The University of California: Irvine Regional Human Embryonic Stem Cell Shared Research Laboratory and Stem Cell Techniques Course

Grant Award Details

The University of California: Irvine Regional Human Embryonic Stem Cell Shared Research Laboratory and Stem Cell Techniques Course

Grant Type: Shared Labs

Grant Number: CL1-00520-1.2

Project Objective: The objective of the CIRM Shared Lab program is to provide a resource to the scientific community for the conduct of pluripotent stem cell research.

Investigator:

Name:	Peter Donovan
Institution:	University of California, Irvine
Type:	PI

Human Stem Cell Use: Embryonic Stem Cell, iPS Cell

Award Value: $3,072,500

Status: Closed

Progress Reports

Reporting Period: Year 1

View Report

Reporting Period: Year 2

View Report

Reporting Period: Year 3

View Report

Reporting Period: Year 4

View Report

Reporting Period: Year 5

View Report

Reporting Period: Year 6

View Report

Reporting Period: Year 7/NCE

View Report

Grant Application Details

Application Title: Regional Human Embryonic Stem Cell Shared Research Laboratory and Stem Cell Techniques Course

Public Abstract: A major goal of the Shared Research Laboratory (SRL) is to foster the development of new treatments for human diseases and disorders by serving as a leading regional center for human embryonic stem cell (hESC) research, clinical applications, and training. A critical component of this vision is a full service SRL. The SRL will provide space and equipment that is free of federal funding to allow pursuit of any study needed to discover the basic properties of hESCs, to understand disease processes, to accelerate drug development and to develop cell-based therapeutics. The research in the SRL includes a balance of studies into the basic biology of hESCs, disease mechanisms, and potential therapeutics. Results of these studies will increase our understanding of the causes and potential treatments of spinal cord injury, retinal disease, motoneuron diseases, Huntington's disease, diabetes, multiple sclerosis, muscular dystrophy, heart disease, and Alzheimer's disease. The SRL also hosts a hESC Techniques Course. This 5-day, intensive, hands-on course trains future stem cell researchers in techniques for cultivation, handling and differentiation of hESCs. We propose to develop new space for pre-clinical testing, to obtain key pieces of major equipment, and to support personnel in order to improve our ability to develop new FDA-compliant treatments for human diseases and disorders. The new space will allow us to expand our training effort to include procedures needed to conduct pre-clinical translational and transplantation projects. The expanded curriculum will include animal survival surgery, cell transplantation techniques, and methods for tracing transplanted cells in the animal. Currently few, if any, venues exist in which researchers can learn not only how to create potential hESC therapeutics, but also learn how to test potential treatments in animal models. Importantly, all treatment-oriented research will be done under strict FDA quality assurance guidelines, so researchers will not have to repeat experiments when they file with the FDA, streamlining processes and decreasing time to clinical trial. The research expertise and institutional support for hESCs puts us in a strong position to serve as a regional facility of excellence, bringing new researchers into the field, and leading the way toward realizing the potential of hESCs in treating human conditions.

Our institution is exceptionally strong in translating basic scientific discoveries to the clinic,and in particular, has FDA-compliant pre-clinical strength in translation of hESC discoveries. Indeed, preclinical studies undertaken through the SRL will be conducted under the guidance of existing Regulatory Quality Assurance Officers to ensure FDA-compliance. With the proposed additions to the SRL, our vision of serving as a regional resource for hESC research and training will bring us closer to hESC-based treatments.

Statement of Benefit to California:	Proposition 71's primary goal is to translate basic research to clinical applications. Our program is exceptionally strong in moving basic scientific discoveries to the clinic and has FDA-compliant pre-clinical strength in translation of hESC discoveries. The disability and loss of earning power and personal freedom resulting from a disease or disorder are devastating and create a financial burden for California. Therapies using human embryonic stem cells (hESCs) have the potential to change the lives of millions, and hESCs as models of diseases will help us understand the underlying causes of disease. For the potential of hESCs to be realized, California researchers need the equipment, lab space, and personnel to develop hESCs into viable treatments. Shared research laboratories (SRL) allow researchers to access critical, expensive equipment and concentrate expertise under one roof providing a favorable environment for collaboration. The federal constraints on hESCs create a critical need for SRL equipped and staffed with non-federal funds. Our SRL is a regional resource currently used by scientists from 4 institutions, and hosts the quarterly hESC Techniques Course. Additional investment will result in a full service regional SRL where researchers can derive new hESC lines, develop cell-based treatments, and test potential therapeutics in animal models. Anticipated benefits of our SRL to the citizens of California include: 1) development of new cell-based treatments for a variety of human diseases and disorders; 2) improved methods for understanding normal development and the environmental risks to the early embryo; 3) development of intellectual property that could form the basis of new biotech startup companies; and 4) improved methods for drug development that could directly benefit citizens of the state. With the proposed additions, our vision of serving as a regional resource for hESC research and training will bring us closer to hESC-based treatments.

Source URL: https://www.cirm.ca.gov/our-progress/awards/university-california-irvine-regional-human-embryonic-stem-cell-shared-research