

**Wisconsin Space Grant Consortium Spring 2023 Advisory Council Meeting Report  
Higher Education Incentives Program – Associate Director Katie Rabidoux**

**Higher Education Incentives Proposals:** In 2022-2023, there was one regular proposal cycle.

Proposals received and funded - Two proposals were received, and both were funded: a minor award (\$4,730) from Dana Garrigan of Carthage College to develop inquiry-based lab activities using NASA data for ecology and conservation science courses, and a major award (\$9,962) from Douglas Martin of Lawrence University to further develop a microscope that can be modified via 3D printing and used by students in the classroom.

Demographics – Both applicants are white men who are tenured professors at private colleges and universities working in the biological sciences.

**Metrics and Targets:** The HEI program targets multi-institutional awards of \$15,000, major awards of \$10,000, and minor awards of \$5000, with a total budget of \$40,000 in the 2022-2023 regular proposal cycle. Proposals should be focused on the education and/or training of undergraduate students, with an emphasis on faculty enhancement and curriculum development above and beyond normal course improvement. No multi-institutional proposals were submitted this year; we will try to encourage more of these proposals next year, especially in partnership between two-year and four-year institutions. Only one major proposal and one minor proposal were submitted for a total of \$14,692, so the budget was significantly underspend with the remaining funds reallocated to other programs. We will try to encourage a larger and more diverse applicant pool in the next cycle.

Strategic goals – The WSGC strategic objective for HEI is “To improve STEM education in institutions of higher education through the introduction of research-based pedagogies and learner-centric curricula.” Both proposals are oriented toward that objective, as they are focused on developing hands-on lab activities that are aligned with training the next generation of STEM investigators. However, the demographics of the PIs from the submitted and awarded proposals this year indicate we may be falling short of the stated overall goal in the Purpose and Scope of the strategic plan that best applies to HEI, “Recruit and train professionals, especially women, underrepresented minorities, and persons with disabilities, for careers in aerospace-related fields”. While the PIs are likely training some students with those identities, the HEI program would be in better alignment with that objective if we were able to award more funding to PIs with those identities. We will make this a goal of the program for the next year.

**Project highlight:** Open Source Microscopy Beyond Lawrence University, Douglas Martin

This project’s goal is to develop an easy-to-use research-grade microscope that can be modified and repaired through 3D printing for locations where professional repair or resupply is difficult or impossible. The PI used funding from a 2022 HEI proposal to develop a prototype, and plans on using the funding from this cycle to develop a scalable version that can be operated and modified by students and researchers outside of the proposal’s research team. A microscope like this could be an asset for conducting biological research in space. The project activities are interdisciplinary, including redesigning electronics, modifying software, developing materials lists and deployment kits, and demonstrating the devices at other universities. The project will involve two student researchers, and the prototype microscope was planned to be tested in the classroom starting in January 2023. The PI plans on submitting an NSF IUSE grant in January 2024 to continue this work.