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FOUR UCLA RESEARCHERS AWARDED \$5.42 MILLION IN BASIC BIOLOGY GRANTS FROM THE STATE'S STEM CELL AGENCY

The Four Grants Represent One-Third of all Grants Awarded by the California Institute for Regenerative Medicine

Four UCLA scientists were awarded state stem cell grants totaling \$5.42 million today to fund research that will uncover the basic mechanisms underlying stem cell biology.

The grants – 12 awarded in all – represent an effort by the California Institute of Regenerative Medicine (CIRM) to build a foundation that will support future research designed to translate stem cell science from the lab bench to the patient's bedside.

UCLA scientists were awarded a third of the basic biology grants given out by CIRM, and the university received the most grants given to any stem cell research center in the state. To date, UCLA and its stem cell scientists have received 29 grants totaling \$68 million in funding from the state agency.

“It is wonderful to see the breadth and quality of stem cell basic science at UCLA recognized by the awarding of these four grants in the latest round of CIRM awards,” said Dr. Owen Witte, director of the Eli and Edythe Broad Center of Regenerative Medicine and Stem Cell Research. “Research supported by these grants will propel future translational and clinical advances, enabling us to realize the full potential of human stem cells in the development of new, more effective therapies for a host of diseases.”

UCLA researchers receiving basic biology grants include Luisa Iruela-Arispe, a professor of molecular, cell and developmental biology, who was awarded \$1.37 million; Dr. Robb MacLellan, an associate professor of medicine, who was awarded \$1.37 million; Bennett Novitch, an assistant professor of neurobiology, who was awarded \$1.36 million; and Dr. Michael Teitell, a professor of pathology and laboratory medicine, who was awarded \$1.32 million. All are scientists with the Broad Stem Cell Research Center.

Iruela-Arispe's grant will fund her work to further understand how endothelial cells, located in the inside wall of blood vessels, can be coaxed into producing large numbers of blood stem cells, which can make every type of blood cell in the body. Her team's findings ultimately could lead to new therapies for certain blood disorders and cancers, said Iruela-Arispe, who also is a researcher with UCLA's Jonsson Comprehensive Cancer Center.

MacLellan's research will focus on characterizing cardiac progenitor cells isolated from human induced pluripotent stem cells or embryonic stem cells. Those cells can differentiate into the various cell types found in the heart, including cardiac muscle cells, smooth muscle cells and endothelial cells. His discoveries could be applied to future cardiovascular cell therapy clinical trials that seek to reverse or repair heart muscle damage, potentially helping the millions of Americans who are born with or develop heart disease.

In Novitch's lab, the grant-funded research will examine the molecular, genetic and functional similarities and differences between motor neurons derived from human embryonic stem cells and those derived from induced pluripotent stem cells. They will test whether the ability of stem cell-derived motor neurons to form connections with different muscle groups in the body can be enhanced by programming the neurons to genes found to regulate motor neuron development in animal models. The work will significantly advance the understanding of how different motor neuron subtypes can be created from stem cells to build disease models and generate therapeutically beneficial cells.

Teitell's grant will fund research to uncover the role of mitochondria, the cell's energy factories, in stem cell proliferation, maintenance of pluripotency and differentiation potential. Studies have suggested that mitochondrial function determines the quality and safety of stem cells. Dysfunctional mitochondria have been shown to promote cancers, diabetes, obesity, neurological degeneration, immune deficiencies and cardiomyopathy. Teitell is also a member of the Jonsson Cancer Center.

The stem cell center was launched in 2005 with a UCLA commitment of \$20 million over five years. A \$20 million gift from the Eli and Edythe Broad Foundation in 2007 resulted in the renaming of the center. With more than 150 members, the Eli and Edythe Broad Center of Regenerative Medicine and Stem Cell Research is committed to a multi-disciplinary, integrated collaboration of scientific, academic and medical disciplines for the purpose of understanding adult and human embryonic stem cells. The center supports innovation, excellence and the highest ethical standards focused on stem cell research with the intent of facilitating basic scientific inquiry directed towards future clinical applications to treat disease. The center is a collaboration of the David Geffen School of Medicine, UCLA's Jonsson Cancer Center, the Henry Samueli School of Engineering and Applied Science and the UCLA College of Letters and Science. To learn more about the center, visit our web site at <http://www.stemcell.ucla.edu>.