B153 Forensic DNA Research and Teaching at San Jose State University: Establishing Partnerships in Academia, Biotechnology, and Government

Steven B. Lee, PhD, Forensic Science, Justice Studies Department, San Jose State University, One Washington Square, MacQuarrie Hall 521, San Jose, CA 95192*

After attending this presentation, attendees will understand the types of forensic DNA Research and teaching strategies being utilized at San Jose State University. Also the attendees will learn creative ways to establish partnerships in Academia, Biotechnology, and Government to support their forensic DNA research and teaching programs.

This presentation will impact the forensic community and/or humanity by making forensic science educators aware of new programs being offered at SJSU. In addition, descriptions of teaching strategies in forensic DNA will provide educators and also criminalists conducting DNA casework new methods of presenting molecular biology concepts. Finally, forensic science administrators at both educational institutions and crime laboratories will become aware of funding sources for forensic DNA research and education.

Forensic science has gained widespread popularity among students of all ages and backgrounds. Both science and non-science majors are attracted to forensic science classes and programs at nearly every educational level. Programs in forensic science are rapidly being developed to accommodate the increase in interest. Among them are two new programs developed at San Jose State University.

In Fall 2003, San Jose State University announced the approval of two interdisciplinary BS degrees in forensic science: Justice Studies with Biological Forensic Science and Chemical Forensic Science emphases. Although the program is relatively new, there are already 3 faculty members at SJSU in Justice Studies and Biology that have working expe- rience in forensic science: a forensic molecular biologist, a forensic ento- mologist and a forensic pathologist. Furthermore, the department has also just submitted a request for a new forensic chemistry tenure-track position.

The goals of the programs are to provide a foundation of core scien- tific knowledge coupled with effective analytical and problem-solving skills and an understanding of key criminal and legal issues. The programs aim to prepare students for entry-level positions in crime laboratories, graduate school or science careers.

The degrees consist of 24 credits of JS courses including forensic science and criminalistics, 36 of core science prep courses including bio- chemistry, statistics, general chemistry, organic chemistry, quantitative analysis, and physics, and 24 biology emphasis or 26 chemistry emphasis credits. Upper division electives are required for each major (minimum of 6 or 4 credits) along with 39 credits of general education and 2 PE credits. Total credits required for the BS in biology are 128 semester units, and for the BS in chemistry are 131 semester units.

Establishing a research and teaching program in forensic DNA requires significant resources and support. Academic grants, biotech- nology donations and government collaborations have been leveraged to establish the undergraduate forensic programs at SJSU.

This report will provide an overview of the forensic science biology and chemistry programs. In addition, some of the current forensic DNA undergraduate research projects will be described. They include 1) Development of a Y Alu-based rapid screening kit using molecular beacons for sexual assault evidence, 2) Comparison of DNA archiving strategies and 3) Evaluation of DNA recovery from different plastic storage tubes.

A compilation of innovative approaches, activities and teaching tech- niques that engage the students through hands-on, inquiry-based learning and critical thinking activities that have been developed for both under- graduate and graduate courses will also be discussed. Finally, a brief description of the partnerships and funding strategies that have been leveraged to establish the program will be provided.

Although the program is fewer than two years old, enrollment has more than tripled since it was first announced. The first three graduates from the forensic biology program will complete their degrees December 2005. All of them are applying for entry level positions in city or state crime laboratories.

Forensic DNA, San Jose State University, Forensic Science Education

 ** Presenting Author*