Alzheimer's Disease Fact Sheet

CIRM funds many projects seeking to better understand Alzheimer's disease and to translate those discoveries into new therapies.

Description

Alzheimer's disease is a degenerative brain disease that causes dementia, which impairs people's ability to think, reason and remember things. More than five million people are living with Alzheimer's disease in the U.S. today. Those people generally live much shorter lives and their medical expenses, combined with lost income for both them and their caregivers, is approximately $236 billion a year as of 2016. Alzheimer's disease is currently the sixth leading cause of death in the U.S. There are no drugs to treat the disease, although some do relieve symptoms.

The exact causes of Alzheimer's disease are unknown, however scientists believe that genetic risk factors make up 70% of Alzheimer's case. One problem that has slowed new treatments for Alzheimer's disease is the fact that no animal model truly mimics the disease. Drugs that have effectively treated animals with a form of Alzheimer's haven't worked in humans. What that means is that we need a better way of finding new drugs. CIRM funds several awards to researchers who are creating stem cell models of the disease in a lab dish using cells from Alzheimer's patients. They can then test drugs on nerve cells derived from the stem cells of Alzheimer's patients to look for ones that eliminate symptoms of the disease. These models are the only way of testing drugs in actual human cells.

The agency also funds teams that are in the early stages of developing potential therapies using stem cells. Some groups are trying to mature embryonic stem cells into a cell type that can be transplanted into the brain to replace cells that are destroyed in the disease. Others are simply using stem cells as a way of delivering factors that appear to protect brain cells. One team is trying to use stem cells to clear out the protein that builds up and clogs neurons in Alzheimer's patients.

CIRM Grants Targeting Alzheimer's Disease

Researcher name	Institution	Grant Title	Grant Type	Award Amount
Deborah Requesens	Coriell Institute for Medical Research	The CIRM Human Pluripotent Stem Cell Biorepository – A Resource for Safe Storage and Distribution of High Quality iPSCs	hPSC Repository	$9,942,175
Lawrence Goldstein	University of California, San Diego	Elucidating pathways from hereditary Alzheimer mutations to pathological tau phenotypes	Basic Biology V	$1,050,300
Tony Wyss-Coray	Palo Alto Veterans Institute for Research	Systemic Protein Factors as Modulators of the Aging Neurogenic Niche	Basic Biology II	$1,159,806
Douglas Ethell	University of California, Riverside	ES-Derived Cells for the Treatment of Alzheimer's Disease	New Faculty I	$621,639
Anirvan Ghosh	University of California, San Diego	Generation of forebrain neurons from human embryonic stem cells	SEED Grant	$587,591

Mathew Blurton-Jones	University of California, Irvine	Optimizing the differentiation and expansion of microglial progenitors from human pluripotent stem cells for the study and treatment of neurological disease.	Tools and Technologies III	$1,147,596
Frank LaFerla	University of California, Irvine	Development of human ES cell lines as a model system for Alzheimer disease drug discovery	SEED Grant	$473,963
David Schubert	Salk Institute for Biological Studies	Human Stem-Cell Based Development of a Potent Alzheimer's Drug Candidate	Preclinical Development Awards	$1,664,885
Lawrence Goldstein	University of California, San Diego	Using Human Embryonic Stem Cells to Understand and to Develop New Therapies for Alzheimer's Disease	Comprehensive Grant	$1,859,414
Yadong Huang	Gladstone Institutes, J. David	Human iPSC-derived GABAergic Progenitors for Alzheimer's Disease Treatment	Therapeutic Translational Research Projects	$1,900,000
Frank LaFerla	University of California, Irvine	Neural Stem Cells as a Developmental Candidate to Treat Alzheimer Disease	Early Translational I	$3,599,997
Janet Baulch	University of California, Irvine	An exosome-based translational strategy to mitigate Alzheimer's disease neuropathology	Inception - Discovery Stage Research Projects	$157,650
Douglas Ethell	Western University of Health Sciences	ES-Derived Cells for the Treatment of Alzheimer's Disease	New Faculty I	$1,401,642
Lawrence Goldstein	University of California, San Diego	Developing a method for rapid identification of high-quality disease specific hIPSC lines	Tools and Technologies II	$1,692,334
Alexandra Capela	StemCells, Inc.	Neuroprotection to treat Alzheimer's: a new paradigm using human central nervous system cells	Disease Team Therapy Planning I	$90,101
Roberta Brinton	University of Southern California	A CIRM Disease Team to Develop Allopregnanolone for Prevention and Treatment of Alzheimer's Disease	Disease Team Therapy Planning I	$107,961
Lawrence Goldstein	University of California, San Diego	Identifying Drugs for Alzheimer's Disease with Human Neurons Made From Human IPS cells	Early Translational III	$1,774,420
David Schubert	Salk Institute for Biological Studies	Stem cell based small molecule therapy for Alzheimer's disease	Early Translational III	$1,673,757
Alexandra Capela	StemCells, Inc.	Restoration of memory in Alzheimer's disease: a new paradigm using neural stem cell therapy	Disease Team Therapy Development - Research	$8,901,641
James Brewer	University of California, San Diego	Collection of skin biopsies to prepare fibroblasts from patients with Alzheimer's disease and cognitively healthy elderly controls	Tissue Collection for Disease Modeling	$643,693

Thomas Novak	Cellular Dynamics International	Generation and characterization of high-quality, footprint-free human induced pluripotent stem cell lines from 3,000 donors to investigate multigenic diseases	hiPSC Derivation	$16,000,000	
					Total: $56,450,565.00

CIRM Alzheimer's Disease Videos

 **Alzheimer's Nightmare Spurs Comedy Fundraiser to Help Caregivers**	 **Grace Asuelime, City of Hope - CIRM Stem Cell #SciencePitch**	 **Aynun Begum, Western Univ. of Health Sciences - CIRM Stem Cell #SciencePitch**	 **Alzheimer's Stem Cell Research: Ask the Expert - Larry Goldstein, UCSD**
 **Alzheimer's Ask the Expert video, Part 2: Of stem cells, iphones and a cellular black box**	 **Alzheimer's: Advancing Stem Cell Therapies - 2011 CIRM Grantee Meeting**	 **Leeza Gibbons - CIRM's Investment in Neurodegenerative Diseases**	 **Alzheimer's Stem Cell Research Patient Advocate Spotlight**
 **Alzheimer's and Huntington's - Using Stem Cells to Understand and Treat Disease**	 **Neural Stem Cells Reverse Alzheimer's-Like Symptoms**	 **Spotlight on Alzheimer's Disease: Welcoming Remarks**	 **Spolight on Alzheimer's Disease: Seminar by Dick Mora**
 **Spotlight on Alzheimer's Disease: Seminar by William Rodman Shankle, M.D.**	 **Spotlight on Alzheimer's Disease: Frank LaFerla, Ph.D.**		

News and Information

- *CIRM Stem Cellar* blogs on Alzheimer's research
- Living with Alzheimer's Disease: Dick Mora (CIRM)

Resources

- NIH: Alzheimer's Disease Fact Sheet
- CDC: Alzheimer's Disease Information
- Find a clinical trial near you: NIH Clinical Trials database
- Alzheimer's Disease Education and Referral (ADEAR) Center
- Mayo Clinic Alzheimer's Disease information center
- Alzheimer's Research Forum

- Alzheimer's Association
- Alzheimer's Foundation of America
- Family Caregiver Alliance
- National Family Caregivers Association

Find Out More:

Stem Cell FAQ | Stem Cell Videos | What We Fund

Source URL: https://www.cirm.ca.gov/our-progress/disease-information/alzheimers-disease-fact-sheet