Fiscal Year:	FY 2023	**Task Last Updated:**	FY 10/03/2023
PI Name:	Iyer, Janani Ph.D.		
Project Title:	Sex-Specific Physiological and Transcriptomic CNS Responses to Combined Effects of Spaceflight Stressors in Drosophila Melanogaster		
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) Cell & Molecular Biology (2) Animal Biology: Invertebrate		
Space Biology Cross-Element Discipline:	(1) Neurobiology		
Space Biology Special Category:	None		
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PI Organization Type:	NASA CENTER	**Phone:**	425-301-9112
Organization Name:	NASA Ames Research Center		
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City:	Moffett Field	**State:**	CA
Zip Code:	94035	**Congressional District:**	16
Comments:			
Project Type:	GROUND	**Solicitation / Funding Source:**	2021 Space Biology NNH21ZDA001N-SBAS E.11: Animal Studies
Start Date:	05/01/2023	**End Date:**	04/30/2024
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:	Griko, Yuri	**Contact Phone:**	650-604-0519
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Flight Program:			
Flight Assignment:			
Key Personnel Changes/Previous PI:			
COI Name (Institution):	Ronca, April Ph.D. (NASA Ames Research Center) Mhatre, Siddhita Ph.D. (NASA Ames Research Center)		
Grant/Contract No.:	Internal Project		
Performance Goal No.:			
Performance Goal Text:			

Task Description:	During space exploration, damage to the central nervous system (CNS) due to altered gravity is a significant risk, along with the constant exposure to elevated CO2 levels. The combination of these stressors can negatively impact the CNS health that may lead to decrements in astronaut performance, posing a risk to the crew and the mission. Thus, there is an unmet need to unravel the mechanisms and pathways affected by these combined spaceflight stressors. In this proposal, we aim to address sex-specific and long-term responses to spaceflight stressors (mimicking the longitudinal post-flight evaluations in astronauts). We will perform behavioral, brain morphological, and biochemical assays, along with cell-specific transcriptomic profiling in Drosophila melanogaster to investigate the underlying mechanistic responses to single and combined exposures of altered gravity and elevated CO2. While this solicitation is limited in time and scope, we anticipate that our findings from this study will inform future investigations in vertebrate models and contribute to new research that will address the biomedical outcomes of deep space stressors.
Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	
Task Progress:	New project for FY2023.
Bibliography Type:	Description: (Last Updated:)