Task Book Report Generated on: 04/25/2024

Pl Name: Rifuidecli, Kanokporn Ph.D.  Project Title: Countermeasures Against Adverse Effects of Space Radiation  Diction Name: Illuman Research  Program Discipline- Element Shudiscipline:  Joint Agency Name: TechPort: No  Human Research Program Elements: (1) SR Space Radiation  Human Research Program Elements: (1) Cameer, Risk of Radiation Cascinogenesis  Space Biology Element: None  Space Biology Element: None  Space Biology Element: None  Space Biology Element: None  Space Biology Special Category: None  Pl Email: Kanokporn Ribidech@elementatory Fax: FY (631) 444-344  Pl Organization Type: UNIVERSITY Phone: (631) 444-3446  Organization Name: State University New York at Stony Brook  Pl Address 1: Department of Pathology  Pl Address 2: BHS 79 Health Sciences Center  Pl Web Page:  Lip: Stony Brook State University New York at Sony Brook  Pl Address 2: BHS 79 Health Sciences Center  Pl Web Page:  Lip: Godg: 1794-8091 Congressional District:  Comments:  Project Type: GROUND Solicitation / Funding Sulface Agency Space Information Agency Space Informat				
Project Title: Countermeasures Against Adverse Effects of Space Radiation  Division Name: Human Research  Program/Dicipline:  It was a second of the program Relation  None  Space Biology Name: (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	Fiscal Year:	FY 2019	Task Last Updated:	FY 03/12/2019
	PI Name:	Rithidech, Kanokporn Ph.D.		
Program/Discipline: Program/Discipline- Element/Subdiscipline- Eleme	Project Title:	Countermeasures Against Adverse Effects of Space Radi	iation	
Program Discipline	Division Name:	Human Research		
	Program/Discipline:			
Human Research Program Elements: (1) SR-Space Radiation Human Research Program Risks: (1) Cancer:Risk of Radiation Carcinogenesis Space Biology Element: None Space Biology Flement: None Space Biology Special Category: None Pl Email: Kanokporn.Rithidech@abumed.org Fax: FY (631) 444-3424 Pl Organization Type: UNIVERSITY Phone: (631) 444-3446 Organization Name: State University New York at Stony Brook Pl Address 1: Department of Pathology Pl Address 2: BIIS T9 Health Sciences Center Pl Web Page: City: Stony Brook State: NY City Congressional 1 Comments:  Comments:  Project Type: GROUND Solicitation / Funding Robert Source Robert Project Type: Story Brook Project Type: No. of Post Does: No. of PhD Degrees: No. of Post Does: No. of PhD Candidates: No. of Master' Degrees: No. of Post Does: No. of Bachelor's Candidates: No. of Master' Degrees: No. of Bachelor's Candidates: Monitoring Center: NASA JSC Contact Monitor: Simonsen, Lisu Contact Phone: Contact Phone: Contact Email: Bias a simonsen@mea.gov Flight Program: Flight Program: Flight Program: Flight Program: Flight Program: Flight Candidation: SonNSSC19K0435 Performance Goal No.:	Program/Discipline Element/Subdiscipline:			
Human Research Program Risks: (I) Cancer-Risk of Radiation Carcinogenesis  Space Biology Element: None  Space Biology Cross-Element Space Biology Cross-Element Space Biology Cross-Element Space Biology Special Category: None  PI Email: Kanokusera Rithidechi/s/shumed ore Fax: FY (631) 444-3424  PI Organization Type: UNIVERSITY Phone: (631) 444-3446  Organization Name: State University New York at Stony Brook  PI Address 1: Department of Pathology  PI Address 2: BIIS T9 Health Sciences Center  PI Web Page:  City: Stony Brook State: NY  Zip Code: 11794-8691 Congressional University Project Type: GROUND Solicitation / Funding Solicitation	Joint Agency Name:		TechPort:	No
Space Biology Cross-Element         None           Space Biology Cross-Element Disciplines         None           Space Biology Special Category:         None           PI Email:         Kanokrorm Rithidecht@sburned.org         Fax: FY (631) 444-3424           PI Organization Type:         UNIVERSITY         Phone: (631) 444-3446           Organization Name:         State University New York at Story Brook         Propertion of Pathology           PI Address I:         Department of Pathology         Propertion of Pathology           PI Address 2:         BHS T9 Health Sciences Center         State: NY           PI Address 2:         Story         State: NY           City:         Story Brook         State: NY           Cip:         Congressional District:         1           Cip:         Congressional District:         2           Comments:         Solicitation / Funding Solicitation / Funding Solicitation / Funding Solicitation / Funding Solicitation / Soli	Human Research Program Elements:	(1) SR:Space Radiation		
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Discipline: "Source Source Space Biology Special Category: None   Fax: FY (631) 444-3424   Pl Organization Type: UNIVERSITY Phone: (631) 444-3446   Organization Name: State University New York at Stony Brook   Pl Address 1: Department of Pathology   Pl Address 2: BHS T9 Health Sciences Center   Pl Web Page:   City: Stony Brook State: NY   Zip Code: 11794-8691 Congressional District:   Comments:   Project Type: GROUND Solicitation / Founding Solicitation / Founding Solicitation / Spacellight. Appendix C   Start Date: 01/31/2019 End Date: 05/30/2021   No. of Post Does: No. of PhD Candidates: No. of PhD Candidates: No. of Bachelor's Degrees: No. of Master' Degrees: No. of Bachelor's Candidates: No. of Bachelor's Candidates: Contact Honitor: Simonsen, Lisa Contact Honitor: Simonsen, Lisa Contact Phone:   Flight Assignment:   Key Personnel Changes/Previous PI: COI Name (Institution): Grant/Contract No.: 80NSSC19K0435   Performance Goal No.:	Space Biology Element:	None		
Pl Email:   Kanokporn Rithidech@sbumed org   Fax:   FY (631) 444-3424     Pl Organization Type:   UNIVERSITY   Phone:   (631) 444-3424     Pl Organization Name:   State University New York at Stony Brook     Pl Address 1:   Department of Pathology     Pl Address 2:   BHS T9 Health Sciences Center     Pl Web Page:   Stony Brook   State:   NY     City:   Stony Brook   State:   NY     City:   Stony Brook   State:   NY     Congressional   District:     Comments:	Space Biology Cross-Element Discipline:	None		
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Contact Email: <a href="mailto:lisa.c.simonsen@nasa.gov">lisa.c.simonsen@nasa.gov</a> Flight Program:  Flight Assignment:  Key Personnel Changes/Previous PI:  COI Name (Institution):  Grant/Contract No.: 80NSSC19K0435  Performance Goal No.:	No. of Bachelor's Candidates:		<b>Monitoring Center:</b>	NASA JSC
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Our primary goal is to test the efficacy of apigenin (AP) for prevention and mitigation of cancer due to space radiation exposure as measured by incidence, aggressiveness, burden, and latency. Our main hypothesis is that AP exhibits its beneficial effects by suppression of radiation-induced inflammation and oxidative stress during the initiation/promotion steps of carcinogenesis. Although the emphasis will be the mitigation of lung cancer and lymphoma/leukemia, other types of cancer will be recorded.

Apigenin (AP) is a dietary supplement known to possess potent antioxidant, anti-inflammatory, and anti-cancer activities in various tissues. We are the first to report that AP protects human lymphocytes from exposure to radiation in vitro and that AP attenuates inflammation and oxidative damage in bone marrow cells of mice exposed to radiation. These findings lay the groundwork for this project.

**Task Description:** 

We will give food containing AP to mice (males and females) before and after exposure to silicon (Si) ions. Subsequently, the mixed-beam (protons + Si) experiment will be designed. Oxidative stress and inflammation are highly relevant not only to carcinogenesis but also to cardiovascular and nervous disorders. Hence, groups of mice from each treatment will be used for a serial sacrifice schedule at 1 week and 3 months post-irradiation. This will test the ability of AP to counteract heavy-ion-induced early- and late-occurring inflammation and oxidative damage in various tissues linked to cancer that are the focus of our study (i.e., bone marrow, lung, thymus, spleen), including the heart and the brain of the same mouse. All remaining mice will be observed for morbidity and mortality until they reach about 800 days of age. Our data enable the evaluation of countermeasure efficacy of AP not only across tissues at risk for cancer but also across risk areas. This multi-tissue approach has not been used in space research.

**Rationale for HRP Directed Research:** 

**Research Impact/Earth Benefits:** 

Task Progress: New project for FY2019.

Bibliography Type: Description: (Last Updated: 05/17/2023)