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| Fiscal Year: | FY 2023 | Task Last Updated: | FY 06/13/2023 |
| PI Name: | Allaway, Heather Ph.D. | | |
| Project Title: | Insights Into the Impacts of Continuous, Low Dose-Rate Neutron Radiation Exposure on Maternal and Fetal Skeletal Physiology | | |
| Division Name: | Space Biology | | |
| Program/Discipline: | | | |
| Program/Discipline--Element/Subdiscipline: | | | |
| Joint Agency Name: | | TechPort: | No |
| Human Research Program Elements: | None | | |
| Human Research Program Risks: | None | | |
| Space Biology Element: | (1) Animal Biology: Vertebrate | | |
| Space Biology Cross-Element Discipline: | (1) Musculoskeletal Biology | | |
| Space Biology Special Category: | None | | |
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| Organization Name: | Louisiana State University and A&M College | | |
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| City: | Baton Rouge | State: | LA |
| Zip Code: | 70803-0001 | Congressional District: | 6 |
| Comments: | | | |
| Project Type: | Ground | Solicitation / Funding Source: | 2021 Space Biology NNH21ZDA001N-SBAS E.11: Animal Studies |
| Start Date: | 06/01/2023 | End Date: | 05/31/2024 |
| 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 ARC |
| Contact Monitor: | Griko, Yuri | Contact Phone: | 650-604-0519 |
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| Flight Program: | | | |
| Flight Assignment: | | | |
| Key Personnel Changes/Previous PI: | | | |
| COI Name (Institution): | Lau, Anthony Ph.D. (College of New Jersey) | | |
| Grant/Contract No.: | 80NSSC23K0784 | | |
| Performance Goal No.: | | | |
| Performance Goal Text: | | | |
| Task Description: | <p>The combined effects of space environmental stressors induce pathologies in multiple organ systems. Specifically, losses to the musculoskeletal system may be very dangerous for the health and performance of astronauts on extended duration missions on the Moon or arriving on Mars. A critical need remains to better understand the impact of radiation exposure, one of the key environmental stressors of deep space, on human and animal physiology to enable extended duration missions beyond low Earth orbit or setting up settlements on the Moon or Mars. There is a critical gap in knowledge surrounding the impact of the space radiation environment on skeletal health and on the progress of fetal skeletal development during pregnancy. The objective of the current proposal is to capitalize on a unique tissue-sharing opportunity to examine the combined effects of continuous radiation exposure and pregnancy on maternal and fetal skeletal physiology. We propose to assess maternal and fetal skeletal physiology through measurements of mineral and</p> | | |

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| | material properties, as well as assess changes in cellular dynamics of the maternal bone under the microscope. This study will be critical in assessing how a very harmful component of the space radiation environment impacts multiple aspects of skeletal health, including sex-specific differences and individual variation in the impact of the space environment on the functioning of the body. |
| Rationale for HRP Directed Research: | |
| Research Impact/Earth Benefits: | |
| Task Progress: | New project for FY2023. |
| Bibliography Type: | Description: (Last Updated: 07/30/2024) |
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