
Modeling Myocardial Therapy with Human Embryonic Stem Cells

Grant Award Details

Modeling Myocardial Therapy with Human Embryonic Stem Cells

Grant Type: Comprehensive Grant

Grant Number: RC1-00104

Investigator:

Name:	Harold Bernstein
Institution:	University of California, San Francisco
Type:	PI

Disease Focus: Heart Disease

Human Stem Cell Use: Embryonic Stem Cell

Award Value: \$2,134,694

Status: Closed

Progress Reports

Reporting Period: Year 2

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Reporting Period: Year 3

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Reporting Period: Year 4

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Grant Application Details

Application Title: Modeling Myocardial Therapy with Human Embryonic Stem Cells

Public Abstract: Five million people in the U.S. suffer with heart failure, at a cost of \$30 billion/year. Heart failure occurs when the heart is damaged and becomes unable to meet the demands placed on it. Unlike some tissues, heart muscle does not regenerate. Human embryonic stem cells grow and divide indefinitely while maintaining the potential to develop into many tissues of the body, including heart muscle. They provide an unprecedented opportunity to both study human heart muscle in culture in the laboratory, and advance cell-based therapy for damaged heart muscle. We have developed methods for identifying and isolating specific types of human embryonic stem cells, stimulating them to become human heart muscle cells, and delivering these into the hearts of mice that have had a heart attack. This research will identify those human embryonic stem cells that are best at repairing damaged heart muscle, thereby treating or avoiding heart failure.

Statement of Benefit to California: More than 90,000 people in California suffer with heart failure, at a cost of ~\$540 million/year. Heart failure occurs when the heart is damaged and becomes unable to meet the demands placed on it. Unlike some tissues, heart muscle does not regenerate. This research will identify human embryonic stem cells that are able to repair damaged heart muscle, thereby treating or avoiding heart failure. The medical treatments developed as a result of these studies will not only benefit the health of Californians with heart failure, but also should result in significant savings in health care costs. This research will push the field of cardiovascular regenerative medicine forward despite the paucity of federal funds, and better prepare us to utilize these funds when they become available in the future.

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