Fiscal Year:	FY 2018	**Task Last Updated:**	FY 10/30/2018
PI Name:	Story, Michael D Ph.D.		
Project Title:	Determining Gender Differences in the Incidence of Lung Adenocarcinoma After Space Radiation Exposure		
Division Name:	Human Research		
Program/Discipline:			
Program/Discipline--Element/Subdiscipline:			
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:	75235-7320	**Congressional District:**	30
Comments:			
Project Type:	GROUND	**Solicitation / Funding Source:**	2016-2017 HERO NNJ16ZSA001N-SRHHC. Appendix E: Space Radiobiology and Human Health Countermeasures Topics
Start Date:	09/01/2018	**End Date:**	08/31/2022
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
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Flight Program:			
Flight Assignment:			
Key Personnel Changes/Previous PI:			
COI Name (Institution):	Lianghao, Ding Ph.D. (University of Texas Southwestern Medical Center, Dallas)		
Grant/Contract No.:	80NSSC18K1676		
Performance Goal No.:			
Performance Goal Text:			

Task Description:	The primary risk factor limiting the amount of time an astronaut can spend in flight is the risk of cancer induction resulting from the unique radiations inherent to the deep space environment. One strategy for mitigating radiation induced carcinogenesis is to provide biological countermeasures that mitigate radiation injury and cancer induction. To date the only Food and Drug Administration (FDA) approved radioprotector is the free radical scavenger, Amifostine; however, concerns about toxicity and reports of severe anaphylactic reactions to this drug prevent its use in spaceflight. Therefore, there is a need to determine and validate appropriate biological countermeasures to mitigate space radiation carcinogenesis, thereby increasing the amount of time astronauts can safely spend in space. In the proposed studies we will evaluate the radio protective potential of GC4419, a novel superoxide dismutase mimetic developed by Galera Therapeutics (St. Louis, MO), in mitigating space radiation carcinogenesis. Due to its efficacy in Phase 1 clinical trials and pre-clinical data generated by our group, GC4419 is currently being fast tracked into FDA Phase II, human clinical trials as a radioprotector for patients undergoing chemoradiation therapy for the treatment of head and neck cancer. Not only does GC4419 reduce the frequency of radiation induced adverse effects, pre-clinical data suggest it has potent anti-carcinogenic and anti-tumor effects as well. Therefore, GC4419 represents a safe, clinically tested countermeasure to reduce radiation injury. In the proposed studies, we will evaluate the efficacy of GC4419 in preventing space radiation induced carcinogenesis focusing specifically on the lung as a primary tumor site.
Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	
Task Progress:	New project for FY2018.
Bibliography Type:	Description: (Last Updated: 12/14/2023)