

NON -TECHNICAL ABSTRACT: *(State in layman's terms the application's broad, long-term objectives and specific aims, making reference to the potential public benefits of the project for California.)*

The B.S. Bioinformatics degree program was developed at CSUSB to satisfy two goals: to prepare students for graduate program and to prepare the students for professional careers in the biotech industries. In the first goal, we have observed that there are many graduate programs in bioinformatics or related fields but very few undergraduate programs that prepare students for graduate work. Most bioinformatics graduate programs assume that students come from a specific disciplinary program, and maybe weak in one or more area, such as biology, computer science or mathematics. Thus concurrent enrollment in appropriate undergraduate courses to address these deficiencies is often recommended. The B.S. Bioinformatics degree program developed at CSUSB is an innovative program because it is the integration of biology, chemistry, computer science, and mathematics into one program that prepares the student in bioinformatics. The degree program has two culminating courses: CSCI 550 (Advanced Bioinformatics I: Sequence Analysis) and CSCI 551 (Advanced Bioinformatics II: Numerical Modeling), which bring together all the students' knowledge in biology, chemistry, computer science, and mathematics into solving problems in bioinformatics. This project proposes to develop experiments/projects for CSCI 550 with the help and assistance of colleagues at the Center for Bio-Image Informatics (UC Santa Barbara), Department of Radiation Medicine (Loma Linda University Medical Center), and Ames Research Center (NASA). This project will establish partnerships between California State University, San Bernardino and the three research centers, which will further improve the B.S. Bioinformatics degree program giving our students and faculty a rare opportunity to interact with researchers who are active in bioinformatics and cancer research.