Task Book Report Generated on: 04/17/2024

Pl Name: Plats, Steven H, Ph.D. Defining the relation between biomarkers of exidative and inflammatory stress and inherosclerosis risk in astronauts during and affect opel-duration spaceflight Division Name: Human Research Program/Discipline: HUMAN RESEARCH Program/Discipline: HUMAN RESEARCH Program/Discipline: HUMAN RESEARCH—Biomedical countermeasures Limit Agency Name: TechPort: No Limit Agency Name: TechPort: No Limit Agency Name: None Space Biology Florements: (I) HHC-Human Health Countermeasures Limit Agency Name: None Space Biology Florement: None Space Biology Florement: None Space Biology Special Category: None Pl Romal: Steven platfie florenes are Space Biology Special Category: None Pl Romal: Steven platfie florenes are Pl Romal: Steven platfie florenes are Pl Address 1: Cardiovascular Laboratory Pl Address 2: Biomedical Research and Environmental Sciences Division Pl Web Page: City: Houston State: TX Congressional District: 36 Comments: Project Type: FLIGHT Solicitation / Funding 2010 Crew Health Source Nailogas Andrew No. of Ph.D. Degrees: 0 No. of Post Does: No. of Ph.D. Degrees: 0 No. of Post Does: No. of Absoler's Degrees: 0 No. of Master's Candidates:	Fiscal Year:	FY 2014	Task Last Updated:	FV 07/26/2013
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Element/Subdiscipline: FLOMAN RESEARCH-Bomeducal countermeasures Joint Agency Name: TechPort: No Human Research Program Elements: (I) HHC:Human Health Countermeasures Human Research Program Risks: None Space Biology Cross-Element Done Space Biology Cross-Element Done Space Biology Special Category: None PI Email: Seven platts-1@mass.cov Fax: FY 281-244-5090 PI Granization Type: NASA CENTER Phone: 281-483-8177 Organization Name: NASA Johnson Space Center PI Address 1: Cardiovascular Labovatory PI Address 2: Biomedical Research and Environmental Sciences Division PI Web Page: City: Houston State: TX Zipi Code: 77058 Congressional District: 36 Comments: Project Type: FLIGHT Solicitation / Funding 2010 Grew Health Native Degrees: 0 No. of Post Docs: 0 No. of Master' Degrees: 0 No. of PhD Cardidates: 0 No. of Master' Degrees: 0 No. of PhD Cardidates: 0 No. of Machelor's Degrees: 0 No. of Master's Candidates: 0 No. of Machelor's Centeres: NASA JSC Contact Monitor: Villareal, Jennifer Contact Phone: 281-483-706 Contact Monitor: Villareal, Jennifer Contact Phone: 281-483-706 Contact Monitor: NSA JSC Coltact Monitoric NSA JSC Col	Program/Discipline:	HUMAN RESEARCH		
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Human Research Program Risks: None Space Biology Element: None Space Biology Cross-Element Discipline: None Space Biology Cross-Element Discipline: Space Biology Special Category: None PI Email: Steven platts-Idents-acov Fax: FY 281-244-5090 PI Organization Type: NASA CENTER Phone: 281-483-8177 Organization Name: NASA Johnson Space Center PI Address 1: Cardiovascular Laboratory PI Address 2: Biomedical Research and Environmental Sciences Division PI Web Page: City: Houston State: TX Zip Code: 77058 Congressional District: 36 Comments: Project Type: FLIGHT Solicitation / Funding 2010 Crew Health Source: NNJ10ZSA003N Start Date: 1001/2011 Solicitation / Funding 2010 Crew Health Source: NNJ10ZSA003N Start Date: 1001/2011 End Date: 09/30/2015 No. of Post Does: 0 No. of PhD Degrees: 0 No. of PhD Candidates: 0 No. of Master' Degrees: 0 No. of Master's Candidates: 0 No. of Master' Degrees: 0 No. of Backelor's Candidates: 0 Monitoring Center: NASA JSC Contact Monitor: Villareal, Jennifer Contact Phone: 281-483-7306 Contact Email: jenifer All Harraldônasa.gov Flight Program: ISS Flight Assignment: ISS Flight Assignment: ISS Simili, Scott PhD. (Universities Space Research Association) Smith, Scott PhD. (Universities Space Research Association) Smith, Scott, State PhD. (Universities Space Research Association) Internal Project Performance Goal No.:	Joint Agency Name:	TechPo	ort:	No
Space Biology Cross-Element Space Biology Cross-Element Discipline: None Space Biology Special Category: None PI Email: serven.platts-1@mass.gov Fax: FY 281-244-5090 PI Organization Type: NASA CENTER Phone: 281-483-8177 Organization Name: NASA Johnson Space Center PI Address 1: Cardiovascular Laboratory PI Address 2: Biomedical Research and Environmental Sciences Division PI Web Page: City: Houston Type: Houston Type: FLIGHT Solicitation / Funding Source: NN10/ZSA003N State: TX Comments: Project Type: FLIGHT Solicitation / Funding Source: NN10/ZSA003N State: No. of Post Docs: No. of Bachelor's Candidates: No. of Master's Degrees: No. of Mas	Human Research Program Elements:	(1) HHC:Human Health Countermeasures		
Space Biology Cross-Element Discipline: None PI Email: steven obatts-1 (@nassa.gov) PI Organization Type: NASA CENTER NASA CENTER Phone: 281-483-8177 Organization Name: NASA Johnson Space Center PI Address 1: Cardiovascular Laboratory PI Meders 2: Biomedical Research and Environmental Sciences Division PI Web Page: City: Houston State: TX Zip Code: 77058 Congressional District: 36 Comments: Project Type: FLIGHT Solicitation / Funding 2010 Crow Health Source: NNo. of PhD Degrees: 0 No. of PhD Degrees: 0 No. of PhD Degrees: 0 No. of Master' Degrees: 0 No. of Master' Degrees: 0 No. of Bachelor's Candidates: 0 No. of Bachelor's Candidates: 0 No. of Bachelor's Candidates: Villarreal, Jennifer Jennifer V3 Harreal (@nassa.gov) Flight Program: ISS Key Personnel Changes/Previous PI: none Lee, Stuart M.S. (Wyle Science, Technology, and Engineering Group) Ploutz-Snyder, Robert Ph.D. (Universities Space Research Association) Serial's Contract No: Internal Project Internal Project Internal Project Performance Goal No.:	Human Research Program Risks:	None		
Space Biology Special Category: None PI Email: Steven platts-1/6/nasa.gov PI Email: Steven platts-1/6/nasa.gov PI Email: Steven platts-1/6/nasa.gov PI Cognaization Type: NASA CENTER Phone: 281-483-8177 Organization Name: NASA Johnson Space Center PI Address 1: Cardiovascular Laboratory PI Address 2: Biomedical Research and Environmental Sciences Division PI Web Page: City: Houston State: TX Zip Code: 77058 Congressional District: 36 Comments: Project Type: FLIGHT Solicitation / Funding 2010 Crew Health Source: NNJ10ZSA003N Start Date: 1001/2011 End Date: 09/30/2015 No. of Post Docs: 0 No. of PhD Degrees: 0 No. of PhD Candidates: 0 No. of Master' Degrees: 0 No. of PhD Candidates: 0 No. of Master' Degrees: 0 No. of Master's Candidates: 0 No. of Bachelor's Degrees: 0 No. of Bachelor's Candidates: 0 No. of Bachelor's Degrees: 1 Contact Monitor: Villareal, Jennifer Contact Phone: 281-483-7306 Contact Email: jennifer. V31 Harreal/Gmasa.gov Flight Program: ISS Flight Assignment: ISS Key Personnel Changes/Previous PI: none Lee, Stuart M.S. (Wyle Science, Technology, and Engineering Group) Ploutz-Snyder, Robert Ph.D. (Universities Space Research Association) Smith, Soott Ph.D. (Valk Johnson Space Center) Stenger, Michael Ph.D. (Universities Space Research Association) Grant/Contract No.: Internal Project	Space Biology Element:	None		
PI Email: steven platts-1@nasa.gov Fax: FY.281-244-5090 PI Organization Type: NASA CENTER Phone: 281-483-8177 Organization Name: NASA Johnson Space Center PI Address 1: Cardiovascular Laboratory PI Address 2: Biomedical Research and Environmental Sciences Division PI Web Page: City: Houston State: TX Zip Code: 77058 Congressional District: 36 Comments: Project Type: FLIGHT Solicitation / Funding Source: NNI10ZSA003N Start Date: 10/01/2011 End Date: 09/30/2015 No. of Post Docs: 0 No. of PhD Degrees: 0 No. of PhD Candidates: 0 No. of Master' Degrees: 0 No. of Master's Candidates: 0 No. of Master' Degrees: 0 No. of Bachelor's Candidates: 0 No. of Bachelor's Degrees: 1 No. of Bachelor's Candidates: 0 Monitoring Center: NASA JSC Contact Monitor: Villareal, Jennifer Contact Phone: 281-483-7306 Contact Email: jennifer, v311 lareal@nasa.gov Flight Program: ISS Key Personnel Changes/Previous PI: none Lee, Stuart M.S. (Wyle Science, Technology, and Engineering Group) Ploutz-Snyder, Robert Ph.D. (Universities Space Research Association) Smith, Scott Ph.D. (NASA Johnson Space Center) Stenger, Michael Ph.D. (Universities Space Research Association) Grant/Contract No.: Internal Project	Space Biology Cross-Element Discipline:	None		
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PI Address 1: Cardiovascular Laboratory PI Address 2: Biomedical Research and Environmental Sciences Division PI Web Page: City: Houston State: TX Zip Code: 77058 Congressional District: 36 Comments: Project Type: FLIGHT Solicitation / Funding Source: NN110ZSA003N Start Date: 1001/2011 End about 97,302/2015 No. of Post Does: 0 No. of PhD Degrees: 0 No. of PhD Candidates: 0 No. of Master' Degrees: 0 No. of Master's Candidates: 0 No. of Master' Degrees: 0 No. of Master's Candidates: 0 No. of Bachelor's Degrees: 0 No. of Bachelor's Candidates: 0 No. of Bachelor's Degrees: 0 No. of Bachelor's Candidates: 0 Contact Monitoring Center: NASA JSC Contact Email: icanifer.y3 Harreal@nasa.gov Flight Assignment: ISS Flight Assignment: ISS Key Personnel Changes/Previous PI: none Lee, Stuart M.S. (Wyle Science, Technology, and Engineering Group) Ploutz-Sayder, Robert Ph.D. (Universities Space Research Association) Smith, Scott Ph.D. (NASA Johnson Space Center) Stenger, Michael Ph.D. (Wyle Science, Technology, and Engineering Group) Westby, Christian Ph.D. (Universities Space Research Association) Smith, Scott Ph.D. (NASA Johnson Space Center) Vestby, Christian Ph.D. (Universities Space Research Association) Smith, Scott Ph.D. (NASA Johnson Space Center) Vestby, Christian Ph.D. (Universities Space Research Association) Internal Project	PI Organization Type:	NASA CENTER	Phone:	281-483-8177
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Contact Monitor: Villarreal, Jennifer Contact Phone: 281-483-7306 Contact Email: iennifer.v311larreal@nasa.gov Flight Program: ISS ISS Key Personnel Changes/Previous PI: Lee, Stuart M.S. (Wyle Science, Technology, and Engineering Group) Ploutz-Snyder, Robert Ph.D. (Universities Space Research Association) Smith, Scott Ph.D. (NASA Johnson Space Center) Stenger, Michael Ph.D. (Wyle Science, Technology, and Engineering Group) Westby, Christian Ph.D. (Universities Space Research Association) Grant/Contract No.: Internal Project Performance Goal No.:	No. of Master's Candidates:	0 No. 6	of Bachelor's Degrees:	0
Contact Email: jennifer.v311larreal@nasa.gov Flight Program: ISS Flight Assignment: ISS Key Personnel Changes/Previous PI: none Lee, Stuart M.S. (Wyle Science, Technology, and Engineering Group) Ploutz-Snyder, Robert Ph.D. (Universities Space Research Association) Smith, Scott Ph.D. (NASA Johnson Space Center) Stenger, Michael Ph.D. (Wyle Science, Technology, and Engineering Group) Westby, Christian Ph.D. (Universities Space Research Association) Grant/Contract No.: Internal Project Performance Goal No.:	No. of Bachelor's Candidates:	0	Monitoring Center:	NASA JSC
Flight Program: ISS Flight Assignment: Key Personnel Changes/Previous PI: none Lee, Stuart M.S. (Wyle Science, Technology, and Engineering Group) Ploutz-Snyder, Robert Ph.D. (Universities Space Research Association) Smith, Scott Ph.D. (NASA Johnson Space Center) Stenger, Michael Ph.D. (Wyle Science, Technology, and Engineering Group) Westby, Christian Ph.D. (Universities Space Research Association) Grant/Contract No.: Internal Project Performance Goal No.:	Contact Monitor:	Villarreal, Jennifer	Contact Phone:	281-483-7306
Flight Assignment: Key Personnel Changes/Previous PI: none Lee, Stuart M.S. (Wyle Science, Technology, and Engineering Group) Ploutz-Snyder, Robert Ph.D. (Universities Space Research Association) Smith, Scott Ph.D. (NASA Johnson Space Center) Stenger, Michael Ph.D. (Wyle Science, Technology, and Engineering Group) Westby, Christian Ph.D. (Universities Space Research Association) Grant/Contract No.: Internal Project Performance Goal No.:	Contact Email:	jennifer.v311larreal@nasa.gov		
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Task Book Report Generated on: 04/17/2024

Task Description:

Atherosclerosis is the major contributor to cardiovascular disease-related morbidity and mortality. Research indicates that many of the risk factors commonly associated with atherosclerosis contribute to endothelial dysfunction, a process which presents early in life before angiographic evidence of disease and precedes the clinical manifestation of many cardiovascular disease-related disorders. In an effort to compensate for the initial risk factor-related disruptions to homeostasis, there is a compensatory upregulation of atheroprotective mechanisms. However, in the absence of appropriate risk factor management, these defense mechanisms may become overwhelmed and less able to reestablish normal function. Key systems that help maintain vascular homeostasis, and are susceptible to differential deleterious alterations, include those that help balance levels of oxidative and inflammatory stress. New evidence suggests that long duration spaceflight may promote oxidative and inflammatory stress through mechanisms such as radiation exposure, diet, physical inactivity, and psychological stress. However, there are no data supporting a causal link between biomarkers of oxidative and inflammatory stress and indices of vascular endothelial dysfunction in space flight. As such, we propose to examine the relation between biomarkers of oxidative and inflammatory stress and well established measures of vascular endothelial dysfunction (flow mediated dilation (FMD) and carotid intima-media thickness (CIMT)), in astronauts before, during, and after long duration spaceflight.

Rationale for HRP Directed Research:

Research Impact/Earth Benefits:

It is well known that inflammation is a key contributor to the development of atherosclerosis. There is also emerging work showing the link with oxidative damage. This work may contribute to general clinical science by showing the interactions of multiple stressors in a unique environment (spaceflight).

Task Progress:

The experiment, "Defining the Relationship between Biomarkers of Oxidative and Inflammatory Stress and the Risk for Atherosclerosis in Astronauts during and after Long-Duration Space Flight," was selected for flight on March 2, 2012. The first astronaut volunteer began training on September 9, 2012, and the first baseline data collection (BDC) session for this study was performed on October 5, 2012. To-date, three astronauts have volunteered to participate in this study when assigned as the prime crewmember, three volunteered to participate when serving as the back-up crewmember, and three astronauts have been designated to serve as test operators when serving as the prime crewmember. Pre-flight baseline data collection and training sessions will have been completed for one prime crewmember by the anniversary date of this project, but this astronaut will not have launched to ISS, and no in-flight sessions will have occurred. Thus, there are no data report at this time. Two prime crewmembers and one back-up also will have begun training, and the first pre-flight baseline data collection will have been completed for the back-up crewmember by the anniversary date.

Bibliography Type:

Description: (Last Updated: 03/01/2018)

Abstracts for Journals and Proceedings

Lee SMC, Westby CM, Stenger MB, Smith SM, Zwart S, Ploutz-Snyder RJ, Platts SH. "Defining the relationship between biomarkers of oxidative and inflammatory stress and the risk for atherosclerosis in astronauts during and after long-duration space flight." 2013 NASA Human Research Program Investigators' Workshop, Galveston, TX, February 12-14, 2013.

 $2013\ NASA\ Human\ Research\ Program\ Investigators'\ Workshop,\ Galveston,\ TX,\ February\ 12-14,\ 2013.\ ,\ Feb-2013\ NASA\ February\ 12-14,\ 2013.\ ,$