Task Book Report Generated on: 04/18/2024

Project Title: Exercise Countermeasure to Prevent Ocular Structural and Functional Changes in a Terrestrial Model of SANS Division Name: Human Research Program/Discipline: Program/Discipline: Program/Discipline: Broad Manager	Fiscal Year:	FY 2020	Task Last Updated:	FY 07/16/2020
Division Name: Human Research Program/Discipline- Element/Subdiscipline- Element/Subdisciplication/Subdisciplion/Subdisciplion/Subdiscipline- Element/Subdisciplication/Subdisciplication/Subdiscipline- Element/Subdisciplement/Subdisciplement/Subdisciplion/Subdisciplication/Subdisciplication/Subdisciplication/Subdisciplication/Subdisciplication/Subdisciplication/Subdisciplication/Subdisci	PI Name:	Huang, Alex M.D., Ph.D.		
Program/Discipline:	Project Title:	Exercise Countermeasure to Prevent Ocular Structural and Functional Changes in a Terrestrial Model of SANS		
Program/Discipline- Element/Subdiscipline- Element/Subdiscipline- Element/Subdiscipline- Element/Subdiscipline- Element/Subdiscipline- Joint Agency Name: TechPort: No Human Research Program Elements: (1) HHC-Human Health Countermeasures Human Research Program Risks: (1) SANSRisk of Spaceflight Associated Neuro-ocular Syndrome (SANS) Space Biology Element: None Space Biology Cross-Element Discipline: Space Biology Special Category: None PI Email: Aghung@health.used.edu Fax: FY PI Organization Type: NON-PROFIT Phone: 410-736-9678 Organization Name: University of California, San Diego PI Address 1: University of California, San Diego Shiley Eye Institute Viterbi Family Department of Ophthalmology PI Address 2: 9425 Campus Point Drive, MC0946 PI Web Page: City: La Jolla State: CA Zip Code: Q2093-0946 Congressional District: 52 Comments: The PI moved from Dobeny Eye Institute to University of California, San Diego Project Type: GROUND Solicitation / Funding Solicitation / Funding Solicitation / Source: Appendix Councembauers. Appendix Councembauers	Division Name:	Human Research		
Element/Subdiscipline: Joint Agency Name: TechPort: No Human Research Program Elements: (1) HHC-Human Health Countermeasures Human Research Program Risks: (1) SANS:Risk of Spaceflight Associated Neuro-ocular Syndrome (SANS) Space Biology Element: None Space Biology Cross-Element None Space Biology Special Category: None PL Email: AnHuman@inhealth.used.edu Fax: FY Pl Organization Type: NON-PROFIT Phone: Hone: Hone: Hone: University of California, San Diego Pl Address 1: University of California, San Diego Pl Address 2: 9425 Campus Point Drive, MC0946 Pl Web Page: City: La Jolla State: CA Zip Code: 92093-0946 Congressional District: The Pl moved from Doheny Eye Institute to University of California, San Diego in 2023. Project Type: GROUND Solicitation / Funding SOUSCOISNO001-SANS: Spaceflight SOURCE: No. of PhD Degrees: No. of Master' Degrees: No. of Master' Degrees: No. of Master' Degrees: No. of Master' Degrees: No. of Bachelor's Degrees: No. of Bachelor's Candidates: No.	Program/Discipline:			
Human Research Program Elements: (1) SANS-Risk of Spaceflight Associated Neuro-ocular Syndrome (SANS) Space Biology Element: None Space Biology Cross-Element Disciplines: An Human Galhe alth used edu PI Email: An Human Galhe alth used edu PI Carganization Type: NON-PROFIT Phone: Althouse Shiley Eye Institute Viterbi Family Department of Ophthalmology PI Address 1: University of California, San Diego PI Address 2: 9425 Campus Point Drive, MC0946 PI Web Page: City: La Jolla State: CA Zip Code: 92093-0946 Congressional District: 52 Comments: The PI moved from Doheny Eye Institute to University of California, San Diego in 2023. Project Type: GROUND Solicitation / Funding Sollicitation	Program/Discipline Element/Subdiscipline:			
Human Research Program Risks: (I) SANS/Risk of Spaceflight Associated Neuro-ocular Syndrome (SANS) Space Biology Element: None Space Biology Cross-Element Discipline: None PI Email: Aallunn@health.ucsd.edu Fax: FY PI Organization Type: NON-PROFIT Phone: 410-736-9678 Organization Name: University of California, San Diego PI Address 1: University of California, San Diego Shiley Eye Institute Viterbi Family Department of Ophthalmology PI Address 2: 9425 Campus Point Drive, MC0946 PI Web Page: City: La Jolla State: CA Zip Code: 2093-0946 Congressional District: 52 Comments: The PI moved from Doheny Eye Institute to University of California, San Diego in 2023. Project Type: GROUND Solicitation / Funding SOSCO(18N0001-SANS: Spaceflight Source: Associated Neuro-ocular Syndrome Countermeasures. Appendix C Start Date: 0701/2020 End Date: 06/30/2023 No. of PhD Degrees: No. of Master' Degrees: No. of Master' Degrees: No. of Master' Degrees: No. of Master' Degrees: No. of Bachelor's Candidates: No. of Bachelor's Candidates: Norsk, Peter Contact Honitor: Norsk, Peter Contact Honitor: Norsk, Peter Contact Honitor: Norsk, Peter Contact Honitor: Norsk, Peter Contact Email: Peter.norsk@nasa.gov Flight Assignment:	Joint Agency Name:		TechPort:	No
Space Biology Element: None Space Biology Cross-Element Discipline: Space Biology Cross-Element Discipline: Space Biology Special Category: None PI Email: Aalluan@health.uesd.edu Fax: FY PI Organization Type: NON-PROFIT Phone: 410-736-9678 Organization Name: University of California, San Diego PI Address 1: University of California, San Diego PI Address 2: 9425 Campus Point Drive, MC0946 PI Web Page: City: La Jolla State: CA Zip Code: 92093-0946 Congressional District: 52 Comments: The PI moved from Doheny Eye Institute to University of California, San Diego in 2023. Project Type: GROUND Solicitation / Funding 80JSCOI8NO001-SANS: Spaceflight Source: Associated Neuro-ocular Syndrome Countermeasures. Appendix C Start Date: 07.01/2020 End Date: 06/30/2023 No. of Post Docs: No. of PhD Degrees: No. of PhD Candidates: No. of Master's Degrees: No. of Master's Candidates: No. of Master' Degrees: No. of Master's Candidates: Norsk, Peter Contact Phone: Contact Contact Contact Phone: Contact Contact Contact Phone: Contact Contact Phone: Flight Program: Flight Assignment:	Human Research Program Elements:	(1) HHC :Human Health Countermeasures		
Space Biology Cross-Element Discipline: None PI Email: AaHuang@healthuesd.edu Fax: FY PI Organization Type: NON-PROFIT Phone: 410-736-9678 Organization Name: University of California, San Diego PI Address 1: University of California, San Diego Shiley Eye Institute Viterbi Family Department of Ophthalmology PI Address 2: 9425 Campus Point Drive, MC0946 PI Web Page: City: La Jolla State: CA Zip Code: 92093-0946 Congressional District: 52 Comments: The PI moved from Doheny Eye Institute to University of California, San Diego in 2023. Project Type: GROUND Solicitation / Funding 8015C018N0001-SANS: Spaceflight Source: Associated Neuro-ocular Syndrome Countermeasures. Appendix C Start Date: 07/01/2020 End Date: 06/30/2023 No. of Post Docs: 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: Norsk Peter Contact Phone: Contact Monitor: Norsk, Peter Contact Phone: Flight Program: Flight Assignment:	Human Research Program Risks:	(1) SANS:Risk of Spaceflight Associated Neuro-	ocular Syndrome (SANS)	
Discipline: None Space Biology Special Category: None PI Email: Aal tuans@health.uesd.edu Fax: FY PI Organization Type: NON-PROFIT Phone: 410-736-9678 Organization Type: University of California, San Diego PI Address 1: University of California, San Diego Shiley Eye Institute Viterbi Family Department of Ophthalmology PI Address 2: 9425 Campus Point Drive, MC0946 PI Web Page: City: La Jolla State: CA Zip Code: 92093-0946 Congressional District: 52 Comments: The PI moved from Doheny Eye Institute to University of California, San Diego in 2023. Project Type: GROUND Solicitation / Funding Source: Associated Neuro-ocular Syndrome Countermeasures. Appendix C Start Date: 07/01/2020 End Date: 06/30/2023 No. of Post Does: No. of PhD Degrees: No. of PhD Candidates: No. of Master' Degrees: No. of Master's Candidates: No. of Bachelor's Degrees: No. of Master's Candidates: Monitoring Center: NASA JSC Contact Monitor: Norsk, Peter Contact Phone: Contact Email: Peter.norsk@nasa.gov. Flight Program: Flight Assignment:	Space Biology Element:	None		
PI Email: Aal Huang@health.ucsd.edu Fax: FY PI Organization Type: NON-PROFIT Phone: 410-736-9678 Organization Name: University of California, San Diego PI Address 1: University of California, San Diego Shiley Eye Institute Viterbi Family Department of Ophthalmology PI Address 2: 9425 Campus Point Drive, MC0946 PI Web Page: City: La Jolla State: CA Zip Code: 92093-0946 Congressional District: 52 Comments: The PI moved from Doheny Eye Institute to University of California, San Diego in 2023. Project Type: GROUND Solicitation / Funding 80JSC018N0001-SANS: Spaceflight Source: Associated Neuro-ocular Syndrome Countermeasures. Appendix C Start Date: 07/01/2020 End Date: 06/30/2023 No. of Post Docs: No. of PhD Degrees: No. of Master's Candidates: No. of Master' Degrees: No. of Master's Candidates: No. of Master' Degrees: 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:	Space Biology Cross-Element Discipline:	None		
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Project Type: GROUND Solicitation / Funding Source: Source: Associated Neuro-ocular Syndrome Countermeasures. Appendix C Start Date: 07/01/2020 End Date: 06/30/2023 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:	Zip Code:	92093-0946	Congressional District:	52
Project Type: GROUND Solicitation / Funding Source: Source: Source: Start Date: O7/01/2020 End Date: O6/30/2023 No. of PhD Degrees: No. of PhD Candidates: No. of Master' Degrees: No. of Master's Candidates: No. of Bachelor's Candidates: No. of Bachelor's Candidates: No. of Bachelor's Candidates: Norsk, Peter Contact Monitor: Norsk, Peter Contact Email: Peter.norsk@nasa.gov Flight Program: Flight Assignment:	Comments:	The PI moved from Doheny Eye Institute to Univ	versity of California, San D	iego in 2023.
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Contact Email: Peter.norsk@nasa.gov Flight Program: Flight Assignment:	No. of Bachelor's Candidates:		Monitoring Center:	NASA JSC
Flight Program: Flight Assignment:	Contact Monitor:	Norsk, Peter	Contact Phone:	
Flight Assignment:	Contact Email:	Peter.norsk@nasa.gov		
	Flight Program:			
	Flight Assignment:			
Key Personnel Changes/Previous PI:	Key Personnel Changes/Previous PI:			
Laurie, Steven Ph.D. (KBR/NASA Johnson Space Center) Lee, Stuart Ph.D. (KBR/NASA Johnson Space Center) Macias, Brandon Ph.D. (NASA Johnson Space Center) Marshall-Goebel, Karina Ph.D. (KBR/NASA Johnson Space Center) Sadda, Srinivas M.D. (Doheny Eye Institute) Loerch, Linda M.S. (NASA Johnson Space Center)	COI Name (Institution):	Lee, Stuart Ph.D. (KBR/NASA Johnson Space C Macias, Brandon Ph.D. (NASA Johnson Space C Marshall-Goebel, Karina Ph.D. (KBR/NASA Jo Sadda, Srinivas M.D. (Doheny Eye Institute)	Center) Center) Phnson Space Center)	
Grant/Contract No.: 80NSSC20K1034	Grant/Contract No.:	80NSSC20K1034		
Performance Goal No.:	Performance Goal No.:			
Performance Goal Text:	Performance Goal Text:			

Task Book Report Generated on: 04/18/2024

Task Description:

Optic disc edema develops in about 16% of astronauts during long-duration spaceflight and is of high concern to the NASA medical community and a target of therapeutic treatment given risk of vision loss. Currently, there is not a reliable method to predict which crewmembers will develop disc edema. Moreover, it was previously believed that only the spaceflight environment could produce optic disc edema in normal healthy subjects. Recently our research team developed a novel ground-based spaceflight analog that reproduced disc edema in healthy test subjects that can be used to test novel pathophysiological hypotheses and possible Spaceflight Associated Neuro-ocular Syndrome (SANS) countermeasures. The research outlined in this proposal will use this new ground-based spaceflight analog advanced by NASA to elucidate the structural and functional impact of optic disc edema and to evaluate alterations to retinal and optic nerve blood flow to understand their contributions to the etiology of SANS. Further, a novel countermeasure will be tested to prevent the development of disc edema, functional decline in ganglion cell function, and vascular alterations associated with this ground-based spaceflight analog. This proposal will (1) determine combined structural and functional ocular alterations caused by the development of optic disc edema in this spaceflight analog, (2) determine the role of altered vascular blood flow in the development of optic disc edema in this spaceflight analog, and (3) determine if daily aerobic exercise in combination with veno-occlusive thigh cuffs can be used as a preventative countermeasure for the formation of optic disc edema. Thus, this proposal utilizes a newly developed spaceflight analog and will allow us to test novel hypotheses for predicting, characterizing, and preventing the development of optic disc edema.

Rationale for HRP Directed Research:

Research Impact/Earth Benefits:

Task Progress:

New project for FY2020.

Bibliography Type:

Description: (Last Updated: 06/07/2023)