Fiscal Voor:	EV 2014	Task Last Undeted	EV 12/18/2014	
PI Name	Boerma Marian Ph D	Task Last Opuattu.	1112/10/2014	
Project Title	Boerma, Marjan Pn.D.			
Troject Inic.	Center for Research on Cardiac, vascular, an	a Acute Effects of Space Radian		
Division Name:	Human Research			
Program/Discipline:				
Program/Discipline Element/Subdiscipline:	NSBRIRadiation Effects Team			
Joint Agency Name:		TechPort:	No	
Human Research Program Elements:	(1) SR :Space Radiation			
Human Research Program Risks:	(1) Cardiovascular : Risk of Cardiovascular Adaptations Contributing to Adverse Mission Performance and Health Outcomes			
Space Biology Element:	None			
Space Biology Cross-Element Discipline:	None			
Space Biology Special Category:	None			
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Zip Code:	72205-7101	Congressional District:	2	
Comments:				
Project Type:	GROUND	Solicitation / Funding Source:	2013 NSBRI-RFA-13-02 Center for Space Radiation Research (CSRR)	
Start Date:	06/01/2014	End Date:	05/31/2017	
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:	NSBRI	
Contact Monitor:		Contact Phone:		
Contact Email:				
Flight Program:				
Flight Assignment:				
Key Personnel Changes/Previous PI:				
COI Name (Institution):	Hauer-Jensen, Martin M.D., Ph.D. (Univers Kodell, Ralph Ph.D. (University of Arkansa Koturbash, Igor M.D., Ph.D. (University of Mao, Xiao Wen M.D. (Loma Linda Univers Nelson, Gregory Ph.D. (Loma Linda Univers Tackett, Alan Ph.D. (University of Arkansa	sity of Arkansas) as) Arkansas) sity) rsity) s)		
Grant/Contract No.:	NCC 9-58-RE03701			
Performance Goal No.:				
Performance Goal Text:				

Recent evidence strongly suggests that humans will face increased risks for adverse effects on heart and blood version from radiation exposure during space travel; however, these risks are not well defined. The proposed Center for R on Cardiac and Vascular Effects of Space Radiation comprises teams from four institutions with experts in the file space radiation, cardiovascular radiation injury, and modern techniques of molecular analysis. The goal is to char the cardiovascular risks of space radiation. Studies will begin with mouse models and then proceed to rabbits to e translation to the human situation. Animals will be exposed to accelerated charged particles relevant to radiation interplanetary space, and monitored for up to 9 months comparable to many years observation in humans. Heart f will be measured non-invasively at regular intervals with high-resolution ultrasound. Heart tissue will be obtained different time points to investigate pathological changes, including scar tissue and inflammation. Cutting-edge molecular techniques will be used to examine thousands of proteins and DNA segments to understand mechanism radiation injury and aid in the discovery of sensitive biomarkers. We will also examine blood vessels in the heart retina of the eye, based on evidence that space radiation causes changes in the retinal blood vessels in the retina and heart. Lastly, we will test whether gamma-tocotrienol, a safe dietary antioxidant the strongest natural product radiation protector yet discovered, will reduce the effects of space radiation on heart blood vessels. Altogether, these studies use innovative methods to characterize acute and degenerative cardiovasc effects of space radiation, and will help develop safe and effective countermeasures to protect humans against the effects.	ssels esearch lds of acterize nhance n unction l at us of and the ar to ucture and and ular se
Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	
Task Progress:New project for FY2014.	
Bibliography Type: Description: (Last Updated: 09/01/2023)	