Fiscal Year:	FY 2016	**Task Last Updated:**	FY 05/12/2016
PI Name:	Rana, Brinda Ph.D.		
Project Title:	Identification of Functional Metabolomic Alterations During the Simulated Spaceflight Environment		
Division Name:	Human Research		
Program/Discipline:			
Program/Discipline--Element/Subdiscipline:	HUMAN RESEARCH--Biomedical countermeasures		
Joint Agency Name:		**TechPort:**	No
Human Research Program Elements:	(1) **HHC**:Human Health Countermeasures		
Human Research Program Risks:	(1) **Bone Fracture**:Risk of Bone Fracture due to Spaceflight-induced Changes to Bone (2) **Cardiovascular**:Risk of Cardiovascular Adaptations Contributing to Adverse Mission Performance and Health Outcomes (3) **Muscle**:Risk of Impaired Performance Due to Reduced Muscle Size, Strength and Endurance (4) **Osteo**:Risk Of Early Onset Osteoporosis Due To Spaceflight (5) **SANS**:Risk of Spaceflight Associated Neuro-ocular Syndrome (SANS)		
Space Biology Element:	None		
Space Biology Cross-Element Discipline:	None		
Space Biology Special Category:	None		
PI Email:	bkrana@ucsd.edu	**Fax:**	FY
PI Organization Type:	UNIVERSITY	**Phone:**	858-822-4010
Organization Name:	University of California, San Diego		
PI Address 1:	Psychiatry		
PI Address 2:	9500 Gilman Dr, MC-0738		
PI Web Page:			
City:	La Jolla	**State:**	CA
Zip Code:	92093-5004	**Congressional District:**	49
Comments:			
Project Type:	GROUND	**Solicitation / Funding Source:**	2015-16 HERO NNJ15ZSA001N-Crew Health (FLAGSHIP, NSBRI, OMNIBUS). Appendix A-Crew Health, Appendix B-NSBRI, Appendix C-Omnibus
Start Date:	03/04/2016	**End Date:**	03/03/2018
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:	Norsk, Peter	**Contact Phone:**	
Contact Email:	Peter.norsk@nasa.gov		
Flight Program:			
Flight Assignment:			
Key Personnel Changes/Previous PI:			
COI Name (Institution):	Patel, Hemal Ph.D. (University of California, San Diego) Sharma, Kumar M.D. (University of California, San Diego)		
Grant/Contract No.:	NNX16AG03G		
Performance Goal No.:			
Performance Goal Text:			

Task Description:	The goal of this proposal is to identify novel early biomarkers in plasma and urine to detect and monitor the progression of a number of physiological disturbances due to prolonged microgravity and CO2 exposure as experienced by crew members on long duration missions. These physiological manifestations include: (1) Visual Impairment/Intracranial Pressure (VIIP); (2) sub-clinical or environmentally induced cardiovascular disease; (3) muscle atrophy and decreased muscle strength; and (4) bone loss. Targeted and untargeted metabolomics will be applied to plasma and urine collected longitudinally from study participants undergoing a 30 day six-degree head-down bed rest combined with ambient 0.5% CO2. We will follow-up metabolomics with a novel cell-based metabolic mammalian organ system assay ("organs on a plate") to address how these metabolites affect physiological processes at the cellular and organ level. The proposed research will directly address the Integrated Research Plan Gaps including CV8, M6, Osteo5, VIIP3, VIIP13, CNS2.
Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	
Task Progress:	New project for FY2016.
Bibliography Type:	Description: (Last Updated: 07/30/2019)