Fiscal Year:	FY 2021	**Task Last Updated:**	FY 12/28/2020
PI Name:	Rosa-Caldwell, Megan Ph.D.		
Project Title:	Influence of Sex Hormones on Nervous System and Musculoskeletal Health in Micro- and Martian Fractional Gravity in Rat Analogues		
Division Name:	Space Biology		
Program/Discipline:			
Program/Discipline--Element/Subdiscipline:			
Joint Agency Name:		**TechPort:**	No
Human Research Program Elements:	None		
Human Research Program Risks:	None		
Space Biology Element:	(1) Animal Biology: Vertebrate		
Space Biology Cross-Element Discipline:	(1) Musculoskeletal Biology (2) Neurobiology		
Space Biology Special Category:	None		
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Zip Code:	02215-5400	**Congressional District:**	7
Comments:			
Project Type:	GROUND	**Solicitation / Funding Source:**	2018 Space Biology (ROSBio) NNH18ZTT001N-FG2. App D: Flight and Ground Space Biology Research
Start Date:	01/04/2021	**End Date:**	01/03/2023
No. of Post Docs:	1	**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
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Flight Program:			
Flight Assignment:			
Key Personnel Changes/Previous PI:			
COI Name (Institution):	Bouxsein, Mary Ph.D. (Beth Israel Deaconess Medical Center, Inc./Harvard Medical School) Rutkove, Seward M.D. (Mentor: Beth Israel Deaconess Medical Center, Inc./Harvard Medical School)		
Grant/Contract No.:	80NSSC21K0311		
Performance Goal No.:			
Performance Goal Text:			

Task Description:	POSTDOCTORAL FELLOWSHIP In this postdoctoral fellowship, we propose to evaluate the impact of sex hormones on neuronal and musculoskeletal health in micro and Martian gravity environments by assessing naive and castrated/ovariectomized male and female rats. We hypothesize micro- and fractional gravity will result in differential aberrations to sex hormone status in female and male rats; these sex hormone aberrations will moderate neurological and musculoskeletal declines in micro- and fractional gravity environments. We will study these rats over a 4-week period and investigations will include a series of neurophysiological and functional measures, blood analyses, and a detailed series of post-mortem histological studies. With completion of this work, we will have a far deeper understanding of the relationship between hormonal status and neuronal and musculoskeletal function. This proposed work will be specifically responsive to the following subtopics in Appendix D: • (AB1-A): Behavior and underlying neural function, including circadian effects, controlling ability of animals to sense and respond to their environment. • (AB1-B): Studies to characterize interactions between multiple physiological systems. • (AH1-E): Effects of fractional gravity provided by spaceflight centrifugation or ground microgravity/partial gravity analogs to gain insights into mechanisms of how animals sense, respond, and adapt to gravity shifts that are less than 1G.
Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	
Task Progress:	New project for FY2021.
Bibliography Type:	Description: (Last Updated: 03/05/2024)