CIRM

CALIFORNIA'S STEM CELL AGENCY

California Institute for Regenerative Medicine

Stroke Fact Sheet

CIRM funds many projects seeking to better understand stroke and to translate those discoveries into new therapies.

Description

In the U.S., almost 800,000 people have a stroke each year and more than 140,000 people die of their stroke. It is the leading cause of serious, long-term disability in the U.S.

Stroke occurs when a blood clot blocks a vessel in the brain and cuts off blood flow. Brain cells begin to die within minutes when they are deprived of oxygen and nutrients. A less common kind of stroke involves a burst blood vessel that bleeds into the brain, also killing brain cells. Losing these brain cells can cause permanent problems with movement and cognitive abilities such as memory, attention span even speaking or understanding speech.

A stroke requires immediate treatment. Signs of stroke include sudden onset of numbness of the face, arm or leg, confusion, blurred vision, dizziness or headache. Doctors can intervene by dissolving the clot and restoring blood flow or stopping the bleeding.

After a stroke, intensive physical therapy can help people regain some lost function. However, there is currently no therapy to restore the brain cells that have died as a result of the stroke.

Stem cell scientists are attempting to use different types of stem cells including tissue-specific neural stem cells, embryonic stem cells and reprogrammed iPS cells to replace cells lost during a stroke. They are testing the different cell types in animal models of stroke to see which are best able to restore movement. They also need to learn the best way of delivering those cells into the brain. Around the country, several clinical trials are underway testing different type of cells and different delivery methods. Other researchers are seeing if it's possible to activate the stem cells in the brain to repair the damage.

CIRM Grants Targeting Stroke

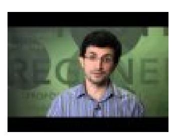
Researcher name	Institution	Grant Title	Grant Type	Award Amount	
Gary Steinberg	Stanford University	Intraparenchymal NR1 Stem Cell Therapy for Chronic Subcortical Ischemic Stroke	Late Stage Preclinical Projects	$5,300,000	
Damien Bates	SanBio, Inc.	A Double-Blind, Controlled Ph 2b Study of the Safety and Efficacy of Modified Stem Cells in Patients with Chronic Motor Deficit from Ischemic Stroke	Clinical Trial Stage Projects	$19,998,580	
Stanley Carmichael	University of California, Los Angeles	iPS Glial Therapy for White Matter Stroke and Vascular Dementia	Quest - Discovery Stage Research Projects	$2,096,095	
Gary Steinberg	Stanford University	Embryonic-Derived Neural Stem Cells for Treatment of Motor Sequelae following Sub-cortical Stroke	Disease Team Research I	$17,244,851	
Ziwei Huang	Sanford-Burnham Medical Research Institute	New Chemokine-Derived Therapeutics Targeting Stem Cell Migration	SEED Grant	$708,000	

Yadong Huang	Gladstone Institutes, J. David	Defining the Isoform-Specific Effects of Apolipoprotein E on the Development of iPS Cells into Functional Neurons in Vitro and in Vivo	New Faculty II	$2,757,303	
Stuart Lipton	Sanford-Burnham Medical Research Institute	MEF2C-Directed Neurogenesis From Human Embryonic Stem Cells	Comprehensive Grant	$2,832,000	
Samuel Pleasure	University of California, San Francisco	Human stem cell derived oligodendrocytes for treatment of stroke and MS	Comprehensive Grant	$2,459,235	
Guoping Fan	University of California, Los Angeles	Epigenetic gene regulation during the differentiation of human embryonic stem cells: Impact on neural repair	Comprehensive Grant	$2,412,995	
Stanley Carmichael	University of California, Los Angeles	Development of a Hydrogel Matrix for Stem Cell Growth and Neural Repair after Stroke	Tools and Technologies II	$1,825,613	
Brian Rutt	Stanford University	Development of Single Cell MRI Technology using Genetically-Encoded Iron-Based Reporters	Tools and Technologies II	$1,833,348	
Stuart Lipton	Sanford-Burnham Medical Research Institute	Programming Human ESC-derived Neural Stem Cells with MEF2C for Transplantation in Stroke	Early Translational IV	$1,020,815	
Gary Steinberg	Stanford University	Paracrine and synaptic mechanisms underlying neural stem cell-mediated stroke recovery	Basic Biology V	$1,178,370	
Stuart Lipton	The Scintillon Institute	Programming Human ESC-derived Neural Stem Cells with MEF2C for Transplantation in Stroke	Early Translational IV	$1,103,185	
Stanley Carmichael	University of California, Los Angeles	iPS-Interneuron Transplantation for Neural Repair after Stroke	Inception - Discovery Stage Research Projects	$229,396	
					Total: $62,999,786.00

CIRM Stroke Videos

Facebook Live: Stem Cells and Stroke

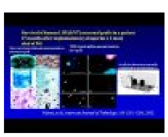
Jonathan Lam, UCLA - CIRM Stem Cell #SciencePitch



Pouria Moshayedi, UCLA - CIRM Stem Cell #SciencePitch

Lina Nih, UCLA - CIRM Stem Cell #SciencePitch

Spotlight on Disease Team Awards: Sub-Cortical Stroke - Introduction



Spotlight on Disease Team Awards: Sub-Cortical Stroke - Steinberg

Spotlight on Disease Team Awards: Sub-Cortical Stroke - Cooper

News and Information

- A Stroke for Stem Cells (Scientific American)
- Stem Cells Replace Stroke-Damaged Tissue In Rats (Science Daily)
- Stem Cells Fill Gap Left By Stroke, Says Stanford Researcers (Stanford)

Resources

- NIH: Stroke Information
- CDC: Stroke information
- Find a clinical trial near you: NIH Clinical Trials database
- American Stroke Association
- National Stroke Association
- Stroke Awareness Foundation
- Family Caregiver Alliance
- National Family Caregivers Association

Find Out More:
Stem Cell FAQ **|** Stem Cell Videos **|** What We Fund
