Fiscal Year:	FY 2022	**Task Last Updated:**	FY 06/15/2022
PI Name:	Lan, Li-i		
Project Title:	Ultra-Compact Urinary Calcium Measurement Device: Refinement and Application		
Division Name:	Human Research		
Program/Discipline:			
Program/Discipline--Element/Subdiscipline:			
Joint Agency Name:		**TechPort:**	Yes
Human Research Program Elements:	(1) **ExMC**:Exploration Medical Capabilities		
Human Research Program Risks:	None		
Space Biology Element:	None		
Space Biology Cross-Element Discipline:	None		
Space Biology Special Category:	None		
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Zip Code:	03755	**Congressional District:**	2
Comments:			
Project Type:	GROUND	**Solicitation / Funding Source:**	2020 HERO 80JSC020N0001-FLAGSHIP, OMNIBUS1 Human Research Program: Crew Health Appendix A; Omnibus1-Appendix B
Start Date:	03/28/2022	**End Date:**	03/27/2023
No. of Post Docs:		**No. of PhD Degrees:**	
No. of PhD Candidates:	1	**No. of Master' Degrees:**	
No. of Master's Candidates:		**No. of Bachelor's Degrees:**	
No. of Bachelor's Candidates:		**Monitoring Center:**	NASA JSC
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Flight Program:			
Flight Assignment:			
Key Personnel Changes/Previous PI:			
COI Name (Institution):	Buckey, Jay M.D. (Dartmouth College) Devoy, Clive (Creare LLC) Phillips, Scott Ph.D. (Creare LLC) Knaus, Darin Ph.D. (Creare LLC)		
Grant/Contract No.:	80NSSC22K0847		
Performance Goal No.:			
Performance Goal Text:			

Task Description:	Slowing bone loss and preventing kidney stone formation are critical for successful spaceflight. The capability to track bone loss and kidney stone risk while in space would allow these risks to be monitored directly and would enable individualized countermeasure programs. At present, post-flight measurements are used to establish the effectiveness of the in-flight bone loss/kidney stone prevention program. A preventive approach would offer much greater operational flexibility, where ongoing in-flight measurements of countermeasure effectiveness would allow for adjustments in the countermeasure program during the flight. This approach could also be used during times when countermeasure equipment is broken, or when scheduling impacts the countermeasure program, to assess how this is affecting bone loss and kidney stone risk. In a previous NASA Omnibus project, we developed a prototype compact, low-power system to make urinary calcium measurements in space. This approach has proven to be feasible, but further development is needed to advance toward flight use. The objective of the current project is to improve this ultra-compact, robust, urinary calcium measurement system. This study will further a technology that may offer a personalized, preventive approach to bone loss and kidney stone prevention in space.
Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	
Task Progress:	New project for FY2022.
Bibliography Type:	Description: (Last Updated: 05/24/2023)