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## **\$75 MILLION BOOST FOR CALIFORNIA STEM CELL SCIENTISTS**

### **Assembly Speaker says California on the path to cures**

#### **State now largest source of funding for embryonic stem cell research**

LOS ANGELES, March 16, 2007 – Just a month after approving nearly \$45 million for embryonic stem cell research, California's stem cell agency authorized another \$75.7 million in additional funds for established scientists at 12 non-profit and academic institutions.

The 29-member Independent Citizens Oversight Committee (ICOC), governing board of the California Institute for Regenerative Medicine (CIRM), today approved 29 Comprehensive Research Grants for approximately \$74.6 million over four years, to accomplished stem cell investigators at academic and non-profit research centers throughout the state. The grants were selected from 70 applications from researchers at 23 institutions, who sought more than \$175 million in CIRM funding.

"This time of the year new life and new hope seem to be everywhere you look," said Fabian Núñez, Speaker of the California State Assembly. "With these new grants, California is continuing on the path of turning the hope and promise of stem cell research into the reality of therapies and cures for millions of Californians and people across the globe. The California spirit – the perseverance, creativity and resourcefulness that has made us a leader on everything from gold mining in the 19<sup>th</sup> Century to fighting global warming in this one -- is fully present in our stem cell research teams. With today's grants California shows we are again blazing the trail."

Speaker Núñez joined Los Angeles Mayor Antonio Villaraigosa and Robert N. Klein, chairman of the ICOC, at a press conference to review the latest research grants.

"As of today, California is the largest and most stable source of funding for human embryonic stem cell research in the world," Klein said. "The scientific projects proposed for our third set of grants are very strong, and it's clear that there is an abundance of scientific opportunities for the state's investments. We are off to an extraordinary start towards fulfilling the mandate of 7 million California voters, and the hopes of patients and families worldwide."

The Comprehensive Grants approved today will support mature, ongoing studies on human embryonic stem cells (hESCs) by scientists with a record of accomplishment in the field. They were designed for investigators with well-developed expertise in hESC research or in a closely-related field to pursue new directions in hESCs based on their current research.

"These grants provide substantial support to a pool of very distinguished researchers in human embryonic stem cell research," declared Zach W. Hall, Ph.D., CIRM's President and Chief Scientific Officer. "These grants are larger than the Leon J. Thal SEED grants approved in February and extend over four years rather than two. Accordingly, our reviewers had higher expectations and more rigorous standards for judging this set of applications."

"The ICOC has approved a very well-balanced portfolio of research proposals, including those aimed at understanding stem cell differentiation and identifying new ways of obtaining hESCs, and many that target specific diseases," Hall said. "Combined with our training and SEED grants, the CIRM is now funding embryonic stem cell research in more than 100 California laboratories."

“We focused our initial grants on human embryonic stem cells specifically,” Klein said, “because human embryonic stem cell research receives minimal funding from the federal government, and even those funds are restricted to lines of questionable value. Going forward, we will support a diverse range of stem cell research projects. There are a number of California institutions that have strong programs in adult and other stem cells, for example, that are just beginning to build embryonic stem cell capabilities. Many of these institutions may be prominent names in future grant awards. We need them to be fully engaged in this project, if we’re going to achieve our objectives. Fortunately, we have 10 years and \$3 billion to build a strong program encompassing all of California’s research institutions.”

Like the Leon J. Thal SEED grants, the Comprehensive Grants will fund a broad range of projects, including:

- A study of how chemical modification of DNA in hESCs impacts nerve formation and the ability of stem cells to repair brain damage caused by stroke (UCLA)
- Development of new ways of deriving hESCs and investigating the special capabilities of newly-derived human cell lines. (UCSF)
- A proposal to develop neural cellular models of Parkinson’s disease and Lou Gehrig’s disease (ALS) that could be used to screen chemical libraries for novel drugs and to develop preclinical models of human disease (Salk Institute)
- Building tools to better isolate heart and blood cells from differentiated populations of hESCs (Stanford)
- A proposal to optimize the creation of liver cells for transplantation, and be able to monitor their in-vivo fate non-invasively (UC Davis)
- A study of molecular mechanisms regulating hESC survival, focused on a very specific and promising class of growth factors (UC Irvine)

The ICOC approved Comprehensive Research Grants to the following researchers (**Note: the dollar amounts shown are the four-year budgets requested by each applicant and are subject to review and revision by CIRM, prior to the issuance of grant awards**):

Application #	Principal Investigator	Institution	Title	Amount
<a href="#">RC1-00100-1</a>	Baker, Dr. Julie C	Stanford University	Functional Genomic Analysis of Chemically Defined Human Embryonic Stem Cells	\$2,628,635
<a href="#">RC1-00104-1</a>	Bernstein, Dr. Harold S	University of California, San Francisco	Modeling Myocardial Therapy with Human Embryonic Stem Cells	\$2,229,140
<a href="#">RC1-00108-1</a>	Crooks, Dr. Gay Miriam	Children's Hospital of Los Angeles	Regulated Expansion of Lympho-hematopoietic Stem and Progenitor Cells from Human Embryonic Stem Cells (hESC)	\$2,551,088
<a href="#">RC1-00110-1</a>	Donovan, Professor Peter	University of California, Irvine	Improved hES Cell Growth and Differentiation	\$2,509,438
<a href="#">RC1-00111-1</a>	Fan, Dr. Guoping	University of California, Los Angeles	Epigenetic gene regulation during the differentiation of human embryonic stem cells: Impact on neural repair	\$2,516,613
<a href="#">RC1-00113-1</a>	Fisher, Dr. Susan J.	University of California, San Francisco	Constructing a fate map of the human embryo	\$2,532,388
<a href="#">RC1-00115-1</a>	Gage, Professor Fred H.	The Salk Institute for Biological Studies	Molecular and Cellular Transitions from ES Cells to Mature Functioning Human Neurons	\$2,879,210

Application #	Principal Investigator	Institution	Title	Amount
<a href="#">RC1-00116-1</a>	Goldstein, Professor Lawrence S. B.	University of California, San Diego	USING HUMAN EMBRYONIC STEM CELLS TO UNDERSTAND AND TO DEVELOP NEW THERAPIES FOR ALZHEIMER'S DISEASE	\$2,512,664
<a href="#">RC1-00119-1</a>	Heller, Professor Stefan	Stanford University	Generation of inner ear sensory cells from human ES cells toward a cure for deafness	\$2,469,373
<a href="#">RC1-00123-1</a>	Lee, Dr. Jang-Won	CHA Regenerative Medicine Institute	Establishment Of Stem Cell Lines From Somatic Cell Nuclear Transfer-Embryos in Humans	\$2,556,066
<a href="#">RC1-00124-1</a>	Lee, Dr. Randall James	University of California, San Francisco	Embryonic Stem Cell-Derived Therapies Targeting Cardiac Ischemic Disease	\$2,524,617
<a href="#">RC1-00125-1</a>	Lipton, Dr. Stuart A.	Burnham Institute for Medical Research	MEF2C-Directed Neurogenesis From Human Embryonic Stem Cells	\$3,035,996
<a href="#">RC1-00131-1</a>	Marsala, Dr. Martin	University of California, San Diego	Spinal ischemic paraplegia: modulation by human embryonic stem cell implant.	\$2,445,716
<a href="#">RC1-00132-1</a>	Mercola, Dr. Mark	Burnham Institute for Medical Research	Chemical Genetic Approach to Production of hESC-derived Cardiomyocytes	\$3,036,002
<a href="#">RC1-00133-1</a>	Nusse, Dr. Roel	Stanford University	Guiding the developmental program of human embryonic stem cells by isolated Wnt factors	\$2,354,820
<a href="#">RC1-00134-1</a>	Palmer, Professor Theo D	Stanford University	Immunology of neural stem cell fate and function	\$2,501,125
<a href="#">RC1-00135-1</a>	Pleasure, Dr. Samuel J.	University of California, San Francisco	Human stem cell derived oligodendrocytes for treatment of stroke and MS	\$2,566,701
<a href="#">RC1-00137-1</a>	Reijo Pera, Dr. Renee A.	University of California, San Francisco	Human oocyte development for genetic, pharmacological and reprogramming applications	\$2,469,104
<a href="#">RC1-00142-1</a>	Srivastava, Dr. Deepak	The J. David Gladstone Institutes	microRNA Regulation of Cardiomyocyte Differentiation from Human Embryonic Stem Cells	\$3,164,000
<a href="#">RC1-00144-1</a>	Tarantal, Professor Alice F.	University of California, Davis	Preclinical Model for Labeling, Transplant, and In Vivo Imaging of Differentiated Human Embryonic Stem Cells	\$2,257,040
<a href="#">RC1-00148-1</a>	Xu, Yang	University of California, San Diego	Mechanisms to maintain the self-renewal and genetic stability of human embryonic stem cells	\$2,570,000
<a href="#">RC1-00149-1</a>	Zack, Dr. Jerome A	University of California, Los Angeles	Human Embryonic Stem Cell Therapeutic Strategies to Target HIV Disease	\$2,516,831
<a href="#">RC1-00151-1</a>	Zarins, Dr. Christopher K.	Stanford University	Engineering a Cardiovascular Tissue Graft from Human Embryonic Stem Cells	\$2,618,704
<a href="#">RC1-00345-1</a>	Keirstead, Dr. Hans S.	University of California, Irvine	hESC-Derived Motor Neurons For the Treatment of Cervical Spinal Cord Injury	\$2,396,932
<a href="#">RC1-00346-1</a>	Kriegstein, Dr. Arnold R.	University of California, San Francisco	Derivation of Inhibitory Nerve Cells from Human Embryonic Stem Cells	\$2,507,223
<a href="#">RC1-00347-1</a>	Leavitt, Dr. Andrew D.	University of California, San Francisco	Understanding hESC-based Hematopoiesis for Therapeutic Benefit	\$2,566,702
<a href="#">RC1-00353-1</a>	Wallace, Professor Douglas C.	University of California, Irvine	The Dangers of Mitochondrial DNA Heteroplasmy in Stem Cells Created by Therapeutic Cloning	\$2,530,000

Application #	Principal Investigator	Institution	Title	Amount
<a href="#">RC1-00354-1</a>	Weissman, Dr. Irving L	Stanford University	Prospective isolation of hESC-derived hematopoietic and cardiomyocyte stem cells	\$2,636,900
<a href="#">RC1-00359-1</a>	Zern, Professor Mark Allen	University of California, Davis	An in vitro and in vivo comparison among three different human hepatic stem cell populations.	\$2,504,614

**Total \$74,587,642**

Totals for each institution are listed below:

Institution	Comp Grants	Amount
UC San Francisco	7	\$17,395,875
Stanford University	6	\$15,209,557
UC San Diego	3	\$7,528,380
UC Irvine	3	\$7,436,370
Burnham Institute for Medical Research	2	\$6,071,998
UCLA	2	\$5,033,444
UC Davis	2	\$4,761,654
The J. David Gladstone Institutes	1	\$3,164,000
Salk Institute for Biological Studies	1	\$2,879,210
CHA Regenerative Medicine Institute	1	\$2,556,066
Children's Hospital of Los Angeles	1	\$2,551,088
<b>Total</b>	<b>29</b>	<b>\$74,587,642</b>

The ICOC also completed its review of the Leon J. Thal SEED Grant applications. Nearly \$45 million was approved in February, to 72 scientists at 20 institutions. Today the ICOC approved two additional grants to the following researchers (**Note: the dollar amounts shown are the two-year budgets requested by each applicant and are subject to review and revision by CIRM, prior to the issuance of grant awards**):

Application #	Principal Investigator	Institution	Title	Amount
<a href="#">RS1-00308-1</a>	Stainier, Dr. Didier Y.R.	University of California, San Francisco	Endodermal differentiation of human ES cells	\$635,242
<a href="#">RS1-00247-1</a>	LaFerla, Dr. Frank M.	University of California, Irvine	Development of human ES cell lines as a model system for Alzheimer disease drug discovery	\$492,750

**Total \$1,127,992**

The first scientific grants approved under the Stem Cell Research and Cures Act totaled \$37.5 million, and were awarded in April 2006, to train 169 pre-doctoral, post-doctoral, and clinical fellows at 16 non-profit and academic research institutions. With today's decision, the ICOC has now approved more than \$158 million for research grants at 23 California institutions:

<b>Institution</b>	<b>Training Grants</b>	<b>SEED Grants</b>	<b>Comp Grants</b>	<b>Grants</b>	<b>Funds (Requested &amp; Awarded)</b>
Stanford University	1	12	6	19	\$26,519,988
UC San Francisco	1	9	7	17	\$25,796,219
UC San Diego	1	6	3	10	\$14,821,287
Burnham Institute for Medical Research	1	8	2	11	\$13,381,881
UC Irvine	1	7	3	11	\$13,581,435
UC Los Angeles	1	7	2	10	\$12,907,906
UC Davis	1	2	2	5	\$8,286,877
The J. Gladstone Institutes	1	3	1	5	\$7,920,705
The Salk Institute for Biological Studies	1	3	1	5	\$6,605,126
Children's Hospital of Los Angeles	1	1	1	3	\$5,578,107
University of Southern California	1	4		5	\$5,405,461
UC Berkeley	1	2		3	\$3,446,378
CHA Institute of Regenerative Medicine			1	1	\$2,556,066
UC Santa Cruz	1	2		3	\$2,132,200
California Institute of Technology	1			1	\$2,071,823
The Scripps Research Institute	1	1		2	\$1,836,280
UC Santa Barbara	1			1	\$1,218,242
UC Riverside		2		2	\$1,139,456
Buck Institute for Age Research		1		1	\$734,202
Human BioMolecular Research Institute		1		1	\$714,654
Ludwig Institute for Cancer Research		1		1	\$691,489
UC Merced		1		1	\$363,707
City of Hope, National Medical Center		1		1	\$357,978
<b>Totals</b>	<b>16</b>	<b>74</b>	<b>29</b>	<b>119</b>	<b>\$158,067,467</b>

### **About CIRM**

Governed by the ICOC, CIRM was established in 2004 with the passage of Proposition 71, the California Stem Cell Research and Cures Initiative. The statewide ballot measure, which provided \$3 billion in funding for stem cell research at California universities and research institutions, was approved by California voters, and called for the establishment of an entity to make grants and provide loans for stem cell research, research facilities, and other vital research opportunities. For more information, please visit [www.cirm.ca.gov](http://www.cirm.ca.gov).

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