Creating Equitable Pathways to STEM Graduate Education

Grants up to $500,000 will be awarded to U.S. higher education institutions and organizations developing equitable pathways to STEM graduate education

Submission Deadline: July 1, 2024
Informational Webinars: April 18, 12:00-1:00pm ET   [Register here](#)
                                      May 9, 3:00-4:00pm ET   [Register here](#)

Background and Overview

The Higher Education Program at the Alfred P. Sloan Foundation is continuing its investment in Minority Serving Institutions (MSIs)[1] and in the establishment of partnerships between MSIs and graduate programs nationwide. Core to the mission of the Foundation is the belief that original research and education in science, technology, engineering, and mathematics (STEM) drives our nation's health and prosperity and necessitates the talent of our entire citizenry. Sloan's *Creating Equitable Pathways to STEM Graduate Education* grants will engage the expertise of MSIs—and the unique experiences of their faculty and students—to model effective systems and practices that remove barriers and create opportunities for equitable learning environments in STEM graduate education so all students can thrive. Grant awards will support sharing MSIs' institutional know-how on equitable undergraduate and graduate education, as well as modeling that know-how to create systemic changes that enhance pathways from MSIs to master's and doctoral degree programs in **astronomy, biology,**

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[1] The nation's more than 700 MSIs are designated by the U.S. Department of Education. There are seven types of MSIs: historically defined MSIs were established through Acts of Congress with the stated purpose of providing access to higher education for a specific racial minority group and include Historically Black Colleges and Universities (HBCUs) and Tribal Colleges and Universities (TCUs). Enrollment-designated MSIs are federally recognized based on student enrollment percentages and other criteria, and include Hispanic-Serving Institutions (HSIs), Alaska Native-Serving and Native Hawaiian-Serving Institutions (ANNHIs), Asian American and Native American Pacific Islander-Serving Institutions (AANAPISIs), Predominantly Black Institutions (PBIs), and Native American-Serving Nontribal Institutions (NASNTIs). In addition to these seven types, we further welcome submissions by American Indian and Alaska Native-Serving Institutions (AIANIS) and Institutions with High Hispanic Enrollment (IHHEs) as defined by the U.S. Department of Education. For more information, see: https://www2.ed.gov/about/offices/list/ocr/edlite-minorityinst.html

chemistry, computer science, data science, Earth sciences, economics, engineering, marine science, mathematics, physics, and statistics at partner institutions.[2]

Awards will also open pathways to students and faculty at partnering institutions to learn at and from MSIs and collaborate on systemic changes that have the potential for even broader impacts. While *Equitable Pathways* grants will directly fund activities that eliminate barriers to pathways between MSIs and their partnering institutions, Sloan is particularly interested in supporting partners that are committed to widening pathways to master's and doctoral degree programs in the covered fields for students from MSIs *and* from other colleges and universities that currently have weak, if any, pathways to STEM graduate education.[3]

We thus invite letters of inquiry (LOIs) for both new and the continuation of previously Sloan-funded projects that seek to dismantle systemic barriers and create sustainable MSI pathways to graduate education in the stated disciplines. Compelling LOIs will result in the invitation of a full proposal. Submissions of LOIs are due no later than July 1, 2024, by 5:00pm EDT.

Proposed projects may take multiple forms, including, for example, planning activities on MSI campuses that set the stage for new pathways between MSIs and graduate programs at partner institutions, which may be other MSIs or institutions with graduate programs in the covered STEM fields. Another example could be projects that establish or scale existing, mutually beneficial partnerships between undergraduate and graduate programs at two or more institutions.

In addition to establishing seamless pathways, projects need to address policies, processes, and practices that reinforce existing systems that are barriers to student access and success in graduate education. These projects could include efforts to examine or redesign graduate recruitment, admission policies and processes, mentoring practices, departmental climate, or other gatekeeping (or gateway) structures to and through STEM graduate education. **Since the barriers to equitable pathways do not end once students are admitted to graduate programs, the Foundation is looking for evidence that projects will promote and enhance existing efforts to reduce and eliminate policies, procedures, and institutional climates and cultures that prevent students from successfully attaining a graduate degree.**

The objectives of this funding program are to contribute to broad, pathway-opening aims by:

- Supporting the development and enhancement of educational pathways from MSI undergraduate programs to STEM master's and doctoral degree programs at universities across the country, including other MSIs;

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[2] The Foundation does not support the health sciences, biomedical sciences, or medical research. For more information, see https://sloan.org/grants/apply#tab-what-we-do-not-fund.

[3] Examples include community colleges and under-resourced colleges and universities that serve students who face systemic barriers to STEM graduate education.

- Supporting mutually beneficial partnerships between faculty and staff across such institutions for sharing know-how—particularly as a key component of a broader commitment to creating stronger and more sustainable relationships between MSIs and other institutions in ways that foster joint research, expanded professional networks, or capacity building to support MSI students in their pursuit of master's and doctoral degrees in STEM;

- Enhancing the quality of undergraduate STEM education and research experiences to create strong, evidence-based, and equitable systems that support the academic and non-academic preparation of MSI students as they seek admission, enrollment, success, and completion in STEM graduate programs;

- Enabling disruption of institutional policy, processes, and practices that perpetuate systemic barriers to STEM education pathways to graduate study and completion;

- Aligning each partnering institution's merit criteria for selection of graduate students and pedagogical approaches to support their success, with a mission to create diverse, inclusive, and equitable learning communities where all talented students can thrive;[4] and

- Laying the groundwork and creating models for long-term investment in equitable undergraduate-to-graduate education pathways by other foundations, government agencies, and higher education institutions themselves.

A key area of focus is supporting approaches to proposed partnerships that create systemic change in the departments and schools on each campus,[5] meaning approaches that not only remove barriers for individual students but that also change the culture and climate within the environments where students learn and work. These approaches may include changing the actions of STEM faculty and other gatekeepers so that they demonstrate an evidenced commitment to sustained and **mutually beneficial** partnerships with MSIs to create equitable pathways for all students.

Project Types

Grant Types and Amounts
Three types of grants will be funded:

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[4] STEM fields require creativity, collaboration, a diversity of individual experience-based perspectives, resilience, and leadership in the face of significant challenges. The excellence of the fields' contributions to society requires understanding and meeting the needs of an increasingly racially diverse society, in which race continues to affect opportunity, prosperity, and quality of life. Consequently, the content knowledge and empathy that create diverse, inclusive, and equitable experiences for all people are important—as are additional character qualities and skills that are relevant to success in these fields (e.g., for research, teaching, and contributions in industry). Any student may acquire such knowledge, qualities, and skills through their own formal scholarship, training, dedicated personal action (e.g., in volunteer service or dedicated learning), or lived experience and expertise (including their lived experience/expertise of race, ethnicity, or other influences).

[5] Read more about the need for systemic change in this Sloan-commissioned landscape scan that was co-authored by Posselt et al. here: https://sloan.org/storage/app/media/files/STEM_Higher_Ed/USC-Rossier-DEI-literature-review.pdf.

1. **Planning grants** to support two or more institutions to conduct internal reviews of existing barriers to student success and for analysis and planning for a future partnership(s) (up to $75,000 for up to 1 year);

2. **Seed grants** to two or more institutions that seek to formalize an existing partnership(s) and launch one or more pilot initiatives (up to $250,000 over 1-2 years); and

3. **Implementation grants** to two or more institutions that allow for the augmentation or scaling of existing partnerships/collaborations (up to $500,000 over 2-3 years).

We request only one LOI (from the lead institutional partner) per institution and only one submission per individual PI.

Eligibility
Institutions/organizations eligible as partners for the grant awards include:
- Nonprofit two- and four-year colleges and universities
- College and university systems or consortia
- Professional societies and associations (along with two or more partnering colleges/universities)
- University-affiliated research centers or laboratories

All projects must have at least one MSI partner. When two or more institutions are the proposed grantees, **it is preferred that the primary PI be housed at the MSI to create a direct connection between MSI expertise and project leadership.** All projects must also include a description of the full breadth of the partner institutions' broad, pathways-opening initiatives, which are integral to the design and objectives of the Sloan Foundation's *Equitable Pathways* initiative.

Planning Grants
Planning grants will support work between two or more institutions (one of which must be an MSI) that are seeking to set the stage for the establishment of a partnership or set of partnerships that engage and model the expertise of the MSI to yield systemic change, but which first require an assessment of the need and timing for partnership activities. Projects must demonstrate a clear roadmap to partnership through a well-defined set of planning activities.

Seed Grants
Seed grants will support work between two or more institutions (one of which must be an MSI) that are seeking to build upon or formalize an established partnership or set of partnerships by launching one or more pilot activities. These projects should include a plan to assess the viability and effectiveness of pilot activities.

Implementation Grants
Implementation grants will support work between two or more institutions (one of which must be an MSI) that are seeking to augment or scale an already well-established partnership or set of

partnerships. Such projects will have preliminary data or evidence of their effectiveness, or potential effectiveness, in widening educational pathways.

For all grant types, the cultivation of faculty-faculty research collaborations, beyond other core activities, are encouraged. We also welcome creative partnerships—such as those that include a business or industry partner, a nonprofit organization or association, or a federal research lab or other federal agency partner.

We encourage LOIs with multiple or co-PIs, with one PI's institution designated to receive the grant award and then issue subcontracts to the partner institutions. Because our funds are limited, we are requesting that no individual be a PI on more than one project (although a PI for one project may also be a co-PI on a second project). We have preference for projects where the lead PI holds an appointment at an MSI.

<u>Example Project Activities</u>
Awards will be considered for activities that include but are not limited to:
- increasing students' academic and research success;
- strengthening mentorship, sponsorship, and other student supports;
- encouraging faculty research and other collaboration across campuses;
- building sustained social and academic support networks for students;
- challenging and eliminating institutional norms, policies, and practices that advantage some students to the detriment of others; and
- dismantling systemic barriers to including all talent through transformative practices and policies.

We will be looking for evidence that institutions are simultaneously (in the proposed project or elsewhere) seeking to create or strengthen activities that disrupt systemic barriers to opening opportunities and supporting the success of all talent, including Black, Indigenous, and Latina/o/e students and others who face disproportionate barriers in graduate education. These activities may include (but are not limited to) new or existing efforts to change graduate admissions policies, recruitment/outreach, teaching, curricula, research, advising, mentoring, and teaching/research assistantship funding and other forms of student financial support.

The following are some **examples** of the types of activities that we envision supporting through these grants:

- The development and implementation of "bridge programs" between partnering MSIs and graduate programs. Through these programs, an MSI would share its exemplary models for measuring and enabling student promise with its partners, who would then adapt them to redefine the merit criteria and systems for traditional STEM graduate admissions and on-campus support programs. As noted in a 2020 study by Tannenbaum et al., such bridge programs approach "student admissions with rigor and selectivity but [take] a different lens to the indicators that best predict success. A common thread [is] their attention to students who have demonstrated self-determination, persistence, and taken intellectual risks, as

demonstrated less by GRE test scores and overall GPA, but of academic growth over time, of overcoming hardships in and out of school, and of taking courses that challenged their thinking and skills."[6]

- The creation of formal structures (e.g., dual-degree programs) that open pathways to graduate programs by allowing MSI students to apply to both institutions using a single co-created application and, if accepted by both under shared criteria (under which each student is individually assessed), receive a bachelor's degree from their home institution and a graduate degree from a partnering institution. These programs would correspondingly provide opportunities for students of the partner institution to earn bachelor's degrees at their home institution and graduate degrees, if offered, or other learning opportunities at the MSI. Such programs—which require collaboration of faculty at both institutions to design coordinated program selection criteria, pedagogy, and content—benefit the education programs of both institutions and their faculty and students.

- Cross-institutional support for students through the creation of formal mentorship and sponsorship programs and activities that involve research exposure or training. This support may include team mentoring approaches that consist of more than one faculty member, one or more professional staff members, and near-peer/peer mentors.

- Faculty relationship-building and collaboration across institutions, both in terms of joint research activities (especially research that can include student participation) and joint course design and course offerings. These efforts may include dual-enrollment opportunities for students between institutions. They may also include the establishment of visiting researcher positions across partner institutions, labs, or industry for a specific period of time where faculty can gain exposure to new approaches to research, teaching, and student mentorship and sponsorship.

- Cross-institutional summer and academic-year outreach programs that invite students to engage in research and other academic experiences that prepare them for graduate study. Such programs may also include advising and mentoring on preparing the most competitive application for graduate admission.

- Collaborative curricular development that increases the availability of courses to MSI students who come from institutions with gaps in course offerings and prepares them for a graduate school trajectory, or the transformation of existing curricula at partner institutions to ensure that it reflects more equitable, diverse, and inclusive content and pedagogy. Contributions to such curricular development by MSIs provide benefits to students at all institutions participating in or benefiting from the broader impacts of the Sloan program.

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[6] See: https://www.understandinginterventionsjournal.org/article/17908-who-can-succeed-how-bridge-to-the-doctorate-programs-are-changing-the-conversation-around-admissions-practices-in-stem

- Student support networks dedicated to individual or small groups of students so that each student has a cadre of trusted advisors and advocates to whom they can turn when (or before) academic, social, and financial pressures become barriers to success.

- Design and implementation of programs and policies that ease the pathway from undergraduate to graduate education, such as the streamlining of admissions practices. This effort may include funds for cross-institution faculty development and training, as well as cross-institution student engagement.

- Intensive, hands-on laboratory experiences and mentorship across partnering institutions or in business or industry labs that increase students' skills and confidence as STEM researchers—as well as corresponding experiential learning opportunities at MSIs for students of partnering institutions.

- Redesigning institutional or departmental policies and practices around areas such as outreach and recruitment, admission, mentoring, and advising, with exemplary MSI designs as models, so as to strengthen the pathway from MSIs to graduate programs and to support the success of MSI students and all students who attend institutions participating in these programs.

- Explicit attention to the need for changes in departmental, school, college, and institutional policies, practices, and leadership that ensures a culture and climate that is diverse, inclusive, and equitable, benefiting all students.

Partnership Structures

Proposed partnerships between two or more institutions are expected to demonstrate many of the following characteristics:

- Clear evidence of planned or existing collaboration among STEM departments, programs, or schools in ways that are mutually beneficial across all parties—with the MSI, as the expert in creating equitable educational experiences, taking a lead role in defining the project strategies, policies, and interventions.

- A strong commitment from institutions to provide the necessary support for participating students, ensuring that project activities reflect principles of *intentionality*.[7]

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[7] According to a report from the National Academy of Sciences, *intentionality* is a calculated and coordinated method of engagement used by institutions, agencies, organizations, and the private sector to effectively meet the needs of a designated population, in this case within a given higher education institution. Intentionality drives the creation of programs, practices, and policies that are tailored to recognize and address student differences across multiple dimensions: academic, financial, and social, and to do so with cultural mindfulness. Intentionality takes into account student needs, as well as student strengths and attributes; in other words, students are not viewed as problems to fix but talent to cultivate. (National Academies of Sciences, Engineering, and Medicine. 2019. *Minority Serving Institutions: America's Underutilized Resource for Strengthening the STEM Workforce*. Washington, DC: The National Academies Press. doi: https://doi.org/ 10.17226/25257.)

- Customized interventions and supports based on students' backgrounds, needs, and social, cultural, and financial circumstances; this approach may include financial support for undergraduate and graduate student participants.

- A commitment to data collection, analysis, and reporting to evaluate the efficacy of the project.

- Potential to secure additional financial support and in-kind contributions from other funding sources (e.g., federal agencies, private philanthropies, institutional support) to sustain the initiative once Sloan Foundation support expires.

- Evidence of support from institutional leadership, including, but not limited to, the provost, academic deans, and department chairs.

PI Eligibility

Lead investigators from submitting and partner institutions should be at the full, associate, or assistant professor level, a department chair, or in an administrative role with high connectivity to academic positions. Such individuals should come from nonprofit two- or four-year institutions, or organizations that serve higher education professionals or institutions.

Submission Timeline and Instructions

Submissions should be submitted electronically via https://apply.sloan.org/prog/2024_equitable_pathways/ no later than July 1, 2024, by 5:00pm EDT.

Decisions will be announced by late August. If invited, full planning and seed grant proposals will be due October 4, 2024. Implementation grant proposals will be due November 1, 2024. Planning and seed grant projects can start as early as January 1, 2025, while implementation grant projects can start April 1, 2025.

Submission Components and Instructions

Complete submission packets must include the following components as indicated at https://apply.sloan.org/prog/2024_equitable_pathways/.

1. **A 1-page Sloan Foundation Proposal Cover Sheet**, summarizing key project details. **Implementation grant projects should have a proposed start date of April 1, 2025, while Planning and Seed grant projects should have a proposed start date of January 1, 2025**. The Cover Sheet is available at https://sloan.org/proposal-cover-sheet.

2. **A Letter of Inquiry 5-7 pages in length (excluding budget table, budget justification, references, and PI CVs), in 11-point font, double-spaced.** Submissions should address the following questions, with the below categories serving as section headings and the questions serving as guidance for what to address in each section. **The bulk of the LOI (approximately 3 pages) should be devoted to project activities.**

a. **Significance**
   i. What is the specific problem or problems the project is aiming to solve on your campuses or through your organizations—and how do you know these are problems?
   ii. How are the problems rooted in systemic practices, policies, standards, and cultural norms (e.g., within institutions, disciplines), and how does that inform your approach?

b. **Project Activities**
   i. What is the nature and scope of the planned activities for the proposed project? Please indicate which activities are new and which are continuing. Also include which individuals/institutions will be primarily responsible for each set of activities.
   ii. How do you know these activities are the right activities for addressing the stated problem?
   iii. How are these activities new or innovative for your institution or institutional context?
   iv. How are your activities not only seeking to eliminate barriers to opportunities for individual students, but also to transform the environment and culture to better serve such students over the long term—beyond the life of this project?
   v. How will you know if the project is successful?

c. **Project Team**
   i. How is the project team well-suited for this project and for the level of collaboration being proposed? Why is this team the right one?

d. **Partnerships**
   i. What is the history of collaboration with participating institutions, or with MSIs at large?
   ii. How will the project ensure mutual benefits across the participating institutions?

e. **Additional Sources of Support**
   i. What other sources or networks of support can the project leverage to ensure its success?
   ii. What other financial resources might the project leverage to ensure its sustainability?

For previous or current Equitable Pathways grantees **ONLY**, please also attach no more than 1-2 pages (these do not count against the overall page limit) outlining:
f. **Project History**

<ol type="i" start="1">
What successes stand out, how did you evaluate them, and what were the main factors that directly contributed to these successes? How will you build upon them if funded again?
What barriers or challenges has your team faced and how have or will you overcome them?
How has your project fulfilled Sloan's aim to eliminate barriers that affect pathways to STEM graduate degrees for MSI students?
How has the project ensured mutual benefits across the participating institutions? How will it continue to ensure mutual benefits moving forward?
Anything else you'd like to share that is pertinent to the proposed project?

<ol start="3">
A draft Budget Table and Budget Justification for the proposed project, with sub-awards to collaborating institutions indicated where appropriate. The budget table document is available on the forms section of the Sloan website: <u>https://sloan.org/grants/apply#tab-grant-forms</u>. The Budget Justification (1-2 pages) should provide additional detail on expenses cited on the budget form (i.e., how the proposer arrived to these numbers). Please align your headings in the budget justification with those in the budget form.

Allowable expenses will generally include:
<ol type="a">
For faculty: salary plus benefits for time spent on project or for course buy-out.
For administrative support staff: salary plus benefits based on project time commitment.
For graduate students, postdoctoral researchers, or undergraduate students: salary/stipend plus benefits based on project time commitment.
Program expenses: mentorship activities, conducting collaborative research, faculty training, advisory committee honoraria, participant stipends, and other expenses.
Workshop and research expenses: travel, meals, lodging, conference fees, room rentals, speaker stipends, audio-visual equipment, dissemination, and other expenses.
Indirect overhead expenses, capped at 20% of direct costs.

<ol start="4">
References/Bibliography List (no more than 2 pages)

<ol start="5">
Brief CVs of key project leads and personnel (no more than 2 pages per person)

Review Process

Sloan Foundation staff and advisors will review LOIs in July. As part of the assessment of LOIs, reviewers will be focused on six key categories: (1) evidence of true partnership, (2) activities being rooted in prior research/practice, (3) team qualifications and makeup, (4) likelihood of being sustained beyond Sloan funding, (5) evidence of systemic change approach, and (6) likelihood of success.

Questions about the call for LOIs can be sent to <u>dei@sloan.org</u> with the subject line, "Equitable Pathways."

Equitable Pathways Partnership Program Learning Community

Equitable Pathways grantees are expected to join the **Equitable Pathways Partnership (EPP) Program** community of learning and practice. Funded by Sloan, EPP is an initiative of the [American Association for the Advancement of Science](#) (AAAS) and is designed to amplify grantee strengths, bridge potential gaps, and reduce barriers to success. Grantees work together to co-create solutions, share relevant knowledge and insights, cultivate equity-minded perspectives, and build capacity within and across project teams.

Housed within the [AAAS SEA Change](#) initiative, the EPP community provides grantees with evidence-informed resources through expert-led sessions, seminars, and workshops. Grantees convene on a regular basis through:

- **Quarterly Cohort Sessions**–where participants share progress, address pain points, exchange ideas and insights, and connect with other teams during a facilitated discussion within their respective cohort.
- **Monthly Share, Solve, and Learn Sessions**–where participants discuss barriers and promising/best practices, as well as insights around a specific content area (e.g., student training, institutionalization of initiatives, funding, and succession planning).
- **Annual In-Person Meeting with SEA Change Member Institutions**–where AAAS hosts a joint in-person meeting between EPP grantee teams and SEA Change member institutions to strengthen relationships between the teams, catalyze information sharing, and discuss MSI-related topics.
- **Expert Designed and Customized Courses**–where EPP teams have access to SEA Change live courses addressing relevant topics such as grants management strategies and other best practices.

Equitable Pathways grantees also have access to the AAAS [SEA Change Community](#), comprised of institutions who are committed to sustainable systemic reform to advance DEI efforts at their respective institutions, and the many related resources including SEA Change Institute courses and in-person events. The time commitment for engaging in the EEP is an **average of 2 hours/month over a 12-month period.**

About the Alfred P. Sloan Foundation

The Alfred P. Sloan Foundation is a nonpartisan not-for-profit, grantmaking institution dedicated to improving the welfare of all through the advancement of scientific knowledge. Established in 1934 by Alfred Pritchard Sloan Jr., then-President and Chief Executive Officer of the General Motors Corporation, the Foundation makes grants in four broad areas: direct support of research in science, technology, engineering, mathematics, and economics; initiatives to increase the quality and diversity of scientific institutions and the science workforce; projects to develop or leverage technology to empower research; and efforts to enhance and deepen public engagement with science and scientists.

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