Fiscal Year:	FY 2014	**Task Last Updated:**	FY 06/12/2014
PI Name:	Lemere, Cynthia Ph.D.		
Project Title:	Impact of Space Radiation on Cognition, Synapses and Biomarkers in Aging and Alzheimer's Disease		
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) **BMed**:Risk of Adverse Cognitive or Behavioral Conditions and Psychiatric Disorders		
Space Biology Element:	None		
Space Biology Cross-Element Discipline:	None		
Space Biology Special Category:	None		
PI Email:	clemere@bwh.harvard.edu	**Fax:**	FY
PI Organization Type:	UNIVERSITY	**Phone:**	617-954-9697
Organization Name:	Brigham and Women's Hospital/Harvard Medical School		
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PI Web Page:			
City:	Boston	**State:**	MA
Zip Code:	02115-6110	**Congressional District:**	7
Comments:			
Project Type:	GROUND	**Solicitation / Funding Source:**	2013 Space Radiobiology NNJ13ZSA001N
Start Date:	06/01/2014	**End Date:**	05/31/2018
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
Contact Monitor:	Simonsen, Lisa	**Contact Phone:**	
Contact Email:	lisa.c.simonsen@nasa.gov		
Flight Program:			
Flight Assignment:	NOTE: change in period of performance to 6/1/2014-5/31/2018 (from 4/29/14-4/28/18) per PI and NSSC information (Ed., 3/17/2015)		
Key Personnel Changes/Previous PI:			
COI Name (Institution):	O'Banion, Kerry (University of Rochester)		
Grant/Contract No.:	NNX14AI07G		
Performance Goal No.:			
Performance Goal Text:			

Task Description:	The goal of our work is to identify early and late effects of space radiation on the connections between nerve cells in the brain (i.e., synapses), inflammation, and cognition so that one can assess the CNS risk to future astronauts involved in long-duration lunar missions and/or a mission to Mars. These early changes, along with changes in brain inflammation that may relay signals between cells in the brain and blood flow, may help define those individuals at risk for developing long-term learning and memory problems. Our studies will utilize normal, wildtype mice and a genetic mouse model of Alzheimer's disease. Female and male 4 month-old mice will be irradiated once with varying doses of heavy ions or protons and examined 2 or 10 months later. Chronic dosing will be compared with a single dose for long-term effects as well. Mice will undergo PET imaging for brain inflammation and blood flow, and behavioral testing before being sacrificed. We will perform a close-up inspection of synapses, Alzheimer’s amyloid plaques, neuron loss, and inflammation in the brain.
Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	
Task Progress:	New project for FY2014.
Bibliography Type:	Description: (Last Updated: 08/06/2022)