SFSU Bridges to Stem Cell Research

Grant Award Details

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Grant Type: Bridges

Grant Number: TB1-01194

Project Objective: To provide a training program in stem cell biology for Masters level students.

Investigator:

Name:	Carmen Domingo
Institution:	San Francisco State University
Type:	PI

Award Value: $4,168,243

Status: Closed

Grant Application Details

Application Title: Bridges to Stem Cell Research

Public Abstract: We are a large, urban university serving a highly diverse student population. We propose a new stem cell biology training program for master's-level students in partnership with three leading stem cell research institutions. We propose to offer two new master's-level specializations in our Biology department to prepare students to enter the stem cell workforce: a Masters of Science in Cell and Molecular Biology with an emphasis in Stem Cell Biology (the "MS program") in preparation for careers as senior researchers or doctoral studies leading to faculty and research science positions in stem cell biology; and a Professional Science Masters with a concentration in Stem Cell and Regenerative Medicine (the "PSM program") in preparation for careers as laboratory technicians and research associates. We will recruit and train 10 students each year. Both programs involve core lecture and laboratory courses in developmental, molecular, and cell biology as well as bioethics and scientific writing taught by faculty at our institution who are experts in their field. PSM students will also take business and biotechnology courses while MS students will begin the first six months of their internship in their first year. During the summer after completing their first year of the program, students will participate in a week-long intensive Stem Cell Laboratory course taught by faculty at one of the host sites where students will learn to propagate, maintain, and manipulate human embryonic stem cells. Both programs will provide students with an intensive research experience in stem cell research at one of our host institutions. MS internships will involve 18 months of original stem cell research culminating in a master's thesis and leading to the preparation of manuscripts for publication. PSM internships will involve 12 months of research training in a stem cell research laboratory, culminating in a final written and oral research report. Mentoring and professional development are an integral part of both programs. Student cohorts will meet monthly with the Program Director (PD) to discuss their academic and research activities. Students will also gain a broader introduction to the importance and application of stem cell research from guest speakers. The PD will meet regularly with the students and their research mentors to provide continuity of programming and ensure that students thrive in their internships. Through its CIRM Bridges to Stem Cell Research program, we will offer a new general education course in Stem Cell Biology and Regenerative Medicine. This course will not only educate a broad audience, but will also provide a mechanism for recruiting students into the stem cell training programs. Thus, CIRM funding will allow our institution to make an important contribution to the stem cell workforce that truly reflects the diverse composition of our state in partnership with three preeminent research institutions.

Statement of Benefit to California:	The proposed CIRM Bridges program will benefit the state of California and its residents by providing training to prepare students to enter research careers in stem cell biology and regenerative medicine. This is particularly important and timely because our state is positioned as a result of the passage of Proposition 71 to become a leader in stem cell research both nationally and globally. With this emerging field it will be crucial to have a skilled workforce equipped to meet the scientific and technical challenges necessary for advancing scientific knowledge and alleviating human suffering. We are extremely well situated to contribute to this effort. Our Biology department has provided training for hundreds of students, those seeking to make career changes as well as those beginning their working lives. We have a long history of educating students in cutting-edge laboratory methods and responding to the needs of industry and academia. Dozens of our graduates have established careers in the sciences, and our alumni are well represented at all levels throughout the region's biotechnology industry. We have a national reputation for contributing to the diversification of the scientific profession through our many training programs which attract, recruit, and support students from groups underrepresented in the sciences, and indeed our student and our faculty are among the most ethnically and culturally diverse in the nation. With the help of our partner institutions, our CIRM Bridges program will expand the training opportunities in our Cell and Molecular Biology program to include two new specializations: stem cell biology, and biotechnology with an emphasis on regenerative medicine. We will provide a comprehensive slate of lab and lecture courses, research internships, professional mentoring, and community service opportunities to ensure that our students possess not only scientific and technical proficiency but also a thorough grasp of the ethical implications of the technology and the ability to communicate effectively with a general as well as a scientific audience. The research internships will provide training in state-of-the-art facilities in the laboratories of three premiere institutions at the forefront of stem cell research, so that students complete the program with the knowledge, skills and experience necessary to work with both federally and non-federally registered stem cell lines. We will also offer a new general education course addressing scientific, humanistic, ethical and legal perspectives on stem cell technology with special presentations open to the general public, and our students will participate in presenting their work to the broader community. Our graduates will be fully prepared to contribute to the growth of a vibrant stem cell industry that is fully reflective of the diversity of backgrounds and perspectives in our state.
