

CUNY-SUNY SPEEDWAY: CONNECTING LEHMAN COLLEGE FACULTY AND STUDENTS TO OPPORTUNITIES IN STONY BROOK UNIVERSITY'S DEPARTMENT OF GEOSCIENCES. T. D. Glotch¹, A. E. Cook², H. K. Pant³, B. Peritore¹, V. Rivera Banuchi¹, and E. Holme^{1,4}, ¹Department of Geosciences, Stony Brook University, timothy.glotch@stonybrook.edu, ²College of Arts and Sciences, Stony Brook University, ³Department of Earth, Environmental, and Geospatial Sciences, CUNY Lehman College, ⁴Department of Earth and Planetary Sciences, Yale University

Introduction: For the past four decades the geosciences have consistently been among the least diverse of all science, technology, engineering and mathematics (STEM) fields [1]. This lack of diversity prevents racial equity and justice in the field [2] and has serious ramifications for scientific innovation and creative problem-solving [3]. Other STEM disciplines have successfully promoted diversity by forming research collaborations between research universities and minority-serving institutions (MSI) [4]. Following these efforts, we proposed and were funded to implement the “City University of New York (CUNY)-State University of New York (SUNY) Speedway” initiative. In the CUNY-SUNY Speedway, the Stony Brook University Department of Geosciences is partnering with the Department of Earth, Environmental & Geospatial Sciences at Lehman College, a Hispanic Serving Institution (HSI) that is part of the CUNY system. In general, smaller MSIs often lack laboratory facilities and resources needed to conduct research. Because research experience is often a major factor in STEM graduate school applications, this can inhibit the success of minoritized students in the graduate application process. The CUNY-SUNY Speedway will give faculty and students from Lehman access to Stony Brook facilities and instrumentation. The centerpiece of the program is a paid summer research residency at SBU for Black, Indigenous, and People of Color (BIPOC) undergraduates from Lehman and collaboration with their Lehman faculty advisors. **The ultimate goals of the Speedway are to facilitate collaborative research with an MSI and to encourage BIPOC students to apply for geosciences graduate programs.**

Path to Funding: The CUNY-SUNY Speedway program started as a Geosciences Equity, Diversity, and Inclusion (EDI) Committee proposal to Stony Brook University's Presidential Mini-Grant for Departmental Diversity Initiative (<https://www.stonybrook.edu/commcms/pres/minigrants/>). Under this program, modest funds (~ \$1- 4k) are available to start new projects and test ideas to promote diversity and inclusion. The Geosciences proposal focused on making the department's considerable laboratory analytical facilities available for free or at reduced cost to faculty and students from MSIs and/or historically Black colleges and universities (HBCUs).

The initial proposal, led by two of our authors (Rivera Banuchi and Holme) was ultimately not selected, but during a debrief with the Stony Brook Chief Diversity Officer, it became clear that an opportunity existed to leverage the proposal idea into substantially more funding than we initially proposed for, while slightly shifting the focus to providing MSI and HBCU students with high quality summer research experiences.

In parallel, another author (Cook), acting as Associate Dean for Research and Innovation in the Stony Brook College of Arts and Sciences, identified the Equitable Pathways Planning Grant from the Alfred P. Sloan Foundation (<https://sloan.org/programs/higher-education/diversity-equity-inclusion/2021-equitable-pathways-grantees>) as a potential opportunity for a partnership between a Stony Brook department and a complementary department at an MSI. The Sloan planning grants provide \$75k for internal reviews of existing barriers to student success and/or planning for future systemic change partnerships/collaborations.

CUNY Lehman College in the Bronx is an HSI and one of 17 MSIs in the CUNY system. It is relatively close to Stony Brook University via train, facilitating long term collaborations. Its Department of Earth, Environmental, and Geospatial Sciences is highly complementary to Stony Brook's Department of Geosciences, and Lehman's students are well prepared for research at Stony Brook. A collaboration was established after several conversations between authors Pant (Lehman) and Glotch and Cook (Stony Brook).

While preparing the proposal to the Sloan Foundation, we were able to successfully negotiate with Stony Brook's Chief Diversity Officer to contribute ~ \$32k in matching funds while the RISE2 node of NASA's Solar System Exploration Research Virtual Institute (SSERVI) contributed \$6k in matching funds. The matching funds were critical to our proposed research activities and demonstrated the commitment of Stony Brook to the CUNY-SUNY Speedway initiative.

Grant Activities: Our initiative includes one programmatic year during which we will plan a pilot program, execute the pilot program, and then pursue future external funding based on the pilot results.

Winter 2022. Five SBU Geosciences faculty and graduate students have agreed to serve as mentors for

the Lehman students during the Summer Residencies. Their research interests cover all of the core research strengths at Stony Brook: planetary science, geochemistry, geophysics/seismology, and mineral physics. Mentoring activities include, but are not limited to, research mentorship, academic advice, scientific writing and presentation guidance, and demystifying the academic “hidden curriculum” with particular emphasis on removing financial and cultural barriers to graduate school application. In February 2022, SBU faculty and Lehman faculty and students had two initial meetings in which the SBU faculty described the facilities available in the SBU Geosciences department and discussed potential research projects. These meetings served as recruiting trips for undergraduate students at Lehman. Faculty at Lehman are in the process of nominating their undergraduate students to the program. Throughout the pilot year, we will continue the faculty-faculty connectivity to explore mutual interests in research and strategies for attracting minority students in the field of geosciences.

Spring 2022. In early spring, COVID guidelines permitting, interested Lehman faculty and students will visit the SBU Geosciences department to see demonstrations of the equipment and laboratory capabilities available. In particular, Lehman faculty and students will visit the facilities that will be used during the summer residencies. In late Spring 2022, we will follow up on these discussions to finalize the summer residency projects. The Lehman and SBU faculty will collaboratively prepare specific plans for up to five undergraduate research positions. If COVID restrictions prevent an in-person laboratory demonstration, SBU faculty will prepare video demonstrations to further describe each project.

The faculty will determine which laboratory the undergraduates will join, what facilities they will use, a list of SBU faculty and students who will be involved in each project, the Lehman undergraduates who will assist with the projects, and a staffing schedule to ensure that the undergraduate researchers have sufficient supervision and mentorship.

Summer 2022. During the Summer Residency program, Lehman undergraduates will live on the SBU campus for 8 weeks while performing research in the SBU Department of Geosciences. Lehman faculty will also participate in short 1–2 week residencies, at their discretion. Students will have daily interactions with the faculty and student mentors in their assigned research groups and we will institute weekly meetings with the whole cohort of Lehman students and their mentors to summarize weekly progress, set goals for the coming week, address challenges and obstacles encountered, and to promote a positive culture of

community within the program. SBU will host a graduate school application workshop led by current graduate students and the Graduate Program Director to provide proactive guidance and clarification. At the end of the summer, the Department will host a research poster presentation symposium for the Lehman students and other summer undergraduate researchers to present their work to the department. This symposium will serve as practice for the students’ planned presentations at the annual American Geophysical Union Fall Meeting. The Sloan Speedway class of 2022 will participate in dialogues across the campus on what changes are needed—from how we recruit and select grad students to how we reward faculty work in areas of equity and access.

We know from previous research tied to Stony Brook grants focused on IDEA values and concepts, the critical role of identity, self-efficacy and a sense of belonging in creating an academic culture that values diversity, equity and inclusion. The model we propose for the Sloan Speedway integrates all of the best practices we have learned through these collective efforts.

Fall 2022. Following the summer research residencies, Lehman faculty and students, and SBU faculty will meet monthly to finalize research results and plan for conference presentations and publications. The faculty will also prepare an annual report of the pilot program to assess its outcomes, including the results of an end-of-summer survey and a report-out document from the dialogues hosted over the summer. In addition, during this semester, SBU and Lehman will identify sources of external funding support and will create specific timelines for the submission of proposals. Participating Lehman students will travel to the American Geophysical Union Fall Meeting to present posters on their work.

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References: [1] Bernard & Cooperdock (2018), *Nature Geoscience*, 11, 292–295. <https://doi.org/10.1038/s41561-018-0116-6>. [2] Haacker, et al. (2022), *Eos*, 103, <https://doi.org/10.1029/2022EO220080>. [3] Medin & Lee (2012), *Association for Psychological Science*, <https://www.psychologicalscience.org/observer/diversity-makesbetter-science>. [4] Stassum (2011), *American Journal of Physics*, 79, 374. <https://doi.org/10.1119/1.3546069>.