
UCSC Shared Stem Cell Facility

Grant Award Details

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Grant Type: Shared Labs

Grant Number: CL1-00506-1.1

Investigator:

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Institution:	University of California, Santa Cruz
Type:	PI

Award Value: \$1,849,452

Status: Closed

Grant Application Details

Application Title: Shared Stem Cell Facility

Public Abstract:

We have assembled a team of researchers with the aim of elucidating the molecular and cellular mechanisms that regulate stem cell self renewal and differentiation. Drawing on their broad range of expertise in development, genetics, genomics, molecular, cell and computational biology, these researchers will use interdisciplinary approaches to tackle problems concerning how genes are regulated in human embryonic stem cells (hESCs), and how this regulation influences their ability to both self-renew and differentiate into specific cellular subtypes. Defining and ultimately controlling this process is an essential step in designing stem cell-based therapies. These projects are aimed at providing insights and tools for neurological and genetic conditions such as Parkinson's Disease, ALS, CHARGE Syndrome, and Down Syndrome, and in aiding the development of gene therapy strategies. The work is funded in part from CIRM SEED grants to our faculty. In addition, we are committed to campus growth in this area, with faculty hires slated for expertise in various aspects of stem cell biology. Supported by a CIRM Training Grant, we are also committed to training a new generation of stem cell researchers – graduate students and postdoctoral fellows who will gain the knowledge and skills to embark on their own careers in this field.

To achieve these goals, we propose to build a Shared Stem Cell Facility (SSCF) by renovating 2000 square feet of space in the building where hESC research currently occurs. Our institution currently has no stem cell facility – hESC research is currently limited to NIH-approved lines because of the lack of separate, appropriately funded space. In addition, this facility will significantly expand and enhance the research space available for experimentation with hESC, in general, at our institution. The creation of a central facility dedicated to hESCs is essential for both on-going and new research, as well as for training. The resources and expertise provided by the SSCF will encourage additional faculty to use hESCs in their research and create new opportunities for faculty already committed to hESC research. For example, our faculty are eager to initiate projects that involve the use of non-approved cell lines that are free of the biological limitations of the approved lines, such as new hESC lines in which the mechanisms of self renewal and differentiation are altered, and in lines bearing disease causing mutations. This work will not be possible without a facility dedicated to hESC research that is free of federally-imposed restrictions.

Statement of Benefit to California:

The California Institute for Regenerative Medicine came about because of a mandate from the citizens of California who voted to invest state money into human embryonic stem cell research. Supporters of Proposition 71 waved signs reading "Save Lives with Stem Cells" and news reports predicted that the measure's passage would "put California at the forefront of the field." While individual projects such as the shared stem cell facility in this proposal will not directly save lives or put California at the forefront, the work that will take place promises to move the field towards successful stem cell-based therapies, and to help give rise to technologies and intellectual property that can serve as the basis for new companies in California. The research to take place in the proposed facility will contribute to the characterization of stem cell lines that will populate an envisioned stem cell bank in California. By allowing advanced hESC research, this facility will strengthen pre-existing international collaborations and stimulate more, thus bringing together worldwide efforts in a common cause. Finally, the ability to perform hESC research at this and other CA institutions that is not restricted to the federally approved lines will attract highly talented researchers from around the country. The research to be carried out in these facilities will greatly accelerate the rate at which we acquire new knowledge about the properties and uses of stem cells. Californians will be proud of this investment in infrastructure to facilitate new discoveries and the training of new researchers, positioning California to lead the way to improving and saving lives through regenerative medicine.