

Getting Support from Colleagues; Graduate Student Retention

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We discussed several challenges faced by proponents of undergraduate research. The first challenge brought up was the difficulty some mathematics faculty have had with poor judgments by non-mathematicians on internal grant funding committees. At one school in particular, a good mathematics proposal was not funded, whereas in a different year, a much weaker proposal was funded. Several viable solutions emerged from the resulting discussion. One is to make sure that a mathematician is on the school-wide committee that determines grant funding. Another is to stress applications in the grant proposal. For example, if the research is on algebraic number theory, then the proposal should mention that the National Security Agency uses number theory for encryption and code breaking. Finally, one could include an explanation of what mathematics research is in the proposal in order to educate the non-mathematicians (see the MAA CUPM report on Mathematics Research by Undergraduates for ideas, www.maa.org/cupm).

We also discussed the challenge of getting more faculty on board with undergraduate research. Most agreed that in order to get more faculty on board, it is important to have institutional buy-in. To this end, participating in undergraduate research should be linked to rewards and promotion. At doctoral granting institutions, graduate students should be brought in on undergraduate research projects, so that they will begin their faculty careers primed to lead undergraduate projects.

Our third challenge involved helping students have better success in persisting in their graduate studies. One participant pointed out that a large percentage of mathematics graduate students drop out before receiving a doctoral degree. Some participants felt that this was because there is such a different level of challenge in the undergraduate and graduate levels. Many felt it would be good to have more summer programs for students between their senior year in undergraduate studies and their first year in graduate studies. Currently, there are few opportunities available for such students; for example, all NSF-funded REU programs explicitly

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disqualify this group of students. Some programs, such as PCMI, the IAS Mentoring Program for Women, and the Director's Summer Program at the NSA, are targeted to undergraduates but are also open to students between the undergraduate and graduate level. Other national programs, such as EDGE and Nebraska IMMERSE, are specifically designed to help this group make a successful transition from undergraduate study to graduate study. There was not agreement on whether or not there should be more NSF-funded programs like these available for graduate school bound students. Many faculty members at the meeting expressed that they felt that students who were already committed to attending graduate school really did not need NSF support for their summer. They felt that the institutions themselves should provide a transitional program, as they deemed it necessary. Some schools, including the University of Virginia and the University of Iowa, already offer summer courses for their incoming graduate students. Finally, we also discussed the difficulty of recruiting minority students into the mathematical sciences, but by the time we got to this important point, time had run out.