R&D proposal “Small-start type” called for in FY2020 (Form 1)

Confidentiality class 2

|  |  |  |
| --- | --- | --- |
| Prioritized Theme | \* In the “Realization of a low carbon society, a global issue” area, please describe the Prioritized Theme, Sub-Theme number, classification of proposals, and Bottleneck Issue.  \* In the “Common Platform Technology” area, please describe the classification of proposals, and name of preferred issue for proposal or Sub-Theme. | |
| Title of R&D project  *\* about 20 words* |  | |
| R&D period | (1) Total period: Month, 2020 – Month, Year ( years) | |
| (2) Feasibility study: Month, 2020- Month, Year ( years) | |
| (3) Full-scale research: Month, Year – Month, Year ( years) | |
| R&D budget  (Direct Costs)  \* (1) = (2) + (3)  Omit decimal point | (1) Total R&D cost for whole period ( million yen) | |
| (2) Total R&D cost for feasibility study ( million yen) | |
| (3) Total R&D cost for full scale research ( million yen) | |
|  |  | |
| Name of R&D Principle Investigator |  | Plan to exchange the Project Leader: □ Yes □ No □ Undecided  *\* Check* |
| Affiliated  Institution, Department, Title |  | |
| Effort for this FY | This fiscal year: % | |
| Conflicts of interest with R&D supervisor  \* Check | Conflict of interest with R&D supervisor: □ Yes □ No  \* If “Yes,” describe contents in Form 3 “6. Other” | |
| Conflicts of interest  with R&D proposer  *\* Check* | Participation of R&D proposer-related organizations: □ Yes □ No  *\* If “Yes,” describe contents in Form 3 “6. Other.” For details, Check “(2) Managing the conflicts of interest” in the Application Guideline Chapter 2, “2.3.3 Selection method.”* | |
| Researcher number | \* Enter the 8-digit “e-Rad” login ID number which is provided by registering researcher information on the Cross-ministerial Research and Development Management System (e-Rad) | |
| Information on Project Leader | URL:  Author ID:  \* URL if website (lab website, researchmap page) available for information on Project Leader, or ID if ORCHID ID, Researcher ID, or SCOPUS author ID is known | |

R&D Project Description (Form 2)

\* Be sure to check the policies of the R&D supervisors for each area, which are described in the Application Guideline. Chapter 2, “2.1.2 (5), Selection viewpoints” and “Appendix Application Guideline, Chapter 6 “Prioritized Theme and Technology Theme for Research Proposals.”

1. Goal to be achieved by this R&D project

\* The goal is to reach a stage (proof of concept: POC) where application feasibility may be judged, not describe an outline or purpose of the feasibility study.

\* Describe the goal throughout the feasibility study and full-scale research.

2. Reasons for setting the goal

2-1 Scientific viewpoint

\* Provide simple and clear descriptions in line with the following:

• Verification of the validity of the goal in line with the current R&D status.

• Reasons and problems why the goal is not achieved at present, and propose R&D effective for finding solutions.

2-2 Viewpoint of social and industrial needs

\* Take into account the following when describing why you set a particular goal:

• Show the ground of setting a highly impactful goal based on social and industrial needs.

• Show the path to social implementation after achieving the POC and social and economic impacts that are believed to exert both in Japan and overseas.

\* If you sought for the cooperation of an intermediary person or a person in charge of a company to describe the goal set for the R&D period or social/industrial issues, describe opinions of this person as detailed as possible in form 9 “View of the Coordinating Person or Company Contact.” Submitting the document (form 9) is optional, not mandatory.

\* In the case of a proposal relating to the “Realization of a low carbon society, a global issue” area, quantitatively show the degree of contribution of technological projects to achieve goal to the realization of a low carbon society by approximately 2050 in“2. Reasons for setting the goal.”

\* Prepare a separate compact summary of the contents of “1. Goal to be achieved by this R&D project” and “2. Reasons for setting the goal” in about 300 words in English, and include this summary in the “Basic information” section of “common provisions” on e-Rad.

**- Do not exceed two A4-size sheets -**

R&D Plan of Feasibility Study (Form 3)

1. Matters to be achieved in Feasibility Study

\* Clearly describe, in about 300 words in English, matters to be achieved during the feasibility study.

\* Copy this description and paste it into the “research outline” section of “Basic informaion” on e-Rad.

2. Contents of Feasibility Study

(Items of entry)

・R&D plan (implementation scheme, budget, milestone, etc.)

・Issues on social implementation (e.g. consideration of ELSI) and solutions

・Understanding of social and industrial needs and how to involve private companies

・R&D results deployment scenario (business model, transfer to companies, etc.)

・For the proposal by an individual researchers, approaches to build the R&D system to achieve the set goal, etc.

\* Describe the following about the proposal as clear as possible:

・R&D aiming for a breakthrough of science and technology, not extension of conventional technology

・Proposal with competitiveness and originality in line with R&D trends in Japan and abroad

・R&D plan for achieving the goal through involving society and industry, etc.

3. Special Matters

\* Describe the above-mentioned efforts which have already been started.

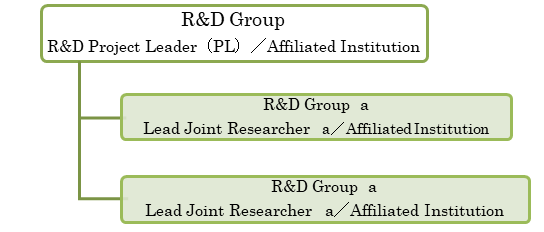
**- Do not exceed 10 A4-size sheets (no exceptions) –**

4. Team to conduct feasibility study

(1) Schematic illustration of an R&D team

\* Illustrate an R&D team. Ensure that role allotment for goal achievement is clearly indicated.

*(Correct the following reference chart as appropriate according to the proposed ideas and plans of feasibility study as appropriate.)*



R&D Group b

Main Joint Researcher b/ Affiliated Institution

R&D Group a

Main Joint Researcher a/ Affiliated Institution

(2) Project Leader (PL)’s group

|  |  |  |  |
| --- | --- | --- | --- |
| Name of PL | Name of R&D institution1) | Title | Effort2) |
| *OO OO* | *OO university*  *graduate school*  *OO department OO major* | *Professor* | *40%* |
| Name of R&D  participant3,4)) | Affiliation (omit if same as above5) | Title | |
| *OO OO* |  | *Professor* | |
| *OO OO* |  | *Associate professor* | |
| *OO OO* |  | Lecturer | |
|  |  |  | |

1) If the organization you are currently affiliated with differs from the organization at which you propose to conduct the adopted R&D, describe the latter in the column relating to special matters and inform us of the reason you have chosen this institution.

2) In the “effort” column, enter the distribution percentages (%) for the time required for the research relative to 100%, which represents the Total work hours (including not only R&D activities but also education and therapeutic activities) of researchers in a year.

3) Fully describe the roles to be played by the members of the R&D group.

4) Add necessary information concerning the researchers participating in R&D. A description such as “X researcher” is acceptable in cases where the names of researchers are not known at the time the proposal is submitted.

(2-1) Role of groups in generating R&D ideas

(2-2) Special matters

\* Give details of situations (background, reasons, etc.) when work hours (effort) is necessary for completing special tasks (such as managers including the head of research departments or chairmen of academic associations in the process).

(3) Team of main joint researchers

\* When joint R&D groups (joint R&D institutions) outside of the institution the Project Leader is affiliated with are required, describe each group separately. Describe all the joint research organization which concludes an R&D agreement with JST and is planned to be allocated R&D costs.

\* It is possible to include members of various research organizations affiliated with industries, universities, and the government in joint R&D groups.

\* There is no limit to the number of joint R&D groups; however, forming an optimal team for pursuing the R&D representative’s R&D idea should be the priority.

\* Add or delete tables depending on the number of R&D groups involved.

\* It is not mandatory to add members of joint research groups to research teams.

**①** **Joint R&D Group a** (example)

|  |  |  |  |
| --- | --- | --- | --- |
| Name of main joint researcher | Name of joint R&D organization1) | Title | Effort2) |
| OO OO | OO Institute OO Department OO team | Team leader | 10% |
| Researcher number6): 12345678  Research organization code7): 1234567890 | |
| Name of R&D participant3,4) | Affiliation (omit if same as above) | Title | |
| OO OO |  | Chief researcher | |
| OO OO |  | Researcher | |
| Plan to employ two |  | Special researcher | |
|  |  |  | |

1)-4) See previous pages.

5) Provide the eight-digit number of the main joint researcher, which was given upon registering researcher information on the R&D management system common to ministries (e-Rad).

6) Provide the codes for each affiliated research organization given by the R&D management system common to ministries (e-Rad).

<Role of groups in generating R&D ideas>

<Special matters>

\* Give details of situations (background, reasons, etc.) when work hours (effort) is necessary for completing special tasks (such as managers including the head of research departments or chairmen of academic associations in the process).

\* When adding an overseas R&D institution to the R&D team, see “2) Requirements for R&D team” of Application Guideline Chapter 2, “2.1.2 (4), Requirements for application,” and then describe in this column the reason the inclusion of joint researchers affiliated with overseas research organizations is necessary.

**② Joint R&D Group b**

\* Add or delete the joint R&D group such as "joint R&D group b" or " joint R&D group c" as necessary.

(4) Other participating R&D organizations

|  |  |  |
| --- | --- | --- |
| Name of R&D  participant3,4) | Affiliation | Title |
| OO OO | OO Institute OO Department OO team | Chief researcher |
| OO OO |  | Researcher |
| XX XX | XX Co., Ltd. XX Institute | Chief researcher |

\* Private firms, universities and individuals, etc. that have not signed an R&D agreement with JST in regard to participation but that are collaborating and cooperating with research groups that have signed an R&D agreement with JST relating to participation.

(4-1) Role of organizations participating in R&D ideas

(4-2) Special matters

\* When adding an overseas R&D institution to the R&D team, see “2) Requirements for R&D team” of Application Guideline Chapter 2, “2.1.2 (4), Requirements for application,” beforehand and describe the reason joint researchers affiliated with overseas research organizations are required.

5. The PL’s management policies

(1) Policies for R&D management

\* Improvement, correction of proceedings, introduction of new findings and technologies, policies for developing results

(2) Policies for managing intellectual property

\* Policies for managing intellectual property should include the following:

- A basic idea of the Principal Investigator concerning how to build a management system and manage the intellectual property of the project.

- A basic description of how R&D results created by this research project will be grouped so that they are not considered to constitute intellectual property; in addition, a basic plan for deciding whether the results should be disclosed or not to the public.

- A basic plan concerning acquiring and maintaining or abandoning or transferring (including how to obtain funding) intellectual property rights during and after researching this project.

6. Other

**(Common)**

\* Describe the current status of preparations and examinations as to the support measures and systems at major research organizations.

\* If there are conflicts of interest with the R&D supervisor, describe the specific contents. In addition, if there are conflicts of interest with the R&D proposer of this proposal, describe the specific contents. Check (2) Managing the conflicts of interest (persons engaged in selection) in the Application Guideline Chapter 2, “2.3.3 Selection method” for the definition of conflicts of interest.

**(by Prioritized Themes)**

\* If there are any other special matters specified by a Prioritized Theme, describe them here.

R&D Budget Plan for Feasibility Study (Form 4)

-*In this form, describe R&D budgets during Feasibility Study only. For R&D costs during a full-scale research period, describe the Total amount in form 1.*

-During the Small-start type phase, different Prioritized Themes may have different research periods. Be sure to check the R&D supervisor’s policies relating to the area in question by consulting the Application Guideline contained within “Prioritized Theme and Technology Theme for Research Proposals” when completing this form. Delete unnecessary lines for later FY(s) as necessary (For example: If R&D period is three years, delete lines for fourth and fifth years.).

-Enter an annual R&D-expense plan for each expense item and for each research group.

-More detailed R&D expense plans are requested for selection interviews.

-R&D expenses may be reviewed upon adoption or during the R&D period, depending on the budgeting situation of the entire program, the management of the research area by the R&D supervisor, or the project-evaluation situation.

-Propose a necessary, adequate, and optimum team composition for realizing the R&D representative’s R&D idea. A joint research group is essential for realizing R&D ideas and would greatly contribute to achieving a research objective.

〇 R&D cost plan by expense account (for an entire team)

(Unit: million yen)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **1st year**  (2020 Nov. -2021 Mar.) | **2nd year**  (2021 Apr. -2022 Mar.) | **3rd year**  (2022 Apr. -2023 Mar.) | **4th year**  (2023 Apr. -2024 Mar.) | **5th year**  (2024 Apr. -2025 Mar.) | **Total** |
| **Equipment** |  |  |  |  |  |  |
| **Supply** |  |  |  |  |  |  |
| **Travel** |  |  |  |  |  |  |
| **Personnel & gratitude**  **(number of**  **researchers)** | (　 ) | ( 　) | ( 　) | ( 　) | ( 　) |  |
| **Other** |  |  |  |  |  |  |
| **Direct cost total** |  |  |  |  |  |  |
| **Indirect cost** |  |  |  |  |  |  |
| **Total** |  |  |  |  |  |  |

\* R&D cost accounts and their uses are as follows:

- Equipment: purchases of facilities and equipment

- Supply: purchases of supplies

- Travel: travel expenses for the Principal Investigator and researchers

- Personnel & gratitude: personnel costs of researchers, engineers, research aids, and RA (\*), as well as for providing tokens of gratitude

\* See Application Guideline Chapter 4. “4.13, Improving the treatment of (latter-stage) doctoral students” for RA (research assistant).

〇 Special matters

\* Stipulate optimum budget and ratio for each account.

\* If applicable, describe the reasons personnel expenses exceed 50% of the total R&D expenses or supply expenses and travel expenses exceed 30% of the total R&D expenses.

〇 R&D budget plan by group

\* Propose a necessary, adequate, and optimum team composition for realizing the PL’s R&D ideas. A joint research group is essential for realizing a research idea and can greatly contribute to achieving a research objective.

(Unit: million yen)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **1st year**  (2020 Nov -2021 Mar.) | **2nd year**  (2021 Apr. -2022 Mar.) | **3rd year**  (2022 Apr. -2023 Mar.) | **4th year**  (2023 Apr. -2024 Mar.) | **5th year**  (2024 Apr. -2025 Mar.) | **Total** |
| **Project Leader Group**  **OO university** |  |  |  |  |  |  |
| **Joint research G-a**  **XX university** |  |  |  |  |  |  |
| **Joint research G-b**  **XX university** |  |  |  |  |  |  |
| **Direct costs total** |  |  |  |  |  |  |
| **Indirect costs** |  |  |  |  |  |  |
| **Total** |  |  |  |  |  |  |

〇 Major facilities to be utilized (name of instrument, installation site)

〇 Major facilities planned for purchase(more than 5,000 thousand yen for every order, name of instrument, approximate cost)

(example)

*Group A:*

*XXXXXXXXX 15,000* *thousand yen* *(Purchase fiscal year )*

*XXXXXXXXX 5,000 thousand yen (Purchase fiscal year )*

*XXXXXXXXX 10,000 thousand yen (Purchase fiscal year )*

*Group B:*

*XXXXXXXXX 7,000 thousand yen (Purchase fiscal year )*

*XXXXXXXXX 10,000 thousand yen (Purchase fiscal year )*

R&D Project Proposer (Project Leader) (Form 5)

〇 Basic information on the Project Leader (PL)

|  |  |  |  |
| --- | --- | --- | --- |
| Name |  | | |
| Nationality/  gender |  | Birth date (A.D.) |  |
| Affiliation, title |  | |  |
| Academic history  (after graduation from college) | Academic history:  (Filling-in example)  OO year OO university OO department graduation  *OO year OO graduate school OO department master’s course*  *OO major*  *OO year OO graduate school OO department doctoral course OO major*  *OO year Ph.D. (OO major) (OO university)* | | |
| Career track  (main R&D history and research contents) | Job history:  (Filling-in example)  OO year-OO year OO Co., Ltd OO R&D department (development of OOOO)  *OO year-OO year OO university special associate professor (research on OOOO)*  *OO year-OO year OO Co., Ltd OO department (in charge of OO)* | | |
| Other special matters | *(voluntary description on social contributions, international activities)* | | |

〇 List of achievements by the Project Leader (PL)

\* Describe up to 20 previous achievements (by PL and main joint researcher), such as published papers and books, related to this R&D project in chronological order, starting with the most recent.

\* Follow the instructions below concerning items on papers to be described (the same applies to authored books):

\* You may choose the order of the items freely.

\* Place a “●” mark in front of a paper cited in form 3.

<Project Leader>

*(example)*

- Author(s) (all authors), Title, Journal/Book, Volume, Page numbers and Published year

<Main Joint Researcher a>

*(example)*

*- Author(s) (all authors), Title, Journal/Book, Volume, Page numbers and Published year*

<Main Joint Researcher b>

*(example)*

*- Author(s) (all authors), Title, Journal/Book, Volume, Page numbers and Published year*

Other Funding Supports (Form 6)

\* If the Project Leader and Main Joint Researchers are receiving, applying for, or planning to apply for alternative funding systems or other research subsidies (including from private foundations or overseas organizations), describe the R&D title, R&D period, role, amount of R&D expenses received, and efforts made thus far for each of system or subsidy. Also, see Application Guideline “4.2, Measures against unreasonable duplication and excessive concentration.”

\* If a description is found to be false, an adopted proposal may be cancelled later.

\* If, during the selection process for this R&D proposal, a description in this form requires alteration because the research subsidies applied or planned to be applied for, as mentioned above, have been altered, correct this form and send a notification e-mail to the contact details provided at the end of these application requirements.

\* Copies of the application documents and plans submitted to other systems may be requested during the selection interview.

(example)

Project Leader: XX XX (name)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Name of program** | **Situation** | **Name of R&D projects**  **(name of representative)** | **R&D**  **period** | **Role**  **(representative/ shared role)** | **(1) Received expenses (whole period)**  **(2) (FY2021 planned)**  **(3) (FY2020 planned)**  **(4) (FY2019 actual)** | **Effort**  **(%)** |
| JST-Mirai  Program (this  Proposal) | Applied |  |  | Representative |  |  |
| *Grant-in-Aid for Scientific Research(S)* | Received | ◊◊ creation by xx  (OOOO) | 2017 Apr. -2021 Mar. | Representative | 1. 100,000 thousand yen 2. 50,000 thousand yen   (3) 25,000 thousand yen  (4) 5,000 thousand yen | 20 |
| *JST Strategic Basic Research Programs*  *CREST* | Applied | ◊◊ upgraded function by xx  (OOOO) | 2019 Oct.  -2024 Mar. | Shared role | (1) 140,000 thousand yen  (2) 35,000 thousand yen  (3) 8,000 thousand yen  (4) - |  |

-List, in descending order of the amounts received (over the entire period), subsidies received or expected to be received. Then, describe subsidies applied for and those that you plan to apply for, if applicable.

-If a subsidy is being received or you expect to receive it, enter “received.” Enter “applied” if you have applied for but not yet received a subsidy or if you plan to apply for a subsidy.

-Describe representative or shared duties under “role.”

-Enter the R&D expenses (direct costs) received by the PL.

-Describe the distribution ratio of the time required to perform the research relative to 100%, which represents Total annual work hours (including not only time for research activities but also educational and therapeutic activities) under “effort” [as defined at the Comprehensive Science, Technology, and Innovation Convention]. Only account for efforts expended or planned to be expended on the presumption that a proposal is adopted by JST-Mirai program, not efforts made in regard to proposals submitted to other research organizations, such as those applied to or those planned to be applied to. The Total efforts made during the Small-start type phase and efforts made toward subsidies being received should not exceed 100%.

-Add or delete lines as necessary.

(example)

Main Joint Researcher a: XX XX (name)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Name of**  **program** | **Situation** | **Name of research projects**  **(name of representative)** | **R&D**  **period** | **Role**  **(representative/shared role)** | **(1) Received expenses**  **(whole period)**  **(2) (FY2021 planned)**  **(3) (FY2020 planned)**  **(4) (FY2019 actual)** | **Effort**  **(%)** |
| JST-Mirai  (this Proposal) | Applied |  |  | Shared |  |  |
| MHLW, Grants-in-Aid for Science Research | Received | ◊◊ creation by xx  (OOOO) | 2017 May -2021 Mar. | Representative | (1) 50,000 thousand yen  (2) 20,000 thousand yen  (3) 20,000 thousand yen  (4) 5,000 thousand yen | 10 |
|  |  |  |  |  | (1) thousand yen  (2) thousand yen  (3) -  (4) - |  |

(example)

Main Joint Researcher b: XX XX (name)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Name of program** | **Situation** | **Name of research projects**  **(name of representative)** | **R&D**  **period** | **Role**  **(representative**  **/shared role)** | **(1) Received expenses (whole period)**  **(2) (FY2021 planned)**  **(3) (FY2020 planned)**  **(4) (FY2019 actual)** | **Effort**  **(%)** |
| JST-Mirai  (this Proposal) | Applied |  |  | Shared |  |  |
| OO Foundation  xx Research Grants | Received | ◊◊ creation by xx  (OOOO) | 2018 Apr. -2020 Mar. | Representative | (1) 2,000 thousand yen  (2) 0 thousand yen  (3) 1,000 thousand yen  (4) 1,000 thousand yen | *15* |
|  |  |  |  |  | (1) thousand yen  (2) thousand yen  (3) -  (4) - |  |

Protection of Human Rights and Compliance with Laws and Regulations (Form 7)

\* Describe the measures and actions that you will take if your R&D involves compliance with the related laws and regulations (e.g. research requiring the consent and the cooperation of the other party when implementing the R&D plan, R&D requiring consideration for the handling of personal information and R&D requiring efforts regarding security export control, bioethics and safety measures).

This applies to surveys, R&D, experiments which require an approval procedure in an ethics committee inside and outside the research institution, such as for example questionnaire surveys in which personal information is involved, interview surveys, the use of provided samples, analysis study of the human genome, recombinant DNA experiments, experiments on animals, etc.

\* When your R&D team includes an overseas joint research group, be sure to describe the preparedness on regulations concerning security export control both in PL's research group and the domestic joint research group.

\* Please indicate where this is not applicable.

References (Form 8)

\* Provide the names of two (2) individuals who have good knowledge of your R&D Project (non-Japanese person(s) are acceptable). Provide names of the reference person, institution and contact information (phone numbers and e-mail address). The evaluators (JST and R&D Supervisor) may contact them regarding the R&D proposal during the screening (preliminary evaluation) process.

\* Providing this reference information is not mandatory.

View of the Coordinating Person or Company Contact

(Form 9)

**\* Submission of this form is optional, not mandatory.**

Author name:

Affiliation:

Title:

Contact address (voluntary):

\* Please prepare within 1 page. (It can be prepared by more than one person.)

\* Person who prepares should not be Project Leader or R&D participant but the person who promotes cooperation of academia and industry or the person in charge of the company who is supposed to receive the technology that achieves POC in future. The person can be outside those included in form 3, “4. Team to conduct Feasibility Study.”

\* The person who plays a role of coordinator can also be a person who supports realization of POC.

\* Please include supplemental information that is not described in form 1-5. For example, public or private firms’ needs, domestic and overseas trends around this R&D proposal, expectation of the achievement of POC and possibility of expanding after POC, role of the coordinating person, relationship with programs of government departments or local governments.

It is not necessary to write an evaluation of the PL or reason for recommendation.