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## Training Program in Stem Cell Research at UCSF

### Grant Award Details

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Training Program in Stem Cell Research at UCSF

**Grant Type:** Research Training II

**Grant Number:** TG2-01153

**Project Objective:** To provide comprehensive stem cell training and support for 6 graduate students, 6 postdoctoral (Ph.D.) fellows, and 4 clinician-scientists.

**Investigator:**

<b>Name:</b>	Susan Fisher
<b>Institution:</b>	University of California, San Francisco
<b>Type:</b>	PI

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**Award Value:** \$7,814,027

**Status:** Closed

### Progress Reports

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**Reporting Period:** Year 4

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**Reporting Period:** Year 5

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**Reporting Period:** Year 6

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### Grant Application Details

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**Application Title:** Training Program in Stem Cell Research

**Public Abstract:**

Our goal is to continue the Type I CIRM-funded Comprehensive Training Program that was established at this institution nearly 3 years ago. Specifically, we want to support 6 graduate students, 6 postdoctoral (Ph.D.) fellows, and 4 clinician-scientists (M.D. and or Ph.D.). We provide a unique training environment for students at all levels who are pursuing careers in regenerative medicine. Specifically, our institution offers a world-class research training experience in the context of an equally prestigious medical school and clinical enterprise. We are also noted for our faculty, a diverse and talented group of individuals—1,500 full-time members who are renowned for their dedication to the training process. Additionally, this institution has a long history of supporting human embryonic stem cell research within a framework of the highest ethical standards of conduct. In this productive research environment, our regenerative medicine institute fosters work toward regenerative medicine therapies. The regenerative medicine institute has 7 pipelines that are designed to promote the development of cell-based therapies for repair/regeneration of cardiovascular, neural, pancreas and liver, hematopoietic, musculoskeletal, epithelial, and reproductive tissues. Each pipeline integrates the research of numerous investigators who are working together to translate basic research discoveries into clinically viable therapies. The pipelines are supported by programs that cut across several disciplines, including Human Embryonic Stem Cells, Cancer, Immunology, Genetics, and Bioengineering. Regenerative medicine institute research is supported by key technology core facilities. Additionally, we were awarded a grant to build and run a CIRM Shared Laboratory and Teaching Facility that will be an important resource for our trainees and a CIRM Major Facilities Award that will allow consolidation and expansion of stem cell-related activities in a new building. With regard to campus-wide events, the regenerative medicine institute sponsors many well-attended series, including regularly scheduled seminars, journal clubs, a young-faculty forum, and an annual retreat. These events take place against a backdrop of stimulating activities with similar formats in other programs that cover cutting-edge research developments in the U.S. and around the world. In this context, CIRM trainees at this university will have several different types of learning experiences that include formal courses in stem cell biology and related topics such as human development and cell biology. Ethical issues will be addressed in a course that is solely devoted to this topic. Trainees will also do research with world-class mentors who focus on transforming basic research discoveries into clinical applications. Thus, this university provides an exceptional and exciting environment for trainees who will be the next generation of leaders in the field of regenerative medicine.

**Statement of Benefit to California:**

We envision that the citizens of the state of California will benefit in many ways from continuing this institution's Comprehensive Training Program for graduate students, postdoctoral fellows (Ph.D.), and clinician-scientists (M.D. and/or Ph.D.). Collectively, the basic research, translational strategies, and clinical therapies that will emerge from the work of this university's California Institute for Regenerative Medicine (CIRM)-funded trainees will be an important stimulus to the state economy, particularly the biotechnology sector and associated medical enterprises. Additionally, specific groups of individuals will directly benefit from work that is focused on cell-based therapies for repairing tissues and organs whose damage leads to common medical conditions, such as diabetes, cardiovascular disease, Parkinson's disease, paralysis and/or immune dysfunction. On the way to achieving the CIRM's ultimate goals in terms of novel regenerative therapies for patients, we envision that numerous other benefits will emerge. For example, human embryonic stem cell (hESC) systems are powerful tools for unraveling the molecular bases of human development, which remain largely a black box. A fundamental lack of understanding regarding the mechanisms that give rise to the hundreds of cell types that form tissues and organs makes it extremely difficult to discern why these processes sometimes go awry, leading to birth defects and/or setting the stage for many diseases. Additionally, it is likely that novel therapies for other medical conditions will emerge. In this regard, some forms of cancer are now thought to be associated with the proliferation of stem cells that carry mutations in genes that promote their self-renewal rather than differentiation and integration into the compartment that they normally occupy. Other important applications include drug development. For example, hESCs and their differentiated progeny could be used to screen lead compounds for efficacy, safety and/or toxicity. Where will the workforce come from that will enable this revolution in how the medical establishment approaches patient care? Given the fact that hESCs were first described just 10 years ago, this is a very young field that must be rapidly populated with scientists and clinicians who are specially trained in all aspects of regenerative medicine, a new specialty. This necessity makes the funding of CIRM-sponsored training programs especially critical for institutions such as ours that have the ability to make important research discoveries and translate them into clinical therapies. In this regard, our university has a long and distinguished history of training leaders in science and/or medicine who easily traverse the boundaries between academia and industry. Our past successes strongly suggest that our CIRM-funded training programs will be equally successful. Accordingly, we expect that our trainees will become leaders in the field.

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