

<b>Fiscal Year:</b>	FY 2013	<b>Task Last Updated:</b>	FY 04/12/2013
<b>PI Name:</b>	Zanello, Susana Ph.D.		
<b>Project Title:</b>	Evaluation of Hindlimb Suspension as a Model to Study Ophthalmic Complications in Microgravity: Ocular Structure and Function and Association with Intracranial Pressure		
<b>Division Name:</b>	Human Research		
<b>Program/Discipline:</b>	HUMAN RESEARCH		
<b>Program/Discipline--Element/Subdiscipline:</b>			
<b>Joint Agency Name:</b>		<b>TechPort:</b>	No
<b>Human Research Program Elements:</b>	(1) <b>HHC:</b> Human Health Countermeasures		
<b>Human Research Program Risks:</b>	(1) <b>SANS:</b> Risk of Spaceflight Associated Neuro-ocular Syndrome (SANS)		
<b>Space Biology Element:</b>	None		
<b>Space Biology Cross-Element Discipline:</b>	None		
<b>Space Biology Special Category:</b>	None		
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<b>PI Organization Type:</b>	NASA CENTER	<b>Phone:</b>	832-576-6059
<b>Organization Name:</b>	KBR/NASA Johnson Space Center		
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<b>PI Address 2:</b>			
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<b>City:</b>	Houston	<b>State:</b>	TX
<b>Zip Code:</b>	77058	<b>Congressional District:</b>	36
<b>Comments:</b>	NOTE (January 2021): PI now at KBR/NASA JSC as of December 2020. Previously at imec USA from June 2019-November 2020; NASA JSC (KBRwyle) from August 2017 until spring 2019. Prior to August 2017, PI was with Universities Space Research Association.		
<b>Project Type:</b>	GROUND	<b>Solicitation / Funding Source:</b>	2011 Crew Health NNJ11ZSA002NA
<b>Start Date:</b>	02/01/2013	<b>End Date:</b>	09/30/2015
<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
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<b>Flight Program:</b>			
<b>Flight Assignment:</b>			
<b>Key Personnel Changes/Previous PI:</b>			
<b>COI Name (Institution):</b>	Parsons-Wingerter, Patricia ( NASA Glenn Research Center ) Vizzeri, Gianmarco ( University of Texas Medical Branch )		
<b>Grant/Contract No.:</b>	Internal Project		
<b>Performance Goal No.:</b>			
<b>Performance Goal Text:</b>			

<b>Task Description:</b>	<p>An animal ground-analog is proposed for validation as a model to induce cephalad fluid shifts and evaluate ocular structural changes similar to those produced in humans after exposure to a microgravity environment. In vivo ocular measures and tissue analysis will be performed in hindlimb suspension (HS) and normal posture control rats. Intraocular pressure (IOP), intracranial pressure (ICP), fluorescein angiography (FA), optical coherence tomography (OCT) scans of the retina and ultrasound of the optic nerve will be evaluated before, during, and after HS. Retinal microvascular changes will be evaluated by computerized quantitative analysis of FA and retinal flat mounts. In order to study cellular responses that are possibly associated with the stress of variations in translaminal pressure in the retina due to cephalad fluid shift, markers of oxidative stress, hypoxia, and cellular death will be investigated by gene expression analysis and immunohistochemistry. This study will lead to better characterization and problem definition of the Visual Impairment and Intracranial Pressure (VIIP) risk, and in turn, it will evaluate the need for countermeasures to mitigate this risk.</p>
<b>Rationale for HRP Directed Research:</b>	
<b>Research Impact/Earth Benefits:</b>	
<b>Task Progress:</b>	New project for FY2013.
<b>Bibliography Type:</b>	Description: (Last Updated: 09/04/2023)