MARIANNETTE MILLER-MEEKS, M.D.
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Congress of the United States
House of Representatives
Washington, DC 20515

March 31, 2023

Dear Chairwoman Granger and Ranking Member DeLauro:

I am requesting funding for Support for Space Technology Innovation and Education project in Fiscal Year 2024. The entity to receive funding for this project is the University of Iowa (Department of Physics and Astronomy) located at 203 Van Allen Hall, 30 N. Dubuque St., Iowa City, IA 52242.

The funding would be used for the purchase of advanced manufacturing equipment, new semiconductor fabrication tooling, and satellite communications hardware to enable technology development and research in support of NASA's mission to explore the unknown in air and space, innovate for the benefit of humanity, and inspire the world through discovery. In addition, the University of Iowa will augment an existing educational program giving the college undergraduates in STEM fields hands-on experience with flight hardware. The investments will enable the University of Iowa to produce graduates with the engineering, mathematics, programming, and data analysis skills needed to support Iowa's continued growth in technical sectors like advanced manufacturing, financial services, and aerospace/defense.

The project entails the purchase of a 5-axis computer numerical control (CNC) machining center capable of machining a wide variety of standard and space-flight materials. In addition, the project involves the purchase a computerized inspection station, which will be used to performance verification that these manufactured components meet design specifications. These tools will be housed in existing facilities at the University of Iowa's Physics & Astronomy Machine Shop, a service center available to both researchers and external businesses for fabrication and prototyping. CNC machining and subsequent inspection also is directly responsive to the goals of NASA Safety, Security, and Mission Services (SSMS); incorporating quality control on-site as part of the manufacturing process decreases risk of component failure and improves the likelihood of mission success.

With the funds, the University will also invest in new semiconductor tools. Acquiring new state-of-the-art semiconductor tools will enable a more rapid rate of progress in these NASA technology development efforts, helping to preserve the United States' preeminent position in the globally competitive domains of aeronautics and space technology. These new tools will be located the University of Iowa's Materials Analysis, Testing, and Fabrication (MATFab) facility. Similar to the Physics & Astronomy Machine Shop, MATFab is organized as a University service center, providing access to these cutting-edge tools for both researchers and external businesses at fixed pricing.

With the allocated funding, the university will also purchase a satellite ground station, training students to communicate with and command spacecraft while in orbit. This project thus creates an advanced satellite communications center within Iowa's 1st district; researchers and students will be able to talk directly to scientific satellites as they pass overhead and download data from these platforms. This outcome is well-aligned with Objectives 2.2 and 2.4 of NASA's current 2022 Strategic Plan, which aim to develop a spaceflight economy enabled by a commercial market and enhance access to space, respectively.

Project funds will also be used to offer positions to eight additional undergraduate students to the program during FY24 focused on astronomical or Earth-observing projects. The program will hire additional instructional support, as this hands-on, internship-style model of instruction requires a low student to-instructor ratio to be effective. All students attending the school receive a stipend, meal per diem, lodging, and travel assistance, if needed. These allocations serve to increase participation by students of all socioeconomic statuses. They will incentivize the participation of groups historically underrepresented in the NASA workforce, including 1st generation college students or those from rural areas by including these considerations in our admissions criteria. This creates opportunities for students attending smaller and/or teaching focused colleges which may not have a history of participating in space research. By drawing on the talent of students from all backgrounds, this effort works to build a diverse future STEM workforce in line with Objective 4.3 of the NASA Strategic Plan and the Diversity, Equity, and Inclusion initiatives of NASA SSMS.

The project is an appropriate use of taxpayer funds because investment in STEM workforce development pays dividends twice: (1) by enabling U.S. employers to hire the technical talent they need locally, catalyzing economic growth; and (2) employing U.S. workers in high paying jobs yielding greater future tax revenue. As a result of this program, students will receive valuable training in designing and operating space instrumentation. They will participate in the execution of aerospace missions both through the Edge of Space Academy and University of Iowa's federally funded research programs.

The project has a Federal nexus because the funding provided is for the purposes described in section 20102 of title 51, United States Code.

I certify that I have no financial interest in this project, and neither does anyone in my immediate family.

Sincerely,

Mariannette J. Miller-Meeks

Mariannette Miller-Meeks, M.D.
Member of Congress