Fiscal Year:	FY 2012	**Task Last Updated:**	FY 06/28/2012
PI Name:	Bowles, Dawn Ph.D.		
Project Title:	Proteomic Profiling of Human Heart Tissue Exposed to Microgravity		
Division Name:	Human Research		
Program/Discipline:	HUMAN RESEARCH		
Program/Discipline--Element/Subdiscipline:	HUMAN RESEARCH--Biomedical countermeasures		
Joint Agency Name:		**TechPort:**	No
Human Research Program Elements:	(1) **HHC**:Human Health Countermeasures		
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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City:	Durham	**State:**	NC
Zip Code:	27710-0001	**Congressional District:**	4
Comments:			
Project Type:	GROUND	**Solicitation / Funding Source:**	2011 Crew Health NNJ11ZSA002NA
Start Date:	07/01/2012	**End Date:**	06/30/2013
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 ARC
Contact Monitor:	Smith, Jeffrey	**Contact Phone:**	650-604-0880
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Flight Program:			
Flight Assignment:			
Key Personnel Changes/Previous PI:			
COI Name (Institution):	Milano, Carmelo (Duke University) Moseley, Martin (Duke University)		
Grant/Contract No.:	NNX12AK76G		
Performance Goal No.:			
Performance Goal Text:			

Task Description:	Our proposal addresses the risks of cardiac damage that could ensue during long term manned space flight. We will accomplish this by examining global protein (proteomic) changes that occur following exposure of cells and tissues to simulated microgravity, one of the stresses during manned spaceflight. In our studies we will examine the effect of microgravity on the proteome of a widely used cardiac cell type (rat neonatal cardiomyocytes) and well as on specimens of human heart tissue. The utilization of cardiac tissues from humans is a meaningful, relevant, and novel model that can directly address the NASA concerns. In addition, proteomics is a sensitive and cutting edge method to monitor protein changes on these human tissues induced by stresses that astronauts encounter during space flight. Being able to identify cardiac damage at an early stage will allow countermeasures to be administered earlier and may mitigate or reverse damage and prevent end stage heart failure. Results from this study may lead to the development of a simple blood test that could be performed on a chip to identify the current state of the cardiovascular system.
Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	
Task Progress:	New project for FY2012.
Bibliography Type:	Description: (Last Updated: 07/11/2023)