

<b>Fiscal Year:</b>	FY 2017	<b>Task Last Updated:</b>	FY 07/30/2019
<b>PI Name:</b>	Rana, Brinda Ph.D.		
<b>Project Title:</b>	Identification of Functional Metabolomic Profiles Contributing to Physiological Adaptations to Simulated Spaceflight		
<b>Division Name:</b>	Human Research		
<b>Program/Discipline:</b>			
<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>Cardiovascular:</b> Risk of Cardiovascular Adaptations Contributing to Adverse Mission Performance and Health Outcomes (2) <b>Muscle:</b> Risk of Impaired Performance Due to Reduced Muscle Size, Strength and Endurance		
<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>Zip Code:</b>	92093-5004	<b>Congressional District:</b>	49
<b>Comments:</b>			
<b>Project Type:</b>	GROUND	<b>Solicitation / Funding Source:</b>	2015-16 HERO NNN15ZSA001N-Crew Health (FLAGSHIP, NSBRI, OMNIBUS). Appendix A-Crew Health, Appendix B-NSBRI, Appendix C-Omnibus
<b>Start Date:</b>	10/18/2016	<b>End Date:</b>	12/16/2019
<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>	Fiehn, Oliver Ph.D. ( University of California, Davis ) Lee, Stuart Ph.D. ( Wyle Laboratories, Inc./NASA Johnson Space Center ) Macias, Brandon Ph.D. ( University of California, San Diego ) Patel, Hemal Ph.D. ( University of California, San Diego ) Saito, Rintaro Ph.D. ( University of California, San Diego ) Sharma, Kumar M.D. ( University of California, San Diego ) Smith, Scott Ph.D. ( NASA Johnson Space Center ) Stenger, Michael Ph.D. ( Wyle Laboratories, Inc./NASA Johnson Space Center )		
<b>Grant/Contract No.:</b>	NNX17AB12G		
<b>Performance Goal No.:</b>			

<b>Performance Goal Text:</b>	
<b>Task Description:</b>	<p>This study is designed to identify novel metabolomic biomarkers in serum and urine to detect and monitor the progression of physiological disturbances due to bed rest and to evaluate the effectiveness of countermeasures (exercise or exercise with testosterone treatment). Bed rest is a well-accepted model of space flight (simulating microgravity) that allows for the study of a larger number of subjects than is available in space flight, and thus is well-suited for more rapid evaluation of countermeasures and identification of potential biomarkers associated with deconditioning and countermeasure efficacy. Our study will focus on three physiological manifestations that are prevalent in crew members on long duration space flight and are also observed in bed rest studies and are the target of countermeasures: (1) altered cardiovascular function and potential sub-clinical manifestations of cardiovascular disease; (2) bone loss and increased fracture risk; and (3) muscle atrophy and decreased muscle strength. The overall goal of the proposed study is to identify serum and urine biomarkers that can be used to improve risk prediction for physiological manifestations due to bed rest beyond current clinical measures and known predictors.</p>
<b>Rationale for HRP Directed Research:</b>	
<b>Research Impact/Earth Benefits:</b>	
<b>Task Progress:</b>	<p>New project for FY2017. [EDITOR's NOTE: added to Task Book when identified in July 2019.]</p>
<b>Bibliography Type:</b>	<p>Description: (Last Updated: 07/30/2019)</p>