Want to Inspire Science Students to Consider a Research Career? Host a Scientist in Your Classroom

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INTRODUCTION

Most biology students have limited exposure to research since this is not a public activity and the pace of science does not lend itself to television dramatization. In contrast, medicine is the subject of numerous TV shows, and students’ experience visiting doctors may lead them to think they want to become physicians. One effective way to encourage these students to consider a research career is to invite engaging scientists to speak about their career paths and lives during class. Students are most likely to be influenced by people they consider to be like themselves. While this method is well-suited to a lecture format where the scientist can address a larger audience, the laboratory would also be appropriate.

PROCEDURE

Choose one or two engaging scientists who in some way reflect the background of the students in your biology or microbiology class. Factors to consider include gender, ethnicity, or whether they may be the first in their family to graduate from college. It is important to choose scientists who are able to draw the students into the talk and get them to participate. Effective ways to locate such scientists are through networking within your professional organizations, through speaker’s bureaus (at universities or scientific societies) or by personally hearing someone speak. Approach the scientists about their willingness to participate and be as flexible as possible with regard to schedule. The talk should be informal and encourage questions and discussion. The scientists need to be told that more than half of their time should be spent talking about their career path and a more personal view of why they love science. This is unusual in that scientists are often asked to present their work or give a general overview of careers in biology or microbiology. The session(s) should be videotaped for students who miss class.

After hearing the speaker, the students will assimilate their experience as they write reflective papers due at the beginning of the next class period. Reflective questions are given to the students in advance that ask for their opinions regarding the speaker’s career path, personal attributes, research, etc. This assignment will make the student reflect on their own path and where it may lead. The amount of credit given for this paper is up to the course instructor, but it should motivate students to complete the assignment.

CONCLUSION

This tool was used in a Microbiology Lecture class of twenty-seven students. Informed consent was obtained for all students and this project was exempted from review by the St. Edward’s University Human Subjects Review Board.

Seven speakers (including the author) addressed the class, including four females and three males. Additionally, the ethnicity of the scientists included four Hispanics, two Caucasians and one African-American. Three different modes of interaction were used: four scientists spoke to the class in person, while two used a videoconference and one a videotaped self-interview. Each student wrote a reflective paper on each scientist soon after hearing him or her speak.

In order to determine which speakers had the most impact on each student, a final reflective paper was assigned in which they focused on the two scientists they considered most influential. These were analyzed to determine the importance of gender, ethnicity, and mode of interaction. Gender appeared more important for males than for females since no male student chose two females for the final reflective paper; while one female did select two males. The scientists’ ethnicity appeared to be important for both Caucasian and Hispanic students and all students were much more likely to be impacted by those who addressed the class in person.

In order to determine the overall impact of the speakers on the students’ consideration of a research career, a question was asked to students in the class with speakers and also a control class that was not exposed to speakers via an online anonymous survey (see Fig. 1). Although the number of students in each class was in the twenties, it does appear that the speakers had a positive impact on student career considerations. It should be noted that some students in the control class indicated that their experiences in laboratory made them more likely to consider a research career resulting in a spike in the figure and showing that many factors can influence such a decision.

Much progress has been made in advancing the role of women and others underrepresented in science but these groups still lag. Women have reached parity with regard to...
the choice of a science major and are approaching equality in advanced schooling but not in employment (1, 2). Women in academic careers are less likely than similarly qualified men to be in a tenure track position, and those in such a position are likely to be more junior in rank than their male peers (3). Of those employed at the doctoral degree level, seventy-five percent are white, while black and Hispanic scientists are 3.5% and 3% of this group, respectively (4). Accordingly, finding role models that mirror the diversity of undergraduate classrooms will be challenging, but the data from this project suggest that these role models will have a great impact.

While the story each scientist told was unique, there were some recurring themes in their talks. These included the importance of having mentors, the overcoming of obstacles and how the scientists' personal lives have enriched and impacted their research lives. The scientists explained that in a research career they could not predict exactly what their research topic may be or where they would do research in the future. They emphasized, however, that being mentored and enjoying the challenge of their research were important.

Students commented that they were happy to hear what life is really like after college and suggested that two speakers would be the optimal number for a semester. They also enjoyed hearing about the scientists as human beings, with one student commenting that he and a speaker had a similar sense of humor that he attributed to their both being Hispanic. Writing about the two speakers that most influenced him, another student summed up the entire point of this tool by saying: “Their decisions lead me to believe that there are other great opportunities besides medical school and I need to make sure I explore all of my options before finally settling on a career.”

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REFERENCES


FIGURE 1. Compared to the beginning of the semester how likely are you to consider a research career?