Task Book Report Generated on: 04/27/2024

P. Name:   Reverse   Common	Fiscal Year:	FY 2020	Task Last Updated:	FY 03/02/2021
Project Title:         UltracComput Device for Monitoring Bone Loss and Kidney Slowe Risk.         Security Computation Research           Program/Discipline:         Fregram/Discipline:         Fregram/Discipline:           Program/Discipline:         Fresheron: Subdite Sidney:         Security Computation State Sidney State Sidney:         None         Security Computation State Sidney State Sidney State Sidney State Sidney State Sidney State Sidney Special Category:         None         Security Computation State Sidney State Sidney Special Category:         None         Security State Sidney Special Category:         Plantal         None         Security State Sidney Special Category:         Plantal	PI Name:	Buckey, Jay C. M.D.		
Program/Discipline: Program/Discipline- Element/Subdiscipline- Element/Subdiscipline- Element/Subdiscipline- Human Research Program Elements: (1) FxMC-Exploration Medical Capabilities  Human Research Program Risks: None  Space Biology Stement: None  Space Biology Special Category: None  Pl Email: isia biology Stement: None  Space Biology Special Category: None  Pl Email: isia biology Stement: None  Pl Email: isia biology Stement: None  Pl Cangaization Type: UNIVERSITY Phone: 603-650-6013  Pl Organization Type: UNIVERSITY Phone: 603-650-6013  Pl Organization Type: University Pl Phone: 603-650-6012  Organization Name: Detrinouth College  Pl Address 1: Department of Medicine  Pl Address 2: Indical Center Drive  Pl Address 2: Indical Center Drive  Pl Web Page:  City: Lebanon State: NH  Zip Code: O375-60-001 Congressional District: 2  Comments: Address updated 9/2008  Solicitation / Funding Health and Performance (TLAGSIIIP).  Sonre: NONE Solicitation / Funding Health and Performance (TLAGSIIIP).  None of Path Describer: None of PhD Degrees:  No. of Path Describer: None of PhD Degrees:  No. of Backelor's Candidates: None of PhD Degrees:  No. of Master's Candidates: Monitoring Center: NASA INC  Contact Monitor: Lebahard Kris Contact Phone: 281,244,0524  Contact Email: Center: NASA INC  Contact Changes/Previous Pt: Aleksandors and CPI) Jay Buckey, MD, became the man Pt when the project started; original Pt in the proposal was Aleksandors Sharkovic, PhD.  COI Name (Institution): PhD, Cercure Incorporated)  Kanus, Drim' PhD, (Creare Incorporated)	Project Title:			
Program/Discipline: Program/Discipline- Element/Subdiscipline- Element/Subdiscipline- Element/Subdiscipline- Human Research Program Elements: (1) FxMC-Exploration Medical Capabilities  Human Research Program Risks: None  Space Biology Stement: None  Space Biology Special Category: None  Pl Email: isia biology Stement: None  Space Biology Special Category: None  Pl Email: isia biology Stement: None  Pl Email: isia biology Stement: None  Pl Cangaization Type: UNIVERSITY Phone: 603-650-6013  Pl Organization Type: UNIVERSITY Phone: 603-650-6013  Pl Organization Type: University Pl Phone: 603-650-6012  Organization Name: Detrinouth College  Pl Address 1: Department of Medicine  Pl Address 2: Indical Center Drive  Pl Address 2: Indical Center Drive  Pl Web Page:  City: Lebanon State: NH  Zip Code: O375-60-001 Congressional District: 2  Comments: Address updated 9/2008  Solicitation / Funding Health and Performance (TLAGSIIIP).  Sonre: NONE Solicitation / Funding Health and Performance (TLAGSIIIP).  None of Path Describer: None of PhD Degrees:  No. of Path Describer: None of PhD Degrees:  No. of Backelor's Candidates: None of PhD Degrees:  No. of Master's Candidates: Monitoring Center: NASA INC  Contact Monitor: Lebahard Kris Contact Phone: 281,244,0524  Contact Email: Center: NASA INC  Contact Changes/Previous Pt: Aleksandors and CPI) Jay Buckey, MD, became the man Pt when the project started; original Pt in the proposal was Aleksandors Sharkovic, PhD.  COI Name (Institution): PhD, Cercure Incorporated)  Kanus, Drim' PhD, (Creare Incorporated)			·	
Program/Discipline-  Element/Subdiscipline-  2   No   No     Human Research Program Elements:   (1) ExMC:Exploration Medical Capabillries   Space Biology Element:   None   Space Biology Element:   None   Space Biology Cross-Element:   None   Space Biology Special Category:   None		Human Research		
Definit Agency Name	Program/Discipline:			
Human Research Program Elements: (1) EAMC-Exploration Medical Capabilities  Human Research Program Risks: None  Space Biology Element: None  Space Biology Cross-Element biology Special Category: None  Pl Email: inv backeviolatimouthedu Fax: Py 603-650-6013  Pl Capanization Type: UNIVERSITY Phone: 603-650-6013  Pl Capanization Name: Dartmouth College  Pl Address 1: Department of Medicine  Pl Address 2: Indeciael Center Drive  Pl Web Page:  City: Lebenon Sate: NH  Zip Code: 03756-0001 Congressional District: 2  Comments: Address updated 9/2008  Project Type: GROUND Solicitation / Funding Health and Performance (FLAGSIIIP)  No. of Post Diese: No. of PhD Degrees: No. of PhD Degrees: No. of PhD Candidates: Indecidents: No. of Master' Degrees: No. of Master' Scandidates: No. of Master' Candidates: Degrees: No. of Master' Candidates: No. of Master' Candidates: Degrees: No. of Master' Candidates: No. of Mas				
Human Research Program Risks:   None   Non	Joint Agency Name:		TechPort:	No
Space Biology Element:         None           Space Biology Cross-Element Discipline:         None           Space Biology Special Category:         None           PI Email:         inv backey@dustmouth.edu         Fax:         FY 603-650-6013           PI Organization Type:         UNIVERSITY         Phone:         603-650-6012           Organization Name:         Department of Medicine         Propertment         Propertment           PI Address I:         Department of Medicine         Propert Address I:         Propertment           PI Address I:         Department of Medicine         Propert PI Address I:         Propertment           City:         Lebanon         State:         NH           Zip Code:         O375-0001         Congressional District:         2           Comments:         Address updated 9/2008         Source:         OMINITARY Source:         Address III Address II	<b>Human Research Program Elements:</b>	(1) <b>ExMC</b> :Exploration Medical Capabilities		
Space Biology Cross-Element Discipline:  Space Biology Special Category:  None  PI Email:  piay buckey@dartmouth.edu	Human Research Program Risks:	None		
Discipline: Space Biology Special Category: None PI Email: jav.backey@dartmouth.edu PI Organization Type: UNIVERSITY Organization Name: Dartmouth College PI Address 1: Department of Medicine PI Address 2: I Medical Center Drive PI Web Page: City: Lebanon State: NII Zip Code: O3756-0001 Congressional District: 2 Comments: Address updated 9/2008 Project Type: GROUND Solicitation / Funding Health and Performance (FLAGSHIP). Source: O4901/2019 End Date: No. of PhD Degrees: No. of PhD Degrees: No. of PhD Degrees: No. of Master's Candidates: No. of Master's Candidates: No. of Bachelor's Candidates: No. of Sachelor's Candidates: No. of Bachelor's Candidates: No. of Bachelor's Candidates: No. of Bachelor's Candidates: No. of Bachelor's Candidates: No. of Sachelor's Candidates: No. of	Space Biology Element:	None		
PI Email: inv.buckev@darmouth.edu		None		
Pl Organization Type: UNIVERSITY Phone: 603-650-6012 Organization Name: Dartmouth College Pl Address 1: Department of Medicine Pl Address 2: 1 Medical Center Drive Pl Web Page: City: Lebanon State: NH Zip Code: 03756-0001 Congressional District: 2 Comments: Address updated 9/2008  Project Type: GROUND Solicitation / Funding Health and Performance (PLAGSHIP, Appendix A-Flagship, Appendix A-Flagship, Appendix B-Omnibus Start Date: 09/01/2019 End Date: 08/31/2021 No. of Post Docs: No. of PhD Candidates: 1 No. of Master' Degrees: No. of Master's Candidates: 1 No. of Master' Degrees: No. of Bachelor's Candidates: No. of Bachelor's Degrees: No. of Bachelor's Candidates: Monitoring Center: NASA JSC Contact Monitor: Lebnhardt, Kris Contact Phone: 281.244.0524 Contact Email: kris-lebnhardt@masa.gov Flight Program: Flight Assignment: Key Personnel Changes/Previous PI: Alessandra Stankovic, PhD. COI Name (Institution): Principal Investigator (PI) Jay Buckey, MD, became the main PI when the project started; original PI in the proposal was Aleksandra Stankovic, PhD. Col Name (Institution): Sons PhD. (Creare Incorporated) Knaus, Darin Ph.D. (Creare Incorporated) Ferformance Goal No.:	Space Biology Special Category:	None		
Organization Name: Dartmouth College PI Address 1: Department of Medicine PI Address 2: 1 Medical Center Drive PI Web Page:  City: Lebanon State: NH  Zip Code: 03756-0001 Congressional District: 2  Comments: Address updated 9/2008  Project Type: GROUND Solicitation / Funding Health and Performance (PLAGSHIP, Source: OMNIBUS). Appendix A-Flagship, Appendix A-Flagship, Appendix B-Omnibus Start Date: 09/01/2019 End Date: 08/31/2021  No. of Post Does: No. of PhD Degrees: No. of PhD Candidates: 1 No. of Master' Degrees: No. of Master's Candidates: 1 No. of Master' Degrees: No. of Master's Candidates: No. of Bachelor's Degrees: No. of Bachelor's Candidates: Contact Monitoring Center: NASA JSC Contact Email: kris. Contact Phone: 281.244.0524  Contact Email: kris.lehnhardtiënasa gov Flight Program: Flight Assignment: Key Personnel Changes/Previous PI: Aleksandra Stankovic, PhD. COI Name (Institution): Philips, Scott Ph.D. (Creare Incorporated) Knaus, Darin Ph.D. (Creare Incorporated) Ferformance Goal No.:	PI Email:	jay.buckey@dartmouth.edu	Fax:	FY 603-650-6013
PI Address 1: Department of Medicine PI Address 2: I Medical Center Drive PI Web Page:  City: Lebanon State: NII  Zip Code: 03756-0001 Congressional District: 2  Comments: Address updated 9/2008  Project Type: GROUND Solicitation / Funding Source: OMNIBUS). Appendix A-Flagship. Appendix B-Omnibus  Start Date: 99/01/2019 End Date: 08/31/2021  No. of Post Docs: No. of PhD Degrees: No. of PhD Candidates: I No. of Master' Degrees: No. of Master's Candidates: No. of Bachelor's Degrees: No. of Bachelor's Candidates: No. of Bachelor's Contact Monitoric Center Monitori	PI Organization Type:	UNIVERSITY	Phone:	603-650-6012
PI Address 2: 1 Medical Center Drive  PI Web Page:  City: Lebanon State: NII  Zip Code: 03756-0001 Congressional District: 2  Comments: Address updated 9/2008  Project Type: GROUND Solicitation / Funding Health and Performance (FLAGSHIP, Source: OMNIBUS), Appendix A-Flagship, Appendix B-Omnibus  Start Date: 09/01/2019 End Date: 08/31/2021  No. of Post Docs: No. of PhD Degrees:  No. of PhD Candidates: 1 No. of Master' Degrees:  No. of Master's 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: Lehnhardt, Kris Contact Phone: 281.244.0524  Contact Email: kris.lehnhardt@nasa.gov  Flight Program:  Flight Assignment:  Key Personnel Changes/Previous PI: Aleksandra Stankovic, PhD.  COI Name (Institution): Phillips, Scott Ph.D. (Creare Incorporated) Knaus, Darin Ph.D. (Creare Incorporated)  Knaus, Darin Ph.D. (Creare Incorporated)  Knaus, Darin Ph.D. (Creare Incorporated)  Knaus, Darin Ph.D. (Creare Incorporated)  Knaus, Darin Ph.D. (Creare Incorporated)  Romand Contract No.: 80NSSC19K1632  Performance Goal No.:	Organization Name:	Dartmouth College		
P1 Web Page:   City:   Lebanon   State: NH	PI Address 1:	Department of Medicine		
City: Lebanon State: NH  Zip Code: 03756-0001 Congressional District: 2  Comments: Address updated 9/2008  Project Type: GROUND Solicitation / Funding Source: OMNIBUS). Appendix A-Flagship, Appendix B-Omnibus  Start Date: 09/01/2019 End Date: 08/31/2021  No. of PhD Candidates: 1 No. of PhD Degrees:  No. of PhD Candidates: 1 No. of Master' Degrees:  No. of Master's Candidates: No. of Master' Degrees:  No. of Bachelor's Candidates: No. of Bachelor's Degrees:  No. of Bachelor's Candidates: Contact Monitor: Changes/Previous Pt: kris. lehnhardt@nasa.gov  Flight Program:  Flight Assignment:  Key Personnel Changes/Previous Pt: Aleksandra Stankovic, PhD. (Creare Incorporated) Knaus, Darin Ph.D. (Creare Incorporated)  Knaus, Darin Ph.D. (Creare Incorporated)  Knaus, Darin Ph.D. (Creare Incorporated)  Knaus, Darin Ph.D. (Creare Incorporated)  Knaus, Darin Ph.D. (Creare Incorporated)  Knaus, Darin Ph.D. (Creare Incorporated)  Knaus, Darin Ph.D. (Creare Incorporated)  Krey Performance Goal No.:	PI Address 2:	1 Medical Center Drive		
Zip Code: 03756-0001 Congressional District: 2  Comments: Address updated 9/2008  Project Type: GROUND Solicitation / Funding Health and Performance (FLAGSHIP, Source: OMNIBUS). Appendix A-Flagship, Appendix A-Plagship, Appendix A-Plagship, Appendix B-Omnibus  Start Date: 09/01/2019 End Date: 08/31/2021  No. of Post Does: No. of PhD Degrees:  No. of PhD Candidates: 1 No. of Master' Degrees:  No. of Master's Candidates: No. of Master' Degrees:  No. of Master's Candidates: Monitoring Center: NASA JSC  Contact Monitor: Lehnhardt, Kris Contact Phone: 281.244.0524  Contact Email: kris. lehnhardt@nasa.gov  Flight Program:  Flight Assignment:  Key Personnel Changes/Previous PI: Principal Investigator (PI) Jay Buckey, MD, became the main PI when the project started; original PI in the proposal was Aleksandra Stankovic, PhD.  COI Name (Institution): Phillips, Scott Ph.D. (Creare Incorporated)  Knaus, Darin Ph.D. (Creare Incorporated)  Grant/Contract No.: 80NSSC19K1632  Performance Goal No.:	PI Web Page:			
Comments: Address updated 9/2008  Project Type: GROUND Solicitation / Funding Source: OMNIBUS), Appendix A-Flagship, Appendix B-Omnibus  Start Date: 09/01/2019 End Date: 08/31/2021  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  Contact Monitor: Lehnhardt, Kris Contact Phone: 281.244.0524  Contact Email: kris.lehnhardt@nasa.gov  Flight Program: Flight Assignment:  Key Personnel Changes/Previous PI: Principal Investigator (PI) Jay Buckey, MD, became the main PI when the project started; original PI in the proposal was Aleksandra Stankovic, PhD.  COI Name (Institution): Phillips, Scott Ph.D. (Creare Incorporated) Knaus, Darin Ph.D. (Creare Incorporated) Ferformance Goal No.:	City:	Lebanon	State:	NH
Project Type:  GROUND  Solicitation / Funding Health and Performance (FLAGSHIP, OMNIBUS). Appendix A-Flagship, Appendix B-Omnibus  Start Date:  09/01/2019  End Date:  08/31/2021  No. of Post Docs:  No. of PhD Candidates:  1  No. of Master' begrees:  No. of Master's Candidates:  No. of Master's Candidates:  No. of Bachelor's Candidates:  No	Zip Code:	03756-0001	<b>Congressional District:</b>	2
Project Type:  GROUND  Solicitation / Funding Source: CHAGSHIP, OMNIBUS). Appendix A-Flagship, Appendix A-Flagship, Appendix A-Flagship, Appendix B-Omnibus  Start Date:  09/01/2019  End Date: 08/31/2021  No. of Post Docs:  No. of PhD Candidates:  1 No. of Master' Degrees:  No. of Master's Candidates:  No. of Master's Candidates:  No. of Bachelor's Candidates:  No. of Ba	Comments:	Address updated 9/2008		
No. of Post Docs: No. of PhD Candidates: 1 No. of Master' Degrees: No. of Master's Candidates: No. of Master's Candidates: No. of Bachelor's Degrees: No. of Bachelor's Candidates: Contact Monitor: Lehnhardt, Kris Contact Phone: 281.244.0524  Contact Email: kris.lehnhardt@nasa.gov Flight Program: Flight Assignment: Key Personnel Changes/Previous PI: Key Personnel Changes/Previous PI: Aleksandra Stankovic, PhD. COI Name (Institution): Phillips, Scott Ph.D. (Creare Incorporated) Knaus, Darin Ph.D. (Creare Incorporated) Grant/Contract No.: 80NSSC19K1632 Performance Goal No.:	Project Type:	GROUND		Health and Performance (FLAGSHIP, OMNIBUS). Appendix A-Flagship,
No. of PhD Candidates:  No. of Master's Candidates:  No. of Master's Candidates:  No. of Bachelor's Degrees:  No. of Bachelor's Candidates:  No. of Bachelo	Start Date:	09/01/2019	End Date:	08/31/2021
No. of Master's Candidates:  No. of Bachelor's Degrees:  No. of Bachelor's Candidates:  No. of Bachelor's Candidates:  No. of Bachelor's Degrees:  No. of Bachelor's	No. of Post Docs:		No. of PhD Degrees:	
No. of Master's Candidates:  No. of Bachelor's Candidates:  Monitoring Center: NASA JSC  Contact Monitor:  Lehnhardt, Kris  Contact Phone: 281.244.0524  Contact Email:  kris.lehnhardt@nasa.gov  Flight Program:  Flight Assignment:  Key Personnel Changes/Previous PI:  Aleksandra Stankovic, PhD.  COI Name (Institution):  Phillips, Scott Ph.D. (Creare Incorporated)  Knaus, Darin Ph.D. (Creare Incorporated)  Grant/Contract No.:  80NSSC19K1632  Performance Goal No.:	No. of PhD Candidates:	1	No. of Master' Degrees:	
Contact Monitor:  Lehnhardt, Kris  Contact Phone: 281.244.0524  Contact Email:  kris.lehnhardt@nasa.gov  Flight Program:  Flight Assignment:  Key Personnel Changes/Previous PI:  Aleksandra Stankovic, PhD.  COI Name (Institution):  Phillips, Scott Ph.D. (Creare Incorporated) Knaus, Darin Ph.D. (Creare Incorporated) Grant/Contract No.:  80NSSC19K1632  Performance Goal No.:	No. of Master's Candidates:			
Contact Email: kris.lehnhardt@nasa.gov  Flight Program:  Flight Assignment:  Key Personnel Changes/Previous PI: Principal Investigator (PI) Jay Buckey, MD, became the main PI when the project started; original PI in the proposal was Aleksandra Stankovic, PhD.  COI Name (Institution): Phillips, Scott Ph.D. (Creare Incorporated) Knaus, Darin Ph.D. (Creare Incorporated)  Grant/Contract No.: 80NSSC19K1632  Performance Goal No.:	No. of Bachelor's Candidates:		<b>Monitoring Center:</b>	NASA JSC
Flight Assignment:  Key Personnel Changes/Previous PI: Principal Investigator (PI) Jay Buckey, MD, became the main PI when the project started; original PI in the proposal was Aleksandra Stankovic, PhD.  COI Name (Institution): Phillips, Scott Ph.D. ( Creare Incorporated ) Knaus, Darin Ph.D. ( Creare Incorporated ) Grant/Contract No.: 80NSSC19K1632  Performance Goal No.:	Contact Monitor:	Lehnhardt, Kris	<b>Contact Phone:</b>	281.244.0524
Flight Assignment:  Key Personnel Changes/Previous PI: Principal Investigator (PI) Jay Buckey, MD, became the main PI when the project started; original PI in the proposal was Aleksandra Stankovic, PhD.  COI Name (Institution): Phillips, Scott Ph.D. ( Creare Incorporated ) Knaus, Darin Ph.D. ( Creare Incorporated ) Grant/Contract No.: 80NSSC19K1632  Performance Goal No.:	Contact Email:	kris.lehnhardt@nasa.gov		
Key Personnel Changes/Previous PI: Principal Investigator (PI) Jay Buckey, MD, became the main PI when the project started; original PI in the proposal was Aleksandra Stankovic, PhD.  COI Name (Institution): Phillips, Scott Ph.D. (Creare Incorporated) Knaus, Darin Ph.D. (Creare Incorporated)  Grant/Contract No.: 80NSSC19K1632  Performance Goal No.:	Flight Program:			
Aleksandra Stankovic, PhD.  COI Name (Institution):  Phillips, Scott Ph.D. (Creare Incorporated) Knaus, Darin Ph.D. (Creare Incorporated)  Grant/Contract No.:  80NSSC19K1632  Performance Goal No.:	Flight Assignment:			
Grant/Contract No.:  80NSSC19K1632  Performance Goal No.:	Key Personnel Changes/Previous PI:		me the main PI when the pro	ject started; original PI in the proposal was
Performance Goal No.:	COI Name (Institution):			
	Grant/Contract No.:	80NSSC19K1632		
Performance Goal Text:	Performance Goal No.:			
	Performance Goal Text:			

Task Book Report Generated on: 04/27/2024

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 provide the ability to track these risks directly and individualize the countermeasure program as needed. 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 be preferable, where ongoing in-flight measurements of countermeasure effectiveness allow for adjustments in the countermeasure program during the flight. Urinary calcium excretion is a reliable marker of bone loss and kidney stone formation risk. Urinary calcium excretion is often measured with a 24-hour urinary collection, but measuring just the calcium concentration in the first void of the day provides similar information to a 24-hour collection. Spot measurements of urinary calcium taken when an astronaut is voiding anyway, could provide key operational information with minimal impact on crew time, power, or stowage. The goal of this project is to provide an ultra-compact, robust, urinary calcium measurement system that could be used in space to assess whether urinary calcium levels are increasing inflight to a point where action is needed. We **Task Description:** plan to measure urinary calcium concentration fluorimetrically using the fluorescent tracer calcein. The same robust assay was implemented in space during the Biosatellite 3 primate flight. Calcium binds with calcein to form a fluorescing complex and the magnitude of the fluorescence signal is proportional to calcium concentration for calcium-calcein mixtures. Urinary calcium is typically measured clinically using a clinical chemistry analyzer with colorimetric indicators. For spaceflight, fluorometry is preferred because the instrumentation can be extremely compact and simple. Laboratory chemical assays typically involve either significant disposables or washing of labware. In space, neither is desirable. We plan to develop an assay with an ultra-compact disposable based on a small capillary tube with the calcein reagent coated onto the interior wall of the capillary tube. Urine will be drawn into the tube using a sampling adapter on the urine funnel. The capillary tube, containing a fixed amount of urine and reagent, will then be inserted into a compact handheld fluorimeter to measure urinary calcium concentration. The proposed technology could provide a small, practical, in flight capability to monitor for bone loss and offer data on kidney stone risk. Rationale for HRP Directed Research: Urinary calcium monitoring is important for kidney stone prevention and for tracking the effects of drugs for Research Impact/Earth Benefits: osteoporosis. Reporting Period Covered: September 2019-Summer 2020. The goal of this project is to develop a prototype, ultra-compact, space-toilet-compatible, disposable, urinary calcium measurement device. The plan is to measure urinary calcium fluorometrically via calcein using a capillary tube coated with calcein on the inner surface (an optrode). The ultimate goal is to have an optrode that can be dipped in urine to acquire a small sample and then the calcium level determined using a compact fluorometer. Calcium binds with calcein to form a fluorescing complex, and the magnitude of the fluorescence signal is proportional to calcium concentration for calcium-calcein mixtures. Urinary calcium is typically measured clinically using a clinical Task Progress: chemistry analyzer with colorimetric indicators. For spaceflight, fluorometry is preferred because the instrumentation can be extremely compact and simple. Laboratory chemical assays typically involve either significant disposables or washing of lab ware. In space, neither is desirable. During the reporting period, the prototype fluorometer was fabricated and an approach for coating the capillary tubes with calcein was developed. **Bibliography Type:** Description: (Last Updated: 03/18/2024) Ren J, Stankovic AS, Knaus DA, Phillips SD, Kynor DB, Buckey JC. "Urinary calcium for tracking bone loss and kidney stone risk in space." Aerosp Med Hum Perform. 2020 Sep 1;91(9):689-96. https://doi.org/10.3357/AMHP.5606.2020; **Articles in Peer-reviewed Journals** 

PMID: 32867898, Sep-2020