Panel Session Summary and Recommendations from ***Best practices for recruiting, retaining, and supporting graduate students from MSIs***

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Best practices for recruiting, retaining, and supporting graduate students from MSIs was part of the [18th Annual PREM Meeting, Dec. 8, 2023](). What follows is a summary of and recommendations from the session.

Session Description from the PREM Meeting Program

Best practices for recruiting, retaining, and supporting graduate students from MSIs

This panel will explore topics around recruiting, retaining and supporting graduate students who earned their undergraduate degrees from minority serving institutions (MSIs). Panelists Andrea Marcano (PhD candidate at Massachusetts Institute of Technology), Deliris Ortiz, PhD (University of Akron; starting a postdoctoral fellowship at University of Michigan-Ann Arbor), and Idalia Ramos, PhD (PREM PI, Prof. of Physics & Electronics at UPR-Humacao) will share experiences and expertise to seed this discussion on broadening participation and student flourishing in STEM graduate programs. The panel will be moderated by Kristin Field, PhD (Education Director for the Penn NRT Soft AE Program).

Summary and Overview

After an introduction to the University of Pennsylvania's [Soft AE Program](), which is a National Science Foundation Research Traineeship ([NRT]()) and the NSF Supplement that supports new engagement of the Soft AE Program at Penn with the Partnerships for Research and Education in Materials ([PREM]()) at University of Puerto Rico, the panelists introduced themselves with brief slide presentations. Despite the range in the panelists' stages in their careers (PhD Candidate to starting Postdoctoral Fellow to seasoned researcher and PREM PI), commonalities in the introductions included: growing up in rural and small communities with low formal education and high poverty levels, pivotal opportunities and mentors that encouraged them to travel far from their communities of origin for educational and research opportunities, and pride in their roots and deep commitment to providing opportunities for the younger generation of students interested in STEM careers.

Recommendations

Responses from the panel to questions about the recruitment, retention and support of students who come from minority-serving institutions (MSIs), as well as comments and perspectives from the audience, brought up observations and recommendations that included:

<u>At the Program- and Institutional-level</u>

- Undergraduate Programs: De-stigmatizing and normalizing lighter academic loads can be helpful to students who have the ability to do all of the classwork, yet might need more time or foundational background to do well. This would also allow additional time to gain meaningful research experience as an undergraduate. Although this could lead to potentially longer degree program durations, it could increase competitiveness of applications for and success in graduate programs.

- Graduate Programs: Supportive grad advisors and program administrators are key to minoritized student success; working with the students to find academic resources to help them if they are struggling can make critical differences in retention and success.

- Recruiting undergraduates to graduate school: Recognition that students may have strong research interests and abilities, even if academic course performance is unimpressive or uneven. For some undergraduate students from MSIs, academic performance issues are tied to external, sometimes unforeseen and extreme circumstances (e.g., Hurricane Maria), or external, less extreme, but chronic infrastructure and other challenges that students from non-MSIs may not experience through their undergraduate degrees.

- Recruiting undergraduates to graduate school: Proactively seeking out students at MSIs and making them feel wanted, welcome and that they would find a good fit at your institution.

- Pivotal to developing/sustaining undergraduate students in STEM: Engaging students in research very early in their undergraduate degrees (or high school).

- Pivotal to developing/sustaining undergraduate students in STEM: Curating and training the mentors of undergraduates (e.g., Research for Undergraduate programs that host undergrads from MSIs); quality and connection of mentors to students will have tremendous effect undergraduate students' abilities and desire to stay in STEM.

- All levels – recruitment & retention: Flexibility and accommodation for diverse backgrounds and circumstances can be seen as enabling nascent talent to develop (inclusion), rather than lowering STEM standards (maintaining exclusivity).

- All levels – recruitment & retention: Development of a culture and mindset that respect what minoritized students bring to the institution and work to eliminate negative assumptions (e.g., students' skills, experience, etc. are deficient). The mindset with which programs, which are meant to recruit and retain students from MSIs, are delivered sometimes can be sending counter-productive messaging (e.g., condescension or pity).

- All levels – recruitment & retention: Seeing a diversity of phenotypes among those involved in STEM (leadership, faculty, grad students, mentors, etc.) contributes to students' perceptions that they can contribute and belong in STEM.

At the Individual-level

- Undergraduate students: Persistence through rejection and failure is important when applying to REU programs, graduate programs, and pursuing a graduate degree.

- Graduate students: Recognition of when to ask for help and to express this early enough so that supportive faculty or administrators can work with the student to troubleshoot.

- Faculty, Administrators, Mentors: Recognition of everyone's need to feel supported and respected for who they are, and sensitivity to the observation that minoritized students may place special priority on feeling part of a community will help retain students from MSIs. Being aware of one's own assumptions about students from MSIs and aiming for interactions with students that do not convey pity, charity or condescension, and engaging with *all* students equitably can help minoritized students feel respected and like they belong in the program like any other student.

At the Agency-level

- Incentives and policies to support minoritized students and MSIs: Although quantification of demographics may be a starting point, focus for institutions should be quality of support and programming for the minoritized students and successful outcomes for those students; funding agencies should try to evaluate quality of "Minority-Serving" Institutions to try to facilitate funding going to institutions that are actively supporting those students; a minimum demographic threshold of minoritized students allowing an institution to be categorized as an "MSI" should not be the only criteria for getting funds.