The STEM Transformations and Advancing Retention Program for Underrepresented Students at the Undergraduate-Graduate Transition

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The Sloan STEM Transformations and Advancing Retention (STAR) program aims to increase diversity, equity and inclusion in geochemistry, the geosciences, and related fields by creating and sustaining equitable pathways to graduate education for Black, Latin/a/e/o and Indigenous students at Rutgers, The State University of New Jersey. The initiative is funded by the Alfred P. Sloan Foundation and led by Rutgers-Newark, a Hispanic Serving Institution (HSI), in collaboration with Rutgers-New Brunswick, a predominantly white institution (PWI). Over 8-weeks in the summer, undergraduate and graduate students from both campuses become Sloan STARs, participating in a near-peer mentoring and workforce development curriculum. STARs form undergraduate-graduate mentoring teams to share strategies for persistence, resilience and academic success; and network with scientific professionals, who also identify with underrepresented groups, through panels and workshops that explore career pathways and opportunities. Field trips facilitate engagement with citizens and communities and emphasize the role of the geosciences in addressing environmental and climate challenges and the benefits of the discipline to society. For undergraduates, the graduate school application process and experience is demystified through conversations with their graduate mentors and graduate program directors from a range of relevant departments. The first two iterations of the program in Summer 2022 and 2023 supported a total of 22 undergraduates and 11 graduate students. Assessment focused on social psychological and academic and professional measures prior to and upon completion of the Sloan STAR program. Results revealed psychosocial benefits for both undergraduate and graduate students, with increased belonging, identity, self-efficacy and interest in the geosciences. Students also showed gains in understanding of graduate school and professional careers, and intent to pursue short and long-term goals such as completing a geoscience major and attending and completing graduate school in the geosciences. Sloan STAR alumni have persisted in the geosciences and related fields, and several undergraduates have transitioned to graduate school. Overall, the Sloan STAR program leverages cohort building and shared resources to boost student recruitment to graduate school and their retention and success in graduate programs. The result is an increasingly diverse geochemistry, geoscience and STEM workforce.