

2010

## **JST-CIRM Collaborative Research Program RFA**



**Attention:**

**This is an English translation of JST's original RFA for the JST-CIRM Collaborative Research, not the RFA itself.**

**Please be sure that you need to refer to the original RFA written in Japanese to know the exact terms and conditions designated by the JST's regulations.**

## **1. Objectives**

For a major step forward finding new practical applications of iPS cell, collaboration between Japan and California is relevant as it will certainly accelerate comprehensive research activities and maximize their research potential.

Based on this understanding, JST and CIRM\*<sup>1)</sup>, as funding agencies representing Japan and California respectively, will work together to establish and support Japan - California collaborative research projects.

\*1) The California Institute for Regenerative Medicine ("CIRM")

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 in November, 2004, and called for the establishment of a new state agency to make grants and provide loans for stem cell research, research facilities and other vital research opportunities in early 2005.

The mission of CIRM is to support and advance stem cell research and regenerative medicine under the highest ethical and medical standards for the discovery and development of cures, therapies, diagnostics and research technologies to relieve human suffering from chronic disease and injury.

On November 18, 2008, JST and CIRM signed MOU on collaboration on stem cell research in order to conduct collaborative research and develop fostering exchange programs such as scientific seminars and conferences. Based on the above MOU, JST and CIRM are facilitating collaborative research and research exchange in the field of stem cell research including iPS cell etc.

CIRM URL : <http://www.cirm.ca.gov/>

## **2. The Basic Scheme to Provide Funding for JST-CIRM Teams**

According to their own rules and regulations, JST and CIRM will provide the research fund to the research teams in Japan and California, respectively. In other words, JST provides support to Japanese researchers as a part of JST's Basic Research Program\*<sup>2)</sup>, and CIRM provides support to California researchers utilizing the framework of Basic Biology Awards III\*<sup>3)</sup>. In this scheme, JST follows its own application call and evaluation process while CIRM follows its own, too.

## \*2) Outline of JST's Basic Research Program

The purpose of the Basic Research Program is to promote basic research in strategically prioritized fields and create innovative technologies that will lead to the future growth of science and technology and the creation of new industries, as part of a system for encouraging innovation that will lead to social and economical reforms.

In line with national science and technology policies, as well as social and economic needs, the government (MEXT) sets targets that are expected to have a major social impact, and JST establishes research areas that are to be promoted and research supervisors who will act as head of research areas under the strategic sector.

Research supervisors promote basic researches aiming to bring out the seeds of innovative technology in order to achieve the strategic objectives.

## \*3) Basic Biology Awards III

For further details, please refer to: <http://www.cirm.ca.gov/RFAs>

## **3. Definition of Terms**

Terms in this guideline are defined as follows:

3-1. Collaborative Research Project: a collaborative research project which is carried out by Japanese and California scientists pursuing collaborative research theme.

3-2. Collaborative Research Team: a team which is constituted of one Japanese research team and one California research team.

\* In case a researcher belongs to two institutions, one in California and one in Japan, that researcher is not qualified to be a member of the team on either side.

3-3. Principal Investigator (PI): researcher who will act as the leader of the Japanese research team. Applications to JST should be submitted by Principal Investigators.

3-4. Research Group: Each Japanese and California research team can be composed of several research groups.

3-5. Group Leader: researcher who will act as the leader of the above group.

## **4. Application and Evaluation Process**

JST calls for the application for this program under the national strategic goal "Creation of Innovative Basic Medical Technologies by Stem Cell Manufacturing and Control Based on

Cell Reprogramming” with the designated research area and research supervisor. CIRM utilizes the scheme of its own program, Basic Biology Awards III, in the selection and evaluation process for the collaboration with JST.

In order for the application to be considered as the one for a JST/CIRM research team, Japanese researchers should apply for JST on one side while at the same time California researchers for CIRM on the other.

Both JST and CIRM go through two application steps, pre-application and full-application. Research proposals submitted to JST and CIRM in the pre-application process will be evaluated by the two agencies respectively, and only the proposals selected by both agencies will be invited to the second stage, full-application.

In the full-application step, the applicants will send applications to each corresponding agency. The full application documents submitted to each agency will be evaluated by JST and CIRM separately and respectively, as in pre-application.

## **5. Eligibility to Apply for JST**

The researchers who belong to a research institution in Japan are eligible to apply for the program. This program is designed for researchers who fully understand its objectives and are able to propose to conduct collaborative research by establishing international cooperative relationship and complementing each other’s project on stem cell research in the close coordination with California researchers.

Each applicant can submit only one proposal.

\* Please also refer to “19. Important Notice”.

## **6. Eligible Research Proposals**

In this collaborative program, the proposals should focus on studies into the basic molecular mechanisms that control the generation and the regulation of human pluripotent stem cells with a particular emphasis on the recently developed cellular reprogramming technologies.

Cooperating with CIRM’s Basic Biology Awards III (<http://www.cirm.ca.gov/RFAs>), JST promotes research into the basic biology of iPS cells and other relevant stem cells. Preferred research areas for collaborative projects include:

- Elucidating the determinants of stem cell fate decisions during differentiation

- Molecular characterization of specific precursor populations at intermediate stages of differentiation
- Molecular basis of lineage specification towards mature adult, metabolically functional cell types, tissues and mini-organs
- Role of the cellular and extracellular microenvironment in regulation of stem cell fate and behavior
- Molecular basis of human pluripotent stem cell self-renewal and expansion
- Molecular basis of pluripotency or developmental potential of stem cells to specific lineages
- Mechanisms of cellular reprogramming
  - Molecular basis for induction of multipotency or pluripotency
  - Mechanisms of direct reprogramming to other cell types (trans-differentiation)
- Genetic, epigenetic and genomic instability of stem cells and the effects of such instability on their differentiation and tumorigenicity
- Epigenetic and/or other regulatory mechanisms (e.g. retrotransposon activity) underlying the developmental potential/plasticity of stem cells and their derivatives, including those mechanisms that generate diversity within an individual cell type
- Molecular mechanisms by which endogenous or engineered multidimensional microenvironments influence stem cell fate and behavior
- Molecular basis of disease: elucidating/validating human disease mechanisms with in vitro, human stem cell-based models

With a view to meeting one of the national strategy objectives, “Creation of Innovative Basic Medical Technologies by Stem Cell Manufacturing and Control Based on Cell Reprogramming”, JST is seeking the above collaborative research proposals.

## **7. Research Supervisor**

Research Supervisor will be committed to the program in the following areas:

Selection of research theme; coordination of research plan (including budget, team arrangement); exchanging views with principal investigators; advice; evaluation; other necessary research management.

Research Supervisor: Dr. Ryozo NAGAI

(Professor, Graduate School of Medicine, The University of Tokyo)

## **8. Budget for the Collaborative Research Project**

### 8-1. JST

The total budget for one project through the research period is considered to be around 20 to 80 million Yen on annual average. Budget of a project can vary in each year, depending on the content of activities.

Please make a proposal for the most appropriate budget to achieve the research goals. In principle, the above budget shall be appropriated as direct cost as part of what JST calls “commissioned research cost”, and the total amount will be administrated by the research institution that a principal investigator or a group leader belongs to. Overhead up to 30% of direct cost will be paid separately to the institution by JST.

Budget items include equipments, consumables, personnel cost and other expenses needed. Due to budget limitations of this program, amounts may be adjusted in each fiscal year, by a consultation with the Research Supervisor based on the research plan of the year.

### 8-2. CIRM will support funding within the Basic Biology Awards III.

Please see the RFA (<http://www.cirm.ca.gov/RFAs>) for details:

## **9. Research Period**

The research period shall be for a maximum of 3 years.

The commencing date is expected around the beginning of August, 2011, however it may be changed according to conditions in JST and CIRM’s evaluation process etc.

## **10. Evaluation Process**

The evaluation will be carried out in two steps, pre-application and full-application.

Only the selected pre-application proposals are invited to the second stage, full-application

Both Pre-application and Full-application will be evaluated by JST and CIRM respectively.

JST will go through evaluation process with peer reviewers under the guidance of the Research Supervisor. Please refer to Basic Biology Awards III for the details of the evaluation by CIRM: <http://www.cirm.ca.gov/RFAs>.

### 10-1. JST Evaluation Criteria

The following evaluation criteria will be applied to each proposed project:

- 1) Conformity with Program Aims and Designated Research Fields

The proposed activity shall conform to the aims of the program and the research fields that the program designates. In addition, the proposed activities shall be supported by the applicants' institutions utilizing their resources available.

2) Significance of Research

- Opening up of a new field or new advances in science and technology through the creation of new scientific knowledge in an existing research field.
- Having a strong impact on science and technology to achieve steady growth and sustainability.

3) Effectiveness of Collaboration Activities

- Having effective consequences on the achievement of the research goals through collaboration

4) Capability of Principal investigator

The principal investigators shall have the insight or experience necessary for pursuing the activity and the ability to manage the cooperation and reach the project goals during this program's period of support.

5) Appropriateness of Plan

The plan shall be appropriate from the perspectives of collaboration environment and the research scale.

10-2. Announcement of Selection

The result of the pre-application will be notified in writing around mid-December, 2010, and the final decision regarding the selection of research project will be around May, 2011. The time of announcement is subject to change due to the progress of evaluation on both JST and CIRM sides.

## **11. Number of Proposals to be Selected**

A few number of collaborative research projects will be selected.

## **12. Administration of Budget**

12-1. Contract between a Japanese Team and JST (for applicants to JST only)

Support will be provided according to a grant agreement concluded between JST and a university or public research institute, etc. (hereinafter referred to as the "institution").

The participating researchers should consult with the department in charge of their institution for the appropriate administration of the allocated budget based on the contract.

As for the contract between the Japanese institution and JST, it stipulates the Article 19 of Industrial Technology Enhancement Act be applied to patents or other intellectual property rights generated as a result of this project, and that these can be the properties of the institution with which the researcher is affiliated.

#### 12-2. Contract between California Team and CIRM

All Grants awards made by CIRM will be subject to CIRM regulations.

Please see the RFA (<http://www.cirm.ca.gov/RFAs>) for details.

#### 12-3. Research Agreements between Teams

Entering into a contract for management of intellectual property issues may be envisioned between the Japanese institutions and the California institutions for the implementation of actual research activities. For intellectual property rights issues, please refer to the section [13. Intellectual Property Rights] described below.

#### 12-4. Funding Expenses

Funding provided within this call is intended to support a complete collaborative research project for Japanese teams.

Research expense (direct cost) needed for the collaborative research project may be spent for the following items:

- 1) Goods: expense for facilities, equipment and consumable supplies.
- 2) Travel: travel expense for principal investigators and research associates (team members); or for the researchers who are invited to attend special events to pursue the goals of research project.

#### 3) Personnel expense:

Salaries: in principle, salary for newly hired fixed-term and full time employees on annual salary base (researcher, technical staff etc.) to carry out the research project.

Fees: fees for fixed-term employees on an hourly wage for data reduction work etc. (technical staff, research support staff etc.), lecture fees etc.

#### 4) Other: Other cost needed for collaborative research project as follows:

Publication of research results (submission fee, printing etc.)

Equipment lease, books, transportation

\* If you have difficulties in judging appropriateness of the cost, please contact JST.

\* JST requests for research institutions to administrate the budget in a flexible and efficient manner, since the funding is financed from the national treasury, appropriate administration is strongly requested by establishing certain rules and guidelines such as



a grant agreement and a grant agreement on administrative procedures etc.

\* Overhead up to 30% of the direct cost will be paid separately to the institution by JST.

Funding for California portion of a JST-CIRM team will be supported according to the CIRM regulations. Please see the details: CIRM Basic Biology Awards III RFA (<http://www.cirm.ca.gov/RFAs>)

### **13. Intellectual Property Rights**

As for the contract between the Japanese institution and JST, it stipulates the Article 19 of Industrial Technology Enhancement Act be applied to patents or other intellectual property rights generated as a result of this project, and that these can be the properties of the institution with which the researcher is affiliated.

A contract to deal with intellectual property issues must be concluded between the Japanese institutions and the California institutions for the implementation of actual research activities.

When agreement is concluded between the two parties, a copy of signed written agreement which indicates the contents should be submitted to both JST and CIRM prior to the start of funding.

As for application for intellectual property rights jointly made by Japan and California institutions in the process of collaborative research, the applicants funded by JST are required to comply with certain terms and conditions set in CIRM's regulations in addition to a grant agreement concluded between JST and the institution. Please refer to the URL below for more details of CIRM's regulations:

<http://www.cirm.ca.gov/cirm-operations/Regulations>

(For intellectual property rights, please see chapter 6 of the CIRM regulations)

With regards to products based on intellectual property rights which are jointly invented by Japan and California institutions, it is required to comply with the following CIRM regulations concerning access and pricing when the products are commercialized and sold in California. For the details, please refer:

<http://www.cirm.ca.gov/files/Regulations/100607.pdf>

## **14. Report**

### 14-1. Annual Progress Report (For Japanese Principal Investigators)

The Principal Investigator shall submit annual progress reports on the status of research, and the institution with which the Principal Investigator and Group Leader are affiliated shall promptly submit a financial report on supported expenses.

### 14-2. Final Report

After completion of the period of collaborative research project, principal investigators shall promptly submit to JST a final report, in addition to a financial report, on the research activities. The report shall include a general summary compiled jointly by both of the Japanese and the California research groups, which California researchers are requested to submit to CIRM.

If papers describing results of research are presented to academic journals, societies and so on, please attach copies of such papers to the final report.

## **15. Responsibilities of Japanese Principal Investigators after Proposals are Approved**

After the proposal has been approved, principal investigators and group leaders shall observe the following rules when carrying out the collaborative research and spending the research funds.

### 15-1. Promotion and Management of Research

Principal Investigators are responsible for the management of the research project as a whole including the research planning and implementation, working with the counterpart in California.

They shall prepare a research report and submit it to the Research Supervisor and JST, and be responsive to their evaluation. They also have to submit research progress reports as designated by research supervisors.

15-2. They are responsible for the appropriate management of research budget of the whole research team by working closely with the institutions they belong to. Principal investigators and group leaders are expected to consider seriously the research and work environment and conditions for the researchers employed through JST funding.

#### 15-3. How research results should be handled

The research results should be published in and outside of Japan in every possible way with the consideration into the fact that the fund comes from the national government and intellectual property rights as well.

When publishing the research results in papers etc., it should be stated that they were brought about from JST's Basic Research Programs.

They may be advised to make a presentation of their research results at workshops or symposiums held by JST in and outside Japan, together with other researchers.

The acquisitions of intellectual property rights are strongly encouraged. The application for Intellectual property rights shall be made by research institutions, based on the research agreement between researchers and JST.

#### 15-4. Principal investigators have to follow the research agreement and other relevant rules of JST.

15-5. Please note that JST provides some items of information such as the name of researchers, research budget etc., to e-Rad and other government databases. Principal investigators may be asked to provide other necessary information regarding the research.

15-6. They have to cooperate for the evaluation of the project as a part of JST's Basic Research Program, the investigation of the budget allocation, and the auditing of the national treasury.

15-7. They may be asked to provide necessary information and accept interviews for the follow-up evaluation which is carried out a while after the research period is over.

### **16. The Application and Evaluation Process**

The application procedure consists of two stages:

In the first stage, the Japanese and California applicants shall submit a pre-application in Japanese and English in the application form of JST and CIRM, respectively. In the second stage - if selected - a full-application shall be handed in both to JST and CIRM in parallel by the principal investigator of both sides. Please note that Japan/California applicants should write the proposals respectively based on the common research objectives in the close coordination with each other.

## 16-1. Pre-application

### 16-1-1. Application process

Pre-application proposals of the collaborative research projects should be submitted to JST by Japanese applicants and to CIRM by California applicants, respectively.

Applicants of Japan team shall submit pre-application to JST no later than 5 pm, October 18, 2010 (Japan standard time).

Japanese applicants have to write pre-application (in Japanese and English) using the application form set by JST through the cross-ministerial R&D management system, e-Rad (online application system) (<http://www.e-rad.go.jp/index.html>).

California researchers should submit proposals as described in the CIRM Basic Biology Awards III RFA (<http://www.cirm.ca.gov/RFAs>).

### 16-1-2. Additional Instructions

- Please note that the due date of pre-application submission for California applicants to CIRM is October 7, 2010 (local time of California).
- Any changes of the research project such as title and other contents described in the pre-application are not accepted once the proposal goes on to the stage of a full-application.
- The research project proposed to JST must be the same as that proposed to CIRM, therefore Japanese applicants should collectively work on the research proposal with California applicants.
- Please note that the research proposal in English should be completely the same as the proposals submitted to CIRM by the California applicant and its precise Japanese translation should be described. Please see CIRM's form at <http://www.cirm.ca.gov/RFAs>

### 16-1-3. Evaluation Process for Pre-Application

Pre-application will be evaluated by JST and CIRM, respectively. JST will select members of the evaluation committee consisting of peers to review all proposals. Please refer to the details for pre-application of CIRM Basic Biology Awards III RFA.

The result of evaluation will be notified to applicants in writing around mid-December, 2010. Applicants whose projects are judged as the most promising, competitive and responsive pre-application by both sides will be invited to submit a full-application.

## 16-2. Full-Application

### 16-2-1. Application Process

Full-application may be submitted only by Japanese/California applicants who are explicitly invited to participate in the second stage of submission following the positive evaluation of

their pre-application. In the second stage, joint proposals should be submitted by Japanese/California applicants. The details for JST's full-application process such as application forms (in Japanese and English), submission instructions, and deadlines will be provided at the time of notice of results of the pre-application review.

Please see CIRM Basic Biology Awards III RFA for details.

#### 16-2-2. Evaluation Procedure for Full-Application

Full-application will be evaluated by JST and CIRM, respectively. JST will select members of the evaluation committee consisting of experts to review all proposals.

Applicants whose projects are judged as the most promising, competitive and responsive full-application by both sides will be approved.

The result of selection will be notified to applicants in writing around May, 2011.

### **17. Strategic Goal**

#### 1. Title

Creating fundamental technologies for advanced medicine through generation and regulation of stem cells, based on cellular reprogramming (Set in FY2008)

#### 2. Content

Cellular reprogramming that can turn differentiated cells into pluripotent stem cells draws attention as potential means to realize pioneering advanced medicine. A team of Japanese researcher brought about major breakthroughs in this field in 2006 and 2007. The strategic sector aims at advancing and simplifying the reprogramming technologies, based on molecular biological mechanisms of the reprogramming process. In addition, using the technologies, stem cells that could be generated from somatic cells of patients or healthy persons will be given to elucidate pathological mechanisms and to establish fundamental technology such as new therapy strategies and methods to detect and test side effects of drugs.

#### 3. Policy position (relationship with "Science and Technology Basic Plan" and "Strategic Prioritized Science and Technology")

The strategic sector is relevant to "Science and technology for reconstruction of complex systems of life" within the "Strategic Prioritized Science and Technology" field of life sciences in the plan. Specifically, this strategic sector is also relevant to "Research for understanding higher-level control mechanisms in living organisms," listed in the content of

## Research and Development.

4. Position of this research project among research promotion measures in relevant research fields, differences from other related measures, and differences in effects of policy  
This strategic sector focuses on research aiming to develop the cellular reprogramming technology, followed by applying the technology to elucidation of pathological mechanisms of congenital diseases and development of detecting and testing methods for side effects of drugs. Research subjects under the strategic sector are different from those of other projects, the "Project for realization of regenerative medicine (Ministry of Education, Culture, Sports, Science and Technology, since 2003)," which aims to establish cell therapies and tissue transplantation using stem cells. The research phase of this strategic sector is different from that of a project supported by Grants-in-Aid for Scientific Research (Grant-in-Aid for Specially Promoted Research "Molecular basis of nuclear reprogramming"), which focuses on scientifically elucidation of the molecular mechanism of reprogramming by 4 essential factors.

5. Achievements and goals expected; and reasons, urgency, and need for priority from specialists and industries over other Strategic Prioritized Science and Technology

The objective of the strategic sector is to establish fundamental technology which can help elucidating pathological mechanisms of congenital diseases, studying new therapy strategy and detecting and testing side effects of drugs through advancing and simplifying the cellular reprogramming technology and establishing disease model from patients' somatic cells. Concrete goals are as follows:

[Examples of short-term goals]

- Establishment of a reprogramming technology with less genomic stress, by precisely introducing the pluripotency factors into genome, or by using of chemical compounds
- Elucidation of pathological mechanisms through disease model from somatic cells of patients or healthy persons

[Examples of medium-term goals]

- Identification of candidate compounds for drug discovery by using the above-mentioned disease model cells, and establishment of fundamental technology for gene therapy
- Finding of methods for detecting side effects of drugs, such as arrhythmia, using pluripotent stem cells from healthy persons

By 2006, 132 stem cell institutes had been established worldwide. At present, researchers in these institutes are trying to establish human induced pluripotent stem (iPS) cells after the success in Japan, bringing severe competitions in the field. It is thus necessary for Japan to keep the position as one of the world's leader in the field by steady implementation of these research themes.

#### 6. Scientific justification for the research and development goals

Advances in related fields of individual research are summarized as follows:

The importance of human disease model cells has been recognized so far, even in the stages of basic research prior to clinical research. Progress in stem cell biology prompted research and development of reprogramming technologies in Europe and the United States that generate disease model cells from patients' own cells, namely "therapeutic cloning". However, this research is confronted with some obstacles, including ethical controversy concerns due to the use of human embryonic stem (ES) cells and low efficiency of generation by nuclear transfer or cell fusion techniques.

In 2006, a Japanese researcher succeeded in establishing iPS cells that are close to ES cells from murine fibroblasts by introducing 4 defined factors, and in 2007, successfully established human iPS cells. These achievements reduced the aforementioned ethical problems, and brought a major breakthrough in reprogramming research. Japanese stem cell research, conducted mainly in universities, maintains internationally-recognized high levels of researchers, equipments, and publications through Grants-in-Aid for Scientific Research and the "Project for realization of regenerative medicine".

Utilizing the high potential of stem cell research in Japan, this strategic sector will enhance the development of new therapies and preventive medicines required in an aging Japanese society through promoting the basic research based on the reprogramming technology. In addition, stem cell research itself is expected to develop as a major research field, comprising - based on the view of stem cells - all areas including developmental and regenerative biology, pathology, and age-related tissue impairment.

#### 7. Considerations in achieving the research and development goals (research team organization, etc.)

To achieve the goal of this strategic sector, it is advised to take a team-oriented research approach in which a team consisted of researchers with abundant clinical findings of diseases and researchers with excellent cellular analysis technologies such as flow cytometry. In addition, individual research will also be necessary to effectively develop cellular reprogramming technologies based on molecular biological mechanisms. Individual

research projects will be conducted mainly by young researchers who have new ideas, such as direct induction of stem cells or progenitor cells of various tissues from skin cells or tissue stem cells without necessity of iPS cell stage.

Advances are made quickly in the field of stem cell research worldwide, and the competition to acquire intellectual property rights is fierce. Although Japan currently holds the second-largest number of patents concerning stem cells after the U.S., the number of acquired patents has tended to decrease recently. In the researches implemented in this strategic sector, attention should be paid to patent acquisition as well as patent quality, in view of the stem cell patents applied in the U.S. and other countries. Moreover, it will be necessary to pay attention to bioethical appropriateness of each research project, because human cells will be used.

(Reference) Political goals to be achieved in this project

More recently, iPS cells have been obtained by reprogramming of human somatic cells via introduction using retrovirus vectors of 3 factors, Oct3/4, Sox2, and Klf4.

In the strategic sector, research on targeted introduction of genes and control of the number of genes to be introduced into single cells will be conducted at first, through genomics, chromosome structure, and especially epigenetic analyses of the cellular reprogramming mechanism. High-throughput screening of reprogramming-inducing compounds will also be conducted to achieve precise control of introduction factors as well as simplifying of generation methods. With effective use of advanced reprogramming technologies, iPS cells will be generated from somatic cells of patients with congenital diseases and will be differentiated into disease model cells for elucidation of pathological mechanisms. On the basis of findings obtained from these activities, fundamental technologies for identifying candidate compounds for disease-controlling drugs and detecting side effects of drugs using iPS cells derived from healthy persons.

### **18. Position of the Strategic Goal in this Collaborative Research Program**

With a view to meeting one of the national strategy objectives “Creation of Innovative Basic Medical Technologies by Stem Cell Manufacturing and Control Based on Cell Reprogramming”, JST is seeking research proposals.

On the Japan side of a collaboration team, the proposals should focus on the research of iPS cells derived from the cellular reprogramming technologies.

Concrete goals to be expected in future as follows:



- The establishment of patient-derived pluripotent stem cells of intractable diseases.
- The development of disease models by using of patient-derived pluripotent stem cells to understand the pathology of the disease at molecular level.
- The development of in vitro models to predict and/or evaluate side-effects of drugs based on the use of iPS technology.

It is strongly advised that both Japan and California research teams work together to achieve their common goals, by complementing the work of each other and maintaining the good cooperative relationship through the research period.

### **19. Important Notice**

Ministry of Education, Culture, Sports, Science and Technology (MEXT) set up “the comprehensive strategy for the promotion of iPS cells research”, and the iPS cell research programs are in progress all over the country at many levels and from many perspectives. As part of the efforts, MEXT established “The iPS Research Network” involving the research institutions and researchers participating in the MEXT-funded and JST-funded iPS cell research programs. This network stipulates its own rules and regulations regarding intellectual property rights, publication of research results, and confidentiality, is expected to function efficiently for the total promotion of iPS cell research through the permission of sharing among members of intellectual property rights and materials.

As this collaboration program constitutes the “Network”, the selected researchers are, as a rule, required to join the “Network”, and asked to go with the national policy objectives described in the government’s comprehensive strategy. (This rule does not apply to researchers or institutions on the CIRM side.)

**平成 22 年度 戦略的創造研究推進事業**  
**JST – CIRM Collaborative Research Program**  
**一次審査提案書 / Preliminary Application Form**  
**Guidance for Completing the Form**

■ **Instructions**

- Please submit a Pre-Application using the JST-CIRM Collaborative Research Program Preliminary Application Forms.
- Any changes of the research project such as title and other contents described in the pre-application are not accepted once the proposal goes on to the stage of a full-application.
- The research project proposed to JST must be the same as that proposed to CIRM, therefore Japanese applicants should collectively work on the research proposal with California applicants.
- Please note that research proposals in English should be completely the same as the proposals submitted to CIRM by the California applicant and its precise Japanese translation should be described. Please see Basic Biology Awards III form <http://www.cirm.ca.gov/RFAs>

■ **Due date**

- Pre-Applications should be submitted to JST through the cross-ministerial R&D management system (e-Rad) **by 5:00 pm, Monday, October 18, 2010.**
- ※ e-Rad log in ID and password will be required. <http://www.e-rad.go.jp/>  
Maximum capacity for upload is 3MB.
- ※ Please note that the due date of the pre-application submission for California applicants to CIRM is October 7, 2010 (local time of California).

**【Contacts】**

For the latest information, please refer to

<http://www.jst.go.jp/kisoken/jst-cirm/ipsboshu1008.html>

JST-CIRM Collaborative Research Program

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Phone : 03-3512-3524 ( \* 10:00~12:00 / 13:00~17:00) \* weekdays only





平成 22 年度 戦略的創造研究推進事業  
JST-CIRM Collaborative Research Program  
一次審査提案書 / Preliminary Application Form

1. 研究代表者 / Principal Investigator (PI)

日本側 研究代表者 (For JST applicant)

氏名	
Name	
学位	
Degree	
所属機関 部署 役職	
Institution Division Title	
住所 Address	〒
所属機関の タイプ	(Type of Institution) <input type="checkbox"/> 非営利組織 <input type="checkbox"/> 営利目的型組織
Email	
電話 Phone	
Fax	

- ※ 項目名が英語ものは英語にて記載してください（以下、同様）。
- ※ Emailおよび電話番号は、確実に連絡がつくものをお知らせください（複数記載可）。
- ※ 作成にあたっては、一次審査提案書の作成要領に沿って作成をお願いします。

研究者番号 (e-Rad Registration No. / JST applicant only)

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- ※ 科学研究費補助金研究者番号がある方はその番号、ない方は e-Rad（府省共通研究開発管理システム [http://www.e-rad.go.jp/]）へ研究者情報を登録した際に付与される 8 桁の研究者番号を記載してください。

**カリフォルニア側研究代表者(共同研究者) (expected collaborator in California)**

Name	
Degree	
Institution / Title	
Address	
Email	
Phone	
Fax	

※ カリフォルニア側の研究代表者について記載してください。

## 2. 提案書 / Research Proposal

### 提案プロジェクトの名称 / Title of Proposed Project

(in Japanese)

(in English)

### 本プロジェクトにおける研究のねらい / Specific Aims of Proposed Research

※Please describe briefly the specific goals of the proposed research.

(in Japanese)

(in English)

### これまでの研究成果等 / Preliminary Results

※Please briefly describe the preliminary results or the publications in the past you would like to emphasize to support the proposed study.

※Figures and tables cannot be included.

(in Japanese)

(in English)

**研究手法および研究計画 / Experimental Approach and Design**

※Please describe concisely the experimental approaches proposed for accomplishing the project goals within the research period.

※Highlight novelty or creative use of approaches and methods.

(in Japanese)

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(in English)



**提案研究のもつ科学的意義 / Significance of Proposed Research**

※Please describe the significant impact on the given research field when the proposed goals are accomplished. Identify the major existing problem which will be addressed and can be solved by the proposed research.

(in Japanese)

(in English)

## プロジェクトキーワード / Project Keywords

※Select keywords appropriate to your proposal. For Cell Category and Cell Behavior select one keyword that most accurately reflects your proposed research. For Molecular Feature/ Experimental Approach and Cell Type select all key words that are appropriate for your proposal.

### Cell Category

- human embryonic stem cell
- human iPS cells
- human pluripotent stem cell
- human adult stem cells
- human cancer stem cells
- other cell categories

### Molecular Feature/Experimental Approach

- epigenetics
- genomic instability
- microRNAs
- proteomics
- bioinformatics
- microarrays
- other feature/approach

### Cell Type

- |  |  |  |
|--|--|--|
| <input type="checkbox"/> ectoderm              | <input type="checkbox"/> mesoderm            | <input type="checkbox"/> endoderm              |
| <input type="checkbox"/> epithelia             | <input type="checkbox"/> endothelia          | <input type="checkbox"/> blood cells           |
| <input type="checkbox"/> cardiac cells         | <input type="checkbox"/> gametes             | <input type="checkbox"/> immune cells          |
| <input type="checkbox"/> kidney cells          | <input type="checkbox"/> liver cells         | <input type="checkbox"/> neurons / glial cells |
| <input type="checkbox"/> pancreatic cells      | <input type="checkbox"/> retinal cells       | <input type="checkbox"/> skin cells            |
| <input type="checkbox"/> skeletal muscle cells | <input type="checkbox"/> smooth muscle cells | <input type="checkbox"/> other cell types      |

### Cell Behavior

- |   |   |
|---|---|
| <input type="checkbox"/> cell-cell interaction    | <input type="checkbox"/> cell proliferation         |
| <input type="checkbox"/> cellular reprogramming * | <input type="checkbox"/> cellular senescence        |
| <input type="checkbox"/> differentiation          | <input type="checkbox"/> oncogenesis                |
| <input type="checkbox"/> stem cell aging          | <input type="checkbox"/> stem cell microenvironment |
| <input type="checkbox"/> stem cell self-renewal   | <input type="checkbox"/> teratoma formation         |
| <input type="checkbox"/> transdifferentiation     | <input type="checkbox"/> other behavior             |

Additional keywords central to proposed research (separate each keyword by a comma):