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| Fiscal Year: | FY 2021 | Task Last Updated: FY 08/30/2021 | |
| PI Name: | Didier, Kaylin Ph.D. | | |
| Project Title: | Ionizing Radiation and Immune Responses: Exploring Sex Differences | | |
| Division Name: | Human Research | | |
| Program/Discipline: | | | |
| Program/Discipline--Element/Subdiscipline: | TRISH--TRISH | | |
| Joint Agency Name: | | TechPort: | No |
| Human Research Program Elements: | None | | |
| Human Research Program Risks: | None | | |
| Space Biology Element: | None | | |
| Space Biology Cross-Element Discipline: | None | | |
| Space Biology Special Category: | None | | |
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| City: | Madison | State: | WI |
| Zip Code: | 53715 | Congressional District: | 2 |
| Comments: | | | |
| Project Type: | GROUND | Solicitation / Funding Source: | 2021 TRISH-RFA-2101-PD: Translational Research Institute for Space Health (TRISH) Postdoctoral Fellowships |
| Start Date: | 09/01/2021 | End Date: | 08/31/2022 |
| No. of Post Docs: | 1 | 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: | TRISH |
| Contact Monitor: | Contact Phone: | | |
| Contact Email: | | | |
| Flight Program: | | | |
| Flight Assignment: | | | |
| Key Personnel Changes/Previous PI: | | | |
| COI Name (Institution): | Schrage, William Ph.D. (MENTOR: University of Wisconsin, Madison) | | |
| Grant/Contract No.: | NNX16AO69A-P0603 | | |
| Performance Goal No.: | | | |
| Performance Goal Text: | <p>POSTDOCTORAL FELLOWSHIP</p> <p>Astronauts will soon be deploying on deep space missions to Mars, and will be exposed to continuous low dose, high energy ionizing radiation (IR). This IR is different from Earth orbit radiation; therefore, this kind of space radiation may lead to undefined acute and chronic health problems from continuous radiation exposure. Previous research on the effects of space radiation have predominantly studied male astronauts. Data from cancer patients receiving radiation, or animal research, suggest women might show an exaggerated inflammation response, making them more likely to develop diseases of the heart or blood vessels (vascular cells). These unknown sex differences remain as unexplored as deep space. The purpose of this fellowship proposal is to investigate how men and women differ in their immune and vascular response to IR, as radiation may increase or accelerate disease burden in astronauts who traveled into deep</p> | | |

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| Task Description: | space. The first study goal is to test increasing levels of IR to see if the inflammation response is more sensitive in one sex versus the other. Immune cells from healthy adults will be exposed to IR and followed for 24 hours. Measurements include signals the cells produce, signals inside and on the surface of immune cells that change their function. In the second study, immune and vascular cells are placed together after IR, to see if crosstalk between cells is different between the sexes. Methods from study one will be repeated in both cell types, plus measuring adhesion molecules on the surface of vascular cells that allow immune cells to bind and amplify inflammation. Crosstalk is expected to magnify the inflammation response. The findings are expected to help develop sex-specific interventions to minimize risk from IR, so astronaut health and mission success are maximized. |
| Rationale for HRP Directed Research: | |
| Research Impact/Earth Benefits: | |
| Task Progress: | New project for FY2021. |
| Bibliography Type: | Description: (Last Updated:) |
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