

Involving Undergraduates in Research: Motivations and Challenges

Panel Moderator

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In the United States, one of the main objectives of the National Science Foundation (NSF) is the encouragement and support of undergraduate involvement in hands-on research projects. An early exposure to actual research practice can help these students more quickly and effectively grasp the principles and goals of research in general.

In keeping with this objective, the NSF has created two mechanisms: REU (Research Experiences for Undergraduates) sites and REU supplements. Each REU site must specify a common research focus (drawing from one or possibly more disciplines), allowing groups of students selected nationwide to participate in a research project typically over an eight-week or ten-week summer program. An REU Supplement supports one or two undergraduate students to take part in a new or existing research project funded by the NSF. Other countries have created similar programs with the same objective – encouraging the engagement of undergraduates in research.

This panel provides a forum for participants drawn from academia, industry, and government agencies to exchange ideas and experiences on the enablement of undergraduate research. Suggested panel discussion topics include, but are not limited to:

- Exciting research developments that will attract undergraduates
- Types of research projects best suited for undergraduates
- Resources and methods to provide undergraduates with the background knowledge necessary to conduct research
- Effective preparation of students to conduct an adequate literature search and compile an annotated bibliography
- Motivators for undergraduates to pursue research interests
- Metrics for student progress and success
- Challenges associated with integrating undergraduate and graduate research
- Recruitment of students from under-represented groups
- Advantages and disadvantages of the one-on-one student/mentor research model versus cooperation between a diverse group of faculty and undergraduates
- Methods to prepare students to write technical papers and give research presentations
- Appropriate venues for publishing undergraduate students' research work

Each panelist will first give a 5-minute presentation reporting their experience in conducting research with undergraduate students and the challenges they have faced, discussing the lessons they have learned, and identifying the improvements which they would like to see. We will then open the floor to the audience to hear their concerns and comments on introducing undergraduates to research. Special attention will be given to the opinions and observations from the perspective of the student panel attendees.