flight Assignment:</b>			
<b>Key Personnel Changes/Previous PI:</b>			
<b>COI Name (Institution):</b>	Hei, Tom Ph.D. ( Columbia University Center for Radiological Research )		
<b>Grant/Contract No.:</b>	NNX16AR81A		
<b>Performance Goal No.:</b>			
<b>Performance Goal Text:</b>			
<b>Task Description:</b>	<p>This project is designed to use state-of-the-art mechanistic modeling of the experimental data from NASA Specialized Center of Research (NSCOR) programs and other available data as a basis to generate HZE (high energy particle) related cancer risk and uncertainty estimates in humans. There are four components: First, development of practical mechanistically motivated models, emphasizing the significance of individual radiation sensitivity. Second, based on model-based analysis of our and other NSCOR experimental data, estimate site-specific and consensus quality functions for HZE ions. Third, generate realistic uncertainty estimates for these estimates. Finally, our results and uncertainties will be critically compared with the current NASA projections and uncertainties.</p>		

<b>Rationale for HRP Directed Research:</b>	This research is directed because it contains highly constrained research, which requires focused and constrained data gathering and analysis that is more appropriately obtained through a non-competitive proposal. The timing of this work supports current efforts by the Risk Assessment project to quantify uncertainties due to radiation quality factors and use of the dose and dose-rate effectiveness factor (DDREF). Work is highly synergistic with on-going work in the Fornace NSCOR as well as in assessing tissue-specific quality factors and DDREF specific to GI (gastronintestinal) cancers. The study will integrate data from multiple NSCORS (NASA Specialized Centers of Research).
<b>Research Impact/Earth Benefits:</b>	
<b>Task Progress:</b>	New project for FY2016.
<b>Bibliography Type:</b>	Description: (Last Updated: 06/28/2023)