

Advanced Technologies for Carbon-Neutral (ALCA-Next) Program

Application Guidelines for 2023

Application period
Thursday, June 1, 2023 – Wednesday, July 12, 2023 at
12:00

Note: This translation is provided as a reference material. If there is any discrepancy between this translated version and the original Japanese version, the original Japanese version prevails.



Department of Research and Development for Future Creation
June 2023

<Outline of the Call for Proposals>

(1) Schedule

Start of call for proposals	Thursday, June 1, 2023
Application deadline (Deadline for acceptance by e-Rad)	Wednesday, July 12, 2023 Noon (Japan Standard Time)
Document Screening Period	Late August to early September
Interview screening period	Mid-September to late September
Notification and announcement of selected proposals	October
Starts of R&D projects	Mid-November or later

1. All information and dates after the application deadline are subject to change.
2. Please refer to the open call website for the latest information on this call for proposals.
3. The date and participation method for the briefing session will be announced on the open call website when it is confirmed.
3. The specific date and time of the interview will be specified by JST.
4. The schedule for the interview selection process and the date of e-mail notification to those selected for interviews will be announced on the open call website as soon as it is determined.

ALCA-Next's open call website : <https://www.jst.go.jp/alca/koubo/index.html>

(2) How to apply

Applications must be submitted via e-Rad (see "Chapter 5: How to apply using the e-Rad"). Please allow sufficient time to complete the application process, as the e-Rad system may become busy near the deadline, and you may not be able to complete the application process depending on the environment in which you prepare your proposal.

Proposals that have not been submitted through e-Rad by the call deadline will not be accepted for any reason.

Please make sure the description of e-Rad and the proposal text regarding the institution/position (in case of discrepancy, the statement in the proposal text will be treated as correct.) coincide with each other. In addition, please note that proposals uploaded to e-Rad will be rejected if there are any deficiencies that make it difficult to review. "Deficiencies that make it difficult to review" refers to errors in the proposal format, omissions from each of the proposal forms (especially Form 1: Proposal Cover Page), and serious omissions of items in the proposal. When garbled text that makes review difficult is found, JST may contact the applicant to confirm the contents of the garbled text.

JST will not be responsible for any defects in the proposal that occur before the call deadline, regardless of whether the proposal is accepted or rejected. Therefore, please be advised that JST will not make any corrections to proposals or request corrections from proposers after prior confirmation of such corrections by the call deadline.

(3) Target Technology Areas of the Call for Proposals

The technology areas subject to the open call are as follows:

Technology Areas
“Energy Storage” Area (Program Officer: WATANABE Masayoshi)
“Energy Conversion” Area (Program Officer: WATANABE Masayoshi)
“Resource Circulation” Area (Program Officer: WATANABE Masayoshi)
“Green Biotechnology” Area (Program Officer: EZURA Hiroshi)
“Semiconductor” Area (Program Officer: KURODA Tadahiro)
“Green Computing and DX” Area (Program Officer: KURODA Tadahiro)

<To researchers who are considering applying for or participating in the program>

1. Contribution to the achievement of the Sustainable Development Goals (SDGs)

JST contributes to the achievement of the Sustainable Development Goals (SDGs)!

At the United Nations Summit on Sustainable Development held in September 2015, the outcome document **"Transforming Our World: The 2030 Agenda for Sustainable Development"** with the Sustainable Development Goals (SDGs) at its core as new, more inclusive and globally common action goals for people, planet and prosperity was unanimously adopted. The 17 goals of the SDGs not only represent the sustainability challenges faced by the humanity, but also require that these challenges be addressed in an integrated and inclusive manner, and that science, technology, and innovation provide the scientific basis for solving these societal challenges and contributing to better policy decisions. These roles can be said to be consistent with the new responsibility of science, "Science in Society and Science for Society," as set forth in the "Declaration on Science and the Use of Scientific Knowledge" (Budapest Declaration*) adopted at the International Council for Science in 1999. As a core institution promoting Japan's science and technology policy, JST promotes cutting-edge basic research and engages in problem-solving R&D that responds to the demands of society. SDGs are universal goals that can cover JST's entire mission. JST will co-create values with industry, academia, government, and the public through its projects, and work with researchers to achieve a sustainable society.

President, Japan Science and Technology Agency

*The Budapest Declaration clearly states "Science for Knowledge," "Science for Peace," "Science for Development," and "Science in Society and for Society" as the responsibilities, challenges, and obligations of science in the 21st century.



2. Promotion of Diversity

JST promotes diversity!

Diversity is necessary for scientific and technological innovation. It is possible to open a new perspective on science and technology through collaboration and discussion among various stakeholders having different specialties and values, irrespective of gender and nationality. JST is committed to promoting diversity in all aspects of science and technology to address the challenges of the future society and contribute to the enhancement of Japan's competitiveness and enrichment of human well-being. The United Nations Sustainable Development Goals (SDGs) include gender equality and other goals that are closely related to diversity, and JST will contribute to solving not only domestic issues but also issues common in the world.

Currently, women's activities are positioned at the core of the growth strategy as "Japan's greatest potential". In the R&D sector, extensive participation of female researchers is also substantially important, and indispensable to supporting science, technology and innovation. JST hopes that female researchers will actively apply for the program. JST is constantly working for institutional improvement, for example, the improvement of our "Childbirth, Child-raising and Nursing Care Support System" to provide an environment in which a researcher on leave can return to his/her research project based on the voice of the system user.

When soliciting and reviewing new proposals, we will consider diversity as well.

We hope to receive active applications from researchers.

President, Japan Science and Technology Agency

We look forward to receiving your applications!

JST promotes diversity based on the idea that diversity is about understanding people who think differently from you and integrating your ideas with theirs to create new value. This leads not only to solving domestic issues but also to solving issues common to the world, and we will address global social issues such as the SDGs through the promotion of diversity in cooperation with overseas institutions.

Diversity at JST is not only for women, but also for young researchers and non-Japanese researchers. To ensure that each researcher can fully demonstrate her or his abilities, we continue to provide support for childbirth, childcare, and nursing care, and we strive to maintain a balanced staffing structure for committees and other activities. Aiming to create an environment where a wide range of people can work hard together, we especially welcome applications from female researchers, who have been scarce in the past, and work to create new value.

We look forward to receiving active applications, especially from female researchers.

Japan Science and Technology Agency
Diversity Promotion Supervisor
General Manager, Diversity Promotion Office

3. Toward Fair Research Activities

Toward Fair Research Activities

The recent spate of research misconduct and dishonest research activities has created an alarming situation in which the relationship of trust between science and society has been shaken and the sound development of science and technology has been impeded. In order to prevent research misconduct, the scientific community is required to function in an autonomous self-cleansing manner. Each and every researcher needs to discipline himself/herself strictly, work on the creation of new knowledge and inventions useful to society based on a noble sense of ethics, and live up to the expectations of society.

As an organization that allocates research funds, JST takes research misconduct seriously and, in cooperation with related organizations, will make every effort to take measures to prevent misconduct in order to restore the trust of society.

- 1 . JST believes that fairness in research activities is extremely important for our country, which aims to become a science and technology nation.
- 2 . JST supports honest and responsible research activities.
- 3 . JST will deal with research misconduct in a strict manner.
- 4 . JST will work with related organizations to promote research ethics education and reform the research fund allocation system to prevent misconduct.

We must foster a sound scientific culture under the trust of society in order to realize a bright future society filled with dreams and hopes. We ask for the continued understanding and cooperation of the research community and related institutions.

President, Japan Science and Technology Agency

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Chapter 1: About ALCA-Next

1.1 Overview

As countries around the world accelerate their efforts to achieve carbon neutrality, investments related to Green Transformation (GX) are expanding rapidly, and in order to realize GX, it is essential to achieve carbon neutrality by 2050, as well as to strengthen industrial competitiveness, economic growth, and development. In order to achieve future greenhouse gas (GHG) reduction targets and create future industries, it is necessary not only to introduce existing technologies but also to create new technologies. In order to continuously create such technologies, support for R&D and human resource development in academia is required in parallel with verification and technological development in industry, and social implementation through genuine collaboration between companies and academia. In response to the demand, the Japan Science and Technology Agency (JST) has launched the "Advanced Technologies for Carbon Neutrality (ALCA-Next)¹" (hereafter referred to as the "Program"), as one of the JST Strategic Basic Research Programs, and the "Green Technologies for Excellence (GteX) Program²" from the fiscal year 2023.

This Program aims to create game-changing technologies that will significantly shift the scientific and technological paradigm toward realizing carbon neutrality, based on unconventional ideas of individual researchers. It intends to uncover a wide range of research on important technologies that are attracting worldwide attention and are expected to develop into challenging yet innovative technology seeds, and aims to improve the level of technological maturity (TRL). For these purposes, the Program has characteristics such as "starting small," "selection and concentration through stage-gate evaluation," "acceleration after stage-gate evaluation." In the stage-gate evaluation, the continuation or discontinuation of research and development is strictly evaluated not only from the viewpoint of development in science, but also from the viewpoint of "the possibility of contributing to carbon neutrality," which is the purpose of this Program.

In addition, the Project will actively collaborate with related organizations and funding programs in order to maximize results. In particular, the Program and GteX are managed by the same program director (hereinafter referred to as "PD") and will actively collaborate with each other to accelerate research and maximize the results.

* This Program is a competitive research funding program and is included in the list posted on the Cabinet Office website (<https://www8.cao.go.jp/cstp/compefund/index.html>).

1.2 Management Structure

The Program is directed by a PD appointed by JST, who oversees the overall operation of the Program and provide overall management of the R&D. The PD also receives advice from the Innovative GX Technology Promotion Committee to oversee the operation of the project from a bird's-eye viewpoint, and will make decisions on important matters related to the operation of the Program,

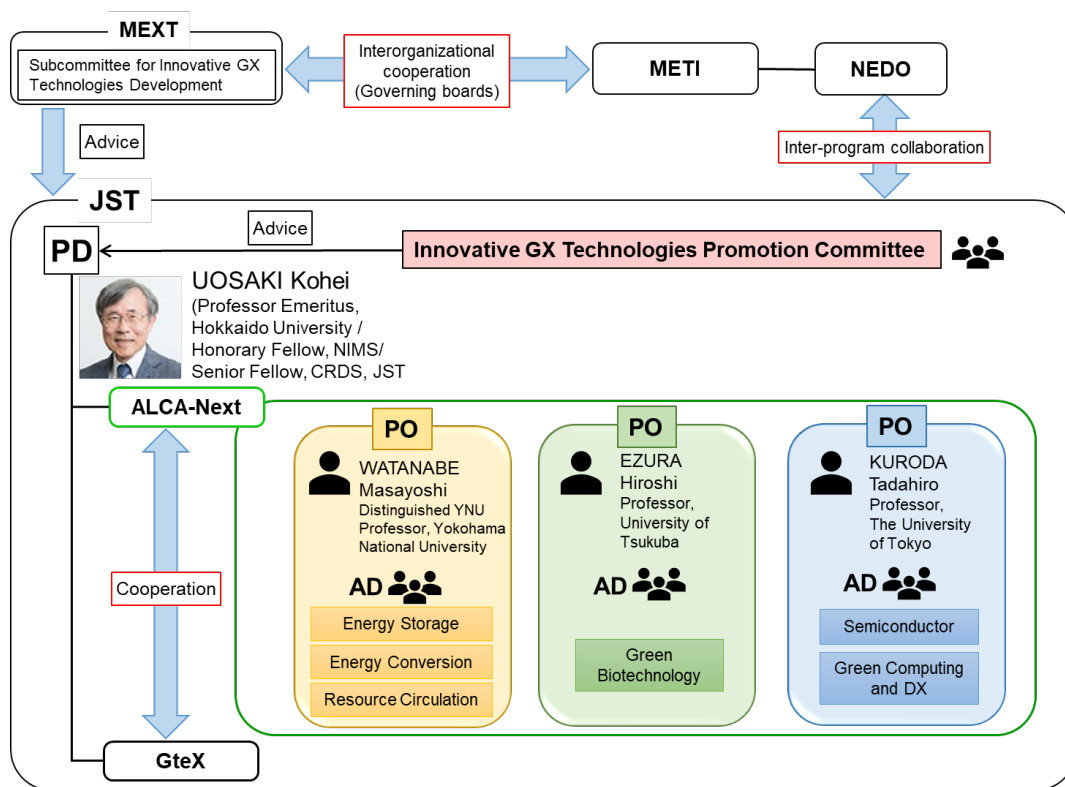
¹ ALCA-Next is designed with mechanisms and features based on the knowledge and other aspects of basic research support in the "Advanced Low Carbon Technology Development (ALCA)," which started in FY2010, anticipating global trends.

² This program aims to create innovative GX technologies by establishing a top-down collaboration system of top researchers from across the country, across fields and organizations. For details, see the program website: <https://www.jst.go.jp/gtex/>

including the formulation and review of the project plans, coordination of cross-disciplinary matters including budget, selection of proposals in each area, and decision on whether to continue or discontinue R&D proposals based on the results of the stage-gate evaluation. The Innovative GX Technology Promotion Committee is chaired by the PD and consists of external experts. The committee convenes at the request of the chairperson and advises the PD on important matters concerning the operation of the project.

A Program Officer (hereinafter referred to as "PO") manages one or several technology area(s) of his responsibility, including individual R&D projects. With the cooperation of external experts such as ADs who have specialized knowledge, the PO selects candidate proposals for adoption, manage research progress through site visits and other means, provide instructions to each team, and conduct stage-gate evaluations. Based on the evaluation results, we may increase or decrease the R&D budget, integrate projects, or terminate (cancel) a project before the end of the project period.

The same PD oversees the operations of both the Program and GteX, with the aim of accelerating research and maximizing results through active collaboration.



Management Structure

1.3 Structure and Characteristics of ALCA-Next

In applying for the Program and promoting research and development after being selected, you are required to take the following program design and characteristics into consideration.

(1) Management and R&D promotion by PD and PO

- The Principal Investigator of a project, who is affiliated with a university, company, or public institutions, promotes the research and development under the management of the PO. The PO's policy on the management and promotion of R&D and other details are described in "Chapter 6" of the Application Guidelines (Appendix) (<https://www.jst.go.jp/alca/koubo/index.html>). Please

take these policies into consideration when proposing R&D. The PO will review the team structure, etc. of the R&D proposal as necessary in order to formulate the R&D portfolio in each technology area.

- Based on the preliminary evaluation and coordination with the PD/PO and others, the R&D Principal Investigator (PI) will set R&D goals and milestones at the time of adoption, and conduct R&D aimed at achieving these goals. During R&D, the PI may flexibly revise the R&D plan and optimize the implementation system (including the introduction of a new team) after approval of the R&D plan by the PD and PO.

(2) Stage-gate evaluation

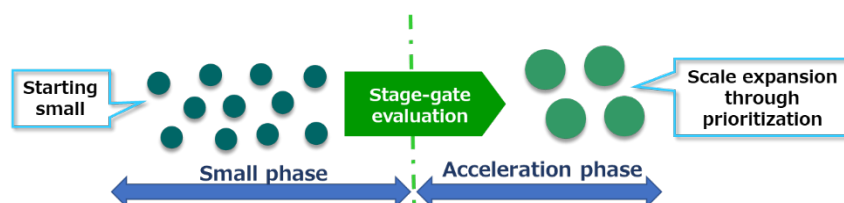
- R&D will be conducted in stages, begins at a small phase in which a large number of relatively small amount of proposals are adopted ("starting small") to an accelerated phase in which those proposals are narrowed down and concentrated investment is made. In the small phase, many innovative ideas are solicited from the public and incorporated, and R&D is conducted to determine the feasibility of the ideas.
- In principle, in the fourth year after the start of research, an evaluation (stage-gate evaluation) will be conducted for the transition from the small phase to the accelerated phase. In the stage-gate evaluation, we will conduct a rigorous evaluation not only from the viewpoint of the development of science, but also from the viewpoint of "potential to contributing carbon neutrality," which is the purpose of this Program, and we expect to narrow the scope to about 1/3 of the total. Please be sure to refer to "3.3 Evaluation" for more information on stage-gate evaluation.
- R&D projects that pass the stage-gate evaluation will be required to accelerate R&D to achieve their R&D goals by expanding the scale of R&D and strengthening the R&D structure.

■ Small phase (3.5 yrs)

Approx. 25 million JPY
/project/yr (direct costs)

■ Acceleration phase (3 yrs)

Approx. 75 million JPY
/project/yr (direct cost)



(3) Research and development system

The Principal Investigator may organize one optimal R&D team consisting of several researchers.

- In addition to the "Principal Investigator's Group" led by him/herself, the Principal Investigator may establish a group ("Collaborative Research Group") consisting of researchers belonging to other laboratories within the same institution or other R&D institutions, if necessary for the realization of the R&D concept. R&D proposals by individual researchers are also accepted.
- If a joint research group is to be established, designate a representative of the group among the researchers participating in the group as the "Principal Co-Investigator."
- Depending on the necessity in promoting R&D, researchers, research assistants, etc. may be hired to participate in the R&D project in line with rules regarding R&D costs (within the scope of the R&D agreement of the R&D institution).

Please refer to "2.6 Application Requirements" for the requirements for the R&D system.

1.4 Points of Attention when applying to ALCA-Next

(1) Linkage between ALCA-Next and GteX

GteX aims not only to achieve results in basic research, but also to improve the technological readiness level (TRL) for social implementation by establishing an integrated all-Japan "team-type" collaboration system of top-level researchers from universities and other institutions in the priority fields defined by a top-down decision. In contrast, this Program will create game-changing technology seeds based on the unconventional ideas of individual researchers (bottom-up), which will significantly change the paradigm of science and technology in a wide range of fields. As described in Section 1.2, ALCA-Next and GteX are operated under the same management structure, and through the following collaborations which take advantage of the characteristics of each program, ALCA-Next aims to maximize its R&D results.

- We will work together on data sharing, international collaboration, and fostering young researchers. In addition, from the viewpoint of promoting the sharing of equipment, we plan to consider a system whereby researchers in this project can utilize the research equipment and other equipment maintained and used at GteX.
- If the PD, PO, and other management members determine that the results generated by projects in the Program are effective as elemental technologies for GteX team-based research, the corresponding projects may participate in the R&D projects in GteX. In this way, we aim to accelerate R&D for early commercialization. Arrangements will be made flexibly not only after the acceleration phase, but also after the small-scale phase, depending on the situation.

Please be advised that in order to carry out the above-mentioned collaboration, GteX's POs in related research areas may participate in site visits or stage-gate evaluations after the adoption to confirm the R&D progress, including R&D plans and results, related to this Program.

(2) Common technology areas between ALCA-Next and GteX

With an eye toward the common objective of both programs, which is to contribute to the realization of carbon neutrality, there are technological fields that are common to ALCA-Next and GteX. In the "Energy Storage," "Energy Conversion," and "Green Biotechnology" areas of this Program, proposals that are not yet in the research phase of GteX team-based research (large-scale all-Japan R&D team), but have potential for future development, will be considered for selection. Proposals that are appropriate for implementation of research in a GteX team-type project will not be selected under this Program. Therefore, in addition to "team-based research," GteX also calls for "innovative elemental technology research" for ideas that could become elemental technologies for team-based research. We strongly recommend that you also refer to the GteX Call for Proposals and apply to GteX for those that could be the subject of a GteX theme.

Please be advised that the selection information, including the contents of R&D proposals for this Program, will be disclosed to the POs of the relevant fields of GteX to the extent necessary, and that they will also participate as observers in the selection committee for ALCA-Next.

(3) Active participation and development of young researchers

In order to foster human resources who will be major players in research activities in 2050, our target year to achieve carbon neutrality, there is a strong need to develop researchers, engineers, including Ph.D. holders, who are expected to lead Japan's future industry and academia in the

targeted technology areas of the Program. It is also necessary to raise the awareness of graduate and undergraduate students who are expected to become researchers and engineers in the future. For this reason, we actively encourage young researchers to assume key positions in the implementation of research and development, and to participate in discussions on the direction of research and development. We also encourage the participation of master's and doctoral students in R&D projects under the Program. For details, see "3.4 Responsibilities of The Principal Investigator and Principal Co-Investigator, etc.," "4.13 Improvement of Treatment of Doctoral Students," "4.14 Ensuring Self-sustaining, Stable Research Environment for Young Researchers," "4.15 Voluntary Research Activities of Young Researchers Employed to Implement the Project, etc. and "4.16 Supporting Various Career Paths for Young Researchers ".

Chapter 2: Call for Proposals and Selection

2.1 Technology Areas of the Call for Proposals

Based on the Green Growth Strategy, which outlines industrial policies and action plans for 14 industrial sectors with growth potential to achieve carbon neutrality by 2050, this Program has identified the six technological areas shown in the table below. These six areas are considered to be scientifically unexplored than others, therefore Japanese academia is expected to make significant future contribution. For details of the technical areas, please refer to Chapter 6 of the Application Guidelines (Appendix) (<https://www.jst.go.jp/alca/koubo/index.html>) . In Chapter 6, we describe expectations for research proposals of each technology area and examples of bottleneck issues to be tackled, but we also invite a wide range of new ideas based on the free thinking of individual researchers toward the realization of carbon neutrality.

The technology areas will be reviewed as necessary based on future revisions of the Green Growth Strategy, industry trends, R&D trends, and other factors.

Technology areas of the call for proposals	
“Energy storage” Area (Program Officer: WATANABE Masayoshi)	
“Energy Conversion” Area (Program Officer: WATANABE Masayoshi)	
“Resource Circulation” Area (Program Officer: WATANABE Masayoshi)	
“Green Biotechnology” Area (Program Officer: EZURA Hiroshi)	
“Semiconductor” Area (Program Officer: KURODA Tadahiro)	
“Green Computing and DX” Area (Program Officer: KURODA Tadahiro)	

2.2 Application Period and Selection Schedule

Start of call for proposals	Thursday, June 1, 2023
Briefing session of the call	Please refer to the ALCA-Next application page for details and registration. https://www.jst.go.jp/alca/koubo/index.html

Application deadline (Deadline for acceptance by e-Rad)	Wednesday, July 12, 2023 12:00 (noon)
Document screening Period	Late August to early September
Interview screening period	Mid-September to late September
Notification and announcement of selected proposals	November
Start of R&D projects	Mid-November or later

*All the information and dates after the document screening period are subject to change.

*The latest information on will be posted on the following application page, so please be sure to check the updates.

*The specific date and time of the interview will be specified by JST.

*The schedule for the interview selection process and the date of e-mail notification to those selected for interviews will be announced on the open application page as soon as it is determined.

Project web page for public application: <https://www.jst.go.jp/alca/koubo/index.html>

2.3 Research and Development Period

In principle, the R&D period for this project is 3.5 years for the small phase and 3 years for the accelerated phase.

Please read Chapter 6 of the Application Guidelines (Appendix) and prepare a 7-year R&D plan (<https://www.jst.go.jp/alca/koubo/index.html>).

* Rigorous stage-gate evaluation is performed prior to the acceleration phase. Be sure to refer to "3.3 Evaluation.

2.4 Research and development costs

The R&D applicant may set the total budget of the proposing R&D project at a maximum of the following

Small phase (from 1st to 4th year): up to 25 million JPY/year (direct costs)

Acceleration phase (from 5th to 7th year): up to 75 million JPY/year (direct costs)

* During the selection process, the appropriateness of the established R&D budget plan will be assessed.

* Actual R&D budget will be determined by scrutiny and approval of the R&D plan.

* Based on research progress and other factors, separate adjustments may be made during the research period (for details, please refer to "3.1.1 Preparation of R&D Plan").

JST will pay direct costs for R&D and indirect costs (up to 30% of the amount of direct costs) to the R&D organization as the total R&D costs based on the R&D agreement.

2.5 Number of Proposals to be Adopted

The Program plans to adopt 28 projects in total.

* The number of projects may vary depending on the situation of the call and the budget.

* Adoption of projects is not guaranteed for all categories indicated in Chapter 6.

2.6 Application Requirements

Application requirements are listed in 2.6.1 through 2.6.3 below. Please note that failure to meet the application requirements will be handled as described below.

- If it is found that a proposal does not meet the application requirements by the time of selection, the R&D proposal will, in principle, be rejected or not adopted.
- The application requirements, if adopted, will be maintained during the entire R&D period of the relevant R&D proposal. If the requirements are not met during the R&D period due to any changes, the entire R&D proposal or part of it will, in principle, be terminated (cancelled) early.

In addition to 2.6.1 through 2.6.3 below, please be sure to understand the information in "2.7.2 Restrictions on Duplicate Applications" and "Chapter 4: Key Points for Application " before submitting your application.

2.6.1 Requirements for Applicants

- a. The R&D applicant, who will be the Principal Investigator (PI) of R&D, must belong to a domestic R&D organization (including private companies, incorporated associations, foundations, etc.) and conduct R&D at the R&D organization (regardless of the nationality of the applicant).

* The following persons are also eligible as R&D applicants:

- Foreign researchers affiliated with Japanese research and development institutions.
- Researchers who are not currently affiliated with specific R&D institutions or who are affiliated with overseas R&D institutions, and who, if selected as a Principal Investigator, will be able to establish a system to conduct research and development affiliated with a Japanese R&D institution (regardless of nationality).

*Persons belonging to research and development institutions other than universities, such as private companies, are also eligible.

- b. A researcher who is able to assume responsibility for the entire R&D project as the person in charge of the R&D project.

(For details, please refer to "3.4 Responsibilities of the Principal Investigator and Principal Co-Investigator, etc.".)

- c. A researcher who have completed a program on research ethics education at your home institution, or have completed an educational program designated by JST by the application deadline.

(For details, please refer to "4.1 Enrolling in and Completing Educational Program on Research Integrity).

- d. Be able to pledge the following four points:

- The applicant shall understand and comply with the contents of "Guideline on Responses to Misconduct in Research Activities (decided by the Minister of Education, Culture, Sports, Science and Technology on August 26, 2014)."
- The applicant shall understand and comply with the contents of " Guidelines for the Management and Audit of Public Research Funds at Research Institutes (Code of Practice) (revised on February 1, 2022)."
- If the R&D proposal is adopted, the Principal Investigator and the R&D participant shall not engage in any misconduct in research activities (fabrication, falsification, or plagiarism) or misuse of research funds.
- No misconduct in research activities has been committed in the past research results described in

this R&D proposal.

*Please confirm on the e-Rad application information entry screen.

2.6.2 Requirements regarding R&D project structure

- a. The R&D team should be optimally structured to realize the R&D concept of the applicant who will be the Principal Investigator.
- b. If a joint research group is assigned to the R&D team, the group must be indispensable for the realization of the R&D concept and must be able to make a significant contribution toward achieving the research objectives.
- c. In cases where researchers belonging to overseas R&D institutions participate as Principal Co-Investigators, the applicant must give explanations to the difficulty of R&D implementation without the overseas R&D institution concerned in order to achieve the R&D goals (approval of the PO is required for participation). Additionally, it must be possible to ascertain the results of intellectual property rights, etc.

* Collaboration with overseas research groups is welcome in proposing this project. **However, in principle, JST will not provide research funds for groups affiliated with overseas research institutions**, so they are required to secure their own research funds.

Exceptionally, if it is deemed essential for an overseas research institution to participate as a joint research group (i.e., researchers belonging to an overseas research institution as principal co-researchers) in order to realize the research concept, JST will provide research funds to the research group. If you wish to have a R&D system that includes an overseas research institution (which requires the approval of the PO), please list it with its members in the section for joint research group of the R&D proposal (Form 4-2: R&D Plan), and in the "Special Notes," please explain the reason why researchers belonging to the overseas research institution are necessary for the project. In addition, for proposals that assume the provision of research funds to the overseas research group from JST, please also include in the R&D Proposal (R&D Plan (Form 4-2)) an alternative plan for collaboration with the relevant group in the event that a contract is not concluded.

In addition, the overseas research organization must, in principle, conclude the research contract with the terms and conditions presented by JST. In some cases, the terms and conditions of the contract may be adjusted for reasonable reasons, taking into consideration the characteristics of the research; however, in such a case, the adjustment period is limited to three months in principle from the start of negotiations by JST. Please note that the researcher him/herself may be required to provide explanations, etc. to the person in charge of the contract at the overseas research institution.

The applicants are required to include the contact information of the person in charge of the contract at the overseas research organization indicated in the R&D proposal (Form 4-2: R&D Plan (Special Note)) and also to submit a prescribed form separately designated by JST by the time of the interview selection, indicating that your institution (person responsible for the department in charge of the contract) have approved each clause of the contract as the research organization in advance (the secretariat will inquire about this information during the selection process). The separate form will be posted on the Call for Proposals page (<https://www.jst.go.jp/alca/koubo/index.html>) at a later date.

Please also refer to "3.5 Responsibilities of Research Institutes, etc." It is also necessary to be able to identify the intellectual property rights and other results of the entire research team, including the overseas research group. If a research agreement cannot be concluded within the

coordination period and it is difficult to implement the proposed collaboration, the research will not be conducted.

For a model research agreement for overseas institutions, please refer to the "Reference Materials" in the "How to Apply" section of the following URL.

<https://www.jst.go.jp/kisoken/boshuu/teian/top/ryoiki.html>

2.6.3 R&D Organization Requirements

In conducting R&D, R&D organizations must be fully aware that the source of commissioned R&D funds is public funds, should comply with relevant laws and regulations and strive to conduct R&D efficiently. Research and development activities will not be permitted at R&D institutions that are unable to fulfill the responsibilities listed in "3.5 Responsibilities of Research Institutes, etc.". When applying, please make sure to obtain the prior approval of the R&D institution where the R&D is planned to be conducted.

2.7 Application Method

Application requirements and conditions, such as R&D period and R&D budget, differ depending on the technology area. Please be sure to check the application requirements listed in the "Chapter 6" of the Application Guidelines (Appendix) (<https://www.jst.go.jp/alca/koubo/index.html>) when preparing your R&D proposal.

2.7.1 Instructions for Completing the R&D Proposal (Form)

Please be sure to use the FY 2023 R&D Proposal Form. Please download the form from the following webpage and prepare your R&D proposal according to the instructions (written in blue letters in the R&D proposal form).

URL: <https://www.jst.go.jp/alca/koubo/index.html/index.html>

The list of documents to be submitted is as follows:

Form Number	Document Name
Form 1	Research and Development Proposal - Cover Page
Form 2	Overall Concept of R&D Project
Form 3	R&D Structure and Schedule (entire 7-year period)
Form 4	R&D System
Form 5	R&D Budget Planning (overall for 7 years)
Form 6	List of Achievements
Form 7	Information of Other Funded Projects Under Other Programs
Form 8	Special Remarks

* Please keep the file size of your proposal within 3 MB.

* Please be sure to confirm "2.8.3 Conflict of Interest Management" when preparing your R&D proposal.

* For details on the application method, please refer to "Chapter 5: How to Apply Using e-Rad".

* Please be sure to read and understand "Chapter 4: Key Points for Application " and "2.7.2 Restrictions on Duplicate Applications" before submitting your entry.

2.7.2 Restrictions on Duplicate Applications

The following restrictions will be placed on duplicate applications. Certain measures may also be taken for other programs inside and outside of JST that are not mentioned in this section, if they are judged to be unreasonable duplication or excessive concentration. For details, please refer to "4.2 Measures against Unreasonable Duplication and Excessive Concentration".

- (1) You may submit only one R&D proposal as a Principal Investigator from among all the technology areas that are open for application during the application period.
- (2) Those who are conducting research and development as a Project Leader (Principal Investigator) of the "Low-Carbon Society" area of the JST-Mirai Program at the time of proposal are not eligible to apply.

However, if the R&D project in JST-Mirai is scheduled to end in FY2023, the applicant may apply for ALCA-Next. The R&D period and other conditions will be individually coordinated so that there will be only one R&D project conducted by the Principal Investigator.

- (3) It is possible to apply for GteX (team-based research and/or innovative elemental technology research) as a PI of the R&D team in parallel with ALCA-Next. However, if you are selected as a candidate for GteX and ALCA-Next, we will make adjustments to either one of the adopted project.
- (4) It is possible to be a Principal Co-Investigator for GteX team-based research, however, in such cases, there must be no overlap between the research content of the project in ALCA-Next and that of GteX and the PI must be able to allocate the appropriate amount of effort. Additionally, the PO may, at his/her discretion, make adjustments such as reducing the amount of R&D budget.
- (5) The following restrictions apply to participation in R&D projects as a Principal Co-Investigator
 - a. Researchers are not allowed to submit multiple applications of the same research content with the Principal Investigator and the Principal Co-Investigator interchanged.
 - b. If a researcher applies as a Principal Investigator or Principal Co-Investigator, and also applies as a Principal Co-Investigator in another R&D proposal, and both proposals are selected, the PO may, at his/her discretion, make arrangements to avoid unreasonable duplication and excessive concentration after considering the research content and scale. Such arrangements include reducing the R&D budget and not allowing the researcher to participate in some of the R&D proposals in which he/she is participating.

2.8 Selection Process

Please refer to "(1) Schedule" at the beginning of this document for the dates relevant to the selection process.

2.8.1 Selection Process

The PO, with the cooperation of the AD and others, will conduct document screening and interview selection. The PO may also obtain cooperation of external evaluators.

In the document screening process, a preliminary screening may be conducted prior to the document screening based on the contents of the R&D proposal (Form 2: Overall Concept of R&D Project) depending on the number of applications received for each technology area. This preliminary selection will be conducted primarily from the perspective of whether the proposal meets the objectives of the technology area (i.e., whether the proposal is expected to contribute to the achievement of the objectives of the technology area). Only those R&D proposals that meet these requirements will be subject to documentary selection. It will not be announced which technical area the preliminary selection will be conducted in.

In addition, other inquiries or surveys may be conducted as necessary during the selection process. If the applicant or Principal Co-Investigator belongs to a commercial organization, the financial statements

of the organization may be requested.

Based on the above selection process, JST will select the Principal Investigators and R&D proposals.

2.8.2 Special Measures for Adoption

The following arrangements or adjustments may be made by the PD and/or PO during the selection process and at the time of adoption. Please understand that the following adjustments may be made during the selection process and at the time of acceptance.

- During the selection process, the selection of R&D proposals may be coordinated across the technology areas. As its result, the R&D proposal may be selected and adopted under a different technical area from that to which the applicant has applied. In such cases, the applicant will be notified when it is decided that adjustments will be made.
- Even in the case of rejection, if the PO deems that a part of the R&D proposal is important for the promotion of the technology area of this project, the PO may arrange such as incorporating the proposed R&D as a joint research group for another adopted candidate proposal. In such cases, JST will contact the applicant and take the necessary measures.
- Even in the case of rejection, if the PO deems that part or all of the R&D proposal contribute to GteX, the PO may make arrangements such as having the proposed research carried out by participating in a GteX-adopted proposal. In such cases, JST will contact the applicant and take the necessary measures.
- At the time of adoption, the PO may instruct to reorganize the team or adjust the budget.

2.8.3 Conflict of Interest Management

From the viewpoint of fair and transparent evaluation and allocation of research funds, the following conflict of interest management will be implemented in accordance with JST's regulations.

(1) Conflict of interest management for those involved in the selection process

From the viewpoint of fair and transparent evaluation, persons having the following conflicts of interest with an applicant will not be included in the selection process of the subjected proposal.

- a. A person who has a family relationship with the applicant.
- b. A person who belongs to the same department, major, etc. at a research institution such as a university, national research institute or company as the applicant. "Same department, major, etc." here refers to a group of the smallest research unit such as a laboratory or research team; such a group may be equivalent to a department or major of the research institution.
- c. A person who collaborates closely with the applicant. (e.g., a person who carry out joint projects, co-author research papers, is a research member with the same objective, or is a co-researcher of another project of the applicant and considered to belong to substantially the same research group as the applicant).
- d. Those who have a close mentor-student relationship or direct employment relationship with the applicant.
- e. A person who is in academic competition with the R&D proposal of the applicant or a person who belongs to a company that is in market competition with the R&D proposal.
- f. Other parties deemed to have conflict by JST.

(2) Conflict of interest management for applicants

If an applicant makes a proposal with an "organization related to the applicant" as a joint research group, and research funds are allocated by JST to the "organization related to the applicant," this may constitute a conflict of interest for the applicant. Therefore, the conflict of interest between the applicant and "an institution related to the R&D applicant" will be appropriately judged in consideration of the necessity, rationality, and appropriateness of the relationship, and conflict of interest management will be implemented to prevent any harmful effects caused by the conflict of interest. The term "organization related to the applicant" refers to a joint research group in the case of any of the following. The terms "a" and "b" refer not only to the applicant him/herself, but also to the spouse and relatives within the first degree of kinship of the applicant (hereinafter collectively referred to as the "applicant, etc.").

- a. An organization established based on the R&D results of the R&D applicant, etc. (Including the case where the person is not directly involved in management but only holds a title such as technical advisor, etc., or only holds shares)
- b. An organization where the R&D applicant, etc. is an officer (including CTO, but not including technical advisor)
- c. An institution in which the R&D applicant has an equity stake
- d. Institutions from which the R&D applicant receives implementation fee income

Proposals that include "an institution related to the applicant" as a joint research group will be evaluated from the perspective of the necessity, rationality, and appropriateness of the institution concerned. Therefore, if you wish to include "institutions related to the applicant" as a joint research group, please indicate in the Proposal Form 8 that "The organization related to the R&D Principal Investigator" are included in the joint research group. In addition, separate materials may be required for conducting conflict of interest management by the applicant.

(3) Conflict of Interest Management at JST

The adoption of the companies in which JST has invested (hereinafter referred to as "funded companies") for this Program and the allocation of research funds to them may constitute a conflict of interest of JST (conflict of interest as an organization). Therefore, conflict of interest management will be implemented in order to avoid any doubt from a third party about the conflict of interest between JST and the funded company. For proposals that include a JST-funded company as a joint research group, we will evaluate the necessity, rationality, and appropriateness of adoption. Therefore, if you intend to include JST-funded companies as joint research groups, please indicate in Form 1 of the proposal that the funded companies are included in the joint research groups. Please cooperate with JST's conflict of interest management.

* Please refer to the following web page for information on JST's portfolio companies. Please note that companies that have terminated their investment are not subject to conflict of interest management, and therefore do not need to report conflicts of interest.

<https://www.jst.go.jp/entre/result.html#M01>

* The base date for declaration is the date of the start of the call for proposals of the program. Please report on the companies whose investment from JST has been publicly announced as of the said date. Companies that have already received an investment offer but have not yet made a public announcement are not required to submit a report for confidentiality reasons within JST. Please refer to the following web page for JST's investment announcement.

<https://www.jst.go.jp/entre/news.html>

2.8.4 Conducting of Interviews and Notification of Selection Results

- a. Applicants who are selected for interview selection as a result of the document screening will be notified and informed of the interview selection procedure, schedule, and additional materials to be submitted. At that time, we may request the application materials, R&D plans, etc. for other research funds. In addition, depending on the results of the document screening and surveys, JST or PO may pose the applicant selected for interview the items to be addressed or explained during the interview selection process. If the applicant or Principal Co-Investigator belongs to a commercial organization, JST or PO may request submission of the financial statements of the organization to which he/she belongs.

The schedule for interview selection and the date of e-mail notification to those selected for interviews will be announced on the following open call page as soon as it is determined.

<https://www.jst.go.jp/alca/koubo/index.html>

- b. During the interview selection, the applicant will be asked to explain the details of the proposal. In principle, the interview will be conducted in Japanese, but if it is difficult to conduct the interview in Japanese, the interview may be conducted in English.
- c. For R&D proposals that are selected as candidates for adoption, the terms and conditions of the R&D plan, structure, and contract R&D agreement may be adjusted. If the conditions cannot be agreed upon, the proposal will not be adopted.
- d. Applicants that are selected will be notified and informed of the procedures for commencing R&D.
- e. Applicants who are not selected for adoption will be notified of the results and reasons for when all selection processes have been completed.

2.9 Selection Viewpoints

The selection criteria for this Program are as follows (proposals must satisfy all items listed in 1. through 4):

<u>Selection Criteria</u>
<u>1. Overall concept of R&D</u> <ul style="list-style-type: none">– The concept meets the purpose of the Program or technology area– The proposal is expected to create technologies that can make a significant contribution to the realization of carbon neutrality.
<u>2. The superiority and uniqueness of the proposal</u> <ul style="list-style-type: none">– The project has a challenging technical content that is not an extension of conventional technologies, and is expected to lead to a dramatic development of science and technology.– The proposal has superiority and originality based on the domestic and international R&D trends.
<u>3. Research and development plan</u> <ul style="list-style-type: none">– The R&D has an appropriate plan in place to achieve its goals.
<u>4. Research and development system</u> <ul style="list-style-type: none">– The R&D structure and the division of roles are appropriate to achieve the R&D goals.– The Principal Investigator possesses strong leadership and management capabilities to achieve the goals.

- * For more information on the selection perspectives and policies specific for each technical area, please refer to Chapter 6 of the Application Guidelines (Appendix). Please refer to the following webpage (<https://www.jst.go.jp/alca/koubo/index.html>).
- * In addition to the criteria above, the "unreasonable duplication" or "excessive concentration" is also considered in the selection process. For details, please refer to "4.2 Measures against Unreasonable Duplication and Excessive Concentration".
- * In order for JST to manage the conflict of interest of the applicants, JST may ask the applicant to submit documents apart from the R&D Proposal (in cases in which an institution related to the R&D proposer is designated as a joint research group, etc.).

Chapter 3: Research Promotion after Adoption

3.1 Development of R&D plans

3.1.1 Preparation of R&D Plan

After the adoption, the R&D PI prepares an R&D plan (R&D items, implementation plan, R&D costs, R&D system, etc.) for the entire R&D period and for each year. The R&D plan is confirmed and approved by the PO.

In addition, in determining the R&D plan, the integration and collaboration among R&D subjects may be coordinated. Furthermore, the R&D budget and R&D structure may be revised during the course of the R&D period, depending on the budget situation of the project as a whole.

3.1.2 R&D Agreement

After the R&D plan is decided, JST will conclude a research agreement with the R&D organization to which the Principal Investigator and Principal Co-investigator belong. Intellectual property rights such as patents resulting from the R&D shall, in principle, belong to the R&D organization, provided that the R&D organization complies with the provisions of Article 17 (Japanese version of the Bayh-Dole act) of the Industrial Technology Enhancement Act, in accordance with the terms of the research agreement. For overseas institutions, JST concludes "Joint Research Agreement." In this case, intellectual property rights will be shared equally with JST, on the condition that the costs required for application, maintenance, etc. are borne equally by both parties. (If these terms and conditions cannot be agreed upon, the intellectual property rights will belong to JST.) For details on other responsibilities, etc., please refer to "3.5 (2) When the research is conducted by an overseas organization .

Please note that if the R&D organization is unable to enter into a research agreement with JST, if it is unable to establish the necessary systems for the management and auditing of public research funds and guidelines on research misconduct, or if its financial situation is extremely unstable, the R&D Organization may not be able to conduct the research and development concerned. For details, please refer to "3.5 Responsibilities of Research Institutes, etc.

3.2 R&D Costs

Based on the contract research agreement, JST pays the research organization the R&D costs (direct costs) plus indirect costs (up to 30% of direct costs) as contract research expenses.

3.2.1 Research and development expenses (direct expenses)

R&D costs (direct costs) are expenses that are directly necessary for the implementation of the research and can be used for the following purposes:

- a. Cost of goods: Expenses for the purchase of new equipment (*1), fixtures, supplies, etc.
- b. Travel: Travel expenses for research personnel and research participants listed in the R&D plan.
- c. Personnel expenses and honorarium: Salaries and honorarium for research participants (excluding (*2) main joint researcher)
- d. Others: expenses for publication of research results (e.g., article submission fees, etc.), equipment leasing expenses, transferring expenses, etc.)

*1. In purchasing new research facilities and equipment, the "research facilities and equipment sharing system for each research organization (hereinafter referred to as the "equipment sharing system")" should be operated as stipulated in the "Introduction of New Research Facilities and Equipment Systems Integrated with the Management of Research Organizations" (Council for Science and Technology, Subcommittee on Advanced Research Infrastructure, November 2015). The "Equipment Sharing

System (hereinafter referred to as the "Equipment Sharing System")" is to be used. For details, please refer to "4.12 Promoting the Joint Use of Research Facilities and Equipment

Note: Examples of expenses that cannot be treated as research expenses (direct expenses)

- Cost for items which are inconsistent with research objectives.
- Costs considered to be more appropriately handled as overhead costs (indirect costs)
- Costs that is determined by JST to be unauthorized use at the time of settlement) (*)

*JST has established rules and guidelines specific to this program for some items in the research agreement, administrative manuals, and the common ministry/agency expense handling classification table. In addition, the administrative handling may differ between universities, etc. (universities, public research institutions, public-interest corporations, etc. recognized by JST) and companies, etc. (research institutions other than universities, etc., mainly private companies, etc.). For more details, please refer to the latest administrative processing instructions, etc. at the following URL.

<https://www.jst.go.jp/contract/index2.html>

*2. In principle, universities and other research institutions are eligible to spend the personnel expenses of PIs and expenses related to the performance of non-research work on behalf of the PIs (buyout expenses) only when certain requirements are met. Please refer to the following list of requirements.

- "Revision of the Direct Expenses to Allow Expenditures for Non-Research Activities (Introduction of the Buyout System) and Expenditures for Personnel Expenses of the Principal Investigator (PI) from Direct Expenses (Liaison)" (September 17, 2020)

<https://www.jst.go.jp/osirase/2020/pdf/20200917.pdf> (Japanese version only)

The scope of eligibility, expenditure limits, etc., for this project will be announced on the Program website at a later date.

3.2.2 Overhead costs(Indirect Costs)

Indirect costs are those necessary for the management of the research institution in conducting research, etc. In principle, 30% of the research expenses (direct costs) will be allocated for indirect costs. In accordance with the "Common Guidelines for the Execution of Indirect Costs of Competitive Research Funds" (Meeting of the Liaison Committee of relevant ministries and agencies concerning competitive research funds, April 20, 2001, amended on October 1, 2021), research institutions must prepare policies, etc. concerning the use of indirect costs, execute them systematically and appropriately, and ensure transparency in the use of such funds. The transparency of the use of indirect expenses must be ensured.

3.2.3 Multi-Year Contracts and Carryover Systems

In order to maximize the research results, JST has established multi-year contracts to allow for carryover of research funds and procurement contracts that cross over from one fiscal year to the next, from the perspective of more effective and efficient use of research funds and prevention of misconduct. (In some cases, multi-year contracts and carry-over may not be allowed depending on the administrative management system of the research institution, etc.).

3.3 Evaluation

Under this project, regular monitoring and evaluation of R&D will be conducted, and flexible measures will be taken as necessary, such as revising the R&D plan if it is deemed difficult to achieve the goals, or increasing the R&D budget or adjusting the transition to GteX if it is deemed necessary to accelerate R&D for early commercialization.

- a. The PO will monitor the progress and results of R&D, and conduct stage-gate evaluation and ex-post evaluation of R&D proposals with the cooperation of ADs and others.
- b. In principle, the stage-gate evaluation will be conducted in the fourth fiscal year after the start of the research to determine whether or not a project can advance to the accelerated phase from the small phase. The stage-gate evaluation will be conducted strictly from the viewpoints of the progress of R&D, such as the progress of R&D including the creation of R&D results, the degree of achievement in resolving technological bottlenecks, and the contribution to the realization of carbon neutrality, and is intended to narrow the number of projects of the same adopted year to about 1/3. In the stage-gate evaluation, not only simple narrowing down of the projects, but also reorganization by integrating multiple projects will be considered depending on the situation.
- c. In the case in which a project is terminated (cancelled) as a result of the stage-gate evaluation, if the PO deems that part or all of the research content would make contribution to GteX, the PO may make coordination such as having the project participate in a GteX-adopted proposal.
- d. The ex-post evaluation will be conducted as soon as possible after the completion of the research and development or at an appropriate time before the completion of the research and development.
- e. In addition to the above, the PO may conduct an R&D proposal evaluation at a time deemed necessary by the PO.
- f. The results of the evaluation will be publicly announced, and measures will be taken to adjust subsequent R&D plans, allocate resources (including increasing or decreasing R&D budget and revision of the R&D structure), terminate (cancel) R&D proposals early, and coordinate among R&D proposals.
- g. After a certain period of time has elapsed after the completion of the R&D, a follow-up evaluation may be conducted based on the status of development and utilization of the R&D results and the activities of the participating researchers.

In addition to the evaluation of R&D projects, evaluations may also be conducted for the Program, technology areas, and POs from the perspective of progress toward achieving goals, operational status, etc. To the extent deemed necessary for such evaluation, the PI will be asked to provide various types of information and to respond to interviews, etc.

<u>Stage-gate criteria</u>
<u>1. Results of the small phase</u> - The milestones in the small phase have been achieved. - R&D results generated in the small phase serve as the basis for the acceleration phase.
<u>2. Overall concept of the acceleration phase</u> - The project is expected to create technologies that can make a significant contribution to the realization of carbon neutrality. - The concept has a reasonable scenario for the practical application of the technology to be created.

3. The superiority and uniqueness of the project

- The project has a challenging technical content that is not an extension of conventional technologies, and is expected to lead to a dramatic development of science and technology.
- The project has superiority and originality based on domestic and international R&D trends.

4. Research and development plan

- The project has an appropriate R&D plan in place to achieve the goals.

5. Research and development system

- The R&D structure and the division of roles of the project are appropriate to achieve the goals.
- The R&D leader demonstrates strong leadership and management capabilities to achieve the goals.

3.4 Responsibilities of the Principal Investigator and Principal Co-Investigator, etc.

3.4.1 Responsibilities in Promoting Research and Development

- (1) The Principal Investigator and Principal Co-Investigators are fully aware that JST's R&D budgets are funded by the tax as its invaluable source, and are responsible for the fair and efficient execution of R&D costs for their own R&D team or research group as a whole..
- (2) After the proposed R&D project has been adopted, the PI is required to understand the following matters through the explanatory meetings, etc. conducted by JST, and submit a written undertaking of these matters to JST.
 - a. Comply with the requirements of the application guidelines and the rules and regulations of your institution
 - b. With the understanding that the R&D budgets of JST are funded by the public taxpayers' money, the project will not engage in fraudulent activities (fabrication, falsification, and plagiarism) in R&D activities, nor will it improperly use R&D costs
 - c. Ensure that participating researchers are informed about the research ethics educational materials (eAPRIN (formerly known as CITI)) designated by JST to prevent misconduct in R&D activities and the improper use of R&D funds
- (3) Principal investigators and research participants must complete the research ethics educational materials (eAPRIN (formerly CITI)) designated by JST to prevent misconduct (fabrication, falsification and plagiarism) in research and development. Failure to complete the course materials may result in suspension of the execution of research and development costs until the completion of the course is confirmed. For details, please refer to "[4.1 Enrolling in and Completing Educational Program on Research Integrity.](#)
- (4) Promotion and management of research and development, etc.
 - a. The Principal Investigator is responsible for the overall R&D, including matters related to its planning and implementation. The PI is also responsible for establishing the R&D site and environment necessary for the promotion of R&D, in cooperation with the R&D organization. If the R&D site or environment is deemed to be a serious obstacle to the promotion of R&D, the R&D proposal may be cancelled or other measures be taken.
 - b. The PI is responsible for submitting R&D plans, research reports, etc., and for responding to R&D

project evaluations. In addition, the PI should respond to reports on the progress of the R&D as required by the JST secretariat or the PO.

- c. The project team is requested to provide various information and conduct interviews for the evaluation of the project and the follow-up evaluation after a certain period of time has elapsed after the completion of the research and development.

- (5) The PI of R&D should appropriately manage and administer the execution of R&D tasks and R&D funds (expenditure plan and progress management, administrative procedures, etc.) together with the R&D organization. In addition, the Principal Investigator should also appropriately manage those who participate in the R&D. The Principal Co-Investigator should properly manage the allocated R&D costs (expenditure plan and progress management, administrative procedures, etc.) together with the R&D institution. If students participate in the project, the faculty advisor is also required to assume the responsibility as an R&D participant in the R&D agreement with JST. For example, if a student commits misconduct, etc., not only the student but also the faculty advisor will be held responsible.
- (6) The Principal Investigator should give consideration to the R&D environment and working environment and conditions for research participants and researchers employed with the R&D funds.
- (7) Principal investigators are encouraged to actively support young postdoctoral researchers employed with the R&D funds to secure diverse career paths in Japan and abroad. The activity plan to support diverse career paths for young postdoctoral researchers employed with the R&D funds may be confirmed at the interview and selection meeting.
For details, please refer to "4.13 Improvement of Treatment of Doctoral Students," "4.14 Ensuring Self-sustaining, Stable Research Environment for Young Researchers," "4.15 Voluntary Research Activities of Young Researchers Employed to Implement the Project," and "4.16 4.16 Supporting Various Career Paths for Young Researchers," "4.17 Securing URA and Other Management Personnel,"
- (8) Please follow the R&D agreement between JST and the R&D Organization and JST's various regulations.
- (9) You are required to respond accounting inspections including investigations of accounting by JST and government audit.
- (10) Please be advised that JST will provide the required information, such as the title of the R&D project, participants in the R&D project and the commissioned R&D expenses, to the e-Rad system and the Cabinet Office ("4.30 Providing Information from e-Rad to the Cabinet Office"). In addition, we may ask the Principal Investigators to provide various types of information.

3.4.2 Responsibilities regarding R&D results, etc.

- a. Since the research and development projects to be conducted under this project are government-funded, we ask that you acquire appropriate intellectual property rights and actively present the results of your research and development both domestically and internationally in order to ensure the smooth transfer of research and development results to society and industry. In principle, intellectual property

rights should be applied for (or filed for) by the R&D organization based on the R&D agreement.

- b. When presenting the results obtained through the implementation of the research and development in the form of a paper, etc., please state that they are the results of ALCA-Next.
- c. In accordance with the "JST's Basic Policy on the Handling of Research Results for the Promotion of Open Science," researchers selected for all technology areas of the Program are required to submit to JST, together with the research and development plan, a "Data Management Plan" that outlines the guidelines for the storage and management of research data generated as a result, its publication and non-publication, and the operation of research data that can be made public, organized accordingly to the items listed below. In addition, please store, manage, and release (or limited release/non-disclosure) data appropriately based on the above policy. For details of the items to be filled in, please refer to "JST's Basic Policy on the Handling of Research Results for the Promotion of Open Science Operational Guideline" below.

https://www.jst.go.jp/pr/intro/openscience/guideline_openscience.pdf

<Items of Data Management Plan>

- Policy for storage and management of research data subject to management
- Policy on publication and non-publication of research data
- Methods and systems for providing research data that can be made publicly available
- Intended use of publicly available research data
- Initiatives to promote the use of publicly available research data
- Other Special Notes

- d. The researchers of the projects should participate in workshops and symposia organized by JST in Japan and abroad, as well as in cross-cutting activities and outreach activities aimed at promoting collaboration and synergy in R&D in technological areas, and present the results of your R&D activities. In addition, please actively engage in international activities and dissemination in the course of your R&D activities.

3.5 Responsibilities of Research Institutes, etc.

In conducting research, research institutions must be fully aware that the source of the research funds is public funds, comply with relevant laws and regulations, and strive to conduct the research efficiently. Conducting research by research institutions that cannot fulfill the responsibilities listed below will not be approved. Therefore, when applying, please ensure that you obtain prior approval from all research institutions where you plan to conduct research (hereinafter referred to as "participating institutions").

(1) When the research is conducted by a Japanese institution

- a. The R&D Organization must, in principle, conclude a R&D agreement in accordance with the contents presented by JST. In addition, they are obligated to properly conduct R&D in accordance with the R&D agreement, the administrative instructions, and the R&D plan. If the sponsored research contract cannot be concluded, or if it is determined that the research and development cannot be properly conducted at the relevant R&D institution, the implementation of the research and development at the relevant R&D institution will not be permitted.

* Please refer to the following web page for the latest model of the contract research agreement.

<https://www.jst.go.jp/contract/index2.html>

- b. In accordance with the "Guidelines for the Management and Audit of Public Research Funds at

Research Institutes (Implementation Standards)" (decided by the Minister of Education, Culture, Sports, Science and Technology on February 15, 2007, and revised on February 1, 2022), R&D institutions must establish a system for the management and audit of public research funds under their responsibility. The R&D institution is also required to make efforts to properly execute the commissioned research and development expenses. In addition, R&D institutions are obliged to report regularly to MEXT on the status of implementation of the system for management and auditing of public research funds, and to respond to various investigations concerning the system. (See " 4.26 Guidelines for the Management and Audit of Public Research Funds at Research Institutes (Implementation Standards) ").

https://www.mext.go.jp/a_menu/kansa/houkoku/1343904_21.htm

- c. R&D institutions must strive to prevent misconduct by establishing the necessary rules and systems on their own responsibility, based on the "Guidelines Concerning Responses to Misconduct in Research Activities (decided by the Minister of Education, Culture, Sports, Science and Technology on August 26, 2014)". In addition, the R&D organization is obligated to respond to various investigations concerning the establishment of systems based on the guidelines. (See "4.27 Guideline for Responding to Misconduct in Research Activities ").

https://www.mext.go.jp/b_menu/houdou/26/08/1351568.htm

- d. The research institution is obligated to ensure that research participants are fully aware of the contents of the guidelines described in the items b. and c. above, and that they complete educational materials on research ethics designated by JST.
- e. In executing the research budget, the research organization must appropriately spend and manage the research costs in accordance with the regulations of the research organization with consideration to flexibility, and must follow the rules specific to this Program as stipulated in the Administrative Instructions, etc. established by JST. (Research institutions receiving Grants-in-Aid for Scientific Research (KAKEN) may comply with the handling of Grants-in-Aid for Scientific Research at their research institutions with regard to matters not described in the Administrative Instructions regarding the use of commissioned research costs).
- f. The research institution is required to make an agreement with the research participant to the effect that intellectual property rights arising from the implementation of the research shall belong to the research institution, or to establish office regulations to that effect. In particular, when a student who has no employment relationship with the research institution is a research participant, unless it is clear that the student cannot be an inventor, it is necessary to take necessary measures such as concluding a contract with the student in advance so that intellectual property rights pertaining to inventions (including devices) made by the student in the course of conducting this research will belong to the research institution. In addition, with regard to the conditions regarding the consideration for the succession of intellectual property rights, etc., consideration should be given so that the student who will be the inventor will not be disadvantaged.
- In addition, when transferring or establishing an exclusive license of the intellectual property right, it is necessary, in principle, to obtain the prior consent of JST. Additionally, when filing an application, registration of establishment, implementation, or abandonment, it is obligatory to submit the required reports to JST.

- g. The research institute is obligated to respond to investigations of its accounting by JST and to government inspections of its accounts.

- h. The research organization is required to follow measures designated by JST such as changing the payment method of the research costs or reducing the research budget, based on investigations related to the administrative management system, financial status, etc.

In addition, if the evaluation of the program at the end of the JST's mid- to long-term target period calls for the dissolution or downsizing of JST, or if there is a change in the budgetary situation of Japan, JST may cancel the contract during the contract period or reduce the contracted research budget in accordance with the special provisions of the R&D agreement. Moreover, based on the results of the interim evaluation of the research project, JST may take measures such as increasing or decreasing the research budget, changing the contract period, or suspending the research. Additionally, if JST judges that it is not appropriate to continue the research, it may take measures such as contract termination even during the contract period. The research organization must comply with these measures.

- i. If the research organization is a national or local government organization, the research organization is responsible for ensuring that the necessary budgetary and other procedures are taken prior to the start of the research contract. (In the unlikely event that the research organization is found to have failed to follow the required procedures after the contract has been concluded, the research organization may take measures such as canceling the contract or refunding the research expenses.)
- j. As part of its efforts to prevent misconduct in R&D activities, JST requires researchers who participate in newly adopted R&D proposals and belong to an R&D organization to attend and complete educational materials on research ethics (JST will take care of the necessary procedures for attendance, etc.). R&D institutions are requested to ensure that all eligible persons take and complete the course.

Accordingly, JST will instruct the research institution to suspend the execution of all or part of the research budget if the researcher concerned does not fulfill the completion obligations stipulated despite JST's reminders. In addition to suspending the execution of the research funds in accordance with the instruction, please do not resume the execution of the research funds until instructed to do so.

- k. Please take necessary measures, such as concluding a joint research agreement with the participating institutions, to the extent that it does not violate the terms of the R&D agreement with JST, regarding the handling of intellectual property rights, confidentiality, etc., so as not to impede the appropriate implementation of the research or the utilization of research results.
- l. In executing contracted research, based on the fact that government funds are used as the source of funds, please handle the expenses appropriately so that accountability can be fulfilled, while paying sufficient attention to economy, efficiency, effectiveness, legality, and accuracy. Please also make every effort to carry out the research in a systematic manner, and be careful not to procure funds for the purpose of exhausting the budget at the end of the research period or at the end of the fiscal year.

(2) When the research is conducted by an overseas organization

- a. In principle, the R&D organization must conclude an agreement using the "Joint Research Agreement" template provided by JST (there are few cases in which the contract clauses may be adjusted for items that are deemed reasonable, taking into consideration the characteristics of the research content and others). Indirect costs are limited to 30% of direct costs. In addition, the applicant is obligated to properly conduct research and development in accordance with the Joint Research

Agreement* and the research and development plan. If the agreement cannot be concluded, or if it is determined that the research and development will not be properly conducted at the relevant R&D institution, the implementation of the research and development at the relevant R&D institution will not be approved.

If you wish to have an R&D team composition that includes overseas research institutions (which requires the approval of the PO), please explain the R&D proposal the necessity of the joint researcher who belongs to an overseas R&D institution. In addition, for R&D proposals that anticipate the conclusion of a contract research agreement with JST, please also include in the R&D proposal an alternative plan for collaboration with the relevant group in the event that no agreement is concluded.

- b. The R&D organization is obliged to appropriately spend and manage R&D budget on its own responsibility in accordance with the Joint Research Agreement and the guidelines, and other policies separately specified by JST if any, and to prepare and submit a detailed statement of costs (equivalent to a balance sheet for domestic organizations) in English, showing the details of R&D costs spent. In addition, the R&D Organization is required to respond to various investigations on the execution status of the R&D expenses at the request of JST even during the term of the contract.
- c. For other details of the terms and conditions, please refer to the latest "Joint Research Agreement" template. Intellectual property rights arising from the implementation of the research will be shared equally with JST. If the intellectual property rights are shared equally, JST and the applicant are obliged to share equally the costs required to apply for and maintain the protection of the intellectual property rights.
- d. Please submit by the interview selection meeting (to be posted on the Call for Entries page at a later date) information on the person in charge of the contract at the overseas R&D organization and the prescribed form (confirmation form for overseas R&D organizations intend concluding a contract (tentative)) indicating that the R&D organization (i.e., the person in charge of the contract) has approved each clause of the contract in advance. (The form will be posted on the Call for Proposals webpage at a later date). If a joint research agreement cannot be concluded and it is difficult to implement the proposed collaboration, the selection will be cancelled.

* There may be cases in which JST determines that a research agreement should not be concluded from the perspective of security trade control, such as institutions listed on the "Foreign User List"³ published by the Ministry of Economy, Trade and Industry.

3.6 Other Points to Note

3.6.1 Maternity, childcare, and nursing care support systems

As part of its efforts to promote gender equality, JST offers a childbirth/childcare/nursing care support system. The purpose of this program is to enable researchers who are employed as full-time researchers with JST research funds (excluding indirect costs) to continue their research when they experience a life event (childbirth, childcare, nursing care), or if they have to temporarily suspend their research, to enable them to continue their career when they return to their research.

³ In order to improve the effectiveness of catch-all regulations for WMD-related cargo, etc., the Ministry of Economy, Trade and Industry (METI) has published a "Foreign User List" that provides information on organizations located in foreign countries where concerns about the development of WMD, etc. cannot be dispelled.

<https://www.meti.go.jp/policy/anpo/law05.html#user-list>

The "Gender Equality Promotion Grant" (maximum amount: 300,000 yen/month x number of months of support) is provided for research projects, etc.

For more information, please refer to the following web page:

<https://www.jst.go.jp/diversity/about/research/child-care.html>

3.6.2 Use of JREC-IN Portal

As one of the largest research personnel career support portals in Japan, the Japan Research Career Information Network (JREC-IN Portal <https://jrecin.jst.go.jp/>) is a service that allows free posting and browsing of job information for researchers, research supporters, technicians, and other personnel involved in research.

Currently, more than 140,000 users are registered with JREC-IN Portal, and more than 20,000 job openings are posted annually by universities, public research institutes, and private companies. In addition, JREC-IN Portal's web-based application function simplifies the management of application documents and reduces the burden on job seekers. If you are looking for highly knowledgeable research personnel (postdoctoral fellows, researchers, etc.) to promote your research project, please take advantage of the JREC-IN Portal.

In addition, JREC-IN Portal is linked to researchmap, and the functions for creating a resume and list of accomplishments allow you to easily create these application documents using information registered in researchmap.

Chapter 4: Key Points for Application

4.1 Enrolling in and Completing Educational Program on Research Integrity

Applicants are required to have completed a program on research ethics education. Please note that failure to complete the program will be considered an incomplete application.

Please follow either (1) or (2) below for the procedures of taking the program on research integrity and declaring completion of the program.

(1) For applicants who have completed an equivalent program at their institution

If you have completed various research integrity education programs such as e-learning and training sessions conducted by your institution at the time of application, please declare that you have completed them on the e-Rad application information entry screen.

(2) For applicants who have not completed a program at their institution (including applicants at institutions where the program is not provided)

a. If you have completed eAPRIN (former CITI) in the past under JST programs, etc.

If you have completed eAPRIN (former CITI) for JST programs at the time of application, please declare that you have completed it on the e-Rad application information entry screen.

b. In cases other than a. above

If it is difficult for you to attend an educational program on research integrity at your institution, you can take the condensed version of eAPRIN (formerly CITI) (including English version) through JST. Please click on the URL below to take the course and complete it as soon as possible. The course takes approximately one to two hours to complete, and there is no cost to attend.

Course URL: <https://edu2.aprin.or.jp/ard/>

■Contact for the program regarding research integrity

Research Integrity Division, Department of Legal Affairs and Compliance, Japan Science and Technology Agency

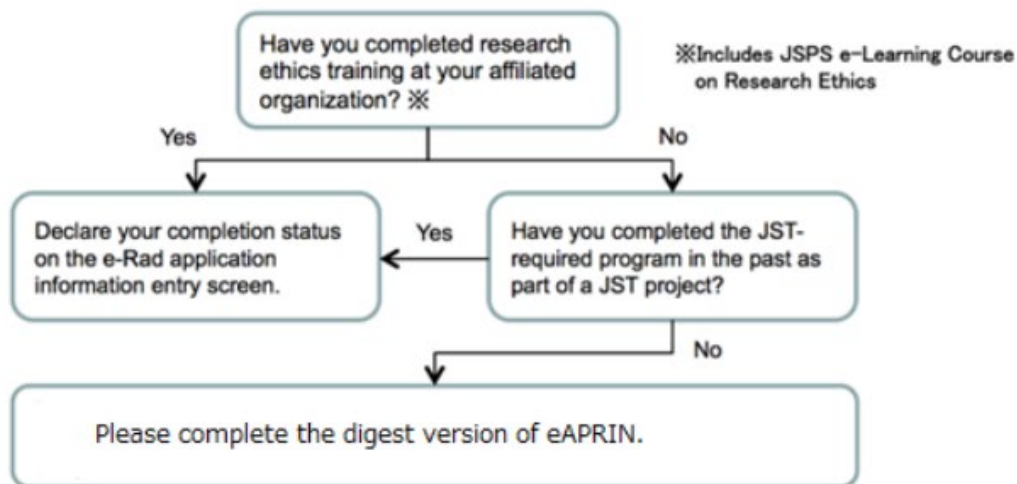
E-mail: rcr-kousyu@jst.go.jp

■Contact for application

Department of R&D for Future Creation, Japan Science and Technology Agency

E-mail: alca-next@jst.go.jp

Please include the name of the open call, the e-Rad project ID, the name of applicant, and project name in email.



Flowchart for Reporting Attendance and Completion of Educational Programs Related to Research Integrity

JST requires researchers participating in this program to take and complete designated units of eAPRIN (former CITI). This requirement will remain unchanged the next fiscal year, all research participants in the adopted projects will be required to take and complete the units of eAPRIN (former CITI) in principle, except in cases where the those who have already completed the units of eAPRIN (formerly CITI) designated by JST at his/her organization or under a JST program.

4.2 Measures Against Unreasonable Duplication and Excessive Concentration

○ Measures against unreasonable duplication

In the case where multiple competitive research funds are unnecessarily allocated to the same research project (the name or the content of research which receives competitive research funding) by the same researcher, and any of the following applies, the Program will reject, cancel, or reduce the allocation of the research proposal (hereinafter referred to as "rejection of the research proposal"), depending on the degree of such a situation.

- In the case where multiple applications are simultaneously submitted to multiple competitive research funds for the same research project (including cases of substantial overlap) and duplicate applications are adopted
- In the case where there is an application for a research program that is substantially the same as a research project that is already adopted and allocated a competitive research grant
- In the case where there is an overlap in the use of research expense among multiple research projects
- Other cases equivalent to the above

Although there is no restriction on applying for other competitive research funds or other research funds at the time of application of the Program, if your research proposal is selected for other competitive research funds or other research funds, the applicant shall report it promptly to the administrative staff of the Program. Failure to do so may result in the rejection of the research proposal.

○ Measures against excessive concentration

If the total research funds allocated to the same researcher or research group (hereinafter referred to as "Researcher, etc.") for a given fiscal year exceed the amount that can be used effectively and efficiently and cannot be fully used within the research period, and if any of the following applies, the Program will reject the research proposal according to the degree of such situation.

- Excessive research funds are allocated in light of the capabilities and research methods of the researcher, etc.
- The research expenses are excessive compared to the effort (the ratio (%) of the time required to conduct the research to the researcher's total work hours*) allocated to the research project
- When the cost of research equipment is unnecessarily expensive
- Other cases equivalent to the above

For this reason, if any changes occur in the information provided in the application, such as the selection status of another application for other competitive research funds or other research funds after submitting the application documents for this program, please promptly report to the administrative staff of this program. Failure to do so may result in the cancellation of the project adoption.

*The total work time of a researcher does not refer only to the time spent on research activities, but also to the actual total work time, including educational activities and administrative work at his/her institution.

○ Methods for eliminating unreasonable duplication and excessive concentration

In order to exclude unreasonable duplication and excessive concentration of competitive research funds, and to ensure transparency in research activities while ensuring appropriate efforts, the following information must be provided at the time of application.

- (i) Information on the current status of application for and acceptance of other competitive research funds and other research funds, including those from other ministries, and all current affiliations and positions

At the time of application, the Principal Investigator and Principal Co-Investigator shall provide the following information on the current status of application for and acceptance of other competitive research funds and other research funds (name of program, research topic, period of implementation, budget amount, effort, etc.; hereinafter referred to as "information on research funds"), including those from other ministries. Information on all current institutional affiliations and positions (including dual employment, participation in foreign personnel recruitment programs, emeritus professorships without employment contracts, etc.) is also required. This information is to be entered in the application documents and e-Rad (hereinafter referred to as "e-Rad"). If any false information is entered in the application documents or e-Rad, the research proposal may be rejected.

Among information related to research costs, information related to joint researches, for which confidentiality agreements have been exchanged, will be handled as follows, taking individual circumstances into consideration so that industry-academia collaboration activities, etc., will not be curtailed.

- We will ask you to provide only the information necessary to confirm that the proposed research will not result in an unreasonable duplication or excessive concentration of research funds and that the research will be conducted in a manner that ensures an appropriate level

of effort (in principle, only the name of the partner institution for joint research, the amount of research funds to be received, and information related to effort).

- However, if submission is difficult due to unavoidable circumstances, such as when a confidentiality agreement already in place makes submission difficult, the application may be submitted without indicating the name of the partner institution and the amount of research expenses received. In such cases, we may still make an inquiry to the institution to which you belong, according to its necessity.
- In addition to the institution(s) to which the applicant belongs, information may also be shared among funding agencies and related ministries. In such cases, information is shared only among those who are obligated to maintain confidentiality.

When concluding nondisclosure agreements related to your research in the future, we strongly ask you to consider making it a prerequisite that necessary information may be provided when applying for competitive research funding. Please note, however, that it is possible to conclude an agreement that does not presuppose the submission of such confidential information if both parties to the agreement agree on the scope of information to be kept confidential and the justification for such confidentiality (e.g., information that is extremely important for corporate strategy and is considered to be particularly sensitive to confidentiality).

(ii) Provision of other information necessary to ensure transparency in all research activities in which the applicant is involved

In addition to information related to research budgets and the institution and position to which the applicant belongs, the applicant is required to pledge that all information necessary to ensure transparency regarding all research activities in which he/she is involved, is properly reported to his/her institution in accordance with relevant rules and regulations. The research activities include those by support other than funding such as donations and support for facilities and equipment (*). If it is found that you have not reported appropriately in violation of your pledge, your research proposal may be rejected.

With regard to information on the status of purchase of facilities and equipment that are not used for the applied research proposal but are used for research in which the applicant is separately engaged. In addition to the pledge, the affiliated organization will be requested to submit information on the status of understanding and management of such information from the perspective of confirming that the research project can be adequately carried out without unreasonable duplication or excessive concentration.

*Includes cases where the research facilities, facilities, equipment, and other goods and services are provided free of charge

Sharing of information on applications to exclude unreasonable duplication and overconcentration

To the extent necessary to exclude unreasonable duplication and excessive concentration, information on some of the applications will be shared among the sections in charge of other competitive research funding programs, including those of other ministries, through the Cross-ministerial R&D Management System (e-Rad) and other means.

4.3 Ensure Research Integrity at Research Institutions

In order to promote the creation of science, technology, and innovation in Japan, we must continue to strongly promote international collaborative research with a variety of partners, with open science as the fundamental principle. At the same time, in recent years, new risks associated with the internationalization and openness of research activities have raised concerns that the fundamental

values of the research environment, such as openness and transparency, may be undermined and that researchers may unintentionally fall into conflicts of interest and responsibilities. In this context, it is essential for Japan to establish an internationally credible research environment in order to promote necessary international cooperation and exchanges while protecting the fundamental values of the research environment.

Therefore, it is important for universities and research institutions, etc. to develop relevant regulations and management systems, including those for conflicts of interest and conflicts of responsibility, based on the "Policy for Ensuring Research Integrity against New Risks Associated with Internationalization and Openness of Research Activities (decided by the Council for the Promotion of Integrated Innovation Strategy on April 27, 2021)," and to ensure the self-sustaining soundness and fairness of research (research integrity) at researchers and universities/research institutions, etc. by taking the necessary measures.

From this perspective, we will check to see if it is possible to exclude unreasonable duplication and excessive concentration of competitive research funds, ensure transparency in research activities, and secure the appropriate level of effort. In addition, we may make inquiries to the affiliated institutions as necessary regarding the status of their rules and regulations and the status of information understanding and management.

4.4 Dealing with Misuse and Improper Payments

The following measures will be strictly applied to the improper use of research funds and the improper receipt of research funds (hereinafter referred to as "improper use, etc.").

Actions to be taken when an improper use of research funds is recognized.

(i) Measures such as cancellation of contract

For projects found to have been conducted an improper use, JST will cancel or modify the R&D agreement, and request the institution to return all or part of the research fund. In addition, the R&D agreement may not be concluded for the next and subsequent fiscal years.

(ii) Measures such as restrictions on application and participation (*1)

(1) The researcher who committed the improper use, etc. of the research funds of the program (including those who conspired with the researcher; hereinafter referred to as "the Researcher who committed the misuse, etc.") shall be deemed to have committed the misuse, etc. of the research funds of the Program and researchers who have not conducted but have violated their duty of care (*2), will be restricted from applying for and participating in this program or given a strict warning, depending on the degree of misconduct, as shown in the table below.

In addition, by providing a summary of such improper use, etc. (name of the researcher who committed the improper use, project name, affiliation, research subject, budget amount, research year, details of the improper use, and details of measures taken) to other competitive research funders, including other ministries, the application and eligibility for participation in other competitive research funding systems, including those of other ministries, may be restricted.

*1 "Application and participation" refers to proposing, applying for, or submitting a new proposal, participating in new research as a co-researcher, etc., or participating in an ongoing research project as a Principal Investigator or Principal Co-Investigator, etc.

*2 "Researcher who violated the duty of care" refers to a researcher who has violated the duty to conduct the project with the care of a good manager, although he/she has not been found to have been involved in improper use, etc.

Persons subject to application restrictions related to unauthorized use and unauthorized receipt of funds	Degree of improper use	Application Restriction Period*3,4	
Researchers who conducted improper use of the funds and those who conspired with them*1	1 Private appropriation for personal gain	10 years	
	2 Other than 1	(1) Those with a significant impact on society and the malignancy of the act is judged to be high.	5 years
		(ii) Items other than (i) and (iii)	2-4 years
		(iii) Those whose impact on society is deemed to be small and the malignancy of the act is deemed to be low.	1 year
Researchers who have received competitive research funds through deception or other dishonest means, and researchers who have conspired with them		5 years	
Researchers who were not directly involved in the misuse but violated their duty of care*2		Maximum of 2 years and minimum of 1 year, depending on the degree of breach of duty by the researcher who has a duty of care.	

*3. In the following cases, the application and eligibility will not be restricted and the applicant will be notified of a severe warning.

In the case of *1, if the impact on society and the maliciousness of the act are judged to be low, and if the amount of improper use is small.

In the case of *2, if the impact on society is judged to be small and the maliciousness of the act is judged to be low.

*4. In principle, the period of limitation on participation will be counted from the fiscal year following the fiscal year in which the improper use of research funds is recognized and the research funds are returned. Eligibility will also be restricted for the fiscal year in which the improper use of research funds is found to have occurred.

(iii) Disclosure of fraud cases

In principle, for researchers who have conducted improper use of research funds or violated their duty of care, and whose application and participation in this program have been restricted, a summary of the misconduct case (name of researcher, project name, affiliation, research year, details of misconduct, and details of measures taken) will be made public at JST. The outline of the misconduct case (e.g. name of the research institution, name of the funding

program, year of misconduct, details of misconduct, the amount of misused funds, and number of researcher involved in the misconduct) will also be made public by MEXT in principle.

In addition, according to the "Guidelines for Management and Audit of Public Research Funds at Research Institutes (Implementation Standards)," if fraud is found as a result of an investigation, the research institution is required to promptly disclose the results of the investigation.

Please refer to the following web page for an overview of the current MEXT publication on fraud cases.

https://www.mext.go.jp/a_menu/kansa/houkoku/1364929.htm

4.5 Measures for Researchers whose Applications and Eligibility are Restricted under Other Competitive Research Funding Programs

Researchers who have been restricted under other competitive research funding programs*, including those of other ministries, due to misuse of research funds, etc., will be restricted from applying for and participating in this Program for the period during which their eligibility is restricted under the other competitive research funding programs.

The "other competitive research funding programs" include those that will begin accepting applications in FY2023 or later. The programs that ended before FY2022 are also included.

*Please refer to the following web page for the specific programs that are currently covered.

<https://www8.cao.go.jp/cstp/compefund/>

4.6 Measures to be Taken in Case of Violation of Related Laws and Regulations

In the event that research is conducted in violation of relevant laws, regulations, guidelines, etc., the researcher will be subject to disciplinary action and penalties in accordance with related laws and regulations, and the allocation of research funds may be suspended or the decision to allocate research funds may be revoked.

4.7 Carryover

In the event that it is difficult to complete its research expenditure within a fiscal year due to difficulties in determining the research method, conditions related to planning or design, weather conditions, difficulty in obtaining materials, or other unavoidable reasons, the budget may be carried over to the end of the following fiscal year at the maximum if a multi-year contract that continues through the following fiscal year.

4.8 Table of Cross-ministerial Cost Categorization

This program has established a cost structure based on the cross-ministerial cost category table for each ministry and agency, which is commonly used in competitive research funds. The table is currently being prepared and will be posted on the following page as soon as it is available.

<https://www.jst.go.jp/contract/index2.html>

Currently, in response to the "6th Science, Technology and Innovation Basic Plan", the "Integrated Innovation Strategy 2022", and the "Comprehensive Package for Strengthening Research Capability and Supporting Young Researchers", institutional improvements regarding competitive research funding are underway. Based on this, in this program, the direct cost is expendable to the personnel cost of the project's Principal Investigator (hereinafter, referred to as "PI" in this section), and the cost for non-research work on behalf of the PI. In case you wish to pay for the personnel expenses of PIs and expenses related to non-research work on their behalf (buyout expenses), please confirm the necessary requirements and procedures below.

- "Revision of the Direct Expenses to Allow Expenditures for Non-Research Activities (Introduction of the Buyout System) and Expenditures for Personnel Expenses of the Principal Investigator (PI) from Direct Expenses (Liaison)" (September 17, 2020)
<https://www.jst.go.jp/osirase/2020/pdf/20200917.pdf>
- The details such as eligibility and the maximum budget amount of the buyout expenses will be announced on the ALCA-Next website.

4.9 Diversion of Cost among Items

Regarding the diversion of funds between expense items, the maximum amount of funds that can be diverted without JST approval is limited to 50% of the total direct costs.

4.10 Securing the Research Period until the End of the Fiscal Year

JST is taking the following measures for all competitive research funds to allow researchers to conduct their research until the end of the fiscal year.

- (1) JST will confirm the completion of the project and inspect and accept the research results.
- (2) The deadline for submission of accounting performance reports shall be May 31.
- (3) The deadline for submission of the research results report shall be May 31.

Each research institute is requested to make efforts to establish the necessary systems, taking into consideration that the purpose of these responses is to secure the research period until the end of the fiscal year.

4.11 Retention of Receipts and Reporting of Actual Use of Receipts for Indirect Expenses

Research institutions that receive allocations of indirect costs must properly manage them and properly keep receipts and other documents that prove their proper use for five years from the year following the project completion.

Research organizations that have been allocated indirect costs are required to report to JST via the e-Rad system by June 30 of the following fiscal year (for research organizations that have received multiple competitive research grants, all indirect costs associated with those competitive research grants must be reported together). If you do not know how to use e-Rad for reporting, please refer to the e-Rad operation manual (https://www.e-rad.go.jp/manual/for_organ.html) or "Frequently Asked Questions and Answers" (<https://qa.e-rad.go.jp/>).

4.12 Promoting the Joint Use of Research Facilities and Equipment

"About reforming competitive research funds toward sustainable creation of research achievements (mid-term summary)" (Committee for reforming competitive research funds, June 24, 2015) considers it proper to share relatively large facilities and equipment for universal use while aiming to fully achieve the research objectives.

In addition, the "6th Science, Technology, and Innovation Basic Plan" (approved by the Cabinet on March 26, 2021) and "Integrated Innovation Strategy 2022" (approved by the Cabinet on June 3, 2022) call for the promotion of the maintenance and sharing of research equipment and facilities, the establishment of a system for the systematic installation, renewal, and utilization of research facilities (core facilities), and the formulation and publication of sharing policies.

In March 2022, the Ministry of Education, Culture, Sports, Science and Technology formulated the "Guidelines for promoting the shared use of research facilities and equipment" with the aim of promoting the strategic operation and sharing of research facilities and equipment at universities.

Based on these, R&D institutions are requested to promote joint use of research facilities and equipment purchased by this program, in particular, large and versatile ones, so as not preclude the

performance of R&D projects. Such purchase shall be made in accordance with joint use system in the affiliated institution. The use of facilities and equipment purchased with other research funds, within control conditions, and purchase or use with combined multiple research funds shall also be actively promoted. When doing so, it is important to be aware of the potential for sharing facilities/equipment even while projects are being carried out and considering further sharing in order to strengthen research capacity through use of cutting-edge research facilities/equipment. Note that the management of shared facilities and equipment should be balanced with their use to achieve the purposes of the R&D projects.

Besides the above joint use system, R&D institutions are requested to collaborate actively with joint use systems such as the “University Collaborative Research Facility Network Project” managed by the Inter-University Research Institute Corporations’ National Institutes of Natural Sciences with the aim of mutual use of equipment throughout the nation, as well as the “Program for supporting introduction of the new sharing system” and “Core facility construction support program” used by universities to promote the joint use of research facilities and equipment beyond the framework of research organizations and R&D institutions.

- “About reforming competitive research funds toward sustainable creation of research achievements (mid-term summary)” (Committee for reforming competitive research funds, June 24, 2015)
https://www.mext.go.jp/b_menu/shingi/chousa/shinkou/039/gaiyou/1359306.htm
(Japanese version only)
- “6th Science, Technology, and Innovation Basic Plan” (approved by the Cabinet on March 26, 2021)
<https://www8.cao.go.jp/cstp/kihonkeikaku/6honbun.pdf> (Japanese version only)
- “Integrated Innovation Strategy 2022” (approved by the Cabinet on June 3, 2022)
https://www8.cao.go.jp/cstp/tougosenryaku/togo2022_honbun.pdf (Japanese version only)
- “About unifying the rules for various office procedures of competitive funds” (agreed upon by the coordination committees of relevant ministries and agencies on competitive funds, revised on March 5, 2021)
https://www8.cao.go.jp/cstp/compefund/toitsu_rule_r30305.pdf (Japanese version only)
- “Purchase of shared facilities under multiple research funding systems (combined use)” (agreed upon by funding agencies and relevant ministries and agencies, revised on September 10, 2020)
https://www.mext.go.jp/content/20200910-mxt_sinkou02-100001873.pdf
(Japanese version only)
- “Guidelines for promoting the shared use of research facilities and equipment” (formulated in March 2022)
https://www.mext.go.jp/content/20220329-mxt_kibanken01-000021605_2.pdf
(Japanese version only)
Reference: Overview Version on YouTube] https://youtu.be/x29hH7_uNQo
- “University Collaborative Research Facility Network”
<https://chem-eqnet.ims.ac.jp/> (Japanese version only)
- “Program for supporting introduction of the new sharing system”
<https://www.jst.go.jp/shincho/program/sinkyoyo.html> (Japanese version only)
- “Core facility construction support program”
<https://www.jst.go.jp/shincho/program/corefacility.html> (Japanese version only)

4.13 Improvement of Treatment of Doctoral Students

In the "6th Science, Technology and Innovation Basic Plan" (Cabinet decision on March 26, 2021), the number of doctoral students receiving an amount equivalent to living expenses is set to increase threefold (equivalent to about 30% of doctoral students receiving an amount equivalent to living expenses) in order to enhance financial support for graduate students, especially doctoral students, to attract excellent students and working people from Japan and abroad. It also states that "In order to promote the payment of salaries at an appropriate level as research assistants (RA) to doctoral students from competitive and joint research funds, rules for RA expenses related to employment and honorarium for RAs, etc. shall be established in each project and university, and implemented sequentially from FY2021." The Plan requires universities and R&D corporations to expand employment of doctoral students as RAs and improve their compensation.

Furthermore, the "Guidelines for Employment and Training of Postdoctoral Fellows" (Human Resources Committee, Council for Science, Technology and Science on December 3, 2020) states that doctoral students "are not only students but also researchers, and it is an important responsibility of universities to provide an environment for research activities and to ensure their treatment as researchers. It is particularly important to treat them in a manner that appropriately evaluates their contributions, such as by setting compensation commensurate with the nature and content of their work and paying them a salary commensurate with the hours they work under appropriate work management", and "Universities and other institutions need to include the cost of hiring RAs as direct expenses when applying for competitive research funds, and review their internal regulations to ensure that RAs are compensated at an appropriate level."

Based on the above, in this program, please actively employ doctoral students as RAs, etc., who are necessary to conduct research, and set a unit price appropriate to the nature and content of the work, and pay them according to the hours they work under appropriate work management. When applying for this program, please also consider the above-mentioned amount of salary for doctoral students in your budget plan.

(Notes)

- The "6th Science, Technology and Innovation Basic Plan" stipulates that the amount equivalent to living expenses for doctoral students should be at least 1.8 million yen per year, and the amount of research grants for excellent doctoral students should be increased to 2.4 million yen per year, which is equivalent to the amount of special research fellowships (DC), so that they can concentrate on research without financial concerns.
- The "Guidelines for Employment and Training of Postdoctoral Fellows, etc." stipulates that, with regard to the treatment of postdoctoral students hired to carry out research projects, "Taking into consideration the average salary of specially-appointed assistant professors employed with competitive research funds, etc., the payment of an hourly rate of around 2,000 to 2,500 yen* is considered standard."

(*) Considering the average salary of specially-appointed assistant professors, etc., who are employed by competitive research funds, the standard hourly wage is considered to be 2,000 yen to 2,500 yen for doctoral students in the latter half of the doctoral course. (Calculated in the "Survey on the Employment Status of Faculty Members at Research Universities (Preliminary Report)" published in August 2020 for the median monthly salary of specially appointed assistant professors in the category (between 400,000 yen and 450,000 yen): the actual working days (19 to 20 days), excluding days is divided by the number of hours worked for (7 hours 45 minutes to 8 hours), then multiplying by 0.8 to account for doctoral student status.)

- The specific amount of salary and employment period are to be determined by the research institution. The above does not limit the amount of the salary to more or less than the above levels.

- When employing students as RAs, etc., please consider not to work excessive hours and to balance the hours with the doctoral students' own research and study hours.

4.14 Ensuring Self-sustaining, Stable Research Environment for Young Researchers

With regard to terms for postdoctoral researchers, the “Guidelines for Employment and Training of Postdoctoral Fellows” (The Committee on Human Resources, Council for Science and Technology, December 3, 2020) state that “Although many postdoctoral researchers are employed for periods less than three years, employment terms that are too short can damage career development, and terms that enable postdoctoral researchers to settle down for a given period of time and concentrate on their research activities need to be secured”; and that “Taking into consideration the fact that it is desirable for researchers to advance to the next step after gaining experience as a postdoc at one or two institutions over a period of around three to seven years up to their mid-30s, it is desirable to secure terms for each post of around three to five years.

In regard to national university corporations and inter-university research institute corporations, the “Guidelines for reform of personnel and salary management in national university corporations, etc.: Toward building attractive personnel and salary management effective for improving education and research capabilities” (Ministry of Education, Culture, Sports, Science and Technology, February 25, 2019) state that “to meet two requirements, ‘fostering young teachers and securing stable employment,’ there is a need to promote an institutional design that takes into account the development of researchers while maintaining mobility, for example, by securing a certain period of employment, in the order of 5 to 10 years, even in fixed-term posts using highly flexible expenses such as indirect costs or donations.”

Based on these points, when the project in this program hires young researchers such as research assistants or postdoctoral researchers, in addition to attempting to secure the period of employment up to the stage-gate as the length of term while making confirmation with the personnel and accounting staff in the administrative departments, a certain period of employment should be ensured as much as possible by using external funds including indirect costs, basic research funds and donations, etc., so that the term is not short.

4.15 Voluntary Research Activities of Young Researchers Employed to Implement the Project

In accordance with the "Competitive Research Funding Policy" (Guidelines for Competitive Research Funding by the Relevant Ministries and Agencies, revised on December 18, 2020), young researchers employed under this Program may allocated a portion of their effort to voluntary research activities or activities that contribute to improving research and management skills, while receiving personnel cost from the Program, if the Principal Investigator of the research project judges that such activities will not hinder and contribute to the promotion of the project and approval is obtained from their research institution. For more information, please refer to the following.

- "Voluntary Research Activities, etc. of Young Researchers Employed for Project Implementation (Liaison)" (April 10, 2020)
<https://www.jst.go.jp/osirase/2020/pdf/20200414.pdf>

4.16 Supporting Various Career Paths for Young Researchers

The creation of “an environment where talented young people can expect to be active in various fields such as academia, industry, and government” has been set as a goal under the “6th Science, Technology, and Innovation Basic Plan” (approved by the Cabinet on March 26, 2021). In addition,

the "Guidelines for Employment and Training of Postdoctoral Fellows" (Council for Science and Technology Human Resource Commission on December, 3, 2020; Japanese version only) state that "Doctoral students with high expertise and excellent research skills can be active in various places of society including venture companies and global companies; creating innovation is essential; and efforts to diversify career paths after the end of the postdoctoral period are important." Based on the understanding of these circumstances, when the R&D project, adopted by this program, employs young researchers such as special-appointment or postdoctoral researchers with allocated public research funds (competitive research funds, other project research funds, or public research funds for universities), special efforts for supporting these researchers to obtain diverse carrier paths are requested. Use of indirect costs for these efforts may be considered.

4.17 Securing URA and Other Management Personnel

In the "6th Science, Technology, and Innovation Basic Plan" (approved by the Cabinet on March 26, 2021), the importance of efforts to ensure professional quality and improve treatment has been pointed out for making URA and other management personnel to be attractive positions. In addition, it indicates in need of establishing career paths for management personnel, URA and engineers, etc., in the "comprehensive package to strengthen research capacity and support young researchers" (Council for Science, Technology, and Innovation on January 23, 2020).

Based on these, when management personnel employed by the research institution, or newly hired URA, etc., is engaged in the management of this research program, it is not limited to this program, and their term of office should be ensured as much as possible by using external funds including indirect costs, basic research funds and donations, etc., so that the term is not short.

At the same time, as support for securing career paths of the management personnel, please take positive efforts for participating in URA training, etc. Please consider utilizing indirect costs for such efforts.

4.18 Security Export Controls (Dealing with Technology Leakage to Foreign Countries)

Research institutions conduct research on many cutting-edge technologies. In particular, due to the increase in the number of foreign students and foreign researchers at universities as a result of internationalization, there is an increasing risk that cutting-edge technologies and research materials and equipment will leak out and be misused in the development and manufacture of weapons of mass destruction and the like. Therefore, when research institutions conduct various research activities, including research under this program, they are required to take systematic measures to ensure that research results, etc. that may be diverted to military use are not passed on to developers of weapons of mass destruction, terrorist groups, or other parties that may engage in activities of concern.

In Japan, for the purpose of maintaining international peace and security, the Foreign Exchange and Foreign Trade Act (Act No. 228 of 1949) (hereinafter referred to as the "Foreign Exchange Law") Export controls (*1) are in place. Therefore, in principle, it is necessary to obtain permission from the Minister of Economy, Trade and Industry if you intend to export (provide) cargo or technology regulated by the Foreign Exchange Law. Please comply with the Foreign Exchange Law as well as all other applicable laws, regulations, guidelines, and notices of the government. If you conduct research in violation of relevant laws, regulations, guidelines, etc., in addition to the legal punishments and penalties, the allocation of research funds may be suspended or the decision to allocate research funds may be revoked.

*1 Currently, Japan's security export control system is based on international agreements, etc. It mainly consists of two parts below;

- (1) a system that requires a permission from the Minister of Economy, Trade and Industry is required in cases of attempting to export (provision) of cargo (technology) with specifications and functions above a certain level among the items listed in the Appended Table 1 of the Export Control Order and Foreign Exchange Order, where (list control)
- (2) a system that requires a permission from the Minister of Economy, Trade and Industry in cases of attempting to export (provision) of cargo (technology) that do not fall under the list control, and there is a risk of military diversion (meeting use requirement and consumer requirement, or inform requirement) (catch-all regulation)

Not only the export of goods, but also the provision of technology is subject to the Foreign Exchange Law. When providing list-controlled technology to a non-resident (including a resident who falls under the specified category (*2) after May 1, 2022) or providing such technology in a foreign country, prior permission is required. The provision of technology includes not only the provision of technical information such as blueprints, specifications, manuals, samples, and prototypes on paper, e-mail, or storage media such as CDs, DVDs, and USB memory sticks, but also the provision of working knowledge through technical guidance and skills training, and technical support at seminars. Activities such as the acceptance of foreign students and joint research may also include a large amount of technology exchange that may be subject to the Foreign Exchange Law.

Please note that exporting (providing) technology acquired through this program may also be subject to regulations.

*2 This refers to a type of resident that is strongly influenced by a non-resident, and refers to the specific type defined in 1.(3)サ (i) to (iii) of "Regarding transactions or acts providing technology that require permission under Article 25, Paragraph 1 of the "Foreign Exchange and Foreign Trade Act and Article 17, Paragraph 2 of the Foreign Exchange Order".

In addition, when exporting list-regulated goods or providing list-regulated technology to a foreign country as a business under the Foreign Exchange Law, it is necessary to establish a security trade control system (*3). Therefore, prior to the conclusion of the R&D agreement, we may confirm whether or not the provision of goods or technology subject to export control under the Foreign Exchange Law is planned under this program, and if there is an intention, we may confirm whether or not a control system is in place. If there is an intention of provision and there is no management system in place, the applicant will be required to establish a system by the time of provision or termination of the project, whichever comes first. The status of said confirmation may be reported to METI upon request. In addition, if any violation of regulations pertaining to the Foreign Exchange Law is found with respect to technology acquired through this program, the agreement may be terminated in whole or in part.

*3 Exporters, etc. are obligated to comply with the "Standards of Compliance for Exporters, etc." stipulated in Article 55-10, Paragraph 1 of the Foreign Exchange and Foreign Trade Control Law. The security trade control system here refers to the internal control system of an organization to prevent unauthorized exports, etc. by appropriately exporting list-controlled goods or providing list-controlled technology to foreign countries, based on the control system in the "Compliance Standards for Exporters, etc.".

Details on security export control are available on the web pages of the Ministry of Economy, Trade and Industry (METI) and other organizations. For more information, please refer to the following:

- Ministry of Economy, Trade and Industry: Security Trade Control (General)
<https://www.meti.go.jp/policy/anpo/>
- Ministry of Economy, Trade and Industry: Deemed Export Control (related to *2 above)
<https://www.meti.go.jp/policy/anpo/anpo07.html>
- Ministry of Economy, Trade and Industry: Sensitive Technology Management Guidance for Security Export (for universities and research institutes)
https://www.meti.go.jp/policy/anpo/law_document/tutatu/t07sonota/t07sonota_jishukanri03.pdf
- Ministry of Economy, Trade and Industry: Model Security Export Control Regulations Manual for Universities and Research Institutes
<https://www.meti.go.jp/policy/anpo/daigaku/manual.pdf>
- Security Export Information Center
<https://www.cistec.or.jp/export/jisyukanri/modelcp/modelcp.html>
- Ministry of Economy, Trade and Industry: Guidance on Security Export (Introduction)
<https://www.meti.go.jp/policy/anpo/guidance.html>

4.19 Strict Implementation of United Nations Security Council Resolution No. 2321

On November 30, 2016 (local time in New York), the United Nations Security Council (hereinafter referred to as the "Security Council") adopted Security Council Resolution No. 2321, which significantly adds to and strengthens sanctions against North Korea, following the conduct of a nuclear test and a series of ballistic missile launches by North Korea in September 2008. In relation to this, the Ministry of Education, Culture, Sports, Science and Technology (MEXT) has issued the "Strict Implementation of United Nations Security Council Resolution No. 2321 (Request)" dated February 17, 2009 to the relevant organizations.

The "scientific and technological cooperation" referred to in the main clause 11 of the resolution is not limited to technology regulated by the Foreign Exchange and Foreign Trade Control Law, but includes all cooperation except for the purpose of medical exchange. It is important for research institutes to keep in mind the strict implementation of this resolution when conducting various research activities including the contract research under this Program.

For more information on Security Council Resolution No. 2321, please see below.

Ministry of Foreign Affairs of Japan: United Nations Security Council Resolution No. 2321, Japanese translation (Ministry of Foreign Affairs Bulletin No. 463 (issued on December 9, 2008))
<https://www.mofa.go.jp/mofaj/files/000211409.pdf>

4.20 Promotion of Dialogue and Collaboration with Society

In the "Promotion of 'Science and Technology Dialogue with the Public' (Basic Policy)" (decided by the Minister of State for Science and Technology Policy and the expert Diet members on June 19, 2010), it is stated that in order to continuously produce excellent results in science and technology for further development, it is essential to return the results of science and technology to the public and to promote science and technology together with the public. If your proposal is selected for this open call and you receive an annual public research funds of 30 million yen or more per project, we ask that you actively engage in "science and technology dialogue with the public," including public lectures, symposia, continuous distribution of research results on the Internet, and roundtable discussions involving various stakeholders.

Promotion of "Science and Technology Dialogue with the Public" (Basic Policy)

https://www8.cao.go.jp/cstp/stsonota/taiwa/taiwa_honbun.pdf

In addition, the "6th Science, Technology and Innovation Basic Plan" (approved by the Cabinet on March 26, 2021), co-creation of knowledge and wisdom, as well as strengthening of science and technology communication, through the participation of diverse actors, including citizen, is strongly encouraged.

The followings are examples of "opportunities for diverse actors to engage in interactive dialogue and collaboration" provided by JST.

Science Agora

<https://www.jst.go.jp/sis/scienceagora/>

National Museum of Emerging Science and Innovation

<https://www.miraikan.jst.go.jp/en/>

4.21 Open Access and Research Data Management

JST's "Policy on Open Access to Research Publications and Research Data Management" was published in April 2017 and revised in April 2022. This policy defines the basic approach to the open access of research papers and the storage, management, and publication of research data in research activities under JST program.

In principle, researchers participating in this program are required to make their research papers publicly available through institutional repositories and publications that are open access based. In particular, peer-reviewed papers must in principle be published within a period of twelve months. Based on the data policy of the research institution, a data management plan describing the policy and plan for the storage, management, publication, and non-publication of research data generated as a result of research activities shall be prepared and submitted to JST together with the research plan, and research activities carried out after research data has been stored, managed, and disclosed based on this plan. Furthermore, it is requested that research data that is subject to management stipulated under the data management plan or elsewhere is provided in the form of metadata prescribed by the JST. It is also possible to modify this plan while research is being carried out.

Refer to the following for more details.

- JST's basic policy regarding the handling of research results for the open science promotion

<https://www.jst.go.jp/all/about/houshin.html#houshin04> (Japanese version only)

- JST's basic policy operational guidelines regarding the handling of research results for the open science promotion

https://www.jst.go.jp/pr/intro/openscience/guideline_openscience_r4.pdf

(Japanese version only)

JST will analyze statistical data such as the number of data modules, type of data, type of release, and storage location for the purpose of understanding the contents of the description, providing support to researchers, and reflecting (revising) the information in the basic policy. We will assume that the statistical data analyzed may be made public, but we will not release any individual personal data, names, or other information that can be used to identify individuals.

* For life science data, please also refer to "4.22 Releasing Data from the NBDC".

4.22 Releasing Data from the NBDC

The National Bioscience Database Center (NBDC) (<https://biosciencedbc.jp/>) promotes integrated

use of life sciences databases created by various research institutions.

In addition, the “Progress of Life Sciences Database Integration Promotion Project and Future Directionality” (January 17, 2013) states that the NBCD (now the Department of NBDC Program) will play a central role in expanding the target projects receiving data and services from the database.

Based on the understanding of these circumstances, researchers are requested to cooperate in publishing the following types of data obtained from this program and databases in the life sciences field.

No.	Data type	Publication destination	Publication URL
1	Overview of public databases that have been built	Integbio Database Catalog	https://integbio.jp/dbcatalog/
2	Data recorded in public databases that have been built	Life Science Database Archive	https://dbarchive.biosciencedbc.jp/
3	Of the data in 2 above, that related to humans	NBDC Human Database	https://humandbs.biosciencedbc.jp/

4.23 Systematic Numbering in Acknowledgments.

When presenting research results obtained through the adopted R&D project, please indicate that the research was funded by this program.

In case of a paper presentation, please include "JST ALCA-Next Grant Number <10-digit systematic number>" in the Acknowledgment of your paper. The same applies when submitting papers. The 10-digit systematic number for this program is "JPMJAN" followed by a 4-digit project number. The systematic number will be announced at the time of acceptance.

The following is an example of introducing the funding information in an Acknowledgment in a paper.

<English>

This work was supported by JST-ALCA-Next Grant Number JPMJANxxxx.

<Japanese>

本研究は、JST 戦略的創造研究推進事業先端的カーボンニュートラル技術開発（ALCA-Next）

JPMJANxxxx の支援を受けたものです。

*If there are two or more programs related to the paper, the name and systematic number of all related programs should be written.

4.24 Research Support Service/Partnership Certification System (A-PRAS)

MEXT established the "Accreditation System for Partnership for Research Support Services (A-PRAS)" in 2019 with the aim of improving the research environment for researchers, accelerating the promotion of science and technology and creation of innovation in Japan, as well as providing support for the development of various initiatives related to research support services. Under this system, research support services provided by private business operators that meet certain requirements are accredited as a “Research support service/partnership” by the Minister of Education, Culture, Sports, Science and Technology. Nine services have been certified as of March, 2023. We strongly recommend you to utilize its wide variety of services such as search for joint researchers, release of

research results for publicity or promotion for commercialization, fund or equipment procurement.
Details of each certified service can be found on the MEXT website below.

https://www.mext.go.jp/a_menu/kagaku/kihon/1422215_00001.htm (Japanese version only)

"Science and Technology Innovation Policy Development for Knowledge Intensive Value Creation - Toward a World Leading Nation through the Society 5.0 Realization - Final Summary" (Council for Science and Technology Policy/General policy Special Committee on March 26, 2020)

https://www.mext.go.jp/b_menu/shingqi/qijiyutu/qijiyutu22/houkoku/1422095_00001.htm

(Japanese version only)

4.25 Competitive Research Funding Reform

The government is currently discussing improvements to the competitive research funding system to enable more effective and efficient use of research funds in response to the "6th Science, Technology and Innovation Basic Plan", the "Integrated Innovation Strategy 2022", and the "Comprehensive Package to Strengthen Research Capability and Support Young Researchers". If, during the period of the call for proposals, a policy or other information regarding the improvement of these systems and their operation that is common to other competitive research funding programs is presented, we will make a new announcement when the policy is applied to this call for proposals and its operation.

4.26 Guidelines for the Management and Audit of Public Research Funds at Research Institutes (Implementation Standards)

(1) Implementation of systems based on the "Guidelines for the Management and Audit of Public Research Funds at Research Institutes (Implementation Standards)

In applying for this program and conducting research activities, research institutions must comply with the contents of the "Guidelines for the Management and Audit of Public Research Funds at Research Institutes (Implementation Standards)" (revised on February 1, 2021) (*).

Research institutions are requested to establish a system for the management and auditing of research costs under their responsibility based on the above-mentioned guidelines, and to ensure the appropriate execution of research budget. If, as a result of the investigation of the status of the system implementation based on the guidelines, MEXT finds deficiencies in the status of the system implementation of an institution, MEXT may take measures such as reducing indirect costs of all competitive research funds allocated by MEXT and independent administrative institutions under MEXT's jurisdiction.

Please refer to the following web page for the "Guidelines for Management and Audit of Public Research Funds at Research Institutes (Implementation Standards).

https://www.mext.go.jp/a_menu/kansa/houkoku/1343904_21.htm

(2) Submission of the "Self-evaluation Checklist for Implementation of Proper Systems" based on the "Guidelines for Management and Audit of Public Research Funds at Research Institutes (Implementation Standards)

Upon concluding an agreement for this program, each research institution is required to establish a system for managing and auditing research costs based on the above-mentioned guidelines, and to submit a "Self-evaluation Checklist for Implementation of Proper Systems" (hereinafter referred to as "Checklist"), which is a report on the status of such system. (If the checklist is not submitted, an R&D agreement shall not be concluded.)

For this reason, after April 1, 2023, please check the contents of the MEXT website, download the checklist form for fiscal year 2023 from the e-Rad (e-Research and Development Management System), fill in the required items, and submit (upload) the form to the Office of Competitive Research Funding, Research and Development Infrastructure Division, Science and Technology Policy Bureau, MEXT via e-Rad, by the designated date before the conclusion of the R&D agreement.

For the research institution submitted the Self-evaluation Checklist for Implementation of Proper Systems for the fiscal year 2022, the conclusion of R&D agreement will be allowed; however, the institution is required to submit the checklist for fiscal year 2023 by December 1, 2023.

For institutions that do not receive competitive research funds allocated by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) or independent administrative agencies under the jurisdiction of MEXT, submission of the checklist is not required.

For details on how to submit the checklist, please refer to the following MEXT webpage.

https://www.mext.go.jp/a_menu/kansa/houkoku/1324571.htm

Note 1: Please be advised that registration and setup of an e-Rad account are required for the submission of a proposal. It usually takes about two weeks to register your research organization with e-Rad. Please refer to the following web page for details on the procedures for using e-Rad.

<https://www.e-rad.go.jp/organ/index.html>

Note 2: Institutions that manage funds such as competitive research funds allocated by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) and independent administrative agencies under its jurisdiction are required to submit the Checklist every year, by December 1, for the duration of their continuous management.

Since the guidelines include the perspective of "promotion of information dissemination and sharing," we ask that you actively disseminate information on your research institution's efforts to prevent misconduct by posting such information on your institution's webpage.

4.27 Guideline for Responding to Misconduct in Research Activities

(1) Implementation of system based on the "Guidelines for Responding to Misconduct in Research Activities"

Research institutions are required to comply with the "Guidelines for Responses to Misconduct in Research Activities" (decided by the Minister of Education, Culture, Sports, Science and Technology on August 26, 2014) (*) when applying for this program and conducting research activities.

If, as a result of an investigation into the status of the organization's system implementation based on the above guidelines, MEXT finds deficiencies in the organization's system implementation, MEXT may take measures such as reducing indirect costs for all competitive research funds allocated by MEXT and independent administrative institutions under MEXT's jurisdiction.

Please refer to the following webpage for the "Guidelines for Responding to Misconduct in Research Activities".

https://www.mext.go.jp/b_menu/houdou/26/08/1351568.htm

(2) Submission of a checklist regarding the status of initiatives based on the "Guidelines for Responding to Misconduct in Research Activities"

Upon signing a contract for this program, each research institution is required to submit the

"Checklist for the Status of Efforts Based on the Guidelines for Responding to Misconduct in Research Activities" (hereinafter referred to as the "Checklist for Research Misconduct"). (Contracts without submission of the Research Misconduct Checklist shall not be approved.)

For this reason, after April 1, 2023, please confirm the contents of the MEXT website, download the Research Misconduct Checklist form for fiscal year 2023 from the e-Rad (e-Research and Development Management System), fill in the required items, and submit (upload) the form to the Office of Competitive Research Funding, Research and Development Infrastructure Division, Science and Technology Policy Bureau, MEXT via e-Rad, by the designated date before the conclusion of the R&D agreement.

For the research institution submitted the Research Misconduct Checklist for the fiscal year 2022, the conclusion of R&D agreement will be allowed; however the institution is required to submit the checklist for fiscal year 2023 by September 29, 2023.

For institutions that do not receive competitive research funds allocated by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) or independent administrative agencies under the jurisdiction of MEXT, submission of the checklist is not required.

Please refer to the following MEXT webpage for the Research Misconduct Checklist.

https://www.mext.go.jp/a_menu/jinzai/fusei/1420301_00003.html

Note: Please be advised that registration and setup of an e-Rad account are required for the submission of a proposal. It usually takes about two weeks to register your research organization with e-Rad. Please refer to the following web page for details on the procedures for using e-Rad.

<https://www.e-rad.go.jp/organ/index.html>

(3) Measures against misconduct in research activities based on the "Guidelines Responding to Misconduct in Research Activities"

In the event of misconduct in research activities in this program, the following measures will be taken strictly.

(i) Measures to cancel or modify agreement

If specific misconduct (fabrication, falsification, or plagiarism) is found in a research project under this program, the agreement will be cancelled or modified according to the case, and all or part of the commission fee will be required to be returned to JST. In addition, the contract may not be concluded for the following fiscal year and thereafter.

(ii) Measures to restrict eligibility for application and participation

For those who are found to be involved in specific misconduct in research papers or reports under this program, or those who are found to have a certain level of responsibility due to negligence of duty of care as the person responsible for the papers or reports although not found to have been involved, the following measures will be taken to limit their application and eligibility for participation in this program as shown in the table below, depending on the maliciousness of the specific misconduct and the level of responsibility.

In addition, in the event that measures are taken to limit the application and participation, the applicant will not be eligible to participate in the competitive research funding programs allocated by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) and independent administrative agencies under the jurisdiction of MEXT (hereinafter referred to as "MEXT-related competitive research funding programs, etc."). The information is to be provided to the person in charge of the competitive research funding system allocated by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) and independent administrative institutions under the jurisdiction of MEXT (hereinafter referred to as "MEXT-related competitive research

funding system, etc."), the person in charge of the competitive research funding system allocated by other ministries and independent administrative institutions under the jurisdiction of other ministries (hereinafter referred to as "other ministry-related competitive research funding system"). Following the provision of the information, the eligibility for application and participation of other competitive research funding programs may be restricted in the same manner.

Persons Subject to Application Restrictions Related to Specified Misconduct		Degree of Specific Fraud	Application Restriction Period*	
Persons involved in the specified fraudulent acts	1. Those who are particularly malicious, such as those who intended to commit specific misconduct from the beginning of the research		10 years	
	2. The author(s) of the paper(s) pertaining to the research in which the specified misconduct occurred	The author(s) responsible for the paper, etc. in question (the person responsible for supervision, the representative author, or those identified as having equivalent responsibility to these)	Those whose impact on the progress of research in the field in question or social impact is deemed to be significant, or whose conduct is deemed to be highly malignant.	5-7 years
			Those whose impact on the progress of research in the field in question or social impact is deemed to be small, or the malignancy of the act is deemed to be low.	3-5 years
		Authors not listed above		2-3 years
	3. Those involved in the specified fraudulent acts except for 1. and 2.			2-3 years
Authors who are not involved in the specified misconduct but are responsible for papers related to the research in which the specified misconduct took place (the person responsible for supervision, the lead author, or a person certified as having the same responsibility as these persons)		Those whose impact on the progress of research in the field in question or social impact is deemed to be significant, or whose conduct is deemed to be highly malicious.	2-3 years	
		Those whose impact on the progress of research in the field in question or social impact is deemed to be small, or the malignancy of the act is deemed to be low.	1-2 years	

*In principle, the period of limitation of application will start from the fiscal year following the fiscal year in which the specific misconduct is recognized. The eligibility for participation will

also be restricted for the fiscal year in which the specific misconduct is recognized.

(iii) Measures against researchers whose eligibility for applications and participation is restricted under the Competitive Research Funding System and the Basic Research Funds

Researchers whose eligibility for applications and participation in the program have been restricted due to specific misconduct in research activities under the competitive research funding systems related to the Ministry of Education, Culture, Sports, Science and Technology (MEXT), the subsidies for national university corporations, Inter-University Research Institutes, and incorporated administrative agencies under the jurisdiction of MEXT, basic funds such as grants for private schools, or competitive research funding systems related to other ministries.

(iv) Disclosure of Fraud Cases

In the case of misconduct in research activities under this program, JST will, in principle, disclose the outline of the misconduct case (name of researcher, project name, affiliation, research year, details of the misconduct, and details of measures taken). In addition, the details of the case (name of the misconduct case, type of misconduct, research field of misconduct, name of the expense in which the misconduct took place, summary of the misconduct case, measures taken by the research institution, measures taken by the allocating institution, etc.) will also be made public by MEXT in principle.

In addition, the above-mentioned guidelines stipulate that the research organization shall promptly disclose the results of the investigation when a fraud has been identified.

https://www.mext.go.jp/a_menu/jinzai/fusei/1360483.htm

4.28 Obligation to Complete Research Integrity and Compliance Education

Researchers who participate in this program are required to attend research integrity education to prevent misconduct in research activities as required by the "Guidelines on Responses to Misconduct in Research Activities" and compliance education as required by the "Guidelines for the Management and Audit of Public Research Funds at Research Institutions".

After the proposed research project has been adopted, the Principal Investigator is required to submit a document confirming that all researchers participating in the research project have attended research integrity education and compliance training and have understood the contents, as part of the procedures for concluding the R&D agreement.

4.29 Handling of Proposals and Other Information on e-Rad

The information on e-Rad (program name, R&D project name, name of the Principal Investigator and his/her affiliated research organization, budget amount, implementation period, and outline of the proposal) regarding each selected proposal is treated as "information scheduled to be made public" as stipulated in Article 5, Item 1 ㄱ of the "Act on Access to Information Held by Independent Administrative Institutions" (Act No. 140 of 2001). This information will be disclosed on the program's website as appropriate after the adoption of the project.

4.30 Providing Information from e-Rad to the Cabinet Office

The "6th Science, Technology and Innovation Basic Plan" (approved by the Cabinet on March 26, 2021) stipulates that the Science, Technology and Innovation Administration will thoroughly implement EBPM, which is policy making based on objective evidence, and that the information registered in the e-Rad (e-Research and Development Management System) will be used for

appropriate evaluation of government-funded R&D, planning of effective and efficient comprehensive strategies and resource allocation policies, etc.

For this reason, we request that you register the information on research results and accounting results for each fiscal year related to the adopted project and the information on the execution results of indirect costs related to competitive research fund using e-Rad.

Information necessary for macro analysis, including research results and accounting performance information, will be provided to the Cabinet Office.

4.31 Registration of Researcher Information on researchmap

In this program, researchers will be asked to submit their R&D plans and results reports via JST's research project management system (R3; R-Cube*¹), which is linked to JST's researcher information database (researchmap*²). Principal Investigators and Principal Co-investigators selected for the interview selection process are required to register with researchmap. We encourage you to register with researchmap and to enter and update your achievement information.

*1 R3 (R-Cube) is an electronic application system for R&D plans and results reporting, which researchers selected for this program are scheduled to use.

Please refer to the "researchmap Quick Guide (New Registration/Login)" below for information on how to check your registration status on researchmap, how to register as a new user, and how to log in and reissue your password.

https://researchmap.jp/outline/rr_manual/quickguide.pdf

Please refer to the following "Manuals and FAQs" for other operation procedures, such as how to register and edit your own achievements, and how to output the registered achievement data.

<https://guide.researchmap.jp/index.php/Researchmap> 利用者マニュアル

*2 researchmap (<https://researchmap.jp/>) is a Japanese researcher information database with more than 300,000 registered users, enabling management and publication of achievement information. In addition, researchmap is linked to e-Rad and many university faculty databases, so that registered information can be used in other systems for improving efficiency by eliminating the repeated registration of the same achievements in various application forms and databases.

4.32 Patent Application from JST

If the research organization does not grant rights to the invention, JST may grant the rights. Therefore, if the research organization does not intend to grant rights to an invention, the researcher should promptly notify JST of the information regarding the invention in any format. (The above "information on the relevant invention" refers to information required by JST to determine whether or not to file a patent application, such as a copy of the notification of invention used within the research institution.)

JST will examine whether to file an application based on the notice received. If JST determines to make an application for the invention, JST will conclude an agreement on the "Assignment of Right to Obtain Patent" between the research organization and JST.

Chapter 5: How to apply using the e-Rad

5.1 About e-Rad (Cross-ministerial R&D Management System)

The Cross-ministerial R&D Management System (e-Rad) is a cross-ministerial system that provides a series of on-line processes (acceptance of applications → selection → adoption → management of adopted subject → reporting of research results) to manage the publicly funded research projects under the jurisdiction of ministries and agencies.

* “e-Rad” is the abbreviation of the Cross-ministerial R&D Management System, which is created by adding the capital letter of “e” of “Electronic” to the capital letters of “Research and Development” for science and technology.

5.2 Application Method Using e-Rad

R&D institutions are requested to make an application using e-Rad.

When applying, refer to the e-Rad portal site (hereinafter referred to as the “portal site”) (<https://www.e-rad.go.jp/en/>).

*With regard to various application processes when using e-Rad, in principle applications using paper documents are not accepted, so be sure to carry out each application process using the e-Rad portal site.

Be especially careful with regard to the following points when submitting an application.

(1) Pre-registration for using e-Rad (<https://www.e-rad.go.jp/organ/index.html>)

R&D institutions and their affiliated researchers must be pre-registered with e-Rad by the time of application. Particularly, please note the following items:

① Registration application for R&D institution

The R&D institution of an applicant is required to be registered at e-Rad by the time of application. R&D institution are requested to appoint one administrative representative responsible for e-Rad and have them carry out application procedures for registration from the “Registration Application for R&D institutions” page (<https://www.e-rad.go.jp/organ/entry.html>). Since registration takes several days, the research institute should perform the registration procedure more than two weeks before. Once the registration is completed, the research institute needs not to register the information again when applying for a program or project under the jurisdiction of other ministries or agencies. *If the research institute has already registered its information in a program or project under the jurisdiction of other ministry or agency, it need not register its information again.

② Registration of information on department, persons in charge of administrative work, positions and researchers

The administrative representative of the R&D institution must log-in to e-Rad using the log-in ID and password obtained through the procedures described in ① above and register information on departments, persons in charge of administrative work (if a person in charge of administrative work has been appointed), positions, and researchers to issue log-in IDs and passwords for persons in charge of administrative work and researchers.

For registration procedures please refer to Sections “10. Procedures for Research Institutions”, “11. Procedures for Research Institution Persons in Charge of Administrative Work”, and “12.

Procedures for Researchers” of the R&D Institution Administrative Representative Manual provided on the e-Rad portal site (https://www.e-rad.go.jp/manual/for_organ.html).

(2) Entry of application information in e-Rad

For submission of project applications by a researcher by e-Rad, please refer to the Manual for Researchers on the portal site (https://www.e-rad.go.jp/manual/for_researcher.html). Applications will become invalid if their status does not change to “Application being processed by funding agency” or “Accepted” by the deadline for submissions. Please check application status on the “List of Applications and Approved Projects” page. If the status of an application does not change to either “Application being processed by funding agency” or “Accepted” despite the researcher submitting the application by the deadline for submissions, please contact <<alca-next@jst.go.jp>>. Please note that an application’s status must be “Accepted” by funding agency in order for the funding agency to manage the project application, but acceptance is not necessary in terms of researchers’ completion of application procedures. If the status of the project application changes to “Application in progress” and the application type (status) changes to “Application being processed by funding agency, request in progress” by the deadline for acceptance of applications, the application will be completed properly.

<Notes>

- ① When submitting an application, it is necessary to enter the application information on the e-Rad portal site and attach the application form. The maximum size of the application form file that can be uploaded is 3 MB. If you use image data in the file, please pay attention to the file size. In case of exceeding the maximum size, please contact <<alca-next@jst.go.jp>> before uploading the file.
- ② The files of the proposals are accepted only in PDF format. File format conversion function to PDFs is available on e-Rad for Microsoft Word and Ichitaro. Applicants need not to convert files on the e-Rad portal site, however, if you do so, please refer to the Manual for Researchers for instructions and attentions.

(3) Others

An incomplete application form will not be subject to selection. Be sure to read the “Application Guidelines” and instructions and notes in the Proposal Forms upon filling out the forms. Please do not make changes to the form. We do not accept replacement of the proposal after the deadline. Also be advised that we do not return the application materials to the applicants.

5.3 Other

- (1) The instruction manual of e-Rad is available on the e-Rad portal site (<https://www.e-rad.go.jp/>) for your reference. Acceptance of the term and condition is required upon use.
- (2) Contact for inquiries on how to operate the e-Rad

Inquiries about the program itself will be handled by the program office as before, and inquiries about how to use e-Rad will be handled by the e-Rad Help Desk. Please check the program webpage and the e-Rad portal site carefully before contacting the e-Rad Help Desk. Please note that we cannot respond to any inquiries regarding the review status or acceptance or rejection of

proposals.

Inquiries about the program and the procedures for preparing and submitting application documents	Department of R&D for Future Creation, JST (in charge of call for proposals)	<Please be sure to send your inquiry by e-mail > e-mail : alca-next@jst.go.jp Operation hours: 10:00-17:00
Inquiries about how to operate e-Rad	e-Rad Help Desk	0570-057-060 (Navidial) 9:00-18:00 *Except Saturdays, Sundays, national holidays, and year-end and New Year holidays

○ **Open call page for this program:** <https://www.jst.go.jp/alca/koubo/index.html>

○ Portal site: <https://www.e-rad.go.jp/>

(3) Hours when e-Rad is available

In principle, the service operates 24 hours a day, 365 days a year, but may be suspended due to system maintenance. When service will be suspended, we will notify you in advance on the portal site.