RFA 12-06: CIRM Stem Cell Genomics Centers of Excellence Awards

I. Purpose

The purpose of the CIRM Stem Cell Genomics Centers of Excellence Awards is to support the establishment and operation in California of one or two centers of excellence dedicated to the application of cutting-edge genomics approaches to substantive problems of human stem cell biology. These centers will provide expertise and resources for the development and application of new and innovative genomics approaches for stem cell biology and regenerative medicine. Combining genomic and bioinformatics approaches with stem cell research will accelerate fundamental understanding of human biology and disease mechanisms, enhance cell and tissue production and advance personalized cellular therapeutics.

II. Objectives and Program Features

The Stem Cell Genomics Centers of Excellence Awards (Genomics Centers Awards) will advance stem cell genomics by providing an infrastructure on which to implement a range of genomic studies focusing on the biology and therapeutic application of human stem cells. The mission of these CIRM Genomics Centers ("Centers") will be 1) to pursue critical, transformative, data-intensive genomics projects that will substantially advance the human stem cell field and to advance genomics technology as applied to stem cell biology, and 2) to collaborate with stem cell scientists from throughout California on genomics research projects by providing advice and assistance in the design and performance of genomics experiments, the collection and processing of complex data sets, and the application of advanced bioinformatics analyses. The Centers will be expected to undertake projects critical to the progress of stem cell research in collaboration with appropriate partners.

Centers will be expected to implement and engage in the following activities:

1. Center-initiated Projects. Centers will advance the entire stem cell field through execution of critical and transformative human genomics research projects that are likely to involve intensive data collection and analysis. This center-initiated research may include innovative technology development projects to address major bottlenecks in stem cell genomic research including information technology and data

analysis. Applicants must propose at least 2 and not more than 4 Center-initiated projects.

2. Collaborative Research. Through the solicitation and participation in collaborative research projects, the Centers will provide stem cell scientists throughout the state with access to cutting-edge genomics and bioinformatics technologies, and expertise and assistance in experimental design and data analysis. Collaborative research projects must comprise 30% of Genomics Center activity, resources and budget. Specific collaborative projects will not be identified at time of application, but applicants must describe the process whereby collaborative projects will be selected and managed, and the types and scope of projects appropriate for collaborative research,

3. **Data Coordination and Management**. A center will provide infrastructure and expertise for storage, transfer, assembly, and publication via web portals of the terabyte-scale amounts of data generated by the CIRM Centers and their collaborators.

Proposals must address and describe plans for Center-initiated Projects, Collaborative Research, and Data Coordination and Management, as well as overall Center administration and operations. However, if two awards are made, only one will receive funds for Data Coordination and Management (up to $4 million), and the Center granted funds for this activity will carry out data coordination and management for both Centers.

Successful Genomics Center Awardees must establish a Collaborative Resource Committee that will evaluate and approve applications for collaborative research projects submitted by researchers from other California organizations. This committee should have a majority of its membership from institutions independent from the grantee organization. Additionally, CIRM will designate a member of the CIRM Science Program staff to serve on the committee.

CIRM Stem Cell Genomics Centers of Excellence should be hosted within established California universities, research institutes or companies, and must augment existing genomics or bioinformatics resources to capitalize on expertise and infrastructure.

Applicant institutions must commit adequate and appropriate space, equipment and other resources to support a Genomics Center. The quality and amount of institutional support will be a key consideration of reviewers in assessing proposals.

III. Award Information

Under this Request for Applications (RFA), CIRM intends to commit up to $40 million to support one or two Genomics Center Awards for up to 5 years. Specific allotments

to individual awards will be made by the Independent Citizen's Oversight Committee (ICOC), CIRM's Governing Board, upon recommendation of the Grants Working Group (GWG). Given the urgency of CIRM's mission, all approved applications must be initiated (grant start date in issued and signed Notice of Grant Award) within 9 months of approval and authorization for funding by the ICOC, unless CIRM's President grants an extension based upon compelling justification of the need for additional time.

For all awards, CIRM has the right to negotiate funded project activities, milestones (both technical and financial), success criteria, timelines and budgets prior to issuance of the Notice of Grant Award (NGA), subject to renegotiation annually and/or based on progress. CIRM will require a written semi-annual progress report in addition to the annual progress report that is required by the CIRM Grants Administration Policy (GAP, section XIII.A). CIRM will also conduct an annual site visit of the award recipient(s). CIRM may also wish to review (for compliance with CIRM's policies and regulations) key contract/agreements (e.g. with subcontractors) that are critical to the success of the project.

Progress on these awards is important to CIRM. Continued funding is contingent upon timely progress as outlined in the project plan and timeline established under the NGA.

IV. Award Mechanism

CIRM expects to fund approved proposals from non-profit and for-profit institutions (separately or in collaborations), through grants.

Grant Terms: Non-profit or for-profit institutions will receive grant funding in quarterly disbursements, and be subject to all terms of CIRM's Intellectual Property and Revenue Sharing Requirements for Non-Profit and For-Profit Grantees (17 Cal. Code Regs. § 100600 et seq.).

V. Eligibility

A. Institutional Eligibility

Both non-profit and for-profit organizations are welcome to apply. At the time of the application deadline, the applicant organization must be located in California (that is, the organization must have employees who are conducting business or operations at a location in California). Furthermore, applicant (or co-applicant) organizations must have an established genomics facility in California with expertise and capability in second-generation sequencing, bioinformatics and genomic data analysis, and associated technologies. At the time of funding, the applicant organization must be conducting or managing research that is taking place in California at a scale

appropriate to perform all required activities of the grant. If these requirements are not met, CIRM may terminate all further action on the application.

Non-profit and for-profit institutions sponsoring Co-Program Directors (Section VII.B, Co-Program Directors) are subject to the same eligibility requirements as applicant institutions.

"Non-profit organization" means: (1) a governmental entity of the state of California; or (2) a legal entity that is tax exempt under Internal Revenue Code section 501(c)(3) and California Revenue and Taxation Code section 23701d.

"For-profit organization" means: a sole-proprietorship, partnership, limited liability company, corporation, or other legal entity that is organized or operated for the profit or financial benefit of its shareholders or other owners. Such organizations also are referred to as "commercial organizations".

CIRM encourages collaborative endeavors between non-profit and for-profit organizations.

B. Program Director (PD) Eligibility

The PD must have an M.D., Ph.D. or equivalent degree, and must be authorized by the applicant institution to manage the Center and conduct the proposed research in California. By the application deadline, the PD must:

- Be an independent investigator in California at a Non-profit applicant institution, or have an equivalent position and be an employee in California (at least 50-percent time) of a for-profit applicant institution
- Have documented authority from the applicant institution to staff the proposed project
- Have documented commitment from the applicant institution to provide laboratory space and shared resources sufficient to carry out the proposed research.

C. Co-Program Director (Co-PD) Eligibility

In order to encourage multidisciplinary team-based research, CIRM will allow for up to two CIRM-funded Co-Program Directors (Co-PD's) to be designated. A Co-PD must have responsibility for a distinct program component(s) and/or activities and have a clearly defined role in the project. A Co-PD must have an M.D., Ph.D. or equivalent degree and must be sponsored by the institution at which the Co-PD will conduct the proposed research in California. A Co-PD's institution may be different than that of the PD.

By the application deadline, the Co-PD must:

- Be an independent investigator in California at a Non-profit applicant institution, or have an equivalent position and be an employee in California (at least 50-percent time) of a For-profit applicant institution
- Have documented authority from the Co-PD's institution to staff the proposed project
- Have documented commitment from the Co-PD's institution to provide laboratory space and/or computing resources, and other shared resources sufficient to carry out the proposed research.
- Designating Co-PD(s) is not a requirement. The decision of whether to include Co-PD(s) should be guided by the scientific goals of the project.

CIRM is limiting the number of active CIRM research awards in which an investigator may participate as PI (PD) or Co-PI (Co-PD). This RFA is not open to investigators as a PD or as Co-PD who are already a PI, PD or a Co-PI (Co-PD) on 3 or more active CIRM awards as of November 28, 2012, the deadline for submission of the application.

The limit includes all CIRM awards that have been approved but not yet closed out, with the exception of the following CIRM RFAs/PAs: Shared Research Labs, Major Facilities, Research Training Awards I & II, Bridges to Stem Cell Research, Disease Team Planning Awards, Disease Team Therapy Development Part I Planning Awards, or Conference Grants.

D. Percent Effort Requirements

CIRM, mindful of the urgency of its mission, will only fund PDs and Co-PDs who are willing to devote substantial, focused attention to the project. For this RFA, PDs must be willing and able to commit a minimum **25%** effort, **15%** for Co-PDs.

E. Extraordinary Exceptions

The President of CIRM has the discretion to permit exceptions to any eligibility requirement specified in this Section V. The President may permit an exception if he determines, in his individual discretion, that the applicant has demonstrated that the exception would preserve an important research opportunity or make a critical contribution to one of CIRM's mission objectives. Exceptions must be consistent with the objectives of this RFA and the requirements of Proposition 71 as well as California state regulations, including the Grants Administration Policy (see Section XI of this RFA), or they will not be considered.

If CIRM determines that an application does not meet the eligibility requirements, CIRM may terminate all further action on the application. Applicants who will need an exception are strongly encouraged to request it at least 30 days before the relevant application deadline. To request an exception, or for assistance in determining whether one is necessary, contact the CIRM staff listed in Section X. Please do not contact CIRM's President directly.

VI. Application and Evaluation Process

Prior to submitting an application, a PD must submit a Letter of Intent (LOI). A PD may submit only a single LOI. Unless notified by CIRM that the LOI does not meet the eligibility criteria (as defined in section V) based on information provided in the LOI, all applicants who submitted an LOI that was accepted by CIRM may submit an application. The application must have the same PD and Co-PD(s) listed in the LOI, or it will be deemed ineligible.

Applications will be evaluated by the CIRM GWG which is composed of fifteen scientific experts from outside California, seven patient advocate members of CIRM's Governing Board, and the Chair of the Governing Board. The list of scientific members who may participate in the GWG review can be found at http://www.cirm.ca.gov/GrantsWkgGrpMembers. The composition of the ICOC can be viewed at http://www.cirm.ca.gov/GoverningBoard. The fifteen participating scientists on the GWG will review the applications and score them according to scientific and technical merit, applying the review criteria described in Section VII below.

As each application will propose multiple Center-initiated Projects, reviewers will assign separate scores for each of the proposed Center-initiated Projects within an application. These project scores will be weighted proportionally to the funds requested for each project, and then combined to determine a score for the Center-initiated Project component of the application. Reviewers will also assign separate scores for the Center Administration and Operations component and Collaborative Activities component. The three component scores will be combined to determine a composite total score for the entire application. Additionally, reviewers will assign a separate score for the Data Coordination and Management component. The GWG (scientists and patient advocates) will then review the entire portfolio of applications, taking into consideration the following criteria: a) Center-initiated Projects of particular merit, feasibility, promise, and value; b) addressing overall needs for genomic resources by California stem cell scientists; c) other programmatic considerations from the perspective of patient advocates.

The GWG will make funding recommendations to the ICOC concerning which Centers and which Center-initiated projects (within a particular award) to fund. The GWG may also make specific recommendations concerning the budget for each proposed award. The ICOC will make final funding decisions.

CIRM's confidentiality and conflict screening rules will apply to everyone who will have access to applications or who will attend the review meeting, including CIRM staff, external reviewers, and representatives of Collaborative Funding Partner Agencies. (Per Gov. Code §6254.5(e), non-public records may be disclosed to government agencies under confidentiality agreements.)

VII. Review Criteria

Applications will be evaluated in four areas: A) Center-initiated Research, B) Collaborative Research, C) Data Coordination and Management, and D) Center Organization and Operational Plan.

A. Center-initiated Research Projects
Each Center-initiated project (2 to 4 per application) will be evaluated with the following criteria:

- Significance and Innovation
  - Research project addresses a major unsolved problem in stem cell biology or regenerative medicine.
  - Technology development project is focused on a new development that may include a tool or technology that will enable researchers to overcome a significant bottleneck in stem cell research.
  - Project is particularly innovative and creative in the use of genomics and bioinformatics approaches.
  - If successful, project will significantly advance the field of stem cell science or regenerative medicine.

- Feasibility and Experimental Design
  - Project is carefully designed to give meaningful results.
  - Aims of the project can be reasonably achieved within the proposed timeframe.
  - Potential difficulties are acknowledged, and alternative plans are provided should the proposed strategies fail.
  - Approaches and hypotheses are supported by compelling preliminary or published data. Very new developments, lacking preliminary data, are adequately described to enable reasonable evaluation.
  - The scope of the proposed work justifies the timeline and the proposed project budget.

- Project Leadership and Research Team
  - The project leadership and research team has the expertise and track record to successfully conduct the proposed research.
  - Any proposed collaboration(s) is critical and integral to the success of the project.

B. Collaborative Research

- The procedures for definition, development, solicitation, assessment, and acceptance of collaborative projects are clearly described and likely to lead to the initiation of appropriate projects.
- The PD and/or Co-PD(s) have appropriate experience in coordinating and participating in large collaborative research programs.
- The proposed composition of the Collaborative Resource Committee meets CIRM's criteria and is appropriate to review and make collaborative project acceptance decisions.
- Criteria for review of proposed collaborative projects are fair and appropriate.
- Plans to identify and handle conflicts of interest are appropriate.
- Plans for coordinating center activities with collaborators and the management of collaborative projects are well described and likely to enable a successful collaboration.
- Strategies for facilitating interactions between collaborating scientists, the Center, and Data Coordination and Management team are well described and are likely to be effective.
- Appropriate and sufficient center resources and personnel with expertise in cutting-edge genomics and bioinformatics technologies, and/or with expertise and assistance in experimental design and data analysis will be available to facilitate collaborative projects.

C. Data Coordination and Management

- The leadership and operational team have appropriate expertise and experience in the handling of large-scale genomic datasets and in supporting their availability to researchers.
- Existing and proposed infrastructure will be adequate to support planned data capacity for all CIRM funded Centers and collaborative projects.
- Proposed technology platforms, software development, data capacity, data submission and quality control pipelines, and data sharing platforms are of sufficient scope and quality to ensure production and appropriate community access to high quality data.
- The plan for outreach to and coordinating data from a second CIRM-supported stem cell genomics center will provide secure, efficient, effective, and uniform management of and access to genomics data.
- The proposed staffing and budget for data management are appropriate for the coordination of all genomics data generated through activities of the stem cell genomics centers, including collaborative projects.
- A detailed strategy is provided for achieving uniform standard operating protocols for data handling.

D. Center Organization and Operational Plan

- The Center leadership has experience with and a significant record of genomics innovation and the application of cutting-edge genomics approaches.
- The Center leadership has appropriate experience and expertise for development and management of a stem cell genomics center.
- The proposed organization is coherent, well developed and likely to enable effective Center operations.
- Leadership and operational responsibilities are well defined and conducive to program success.
- The proposed staff will have required expertise and capacity to carry out planned Center activities.
- The budget for Center administration and operations reflects realistic and reasonable costs.
- Institutional support for the Center is significant and appropriate.

VIII. Application Procedure

Applicants must follow these instructions for submission of a Letter of Intent (LOI) and an Application for RFA 12-06, the CIRM Genomics Centers Awards. Applications will only be accepted from applicants who submitted an LOI that was accepted by CIRM.

A. Letter of Intent (LOI)

A PD may submit only a single LOI for this RFA using the forms and instructions provided in the Grants Management Portal at https://grants.cirm.ca.gov. The completed LOI must be submitted online using the Grants Management Portal and must be received by CIRM no later than 5:00 pm (PDT) on October 3, 2012.

B. Application Forms

CIRM will only accept Applications from applicants who submitted an LOI that was accepted by CIRM. The PD and the Co-PD(s), if applicable, must be the same as named in the LOI; otherwise, the Application is deemed ineligible. Application forms will be available via the Grants Management Portal at https://grants.cirm.ca.gov by October 3, 2012.

The Application for the CIRM Genomics Centers Awards consists of **five parts**:

Part A: Application Information Form (Web-based form)
Part B: Proposal (MS Word template)
Part C: Biographical Sketches and Letters of Support (MS Word template)
Part D: Letter(s) of Institutional Commitment

Part E: Project Budget Workbook (MS Excel template)

The Application includes the following sections:

1. Abstract (up to 1500 characters in Part A)
State the goals of the proposal. Summarize the overall plans for the proposed genomics center and how these will meet the stated objectives of the RFA.

2. Public Abstract (up to 1500 characters in Part A)
In lay language, briefly describe the proposed genomics center and how it will contribute to the advancement of stem cell biology and regenerative medicine. This Public Abstract will become public information and posted on the CIRM website; therefore, do not include proprietary or confidential information or information that could identify the applicant (e.g., PD name, applicant institution name or location).

3. Statement of Benefit to California (up to 1500 characters in Part A)
Describe in a few sentences how the proposed genomics center will benefit the State of California and its citizens. This Statement of Benefit will become public information and posted on the CIRM website; therefore, do not include proprietary or confidential information or information that could identify applicant (e.g., PD name, applicant institution name or location).

4. Key Personnel (included in Part A and C)
List all key personnel and their roles on the project. Key personnel are defined as individuals who contribute to the scientific development or execution of the project in a substantive, measurable way, whether or not they receive salaries or compensation under the grant. Key personnel may include any technical staff, trainees, co-investigators (collaborators), or consultants who meet this definition. For applications that designate a CIRM-funded Co-PD(s), key personnel sponsored by each Co-PD must be listed in the appropriate section of Part A. Key personnel who are not part of the applicant (or co-applicant) organization should be listed in the subcontract section of the application. Personnel that are not key, such as technical support staff, may be supported by grant funds but not named.

A minimum of one percent effort is required for each key person, except the PD, who is required to commit a minimum of twenty five percent (25%) effort and any Co-PDs, who are required to commit a minimum of fifteen percent (15%) effort.

For each key person listed, provide a two-page biographical sketch using the template provided under Part C. The sketch should highlight prior relevant experience, accomplishments and/or special skills related to the proposed center activities. Include relevant publications and/or patents or patent applications. Following biographical sketches for the PD and, if applicable, the Co-PD(s), include all remaining biographical sketches in alphabetical order.

5. Budget (included in Part A)

Provide all budget information requested in the budget section of Part A and in Part E. Budget items must be justified in detail, including all subcontracts and consulting fees. For applications that designate a Co-PD, the PD and the Co-PD(s) will each be responsible for distinct, individual budgets (comprised of CIRM Direct Project Costs, CIRM Direct Facilities Costs and CIRM Indirect Costs) for that portion of the total project performed under their authority.

All allowable costs for research funded by CIRM are detailed in the CIRM Grants Administration Policy (GAP, see Section XI.A of this RFA).

In the Project Budget Workbook (Part E), applicants must provide detailed budgets for four key areas of the proposed project: Center-initiated Research Projects, Collaborative Research, Data Coordination and Management, and Center Administration and Operations. Additionally, individual budgets are required for each Center-initiated Project. Budget requests for these activities should conform to the categories and limits described below:

I. Center-initiated Projects. A detailed budget must be provided and justified for each proposed research or technology-development project (at least 2 and up to 4 projects). Applicants should request funds for direct project costs including salaries for key personnel, supplies, equipment exclusive to this activity, and consultant/subcontract costs. Additionally, applicants should request allowable direct facility and indirect costs for each Center-initiated Project activity.

II. Collaborative Research. Applicants should request funds for collaborative research, although specific collaborative projects or detailed collaborative project budgets should not be described in the application. Applicants should request funds for Collaborative Research amounting to at least 30% of the total award funds requested (i.e. 30% of the entire award request). Requested funds for collaborative research should include total direct project costs, direct facility costs and total indirect costs. Justification for these funds should include information about projected number of collaborative projects and estimated average project budget amounts. Budgetary details for specific collaborative projects and appropriate justifications will be required prior to CIRM's release of funds for collaborative activities. Any costs associated with the activities of the Collaborative Resource Committee should be budgeted under Center Administration and Operations, not under Collaborative Research Projects.

III. Data Coordination and Management. A detailed budget of direct project costs including salaries for key personnel, supplies, equipment specific to this activity, and consultant/subcontract costs together with allowable direct facility and indirect costs must be provided and justified. As described above, only one award will be funded for this activity.

IV. Center Administration and Operations. Include salaries for PD and other key personnel who will oversee all Center activities. Salaries, or portions thereof, for a project manager and/or coordinator can be budgeted by the PD as a direct project expense with adequate budget justification. Travel funds for program administrators to attend scientific meetings should be budgeted to this category. Funds for equipment that will be used for multiple project components should be budgeted to this category.

Budget limits and requirements for this RFA are summarized in the following table:

Total Costs	up to $40 million
Data Coordination and Management	up to $4 million
Center-initiated Projects	up to $22 million
Collaborative Research	at least 30% of total award request
Center Administration and Operations	up to $2 million
-above amounts are for total costs (direct costs + facility costs + indirect costs) assuming 1 award maximally budgeted	

Under this RFA, CIRM-funded allowable costs include the following:

• Salaries for Key Personnel
Salaries for Key Personnel may include the Program Director, Co-Directors, Research Associates, and technical support staff, each of whom must perform the subject work in California, based on percent of full time effort commensurate with the established salary structure of the applicant institution. The total salary requested must be based on a full-time, 12-month staff appointment or the full time annual salary for employees of a for-profit institution. Salary levels must adhere to limits stipulated in the CIRM Grants Administration Policy (GAP). Institutions may request stipend, health insurance and allowable tuition and fees as costs for trainees.

• Supplies
Grant funds will support supplies, including specialized reagents and animal costs. Minor equipment purchases (less than $5,000 per item) are considered supplies and may be included as direct costs in the budget.

• Travel
Recipients (PDs) of CIRM Genomics Centers of Excellence Awards are encouraged to attend a CIRM-organized grantee meeting in California and should include travel costs for this meeting in the budget. Travel costs associated with collaborations necessary to the grant are allowable. Details of allowable travel costs can be found in the GAP (see Section XI of this RFA).

• Equipment

Major equipment (more than $5,000 per item) necessary for conducting the proposed research at the applicant institution should be itemized and justified. Under this RFA, no more than 10% of direct project costs may be used for equipment. Under special circumstances, with sufficient rationale, CIRM may allow a higher percentage of direct project costs for equipment. Equipment costs should not be included as allowable direct costs in indirect cost calculations.

• Consultants/Subcontracts

Grantees that subcontract CIRM-funded work should note that CIRM-funded research must generally be conducted in California. Aside from small consulting contracts, Grantees may not use CIRM funds to contract for research to be performed outside of California. Consulting contracts for out-of-state research are limited to $15,000 per year for a single contract, and $25,000 per year in aggregate. (CIRM may allow modest increases to these limits in exceptional circumstances.)

For activities **other than research**, Grantees may subcontract outside California, but must make a good faith effort to use California suppliers for more than half of their contracts and purchases in accordance with CIRM's California Supplier regulation (Cal. Code Regs., tit. 17, § 100502).

•Facilities Costs

Facilities costs for non-profit applicant organizations are limited to the current applicable, federally-negotiated rates for the organization as defined by the Office of Management and Budget (OMB) Circular A-21 or A-122. Facilities rates for For-Profit applicant organizations are limited to 35%. Facilities rates are applied to direct project costs exclusive of the costs of equipment, tuition and fees and subcontract amounts in excess of $25,000. Applicants may use lower Facilities rates, and use up to 100% of the awarded funds for direct research purposes. The Facilities cost rate budgeted is to be applied to the entire award project period.

• Indirect Costs

Indirect costs are limited to 20 percent of allowable direct research funding costs awarded by CIRM (i.e., project costs and facilities costs), exclusive of the costs of equipment, tuition and fees, and subcontract amounts in excess of $25,000. Applicants may use lower Indirect cost rates and use up to 100% of the awarded funds for direct research purposes. The Indirect cost rate budgeted is to be applied to the entire award project period.

6. Related Business Entities (included in Part A)

All applicants (including, if applicable, a Co-PD and/or Funding Partner applicant institution) must provide information on related business entities for any application that, if awarded, would fund a for-profit organization either as: 1) the applicant organization; 2) a subcontractor or 3) the employer of a Co-PD, co-

investigator, Partner PI, consultant or subcontractor. If the application does not seek funding for any such for-profit organizations, indicate that in Part A; if for-profit funding is sought, include the following for each for-profit organization to be funded:

- A list of any parent organization that owns 50% or more of the for-profit's voting shares;
- A list of all subsidiaries in which the for-profit owns 50% or more of the voting shares; and
- A list of all other related business entities (i.e., entities with which the for-profit shares management and control, or shares a controlling owner).

7. Center-initiated Projects (up to 10 pages per project, distributed as indicated below, in Part B)

Center-initiated projects include both large-scale, data-intensive, transformative genomics research projects focused on substantive problems in human stem cell biology and regenerative medicine and technology-development projects addressing major bottlenecks in stem cell genomic research including novel applications of information technology. Applicants must propose at least two Center-initiated projects and may propose up to four projects.

Provide the following information for each proposed Center-initiated Project:

a. Rationale and Significance (up to 1 page)
Summarize the context and background of the project and the specific rationale for the work proposed. Specifically identify the gaps in the current knowledge base that the project is intended to fill. If the aims of the project are achieved, state how the findings or tool/technology developed will make a critical contribution to the field of human stem cell biology or regenerative medicine.

b. Specific Aims (up to 1 page)
State the goal of the specific research proposed. Identify and enumerate each specific aim of the project in a concise and step-wise fashion, and describe how each aim will support the goal of this research.

c. Preliminary Data (up to 3 pages)
Provide preliminary data or cite published results to support the concepts, hypotheses and/or approaches proposed for the project. Clearly indicate data generated by the applicant PD and/or Co-PD.

d. Research Design, Methods, and Project Timeline (up to 4 pages)
Describe concisely, but in sufficient detail to permit evaluation of the merit of the research, the experimental or developmental design, methods and techniques to be employed to achieve the goals specified for this project. Use clear and consistent terminology to identify the various cell types and cell

lines that may be employed throughout the project. Identify the new or risky aspects of the research, anticipated pitfalls, and plans to overcome or circumvent difficulties that may arise. Describe the methods of analysis of results. Describe specific criteria for success of the project including meaningful quantitative measure(s) to determine if the project objective has been achieved. Provide a realistic timetable for completing each proposed specific aim of the project; provide specific criteria for evaluating the achievement of each specific aim.

e. Project Leadership and Research Team (up to 1 page)
Briefly describe the research project leadership and the personnel that will be committed to carrying out the proposed research. Highlight relevant previous experience, accomplishments or special skills of key personnel.

8. Collaborative Research (up to 4 pages in Part B)
Centers must develop polices and establish procedures that promote collaboration and make genomics resources available to California stem cell researchers.

Describe prior experience of the PD or Co-PD(s) in coordinating and participating in large collaborative research programs. Describe how proposals for collaborative projects will be defined, developed, solicited and evaluated for funding by the Center Collaborative Resource Committee. Discuss criteria for project review and acceptance. Describe the proposed guidelines for naming members to the Center Collaborative Resource Committee, and if potential members have already been identified, name them and briefly highlight their qualifications. Describe how conflicts of interest will be handled. Final committee membership will be subject to CIRM approval.

Describe the projected number and scope of collaborative projects to be undertaken. Discuss resources and expertise that will be made available for collaborative projects with particular attention to data analysis and bioinformatics resources. Identify policies and activities relevant to the collaborative projects including scope of collaborative activities, center capacity, planned infrastructure for data sharing and interactions with remote collaborators.

9. Data Coordination and Management (up to 4 pages in Part B)
Describe previous experience of the leadership, operational team and established genomics center with genomic data coordination and management. Provide details of existing infrastructure including high performance technology platforms, current and planned data capacity, data submission and quality control pipelines and protocols, data sharing platforms and protocols, and estimated costs (per terabyte of data). Discuss plan for outreach to and data coordination with a second CIRM-supported stem cell genomics center that will provide

secure, efficient, effective, and uniform management of and access to genomics data. Discuss planned expansion, activities and policies.

10. Organization and Operational Plan (up to 2 pages in Part B)

Describe proposed center leadership and organization. Identify existing stem cell, genomics, bioinformatics, and biocomputing resources and established center capabilities and activities. Provide plans for operation of the center with particular attention to activities supporting CIRM's mission. Describe the composition and role of any oversight/advisory committee. Discuss planned capacity including projections of yearly data output and costs. Describe previous experience of the center leadership and operational team with genomics and stem cell research. Describe current standard operating procedures for sample and data handling or planned efforts to develop such standards and outreach activities to promote standardization among stem cell researchers. Discuss strategies for harmonization with existing large-scale genomics and bio-banking initiatives and plans to promote interaction and/or data sharing with other stem cell genomics centers outside California (particularly those supported by CIRM's Collaborative Funding Partners). Describe institutional support for the proposed Center including space, equipment, and other resources to be provided by the institution; commitment for this support should be specified in a letter from an appropriate institutional official included in Part D.

11. References (up to 2 pages in Part B)

List all references used in the body of the proposal.

12. Institutional Commitment (Part D)

The applicant institution must provide a letter of support, signed by a senior organizational official who has the authority, or who has been delegated the authority, to commit the applicant institution to support the proposed program. This letter should document in specific terms the nature of the institution's current and future commitment to the proposed program during the period of the award and should include a description of facilities and resources available to the program. A discussion of the institution's track record and future plans for expanding activities relevant to the proposed program should also be included. **Please note that the institutional official who signs this commitment letter cannot be a member or alternate member of the ICOC**, **CIRM's Governing Board.**

13. Project Budget Workbook (Part E)

C. Application Submission Instructions

Applications will only be accepted from applicants who submitted an LOI that was accepted by CIRM.

All five parts of the CIRM Genomics Center Awards application must be submitted together and received by CIRM no later than 5:00PM PST on Nov. 28, 2012 via the Grants Management Portal (https://grants.cirm.ca.gov). It is the applicant's responsibility to meet this deadline; no exceptions will be made.

D. Submission of Supplemental Information

If necessary, the PD may submit limited supplemental materials that provide critical new information related to the project proposal after the application deadline but not later than 5:00pm PST on January 16, 2013. Supplementary materials will not be accepted after this deadline. CIRM will accept a one-time-only submission of materials from the PD only if it meets the submission deadline and conforms to the requirements described herein. Accepted submissions will be forwarded to reviewers for their consideration.

The submission should be in the form of a one-page letter addressed to the Senior Review Officer and submitted via email to gsambrano@cirm.ca.gov. The body of the letter may not exceed 500 words and should briefly describe the type of information submitted and when the information became available. The following materials qualify for submissions of supplemental materials:

Within the one-page letter:

- Provide specific citation(s) to journal publications related to the proposed project that were published or accepted for publication since the application submission deadline. You may briefly describe the significance of the publication(s) to the proposal in the cover letter.
- Confirmation of funding secured from other sources
- Regulatory (e.g., IND, IDE) filings or approvals acquired since the application submission deadline.
- Notice of patent application(s) filed, notice of allowance received or patent(s) issued, or notice of license(s) to relevant intellectual property (granted or received) since the application submission deadline.

The letter may not be used to describe any additional data or experiments. Changes in scope, experimental approach, or research design are not allowed.

IX. Schedule of Deadlines and Reviews

Letters of Intent due	5:00 pm (PDT), October 3, 2012
Full Applications due	5:00 pm (PST), Wednesday, Nov. 28, 2012
Review of full Applications by Grants Working Group (GWG)	February, 2013
Review and Approval by ICOC	Spring, 2013
Earliest Funding of Awards	Spring, 2013

X. Contacts

For information about this RFA:

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For information about the review process:

Gilberto R. Sambrano, Ph.D.
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California Institute for Regenerative Medicine
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XI. CIRM Regulations

Grant awards made through this RFA will be subject to CIRM regulations. These regulations can be found on CIRM's website at http://www.cirm.ca.gov/reg/default.asp.

A. CIRM Grants Administration Policy

CIRM's Grants Administration Policy (GAP) for Academic and Non-Profit Institutions (Non-Profit GAP) and the GAP for For-Profit Institutions (For-Profit GAP) serve as the standard terms and conditions of grant awards issued by CIRM. All research conducted under this award must comply with the stated policy. Progress reports of research, as required by the GAP, are important to CIRM: Funding from year to year will depend on adequate scientific progress as outlined in the grant application timeline. CIRM's GAP is available at http://www.cirm.ca.gov/our-funding/our-regulations/stem-cell-regulations-governing-cirm-grants#GAP

B. Intellectual Property Regulations

CIRM has adopted intellectual property and revenue sharing regulations for non-profit and for-profit organizations. By accepting a CIRM Grant, the Grantee agrees to comply with all such applicable regulations.

C. Human Stem Cell Research Regulations

As reflected in CIRM's GAP, CIRM has adopted medical and ethical standards for human stem cell research (Title 17, California Code of Regulations, sections 100010-100110 available at http://www.cirm.ca.gov/our-funding/our-regulations/stem-cell-regulations-governing-cirm-grants#standards). All research conducted under this award will be expected to comply with these standards. This information can be found on the CIRM website.

D. California Supplier Regulation

CIRM has adopted a regulation to implement the requirement in Proposition 71 that grant and loan recipients make a good faith effort to achieve a goal of purchasing more than 50% of their goods and services from California suppliers (Title 17,California Code of Regulations, section 100502). Grant and loan recipients are required to comply with this standard.