Fiscal Year:	FY 2015	**Task Last Updated:**	FY 02/26/2015
PI Name:	Delp, Michael Ph.D.		
Project Title:	Effects of Spaceflight on Ocular Oxidative Stress and the Blood-Retinal Barrier		
Division Name:	Space Biology		
Program/Discipline:			
Program/Discipline--Element/Subdiscipline:	SPACE BIOLOGY--Cellular and molecular biology		
Joint Agency Name:		**TechPort:**	No
Human Research Program Elements:	None		
Human Research Program Risks:	None		
Space Biology Element:	(1) Cell & Molecular Biology (2) Animal Biology: Vertebrate		
Space Biology Cross-Element Discipline:	(1) Developmental Biology (2) Neurobiology		
Space Biology Special Category:	(1) Translational (Countermeasure) Potential		
PI Email:	mdelp@fsu.edu	**Fax:**	FY
PI Organization Type:	UNIVERSITY	**Phone:**	352-214-1195
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City:	Tallahassee	**State:**	FL
Zip Code:	32306-0001	**Congressional District:**	2
Comments:	Previous affiliations were University of Florida (mid-2007-June 2014), West Virginia University (mid-2005 to mid-2007), and Texas A&M University (1995 to mid-2005).		
Project Type:	FLIGHT	**Solicitation / Funding Source:**	2014 Space Biology Flight NNH14ZTT001N
Start Date:	02/01/2015	**End Date:**	01/31/2017
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:**	NASA ARC
Contact Monitor:	Smith, Jeffrey	**Contact Phone:**	650-604-0880
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Flight Program:	ISS		
Flight Assignment:	Tissue Sharing		
Key Personnel Changes/Previous PI:			
COI Name (Institution):	Pecaut, Michael Ph.D. (Loma Linda University) Bearden, Shawn Ph.D. (University of Florida) Mao, Xiao Wen M.D. (Loma Linda University)		
Grant/Contract No.:	NNX15AE86G		
Performance Goal No.:			
Performance Goal Text:			

Task Description:	Approximately 29% of astronauts on short-term (~2 wk) space shuttle flights and 60% on long-duration (~6 mo) missions to the International Space Station (ISS) are reported to have experienced some impairment in distant or near visual acuity. These visual disturbances have been hypothesized to be related to increases in intracranial pressure (ICP) and intraocular pressure. Modeling studies have shown that a compromise in the integrity of the vascular blood-brain barrier (BBB) would serve to elevate ICP. While much attention has been directed toward the role of the cerebral vasculature in elevating ICP, little work has been done to examine conditions of the vasculature in the eye and the potential role of microgravity in altering the blood-retinal barrier (BRB), which maintains a similar function in the eye for regulating intraocular pressure as the BBB in the cranium. One condition known to compromise the BRB is oxidative stress. For example, in diabetic retinopathy, the leading cause of blindness in Western society, elevations in oxidative stress compromise the BRB and increase vascular permeability in the eye. The proposed studies through the ISS Rodent Tissue Sharing Opportunity will provide new and important information regarding the effects of spaceflight on oxidative stress in the eye and its potential deleterious effects on the BRB.
Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	
Task Progress:	New project for FY2015.
Bibliography Type:	Description: (Last Updated: 06/21/2023)