



CIRM Transition Plan
Sustainability of Mission

January 31, 2012

Executive Summary

In 2004, more than seven million California voters (59%) took the unprecedented step of authorizing the issuance of \$3 billion of state general obligation bonds to fund stem cell research in California. By creating the California Institute for Regenerative Medicine (“CIRM”) to fund and oversee this critical research, the voters hoped to propel the discovery of new therapies and cures to treat patients suffering from chronic disease and injury, advance the biotech industry in California to world leadership, and stimulate the California economy by creating jobs and new tax revenues. As discussed below, CIRM has made considerable progress in reaching these goals. Of course, much work remains to be done. We are committed to delivering on the goals established in Proposition 71.

In 2010, we worked closely with Senator Elaine Alquist, Senate President Pro-Tem Darrell Steinberg, Majority Leader Senator Dean Florez and Senate Appropriations Chair Senator Christine Kehoe on legislation to improve the performance, transparency, and accountability of CIRM. With the support of the leadership in the Senate and the Assembly, the Legislature unanimously enacted S.B. 1064, and Governor Schwarzenegger signed the bill into law. Among other things, S.B. 1064 requires CIRM “to create a transition plan addressing the expiration of current bond funding.” (Health & Saf. Code, § 125290.71.)

Below, we set forth CIRM’s plans for the expiration of bond funding, including both our efforts to sustain CIRM’s mission and to provide a smooth transition. By attracting stem cell researchers from around the world to California, building state of the art research facilities, leveraging CIRM’s funds with collaborative funding partners, and engaging the biotechnology and pharmaceutical industries, CIRM has already made significant progress in creating a sustainable platform to achieve CIRM’s mission, whether or not additional state funding is ultimately obtainable. To advance these efforts further and to fulfill our obligations to the citizens of California, we plan to:

- Continue to create infrastructure and facilitate logistical transitions to enable grantees, industry, other government agencies, disease foundations, venture capitalists and others to continue to pursue CIRM’s mission
- Enable a smooth transition for patients, faculty and student awardees and other stakeholders
- Facilitate the ongoing tracking of intellectual property and other obligations of awardees
- Evaluate the creation of philanthropic venture and/or biopharmaceutical investment funds to continue CIRM’s mission
- Evaluate, at the appropriate time, the feasibility of additional public funding

CIRM currently plans to make its last awards around fiscal year 2016-17, disburse its last funds around fiscal year 2020-21 and finish closeout of all awards thereafter. We recognize that this plan will require modification and additional detail over time to reflect new information and changed circumstances. CIRM intends to maintain the necessary staff to complete the closeout of all awards. In the future and as appropriate for the time, we will develop detailed plans to enable the transfer of ongoing activities and systems, such as tracking of legal and financial obligations currently done by CIRM. We therefore intend to

update the plan on a periodic basis to provide information to the Governor, the Controller, the Legislature and the California public regarding CIRM's plans for the future.

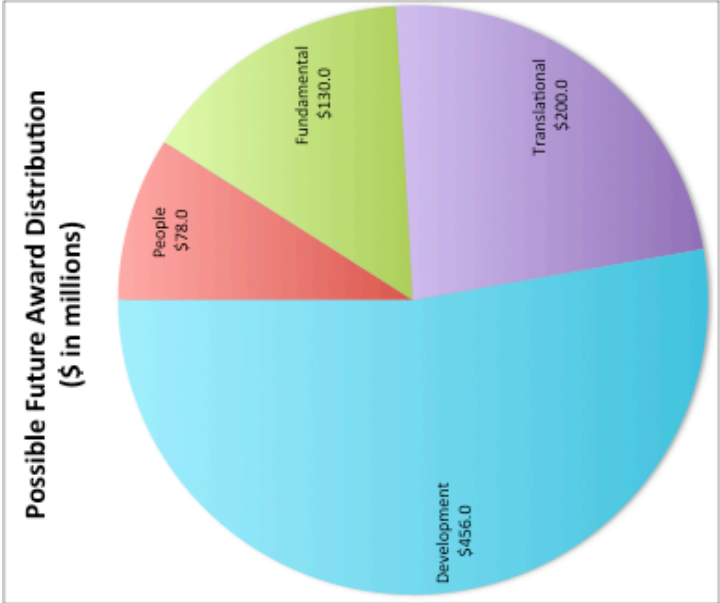
CIRM Today

As a recent external review report issued by a world-class scientific panel stated, "CIRM has already delivered extraordinary results in a remarkably short period of time. This accomplishment is especially noteworthy given the limited administrative budget and correspondingly small staff." CIRM has made material strides towards reaching our goals of finding therapies and cures for chronic diseases and injuries and advancing the biotech industry in California to world leadership, all while remaining under its six percent cap on administrative expenses. CIRM funding has already resulted in over \$900 million in commitments for additional support for stem cell research. At the same time, CIRM expects to generate over \$200 million in state and local tax revenues by 2014. Furthermore, CIRM funding is expected to create over 24,600 job-years of employment in California through 2014. Of course, the greatest economic benefit to California would be the development of new treatments for debilitating diseases and conditions. Such advances would directly reduce health care expenses in California for the long term. New treatments brought to market would also provide the opportunity for payments to the state's General Fund through "Revenue Sharing" provisions of CIRM's Intellectual Property regulations.

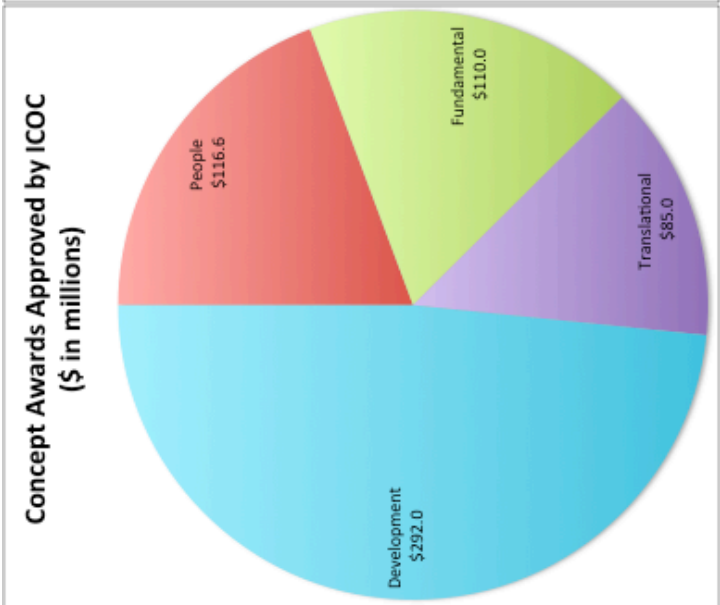
To achieve the goals of Prop. 71, CIRM has focused on five broad categories of funding:

- Research facilities: providing world-class physical infrastructure for California stem cell researchers
- Human capital: attracting the best researchers worldwide and training the next generation of California stem cell scientists
- Fundamental stem cell science: advancing the basic understanding of stem cell biology and thereby enabling broad advances
- Translational research: moving basic science discoveries into position for clinical trials
- Clinical trials of stem cell based therapies: during the period of CIRM funding, moving scientific advances into early testing in patients to evaluate safety and efficacy for use as new therapies

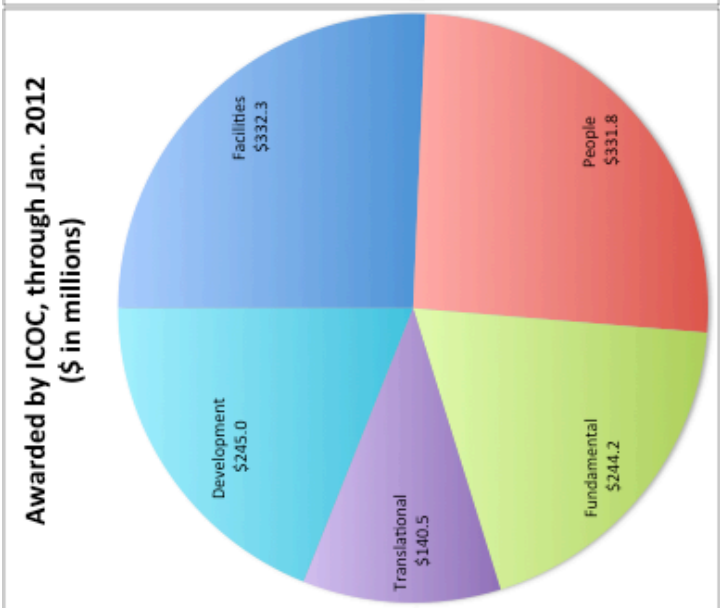
To date, CIRM has made award commitments of approximately \$1.29 billion. Another \$604 million in award concepts have been approved by the ICOC. The graphs below summarize CIRM's awards to date as well as the award concepts. These graphs demonstrate CIRM's transition over time from funding physical and human infrastructure, to increasing its emphasis on translational and clinical development awards.



\$864 million



\$604 million



\$1.29 billion

Following is a recap of our activities to date, which highlights our efforts to sustain CIRM's mission of stem cell research and cures within California.

Research Facilities. To date, CIRM has funded approximately \$332 million in new research space and shared laboratories, attracting commitments for nearly \$800 million in matching funds, and upon completion of ongoing projects, creating over 500,000 square feet of dedicated and shared research facilities that will house approximately 2,000 scientists. These awards alone have generated more than 13,000 job-years of employment in California. CIRM-funded facilities provide the opportunity for stem cell scientists to work in close proximity, and not scattered across an academic campus, providing tremendous opportunity for scientific synergy and cross-disciplinary innovation. These world-class CIRM-funded facilities at over a dozen leading academic and nonprofit research institutions throughout California will continue to provide a home for thousands of stem cell research scientists for decades to come.

Research Leadership and Work Force. CIRM's New Faculty Awards, Research Leadership Awards, and other research awards have funded more than 100 investigators in California. Significantly, many have moved to California because of the opportunity to conduct CIRM-funded translational research. This scale and breath of opportunity simply does not exist from other funding sources outside California. In addition, the "Bridges Program" brings together the best and brightest young students throughout the state, laying the groundwork for future scientific and technical leadership. Through 2013, the first five years of this program, we expect to reach 750 students from the California State University and Community College systems.

Fundamental Stem Cell Science. CIRM has made 163 awards supporting research into fundamental stem cell science. These basic advances will continue to enable downstream discoveries and the identification of new therapies for major diseases.

Translational Research. Translational research refers to projects focused on transforming basic scientific discoveries into a potential new therapy or drug that is ready for evaluation in human clinical trials. CIRM made its first awards for translational programs in early 2009. Currently, CIRM is funding 43 translational programs, each with the goal to identify a candidate for human clinical development within the next several years.

Clinical Therapy Pipeline. In 2010, CIRM made its first 14 awards, under the "Disease Team I" RFA, for programs that are expected to result in clinical trials during the period of CIRM funding. Pending peer review and ICOC approval, we expect our current "Disease Team II" RFA will add more programs to this list. In addition, many CIRM-funded translational projects are moving towards initiation of human clinical trials within the next several years. This clinical pipeline is where the most visible achievements of CIRM – new treatments for chronic disease and injury – will come to fruition. Consequently, as the field has grown and matured in recent years, we have placed increasing emphasis on moving towards and funding early-stage human clinical trials of stem cell-based therapies.

Collaborative Funding Agreements. As the largest funding source for stem cell research in the world, California has attracted international interest in the stem cell work being done in the state. As a result, CIRM has entered into 16 “Collaborative Funding Agreements” (CFAs) with other countries, states and foundations. These agreements have paired California stem cell scientists with some of the best researchers from all over the world and have already led to over \$100 million in funding commitments for CIRM-funded programs.

In summary, CIRM has established world-class infrastructure; attracted and cultivated the best scientific talent worldwide; is moving downstream to the challenging process of human clinical trials of stem cell-based therapies; and overall is expected to create over 24,600 job-years of employment in California through 2014. In just five years, CIRM-funded research has resulted in over 1,000 publications in scientific journals. Furthermore, the awards made to date have resulted in over \$900 million of commitments for additional funding for stem cell research (including the facilities funding mentioned above). Sources of this financial support include private universities; philanthropic organizations; the biopharma industry; other state and foreign government agencies; and the National Institutes of Health (NIH). Such financial leverage increases the impact of taxpayer funding, and also represents a potential model for future funding of stem cell research within California.

Future Awards

Taking account of the previous and planned awards referenced above, \$864 million of the original \$3 billion remains for new awards. We currently expect to make new awards for approximately another five years, into FY16/17. As award commitments last over multiple years, disbursements will continue into FY20/21, nine years from now. These timelines are subject to revision as CIRM is in the midst of updating our strategic plan, with completion expected spring 2012. The focus, balance and timing of our future awards is a primary consideration of our ongoing strategic planning process.

As we look to allocate the remaining funding authorized by Prop. 71 in the coming years, we expect to maintain our support for the development of human capital in California stem cell research and development. Over the next five years, we expect to continue to increase the emphasis on clinical trials of stem cell derived therapies. We will also look to continue to increase industry activity and involvement in stem cell research and clinical trials in California, both by encouraging the growth of the industry already present and also attracting the best companies from outside the state to establish operations here. As we move our focus from basic scientific advances to developing new products, such industry involvement will be crucial for achieving the goals of Prop. 71. Significantly, the biopharma industry employs a highly skilled, highly trained workforce, which represents the future for economic growth in California.

Logistical Transitions

We have identified several logistical priorities where CIRM will continue to focus in the coming decade. Successfully addressing these transition points will help ensure that those involved with stem cell research in California will be able to continue to advance CIRM's mission for the discovery of new stem cell therapies and cures:

- Provide regulatory and product development guidance to its grantees to ensure that they have the tools necessary to take their discoveries from the bench to the bedside
- Support efforts by its grantees to protect CIRM-funded intellectual property in order to safeguard the state's investment and promote the commercialization of CIRM-funded therapies
- Develop detailed plans for the transition considering the needs of all stakeholders (e.g. patients, awardees) and for transferring authority for monitoring third party obligations, such as the repayment of loans, before CIRM's last research awards are closed
- Transfer award agreements to the State Controller's Office, Collections Division, for the purpose of auditing grantees and collecting any payments due to the State after CIRM's last research awards are closed. (This is per our agreement with the State Controller's Office in 2006.)

Programs to Sustain the Mission

CIRM has already enabled the creation of significant physical infrastructure within the state. As described above, the CIRM-funded facilities will help enable the sustainability of CIRM's mission for decades to come. Additional programs and initiatives to sustain CIRM's mission include:

- Encourage the growth of the biotechnology industry in California, both by fostering the growth of the companies already present in the state, and working to bring new biotechnology companies to California
- Fund the creation of an induced Pluripotent Stem Cell (iPSC) bank as a resource for California researchers and companies interested in disease modeling and drug discovery
- Explore and facilitate the creation of other resources, such as an "Alpha Stem Cell Clinic" for the delivery of stem cell based therapies to patients

Financial Transitions

Prop. 71 authorized the sale of \$3 billion of California General Obligation Bonds to fund stem cell research. In the interest of leveraging that funding to continue California's pre-

eminence in stem cell research through and beyond 2021, we are exploring the following funding opportunities:

- **Disease Foundations.** As described above, CIRM’s Collaborative Funding Program has already attracted over \$100 million in outside funding commitments alongside CIRM awards, primarily from government organizations in other states and countries. Like CIRM, many disease foundations have recently moved downstream from their traditional role of patient advocacy and funding basic research, to a collaborative focus on translational medicine and clinical research. The Juvenile Diabetes Research Foundation recently provided funding under a collaborative agreement with CIRM to our Disease Team awardee ViaCyte. JDRF has already funded \$1.6 billion in research for type 1 diabetes. We will be exploring and aggressively evaluating new collaborative opportunities to fund programs of similar mutual interest.
- **Federal Funding.** In October 2011, CIRM and the NIH announced a pioneering program to provide California researchers, under CIRM auspices, an opportunity to access intramural resources at NIH. One opportunity relates to the current round of applications for CIRM’s Disease Team Therapy Development Research awards. During the planning phase of these awards, California teams could develop collaborations with researchers at the NIH Clinical Center on various aspects of a preclinical, Phase 1, Phase 1/2 or Phase 2 clinical trial. Another option is to provide California researchers with the opportunity to take part in NIH Clinical Center visiting fellowship or clinical investigator training programs. A third is to enable access by California researchers to unique resources at NIH that may not be available at their home institutions.
- **Venture Philanthropy.** Because CIRM’s primary goal is to establish clinical proof-of-concept for a novel stem-cell based therapy in the coming years and clinical trials represent the most expensive stage of the drug development process we are exploring the possibility of establishing a venture philanthropy fund to augment and co-fund CIRM projects for Phase 1 and Phase 2 programs. Such funds could come from high net worth donors and medical foundations interested in the stem cell space. A venture philanthropy fund would operate independently of CIRM, could provide the opportunity to magnify the effect of CIRM funding for the expensive and uncertain clinical development process, and would continue to be active beyond the expiration of CIRM’s current funding. Fund managers would take an active advisory role with respect to the funded projects, much as a venture capitalist does when investing in a fledgling company. Such a fund would work in partnership with the leading California academic centers and biotechnology companies to move promising programs through the “valley of death” to the point where traditional funding sources (such as venture capital and pharmaceutical companies) are willing to shoulder the expense and risk of further clinical development.
- **Biopharma Investment Fund.** Many of the world’s leading biopharmaceutical companies have recently adopted an “open innovation” model, where they seek to

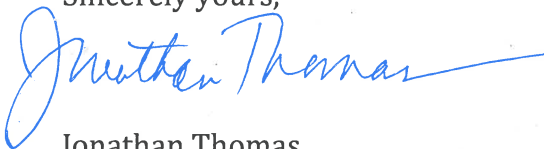
identify new product opportunities through aggressive and early-stage outside collaborations as well as through non-exclusive and “pre-competitive” relationships. For example, UCSF and Pfizer recently announced an \$85 million partnership to accelerate the translation of biomedical research into effective new medications and therapies for patients. Many of the world’s largest biopharma companies are growing increasingly interested in regenerative medicine research and product opportunities. In the future, we will explore opportunities for companies to fund a broad portfolio of stem cell research in California, under terms that universities and researchers endorse.

- **State Funding.** Although additional state funding could be a possibility in the future, *it would be premature to consider another bond measure at this time.* Any such decision would depend on CIRM’s ability in the coming years to make a compelling scientific and economic case to the public that such additional funding is warranted, and that CIRM should continue its mission beyond 2021.

We believe that CIRM’s success in human clinical trials would enable a wide variety of future funding opportunities for California stem cell research, from governmental to philanthropic to industry support. Success would highlight the scientific, medical and economic accomplishments made possible by Prop. 71, as well as underscore the leadership role of CIRM in advancing this field.

Looking forward, our actions to date have laid the groundwork for California to remain a global center of excellence for stem cell research and development. Success will lead to the creation of new therapies to improve health, reduce the economic burden of disease, and enable the advancement of the biotech industry in the state. Our lasting accomplishments will include physical infrastructure to house thousands of stem cell researchers in California; the recruitment and training of over one thousand new scientists within the state; a pipeline of translational and clinical development programs; international relationships advancing and accelerating stem cell research throughout the world; and numerous biotechnology companies focused on stem cell research within California. Collectively, this legacy will allow California to continue world leadership in the coming decades.

Sincerely yours,



Jonathan Thomas
Chair, ICOC



Alan Trounson
President, CIRM