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## **UCLA Launches \$20 Million Stem Cell Institute to Investigate New Approaches to HIV, Cancer and Neurological Disorders**

**Experts in bioengineering, imaging, molecular genetics, immunology, ethics,  
hematology/oncology and cellular biology to collaborate on Proposition 71 research**

Drawing together experts from fields as diverse as engineering to molecular biology, UCLA officials announced March 15 the formation of the Institute for Stem Cell Biology and Medicine to conduct embryonic and adult stem cell research that may lead to better treatments for HIV, cancer and neurological disorders.

“As one of the world’s leading research universities, UCLA has long been engaged in adult and embryonic stem cell research with activities in areas ranging from the AIDS Institute to the Brain Research Institute to the UCLA College,” said UCLA Chancellor Albert Carnesale. “The new UCLA Institute for Stem Cell Biology and Medicine will enable us to continue fostering such interdisciplinary collaborations and to build upon the existing body of knowledge for the benefit of people worldwide.”

UCLA will provide \$20 million over five years to launch the campuswide institute, which will enable teams of researchers to compete for state grants created by the passage of Proposition 71. The money will pay for recruitment for a dozen new faculty positions, salaries and expansion of highly sophisticated laboratory space, infrastructure, and supplies.

Dr. Owen Witte, a renowned scientist whose laboratory research laid the groundwork for development of the targeted leukemia therapy Gleevec, is director of the new institute. He also stressed the interdisciplinary approach necessary to face the challenges related to stem cell research.

“Embryonic stem cells have the power to develop into every type of human tissue,” said Witte, who also is a professor of microbiology, immunology and molecular genetics, and a Howard Hughes Medical Institute investigator. “If we can learn how they are regulated for growth and development, we can harness this knowledge to study tissue development and regeneration and potentially come up with new ways to fight many life-threatening diseases.”

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Researchers are hopeful that stem cell research will lead to revolutionary new treatments for Parkinson's, spinal cord injuries, Alzheimer's, cancer and other diseases, and perhaps shed new light on how some diseases develop. However, most scientists agree that human treatments are years or even decades away.

Proposition 71, passed by 59 percent of California voters in November, will provide \$3 billion for stem cell research. A state institute is being created in Northern California to allocate funding to stem cell scientists at universities, medical schools and research facilities. Grant applications will be available in May. A 29-member oversight and governing board will oversee the institute and review requests for funding.

"With the launch of this institute, we realize our goal of bringing together scientific, ethical, legal and policy experts from across the UCLA campus to focus on the great promise of stem cell research," said Dr. Gerald S. Levey, vice chancellor for medical sciences and dean of the David Geffen School of Medicine. "As dean, I am committed to advancing the full potential of stem cell research to find novel and more effective therapies to treat many diseases for which present-day therapy is either unsatisfactory or unavailable."

Because the university and medical school at UCLA are located on the same campus, researchers are well positioned to compete for stem cell grant funding, Witte said. UCLA researchers have proven their skill at ushering scientific discoveries from the lab to modern medicine. Several targeted therapies were developed based on UCLA research, including Gleevec and the breast cancer drug Herceptin. Additionally, UCLA scientists played key roles in testing the targeted therapies Avastin and Tarceva.

UCLA also is the only public university in California to boast a sophisticated Good Manufacturing Practice (GMP) suite, a specialized laboratory that is critical for the safe growth and manipulation of stem cell lines. Compliance officers oversee all research in the GMP suite, which must follow stringent federal guidelines for reintroduction of manipulated cells into the human body.

In addition, UCLA's Jonsson Cancer Center features an established clinical trials infrastructure that could be used to test new therapeutics that may develop as a result of the stem cell studies, said Judith C. Gasson, cancer center director, stem cell institute co-director, and a professor of medicine and biological chemistry.

"I see cancer and stem cells as tightly linked," Gasson said. "More and more evidence suggests that cancer is a stem cell disease. Many of our current therapies are not effective because they don't target the cancer stem cells. Our experience with gene medicine and the GMP facilities will make it easier for us to translate our basic stem cell research into human therapies by using facilities and procedures already in place."

The UCLA Institute for Stem Cell Biology and Medicine will focus its embryonic and adult stem cell research in three areas:

- HIV: UCLA scientists are exploring how the AIDS virus blocks stem cell function, as well as stem cell approaches to combating HIV disease. One potential therapeutic example includes inserting antiviral genes into blood-forming stem cells and

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reintroducing them into the body. As these blood cells develop, the gene protects the mature cell against HIV infection. The UCLA AIDS Institute already has completed a Phase I clinical trial using adult stem cells. Embryonic stem cells also could be engineered for this strategy to avoid the need for isolating patients' cells, ease transplantation and increase clinical usefulness.

- **Cancer:** Research will seek to shed more light on cancer stem cells and how they develop. Not much is known about cancer stem cells and new findings may lead to therapies that target cell signaling pathways specific for cancer stem cells. These therapies hone in on what is broken in a cancer cell while leaving the healthy tissue intact. Several Jonsson Cancer Center researchers already are doing stem cell research in laboratories, and that work will be folded into the institute.
- **Neurological disorders:** UCLA researchers are studying many aspects of the roles that stem cells may play in healing neurological disorders, including stroke, spinal cord injury, brain tumors, multiple sclerosis and genetic diseases. Future studies will include investigation of stem cell biology and development, as well as therapeutic-based research using adult and embryonic stem cells.

The Institute for Stem Cell Biology and Medicine 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. Each collaborator brings leading-edge technologies to the table: integrated microfluidics to aid in cell isolation, microarrays and shape-encoded particle approaches for gene expression analysis, proteomics using advanced mass spectroscopy, large-scale computational facilities for bioinformatics, and world-class multi-modality imaging facilities for analysis of stem cell therapies in laboratory models and, ultimately, in patients enrolled in clinical trials.

"UCLA encourages strong collaborations between faculty in the life sciences and the health sciences," said Patricia O'Brien, executive dean of the UCLA College. "As biomedicine grows increasingly complex, new academic partnerships hold the key to discovery; this institute will create novel opportunities for research that spans many disciplines."