stem cell research is a revolutionary opportunity to explore and understand scientific phenomena to treat human disease.
The Broad Stem Cell Research Center reshapes and expands the culture of scientific exploration at UCLA. Our innovative and integrated structure pushes the boundaries of our understanding of human biology and represents the future of biomedicine.

Our mission is to take groundbreaking discoveries from the laboratory to the patient bedside, revolutionize the treatment of disease through personalized cellular therapies and regenerative medicine, and support technology-driven, cross-disciplinary research teams of basic laboratory and physician scientists.
[ Human Embryonic Stem Cells (hESC) ]

hESC are derived from early stage embryos (4-6 days). hESC are self-renewing and pluripotent (can form all cell types in the body).
Our faculty apply new knowledge and technologies, developed from stem cell science, to fundamentally change the practice of medicine by using the body’s own cells to study disease processes and regenerate damaged tissue.

**Unequaled Opportunity**  
The Broad Stem Cell Research Center breaks down traditional academic barriers to bring together an elite group of scientists from the David Geffen School of Medicine, Jonsson Comprehensive Cancer Center, Henry Samueli School of Engineering and Applied Science, and the College of Letters and Science.

The collaboration of medical and scientific disciplines offers unequaled opportunity to develop the field of regenerative medicine through stem cell exploration. More than 200 faculty representing ten academic fields actively engage in our multi-disciplinary effort.

**Pioneering Endeavors**  
The Center’s fertile environment for pioneering scientific endeavors provides state-of-the-art facilities and technology, seed research funding, education, and training necessary to turn empirical discoveries into therapies for patients.

**Novel Discoveries**  
Insights gained through model systems like zebrafish and fruit flies inform our understanding of human stem cells. Breakthroughs like reprogramming human skin cells into induced pluripotent stem cells (iPS cells) serve as the foundation for personalized cellular therapeutics to treat disease without immune rejection.
The Broad Stem Cell Research Center is committed to the challenge of translating new knowledge into potential treatments and diagnostic tools. Our faculty are determined to overcome the inevitable setbacks of scientific research in pursuit of breakthroughs that may lead to treatments for musculoskeletal diseases, cancer, blood disorders, and neurological diseases, among others.

**Potential Impact on Disease**

Our faculty use iPS cell technology to repair the heart and blood vessels, creating hope for individuals who suffer from cardiac disease.

We also engage in basic science and translational preclinical studies that may enable the transplantation of stem cells into brain tissue damaged by a stroke in order to regenerate healthy tissue and hopefully regain lost function.

**Clinical Trials underway at UCLA have the potential to:**

- create an immune response to melanoma.
- demonstrate that cell-delivered gene transfer has the potential to be a once-only treatment for HIV patients that restores the immune system and avoids lifelong drug therapy without adverse events.
- give infants with severe genetic immune deficits, such as “bubble baby disease,” their own modified stem cells in order to reconstitute their immune system without serious side effects.
iPS cells are taken from tissue, such as skin, and genetically modified to form all cell types in the body, similar to hESC.
Adult stem cells are more accurately called tissue-specific cells and are found in tissues of adults, children, and fetuses. These cells will only become a cell of their tissue of origin. For example, blood stem cells give rise only to cells of the blood system.
Our facilities allow for such specialized research as computational modeling, synthetic chemistry, analytical instrumentation, and cell and animal biology. Our emphasis on technology development and core shared resources resulted in the creation of more than 26,000 square feet of centrally located state-of-the-art facilities, less than a five minute walk from any campus laboratory.

**Expanding Facilities**
UCLA is the first public university in California to boast two FDA-compliant Good Manufacturing Practice (GMP) suites; specialized laboratories critical for the safe growth and manipulation of stem cells for use in new experimental drugs and clinical trials. The Broad Stem Cell Research Center expanded existing UCLA infrastructure by doubling the size of the GMP suites, providing faculty the opportunity to rebuild patient immune systems through engineered cell transplantation and gene therapy to combat cancer, HIV, and metabolic and genetic diseases.

**Cutting Edge Technology**
Our shared facilities house core resources that led to the development of non-invasive imaging technologies that allow physician-scientists to see and understand the therapeutic activity of transplanted cells in patients.

Advances have also led to the development of microfluidics, or lab-on-a-chip technology, allowing researchers to reduce the time and resources necessary to study stem cell growth and differentiation at volumes a thousand times smaller than a teardrop.

Microfluidics perform more than 1,000 chemical reactions at a time, dramatically increasing the speed and ease of medical research.
The vision of a new frontier of regenerative medicine resulted in the launch of the Stem Cell Center in 2005 with an unprecedented UCLA commitment of $20 million. Investing in the shared vision, Eli and Edythe Broad, through their foundation, generously donated an additional $20 million to advance stem cell research at UCLA. The Center was renamed in their honor.

Leadership
Dr. Owen Witte is the Center’s internationally renowned founding Director. A member of the National Academy of Sciences, the Institute of Medicine, and a Howard Hughes Medical Institute Investigator, Dr. Witte’s seminal findings have deepened the understanding of leukemia, immune disorders, and cancer stem cells. As Director, he leads a team of world-class researchers in the translation of laboratory breakthroughs to new diagnostics and therapies.

Looking Forward
Philanthropy enables the Center to offer competitive, intra-mural research awards that may lead to the development of novel and effective stem cell therapies. Significantly leveraging funding from state and federal agencies, it also provides the resources to purchase critical equipment and hire highly trained technical staff.

Public support allows us to embrace this rare opportunity to alter the treatment of disease; our effort will result in the human body’s ability to heal itself through the use of one’s own stem cells.
imagine

[ For More Information ]
please visit
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