B151 Developing an Undergraduate Research Program in Forensic Science: The Cedar Crest College Experience

Lawrence A. Quarino, PhD, Cedar Crest College, Department of Chemical and Physical Sciences, Allentown, PA 18104*

After attending this presentation, attendees will understand the reasons for developing a student-based research program in an undergraduate forensic science program and the resources needed for implementation.

This presentation will impact the forensic community and/or humanity by fostering the belief that undergraduate forensic science research programs are a benefit to the profession because they help students develop skills necessary for success as future practitioners of the field.

Traditionally undergraduate academic forensic science programs have not placed a large emphasis on student research in their curriculum. This may be due to a lack of resources and faculty, inadequate time and space available in undergraduate schedules, a preference of faculty for graduate student research, and a belief among faculty that undergraduates have little interest in research. Additionally, many feel that since forensic science is an applied science, the goals of undergraduate forensic science education are not well served by independent student research. Despite these problems and beliefs, the undergraduate forensic science program at Cedar Crest College has made student research a central part of its academic program. Student-based research programs have been a cornerstone of other under- graduate science programs at Cedar Crest and have long achieved positive student outcomes.

The establishment of a coherent and structured undergraduate forensic science program can foster future success as a forensic science professional in a variety of ways. A meaningful research experience can serve as a preparation for graduate school where student research has a more tradi- tional role. Research also tends to bring many of the concepts learned in the classroom together in a coherent fashion and gives these concepts more meaning to the student. Under proper faculty guidance, research can develop critical thinking ability, problem-solving skills, and an ability to evaluate data through statistical measures. Furthermore, student research fosters both independence and learning to work as part of a team. Research can create a vehicle by where students can contribute to the profession while still students by offering the possibility of presenting original research at professional meetings or publishing in peer reviewed journals. Finally, research creates an appreciation of forensic science literature and the intellectual curiosity and creativity necessary to address the scientific needs of the forensic science community.

The undergraduate forensic science student research experience at Cedar Crest encompasses four semesters during the student's junior and senior year and is required of all students in the program. The first semester is spent formulating a research proposal under the guidance of a faculty member. Many of the projects available to students are part of on-going research that requires several years to complete. In addition to reviewing the literature relevant to the project and providing an experimental design, students are required to submit a budget for the project. The second and third semesters are spent performing laboratory work. During these two semesters, students are required to attend weekly research meetings and to give three presentations each semester to the forensic science research group, which includes both faculty and students. Research performed during the second semester (spring semester, junior year) and the third semester (fall semester, senior year) still allows adequate time for the sub- mittal of an abstract to a professional meeting for presentation at the meeting while the student is still matriculated. The fourth and final semester is spent writing a manuscript (Journal of Forensic Sciences format required) and presenting the work in a seminar fashion to students and faculty. First, second, and final drafts of the manuscript are submitted according to schedule. The two-year student research experience does require resources and time. Faculty are allocated contact hours to deal with student research and funding for research projects is budgeted annually as part of the normal operating expenses for the program. In addition, outside funding is being solicited. Success does depend on the commitment of faculty, students, and administration.

Student outcomes of the research experience have been successful. Under the structured format and with guidance from faculty, students do achieve research goals, finish projects, and present their findings in the manner expected of a professional. During the four years the research requirement has been in place, students have given 8 presentations at pro- fessional forensic and other science conferences. In exit interviews con- ducted of graduating seniors in the past three academic years, 41% stated that the research requirement was the most rewarding facet of their under- graduate education. Of the program's graduates in the past three academic years, 41% are in or have been accepted into graduate programs in either forensic science, forensic science-related or other science programs and 35% are employed in forensic science or other science laboratories.

Undergraduate Education, Student-Based Research, Forensic Science

 ** Presenting Author*