Application Procedures for Grants-in-Aid for Scientific Research - KAKENHI -

FY2026

Grant-in-Aid for Transformative Research Areas (A) (Publicly Offered Research)

This English version is provided for convenience of prospective KAKENHI applicants who experience difficulty in reading the Japanese original, which should be referred to, in case of dispute.

July 14, 2025

The Ministry of Education, Culture, Sports, Science and Technology (MEXT)

Introduction

This document describes the procedures and other matters relevant to the "Call for Proposals for the Grants-in-Aid for Scientific Research-KAKENHI- for FY2026" including the "Grant-in-Aid for Transformative Research Areas (A) (Publicly Offered Research)."

The contents are:

"II. Call for Proposals" provides for each of the research categories, such basic issues as the subjects in the research categories to be called, the range of envisaged total budget, a project period, etc. The schedule from the call for proposals, through the proposal submission and the review, to the grant delivery is also described.

The subsequent sections, "III. Instructions for Prospective Applicants" and "IV. Instructions for Administrative Staff of Research Institution," describe conditions for application, required procedures, and other matters to be followed by the respective actors.

This Call for Proposals is announced prior to the finalization of the national budget for FY2026, so as to let prospective applicants proceed with an early preparation for the review and enable them to commence their research activities as soon as possible.
It is, therefore, to be reminded that, depending on the situation of the national budget enactment, details on the grant allocation and other matters may be subject to change at a later stage.

See Major Changes in the Call for Proposals for Fiscal Year 2026 for details on these changes.

Explanation of Important Matters

- Grants-in-Aid for Scientific Research is a competitive research funding intended to provide financial support for creative and pioneering research conducted by individual researchers. Therefore, the contents of the Research Proposal Document must be original planned by the applicant.
  Plagiarism and/or misappropriation of the research contents of others are strictly impermissible. Applicants must comply with research ethics.
  Please note that the use of generative AI in the preparation of the Research Proposal Document causes the risk of inadvertent infringement of copyright and leakage of personal information and confidential information. It is the responsibility of the individual researcher to make appropriate decisions about the usage of generative AI.

- The research using the KAKENHI fund should be carried out by the researchers' own initiative and responsibility. Therefore, the implementation of a KAKENHI research project and publication of the research results are solely attributed to the researchers' responsibility and view, and do not reflect that of the funding sector nor of the government.

・To ensure the quality of scientific knowledge and to gain trust of society on scientists and scientific communities, it is essential to exercise fair and conscientious research activities with the adherence to the code of conduct for scientists. Applicants must understand and practice the contents of both the Statement "Code of Conduct for Scientists -Revised Version-" (section I. "Responsibilities of Scientists") by the Science Council of Japan and the booklet "For the Sound Development of Science -The Attitude of a Conscientious Scientist-" (especially section I "What Is a Responsible Research Activity?") issued by the Japan Society for the Promotion of Science (JSPS).

・From the perspective of enhancing the quality of research activities among the international scientific research networks, researchers are urged to disseminate their research results aggressively to the international society by publication of scientific papers in international journals, co-authoring of international papers, presentations in international conferences, etc.

<Major Changes in the Call for Proposals for Fiscal Year 2026>

(1) Schedule for the Call for Proposals

○ The main future schedule for the FY2026 call for proposals for the Grants-in-Aid for Scientific Research -KAKENHI- (for the FY2025 call for proposals for the Grant-in-Aid for Research Activity Start-up and the Fund for the Promotion of Joint International Research) to be made in fiscal year 2025 is tentatively as follows.

No call for proposals will be made for the International Collaborative Research for adoption in fiscal year 2025 and beyond.

Schedule for the FY2026 Call for Proposals for the Grants-in-Aid for Scientific Research -KAKENHI- (Tentative)*1

Research Category*2	Start of Call for Proposals	Deadline for Submission of Applications	Notice of Review Results*3	Provisional Grant Decision*4
Specially Promoted Research	April 11, 2025	June 17, 2025	Early January 2026	Early April 2026
Scientific Research (S)	April 11, 2025	June 17, 2025	Mid-February 2026	Early April 2026
Transformative Research Areas (A/B)	April 11, 2025	June 17, 2025	Mid-February 2026	Early April 2026
Transformative Research Areas (A) (Publicly Offered Research)	July 14, 2025	September 17, 2025	Mid-February 2026	Early April 2026
Scientific Research (A/B/C) and Early-Career Scientists	July 14, 2025	September 17, 2025	February 27, 2026	Early April 2026
Challenging Research (Pioneering/Exploratory)	July 14, 2025	September 17, 2025	June 30, 2026 (Late February 2026*5)	Late June 2026
Encouragement of Scientists	July 14, 2025	September 17, 2025	January 30, 2026	Early April 2026
Publication of Scientific Research Results	July 14, 2025	September 17, 2025	Late March 2026	Early April 2026

Schedule for the FY2025 Call for Proposals for the Grants-in-Aid for Scientific Research -KAKENHI- (Tentative)*1

Research Category*2	Start of Call for Proposals	Deadline for Submission of Applications	Notice of Review Results*3	Provisional Grant Decision*4, 6
Research Activity Start-up	March 1, 2025	May 8, 2025	July 31, 2025	Late July 2025

International Leading Research	January 9, 2025	March 14, 2025	Late November 2025	Late November 2025
Fostering Joint International Research	July 14, 2025	September 17, 2025	Late February 2026	Late February 2026
Home-Returning Researcher Development Research	July 14, 2025	September 17, 2025	Late February 2026	Late February 2026
International Collaborative Research	Call for proposals discontinued (no call for proposals will be made for adoption in fiscal year 2025 and beyond)			

*1 Both schedules are for newly proposed projects.
*2 For the schedule for research categories other than the above, please refer to the respective Application Procedures for Grants-in-Aid for Scientific Research and other documents.
*3 The adoption or rejection of newly proposed projects will be notified to their Principal Investigators via the KAKENHI electronic application system before or on the day of provisional grant decision.
When you receive a Notice of Review Results indicating "adoption" of your project, you can make advance preparations for the commencement of your research project; however, as before, please conclude necessary contracts, etc. after provisional grant decision.
*4 Timing of provisional grant decision may change, depending on the passage of the government budget and other circumstances.
*5 The schedule in parentheses means the timing for issuing Notices of Review Results of "Preliminary Screening."
*6 For Home-Returning Researcher Development Research, "provisional grant decision with conditions" will also be made.

(2) Promotion of the Joint Use of Research Facilities

○ In order to promote efficient use of research funds and joint use of facilities, starting from fiscal year 2025, JSPS will require joint use with those inside and/or outside the research institution of research facilities and equipment that have been purchased with direct expenses of KAKENHI and that meet conditions stipulated by the spending rules. Please visualize such research facilities and equipment for those inside and/or outside the research institution, by, in particular, registering them on a search system, etc. For details, please refer to the Guidelines toward the Promotion of the Joint Use of Research Facilities and Equipment (March 2022, Study Group on the Formulation of the Guidelines, etc. toward the Joint Use of Research Facilities and Equipment at Universities and Other Institutions) and the KAKENHI spending rules (supplementary conditions, funding conditions, etc.).

Guidelines toward the Promotion of the Joint Use of Research Facilities and Equipment (March 2022, Study Group on the Formulation of the Guidelines, etc. toward the Joint Use of Research Facilities and Equipment at Universities and Other Institutions)
https://www.mext.go.jp/b_menu/shingi/chousa/shotou/163/toushin/mext_00004.html

(3) Research Data Management

○Starting from fiscal year 2024, researchers are asked to prepare research Data Management Plans (DMPs) of their projects under all research categories in principle. Details such as an example of a DMP are given at the time of provisional grant decision or via the URL below. As such, please store, manage, and take other measures for research results and data of your research projects in accordance with your DMPs.

In addition, researchers are requested to submit the information on research data that are generated in funded projects and made public (metadata, etc.) as part of the Report on the State of Implementation and the Report on the Results for submission in fiscal year 2025. (Refer to I. Outline of the Grants-in-Aid for Scientific Research -KAKENHI- 6. Dissemination, Etc. of Research Achievements Supported by KAKENHI (4) Management of Research Data)

○ Management and Utilization of Research Data in KAKENHI (JSPS website)
URL: https://www.jsps.go.jp/j-grantsinaid/01_seido/10_datamanagement/index.html

(4) Promotion of Open Access to Research Papers, etc.

○ In order to promote open access to research papers through presentations thereof and other means, starting from new calls for proposals in April 2025 and beyond, it will be required to publish such papers under all research categories in principle on “institutional repositories and other information infrastructure” immediately after they are published in academic journals. It will also be required to report the published information as part of the Report on the State of Implementation and the Report on the Results. (Refer to I. Outline of the Grants-in-Aid for Scientific Research -KAKENHI- 6. Dissemination, Etc. of Research Achievements Supported by KAKENHI (3) Promotion of Open Access to Research Papers, etc.)

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Reference

The application forms (Research Proposal Document) and other application materials are contained in separate files. Please refer to “Supplementary edition to the Application Procedures for Grants-in-Aid for Scientific Research-KAKENHI- for FY2026 (Grant-in-Aid for Transformative Research Areas (A) (Publicly Offered Research)) (Forms / Procedures for Preparing and Entering a Research Proposal Document).” (Japanese only)

* The application forms (Research Proposal Document) and other application materials can be downloaded from the MEXT website (cf. URL below).

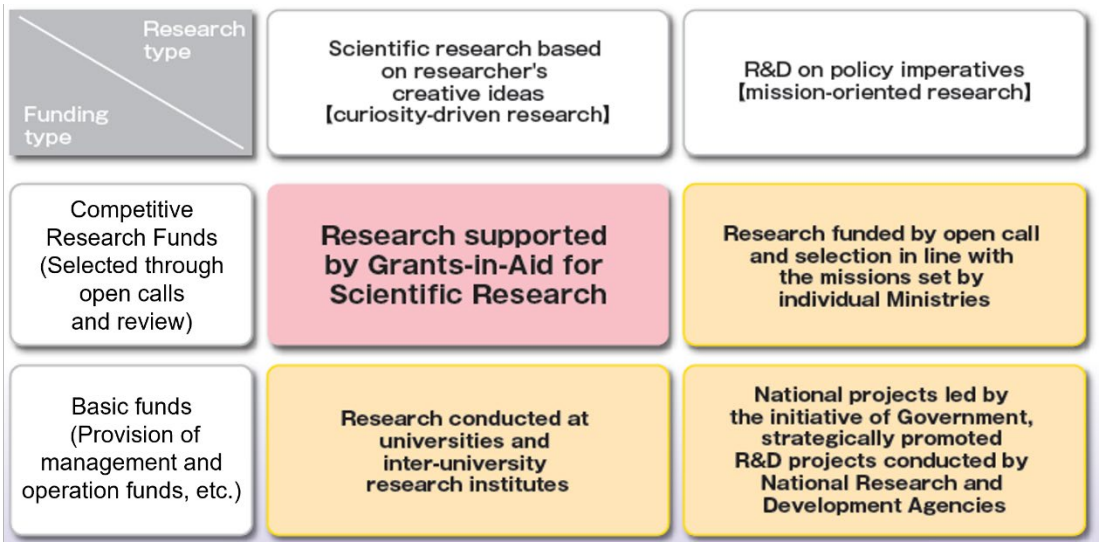
URL: https://www.mext.go.jp/a_menu/shinkou/hojyo/boshu/1351544.htm

I. Outline of the Grants-in-Aid for Scientific Research-KAKENHI-

1. Purpose and Character of Grants-in-Aid for Scientific Research-KAKENHI-

Grants-in-Aid for Scientific Research (hereinafter referred to as "KAKENHI") are competitive research funds that are intended to promote development of scientific research (based on original ideas of researchers), encompassing basic to applied researches in all fields ranging from humanities and social sciences to natural sciences. The grants provide financial support for creative and pioneering research projects that will become the foundation of social development. The research projects are selected by peer-review process.

<The placement of "KAKENHI" in the policy on the promotion of science, technology and scientific research in Japan>



2. Research Categories

Different research categories of KAKENHI listed below are provided so as to meet the variety of the research content and budget scale.

*As of July 2025

Research categories	Purposes and description of each research category	Type of fund	
Grants-in-Aid for Scientific Research			
Specially Promoted Research	Outstanding and distinctive research conducted by one or a relatively small number of researchers expected to achieve remarkably excellent research results that opens up a new scientific field. The research period is 3 to 5 years. (In a truly necessary case, period up to 7 years is acceptable.) The budget ranges from 200 million to 500 million yen per project. (Only in a truly necessary case, budget exceeding 500 million yen is asked for.)	SG	
Grant-in-Aid for Transformative Research Areas	(A) Research areas proposed through co-creative and interdisciplinary efforts of diverse researchers, which aim to create research areas that will lead the way to radical transformation of and change in the existing framework and/or direction of research as well as upgrade and level-up of scientific research in Japan and nurturing young researchers, and will contribute to the development of the proposed research areas through efforts for joint research and shared use of equipment, etc. (5 years; more than 50 million yen and up to 300 million yen per fiscal year per research area (In a truly necessary case, a budget exceeding 300 million yen may be requested.)) (B) Research areas proposed by compact groups of researchers who will be bearers of the next generation of research with a smaller budget scale (about 3 or 4 groups), which aim to create research areas that will lead the way to radical transformation of and change in the existing framework and/or direction of research as well as upgrade and level-up of scientific research in Japan through more challenging and exploratory research, and expected to lead to the Transformative Research Areas (A) in the future. (3 years; 50 million yen or less per fiscal year per research area)	SG	
Grant-in-Aid for Scientific Research	(S): Creative/pioneering research conducted by one or a relatively small number of researchers. 5 years (in principle) 50 million to 200 million yen (A), (B), (C): Creative/pioneering research conducted by one researcher or jointly by multiple researchers. (A) 3 to 5 years; 20 million to 50 million yen (B) 3 to 5 years; 5 million to 20 million yen (C) 3 to 5 years; 5 million yen or less	(S) (A)	SG
		(B) (C)	MF
Grant-in-Aid for Challenging Research (Pioneering/Exploratory)	Research conducted by a single or multiple researchers that aims at radically transforming the existing research framework and/or changing the research direction and has a potential of rapid development. The scope of the (Exploratory) category encompasses research proposals that are highly exploratory and/or are in their budding stages. (Pioneering) 3 to 6 years; 5 million to 20 million yen (Exploratory) 2 to 3 years; 5 million yen or less	MF	
Grant-in-Aid for Early-Career Scientists	Research conducted by an individual researcher (note) who is less than 8 years after Ph.D. acquisition. 2 to 5 years; 5 million yen or less	MF	
Grant-in-Aid for Research Activity Start-up	Research conducted by a single researcher who has been newly hired by a research institution, or who has returned from his/her childcare leave, etc. or from the nursing of his/her preschool child(ren). 1 to 2 years; 3 million yen or less (1.5 million yen or less if the research period is 1 year.)	MF	

	Encouragement of Scientists	Research conducted by an individual who belongs to educational or research institutions, private companies, etc. and engages in the researches to contribute to the promotion of the science. 1 year; 100 thousand to 1 million yen	SG
Grant-in-Aid for Special Purposes		Research projects of pressing urgency and importance.	MF
Publication of Scientific Research Results			SG
	Publication of Research Results	Subsidy for publication and/or international dissemination of research achievements of high academic values executed by academic associations and other organizations.	
	Enhancement of International Dissemination of Information	Subsidy for efforts by academic societies and other scholarly organizations to strengthen international dissemination of academic information for the purpose of international academic exchange.	
	Scientific Literature	Subsidy for academic publication of research results (books) authored by an individual or a group of researchers.	
	Databases	Subsidy for creation and operation of a database open to public use by an individual or a group of researchers.	
Grant-in-Aid for JSPS Fellows		Funding period is up to 3 years for research conducted by JSPS Fellows (including Foreign JSPS Fellows).	MF
Fund for the Promotion of Joint International Research			MF
	International Leading Research	This grant aims to enable research groups led by top-level researchers in our country to play a central role in the international network, thereby achieving research results of high scientific value internationally. With the participation of postdoctoral fellows and graduate students, the grant seeks to foster researchers who can play leading roles in the international research community in the future. (7 years (extendable up to 10 years); up to 500 million yen)	
	Fostering Joint International Research	Support of joint international research project conducted by a KAKENHI grantee in collaboration with researcher(s) at a foreign university or research institution over a period of 6 to 12 months. The grant seeks to markedly advance research plans for the root research project and to foster independent researchers who can be internationally competitive. (The budget is up to 12 million yen.) [The category name is changed from FY2023 call for proposals.]	
	Home-Returning Researcher Development Research	Support of research to be conducted by a Japanese researcher with current affiliation abroad who is to be newly appointed at university or research institution in Japan. (The period is up to 3 years. The budget is up to 50 million yen.)	

Note: Including those who are expected to acquire their Ph.D. and those deemed less than eight years after the acquisition of their Ph.D. by exempting the period of maternity leave or the period of raising preschooler(s) following their Ph.D. acquisition.

3. Role Sharing Between MEXT and JSPS

Up to FY1998, all aspects of KAKENHI funding were handled by the Ministry of Education (the predecessor of the Ministry of Education, Culture, Sports, Science and Technology (hereinafter "MEXT")). From FY1999 on, these tasks have been gradually transferred to the Japan Society for the Promotion of Science (hereinafter "JSPS"). The current role-sharing between MEXT and JSPS is as shown below.

Research category	Call for proposals, Review Preparation of the Application Procedures Reception of proposal submission	Grant delivery Notifications of provisional grant decision Reception of the form of the formal application for grant delivery and other documents for the relevant procedures Notification of grant decision
Scientific Research on Innovative Areas, Transformative Research Areas, Grant-in-Aid for Special Purposes	The Ministry of Education, Culture, Sports, Science and Technology (MEXT)	JSPS
Specially Promoted Research, Scientific Research, Challenging Research, Early-Career Scientists, Research Activity Start-up, Encouragement of Scientists, Publication of Scientific Research Results, JSPS Fellows, Fund for the Promotion of Joint International Research (International Leading Research, Fostering Joint International Research, International Collaborative Research, Home-Returning Researcher Development Research)	JSPS	JSPS

4. Rules Pertaining to KAKENHI

KAKENHI (Series of Single-year Grants) are governed by the "Law on Optimizing Implementation of Budgets Relating to Subsidies" (Law No. 179, 1955), the "Rules for the Handling of Grants-in-Aid for Scientific Research" (Public Notice

of the Ministry of Education), the "Procedures on the Handling of JSPS Grants-in-Aid for Scientific Research (KAKENHI (Series of Single-year Grants))" (Regulations No. 17, 2003), and other rules.

KAKENHI (Multi-year Fund) are governed by the application with modifications of the "Law on Optimizing Implementation of Budgets Relating to Subsidies" (Law No. 179, 1955) and the application of the "Basic Policy on the Management of the KAKENHI (Multi-year Fund) (Decision by the Minister of Education, Culture, Sports, Science and Technology)", the "Procedures on the Handling of JSPS Grants-in-Aid for Scientific Research (KAKENHI (Multi-year Fund))" (Rule No. 19, 2011), and other rules.

(1) Three Types of Rules Pertaining to KAKENHI

The following three sets of rules pertain to various aspects of KAKENHI.
i) Application Rules: rules concerning the submission of research proposals
ii) Assessment Rules: rules concerning the pre-assessment (review) of applications, and rules concerning the interim and ex-post assessments of granted projects
iii) Spending Rules: rules concerning the use of KAKENHI

These three sets of rules apply as follows.

<table>
<tr><th></th><th>Application Rules</th><th>Assessment Rules</th><th>Spending Rules</th></tr>
<tr><td rowspan="2">KAKENHI (Series of Single-year Grants)</td><td>The Ministry of Education, Culture, Sports, Science and Technology (MEXT)

Application Procedures</td><td>The Ministry of Education, Culture, Sports, Science and Technology (MEXT)

Rules concerning the assessment for Grants-in-Aid for Scientific Research

*Assessment rules for fiscal year 2026 are available on the MEXT website.</td><td rowspan="2">JSPS

For researchers: Supplementary conditions
For research institutions: Administrative work and other tasks concerning the use of Grants-in-Aid for Scientific Research (KAKENHI (Series of Single-year Grants)), to be performed by each research institution</td></tr>
<tr><td rowspan="2">JSPS

Application Procedures</td><td rowspan="2">JSPS

Rules concerning the review and assessment for Grants-in-Aid for Scientific Research</td></tr>
<tr><td>KAKENHI (Multi-year Fund)</td><td>JSPS
For researchers: Funding conditions
For research institutions: Administrative work and other tasks concerning the use of Grants-in-Aid for Scientific Research (KAKENHI (Multi-year Fund)), to be performed by each research institution</td></tr>
</table>

(2) Appropriate Use of KAKENHI

KAKENHI is funded by the tax of citizens and other sources, so please ensure that the KAKENHI is used efficiently and effectively, for example through planning for the communal use of purchased items.
Researchers receiving the KAKENHI have a duty to comply with the related laws, regulations and spending rules by researchers (supplementary conditions or funding conditions), and also to use such grants appropriately. To facilitate the appropriate use of KAKENHI, research institutions to which the researchers belong are responsible for the management of KAKENHI. The administrative work that each research institution is required to carry out (rules for use for institutions) is determined by JSPS. The research institutions are responsible for the appropriate accounting of KAKENHI. It is desirable, for example, to set up an accounting system for proper management of KAKENHI budget and expenditure, purchase order and delivery inspection, and internal auditing. To prevent improper business transactions, it is important, in addition to appropriate delivery inspections, to make all traders thoroughly informed of the KAKENHI rules and thus obtain cooperation of traders in the prevention of this kind of fraudulent accounting. Research institutions should take rigorous measures so as to eliminate business malpractice.
KAKENHI applicants and their research institutions must have full understanding of the KAKENHI rules prior to the submission of their research proposals.

(3) The Distinction between KAKENHI (Series of Single-year Grants) and KAKENHI (Multi-year Fund)

A research project submitted to the categories of KAKENHI (Series of Single-year Grants), if adopted, is granted as a package plan for the multi-year research period. The actual funding, however, is made on the single-year basis for each fiscal year of the research period. Therefore, this type of KAKENHI cannot be used to cover the expenditures in fiscal years other than the respective grant year.
When it is anticipated that spending of the grant cannot be completed within the fiscal year, owing to reason(s) unforeseeable at the time of official grant decision, the grant can be carried over to the next fiscal year after going through the due procedure. Firstly a Principal Investigator submits an application for carry-forward of grant through his/her affiliated research institution to JSPS. After reviewing it by JSPS and MEXT, the Minister of Education, Culture, Sports, Science and Technology makes a request to the Minister of Finance for the carry-forward of grant to obtain his/her approval.

On the other hand, the KAKENHI (Multi-year Fund) is handled as single funding for the whole research period. Therefore, it is possible to use the grant to cover the expenditures extending over fiscal year boundaries.

Moreover, if an amount of grant remains unused by the end of a fiscal year, it can be carried over to the successive fiscal year(s) as long as they are within the overall research period, without going through prior authorization procedures.
In case such a grant carry-over becomes necessary in the final year of the research period, the grantee may choose to request an official approval of one-year extension of the research period.

(4) Penalty for Non-submission of "Report on the Research Achievements"

i) The "Report on the Research Achievements" plays the important role in making the achievements of the research funded by the KAKENHI widely known to the public, and thereby returning the outcome of KAKENHI supported by citizens' tax to the society.
The contents of the "Report on the Research Achievements" submitted by KAKENHI grantees at the end of the research period are compiled and made available to the public on the "Grants-in-Aid for Scientific Research Database" (KAKEN) of the National Institute of Informatics and other platforms. The "Report on the Research Achievements" should be submitted via the research institution to which the KAKENHI grantees belong.

ii) No KAKENHI grant will be awarded to a researcher who failed to submit the "Report on the Research Achievements" at the end of his/her research period without justified reason. If such a non-compliance case is uncovered, the decision of grant award to the researcher in question may be cancelled, the on-going grant may be suspended, and return of the delivered grant may be ordered. In addition, relevant information, such as the name of the research institution to which the researcher in question belongs, may be made public.
Furthermore, if researchers have failed to submit the scheduled "Report on the Research Achievements" without justified reason, then execution of other KAKENHI implemented in the same fiscal year will be suspended. Therefore, it is the responsibility of the representative of the research institution to ensure that the "Report on the Research Achievements" is submitted without fail.

(5) Penalty for the Case of Infringement of Related Laws and Regulations

If there have been serious falsehoods in the application documents, or violation of relevant laws, regulations and guidelines, the delivery of KAKENHI may be suspended or cancelled.

5. "Guidelines on the Proper Implementation of Competitive Research Funds," etc.

The "Guidelines on the Proper Implementation of Competitive Research Funds" (Agreement of the Liaison Meeting of Related Offices and Ministries on Competitive Research Funds, September 9, 2005; revised December 17, 2021) states common understandings among the research-related ministries and offices in regard to allocation of competitive research funds, in terms of elimination of such inappropriate practices as unreasonable duplication and/or excessive overconcentration in the grant allocation, fraudulent acquisition and/or unlawful use of grants, and misconducts in research activities.
The implementation of the KAKENHI system as well as other competitive research funds scheme follows the above-mentioned "Guidelines" and other related rules. Applicants are urged to take special notice of the following points.

(1) Elimination of Unreasonable Duplication and/or Excessive Overconcentration in the Grant Allocation

i) Towards elimination of "Unreasonable Duplication and/or Excessive Overconcentration" (see below) of competitive research funds, relevant information on funding applications is shared among the pertinent ministries and funding agencies, making use of the Cross-ministerial Research and Development management system (e-

Rad).
Therefore, applicants, when submitting more than one KAKENHI applications and/or other competitive research funds, are urged to prepare their application documents with due care to clearly state the differences between the project to be submitted and their other projects so as to make it clear that they do not constitute unreasonable duplication.
In case a particular KAKENHI application is recognized as constituting a case of unreasonable duplication and/or excessive overconcentration, that application may not be granted.

ii) Applicants are urged to state in the Research Proposal Document the status of applications and acquisitions of other competitive research funds (including those of other ministries) and other research grants (such as name of research grant, title of research project, research period, amount of budget, effort, etc.) as well as the information on all affiliated institutions and positions (such as side jobs, participation in a foreign recruitment program, position of professor emeritus without employment contract, etc.). Untruthful statement or misrepresentation may result in rejection of the research project, cancellation of grant, or reduction of the research budget.

iii) Applicants are required to make a pledge that they have appropriately reported to their affiliated research institutions the information necessary to ensure the transparency of all research activities that they are involved in, including information on research funds and side jobs, etc., as well as information on donations and information on supports other than monetary funds, for example, through the provision of facilities and/or equipment. The status of pledge will be confirmed with e-Rad registration details. Please note that applicants cannot make applications if they have not made a pledge.
If it is found that applicants have not appropriately made reports contrary to their pledge, it may result in rejection of the research project, cancellation of grant, or reduction of the research budget.

iv) Inquiries on the status of acceptance and/or management of facilities and/or equipment used for the research may be made to researchers, etc.

Elimination of Unreasonable Duplication and Excessive Overconcentration in Grant Allocation

"Guidelines on the Proper Implementation of Competitive Research Funds" -Extract-
(Agreement of the Liaison Meeting of Related Offices and Ministries on Competitive Research Funds, September 9, 2005; revised December 17, 2021)

2. Elimination of Unreasonable Duplication and/or Excessive Overconcentration in the Grant Allocation

(1) Basic Policy of the Unreasonable Duplication and Excessive Overconcentration
i) In the Guidelines, "Unreasonable Duplication" refers to a situation where more than one competitive research fund and other research grants (all current research funds that are allocated to individual research contents, including both domestic and overseas grants-in-aid, subsidies, joint research funds, commissioned research funds, etc.; hereinafter the same) are unnecessarily and redundantly allocated to the same research project (meaning, the name and content of the research to which the competitive research funds are allocated; hereinafter the same) by the same researcher. Any of the following cases fall under "Unreasonable Duplication."
○Cases where simultaneous applications have been made to more than one competitive research funds / other research funds for substantially the same research project, and where these research projects are redundantly adopted.
○Cases where an application has been made again for substantively the same research project as another project that has already been adopted, and for which the allotment of competitive research funds / other research funds has already been completed.
○Cases where there is duplication in the use of research funds among more than one research projects.
○Other cases corresponding to those above.

ii) In these guidelines, "Excessive Concentration" is a situation in which the entire research funds that are allotted to one and the same researcher or research group (hereinafter referred to as "researcher, etc.") in the fiscal year in question exceeds the limit within which they can be used effectively and efficiently, and in which the research funds cannot be used within the research period. Either of the following cases falls under "Excessive Concentration."
○Cases where, in the light of the abilities of the researcher, etc. and the research methods, etc., excessive research funds are allotted.
○Cases where, in comparison with the effort (the time allocation rate (%) of time necessary for the implementation of the research activities with the entire working time of researcher) that is being allotted to the research project in question, excessive research funds are allotted.
○Cases where the purchase of unnecessarily expensive equipment is carried out.
○Other cases corresponding to those above.

(2) Dealing with "Improper Grant Spending," "Fraudulent Grant Acquisition" or "Research Misconduct"

○ "Improper Grant Spending," "Fraudulent Grant Acquisition" and "Research Misconduct" refer to the following type of acts respectively.

・"Improper Grant Spending":

Use of competitive research funds for other purposes, intentionally or by gross negligence, for example, by conducting fictitious business transactions ("azukekin") with a trader through fictitious order placements, or by charging costs higher than actually needed for personnel, travel expenses, etc., or use of competitive research funds in violation of the content of the funding decision or the conditions it implies.

・“Fraudulent Grant Acquisition”:
Receiving competitive research funds by deception or other fraudulent means, for example, by applying under the name of another researcher, or by making false entries in application documents.
・“Research Misconduct”:
Fabrication, falsification, or plagiarism of data, information, or findings shown in published research achievements based on the intent of the researcher, or the failing of the researcher to fulfill the basic duty of care that he/she has.

(i) No KAKENHI will be offered, for a fixed period of time, when a researcher or related party has committed an improper grant spending of KAKENHI, has committed a fraudulent grant acquisition of KAKENHI, or has committed a research misconduct. Moreover, for research projects for which it is established that an improper grant spending of grants, a fraudulent grant acquisition of grants or research misconduct has been committed, the researcher in question may be required to return the given KAKENHI completely or partially.
Moreover, an outline of the improper grant spending of KAKENHI, the fraudulent grant acquisition of KAKENHI, and/or the research misconduct in question of the researcher who falls in those categories (containing an outline of the outcome of the investigation in the research institution, the names of the people involved, the name of the system, the institution they belong to, the research project, the budget, the fiscal year of the research, the fraudulent content, details of the measures taken, etc.) will be made public.
Also researchers who have committed improper grant spending or fraudulent grant acquisition of competitive research funds other than the KAKENHI (including funds under the jurisdiction of other Offices and Ministries), etc., and/or have committed research misconduct by means of these competitive research funds, and therefore are excluded from receiving these funds in question for a certain period of time, will not receive the KAKENHI for the same period of time.

Note: This applies to those schemes newly starting a call for proposals in FY2026 (and onward) for “competitive research funds other than KAKENHI, etc. (including funds under the jurisdiction of other Offices and Ministries)” as well. It also applies to those schemes that ended before FY2025. Refer to the website below for the schemes to which this specifically applies at present.
URL: https://www8.cao.go.jp/cstp/compefund/

【Period of KAKENHI suspension】

[Improper Grant Spending and Fraudulent Grant Acquisition of KAKENHI]

Researcher categories	Extent of the improper grant spending		Period of KAKENHI Suspension
I. Researchers who committed improper grant spending of KAKENHI and researchers who conspired in such acts	1. Misappropriation of KAKENHI for personal gain		10 years
II. Researchers who committed improper grant spending of KAKENHI and researchers who conspired in such acts	2. Other than 1.	(i) Impact of the misconduct on the society is substantial and maliciousness of the misconduct is judged to be high	5 years
		(ii) Cases other than (i) and (iii)	2 to 4 years
		(iii) The impact of the misconduct on the society is small and the maliciousness of the misconduct is judged to be low	1 year
III. Researchers who acquired KAKENHI by deception or other fraudulent means and researchers who conspired in such acts	-		5 years
IV. Researchers who were not directly involved in the improper grant spending of KAKENHI, etc., but failed to exercise due care	-		The upper limit is 2 years and the lower limit is 1 year depending on the degree of the breach of duty by the researchers who have the duty of care as a good manager.

For cases judged as subcritical to the punitive suspension measures, sharp reprimand is administered to the individual(s) concerned. The following cases are pertinent to the "sharp reprimand" penalty.

1. Among the case II above, the researchers in case that the influence on society and the maliciousness of their conducts are judged to be insignificant and the amount of money involved is small.
2. Among the case IV above, the researchers in case that the influence on society and the maliciousness of their conducts are judged to be insignificant.

[Research Misconduct]

Individual Involvement in the Misconducts			Negative Impacts on Science and on Public at Large Degree of Maliciousness	Period of KAKENHI Suspension
Subject of Research Misconduct	(a) Particularly malicious individual(s) who, for example, had intention of research misconduct from the very beginning of the research			10 years
	(b) Author(s) of paper(s), etc. related to the research in which research misconduct(s) have been identified (other than (a) above)	Responsible author(s) of the paper(s) in question (corresponding author, lead author or other authors bearing equivalent responsibilities)	Cases where it is judged that the impact on the progress of the science in the field in question and the social impact are major, or the level of maliciousness involved in the acts is high	5 to 7 years
			Cases where it is judged that the impact on the progress of the science in the field in question and the social impact are minor, or the level of maliciousness involved in the acts is low	3 to 5 years
		Author(s) of the paper(s) in question other than the responsible author(s) described above		2 to 3 years
	(c) Individual(s) involved who are not the authors of the research paper(s) for which research misconduct(s) are identified. (other than (a) above)			2 to 3 years
Responsible author(s) of paper(s), (corresponding author, lead author or other authors bearing equivalent responsibilities) for which research misconduct(s) are identified, but not involved in the alleged research misconduct			Cases where it is judged that the impact on the progress of the science in the field in question and the social impact are major, or the level of maliciousness involved in the acts is high	2 to 3 years

	Cases where it is judged that the impact on the progress of the science in the field in question and the social impact are minor, or the level of maliciousness involved in the acts is low	1 to 2 years

* In cases where specific issues for extenuation such as voluntary withdrawal of the paper in question may be taken into account, the suspension period can be shortened as judged fit.

(ii) The relevant information of each research misconduct case may be provided to the offices of the research funding agencies (including Incorporated Administrative Agencies) under the jurisdiction of the relevant Office. Thereby the penalized researcher may be also subject to restriction in application of and/or participation to research projects in other competitive research funds other than KAKENHI.

Note: "Application and/or participation" means proposing new research projects, applying, responding to call for proposals, newly participating to research as a person involved in collective research, etc. and participating as a Principal Investigator or a person involved in collective research, etc. in research projects in progress (continued research projects).

(iii) Research institutions are required to comply with the "Guidelines on the Management and Audit of Public Research Funds at Research Institutions (Implementation Standards) (revised on February 1, 2021), Ordered by the Minister of Education, Culture, Sports, Science and Technology" and the "Guidelines for Responding to Misconduct in Research (adopted August 26, 2014 by MEXT)." Therefore, research institutions should pay adequate attention to these two sets of Guidelines when researchers implement their research activities.
In case where the status of the system improvement in line with these guidelines is recognized inadequate based on the survey results, the measures such as the reduction in indirect expense of all kinds of competitive research funds disbursed by MEXT or the Incorporated Administrative Agencies under the control of MEXT to the research institution(s) in question can be taken.

○ "Guidelines on the Management and Audit of Public Research Funds at Research Institutions" (Revised February 1, 2021; Ministry of Education, Culture, Sports, Science and Technology)
URL: https://www.mext.go.jp/a_menu/kansa/houkoku/1343904_21.htm

○ "Guidelines for Responding to Misconduct in Research" (Established August 26, 2014; Ministry of Education, Culture, Sports, Science and Technology)
URL: https://www.mext.go.jp/a_menu/jinzai/fusei/index.htm

(Reference) Examples of improper grant spending, fraudulent grant acquisition and research misconduct of KAKENHI

○ Improper grant spending
- Someone instructed a trader to forge fictitious transaction pretending to have purchased expendables, made the university pay a KAKENHI for them, and then instructed the trader to keep the money as deposit for future use.
- Someone instructed a trader to forge a fictitious transaction, obtaining a false invoice which carries item names different from those actually ordered and delivered, and then made the university pay a KAKENHI for them.
- Someone instructed his/her students to submit false work attendance sheets, made the university pay a KAKENHI for them, and then kept the money as a pooled fund of his/her lab.
- Someone visited destination not listed on the overseas travel itinerary, in order to have a meeting on cooperative research unrelated to the purpose of the KAKENHI research project.

(Note) The expenditure of the KAKENHI for fictitious and other transactions, like the ones mentioned in the case examples above, is all considered "improper grant spending," even if the expenditure was intended for the purpose of conducting the KAKENHI research project.

○ Fraudulent grant acquisition
- A researcher ineligible for the KAKENHI funding made application and acquired a KAKENHI grant.

○ Research misconduct
- Someone manipulated or forged experimental data or figures in a research paper published as an achievement of the research supported by a KAKENHI.
- Someone published books of his/her achievement with KAKENHI which contained an article translated from an original English research paper with no prior consent from the author(s) nor proper quotation statement.

6. Dissemination, Etc. of Research Achievements Supported by KAKENHI

KAKENHI research achievements are made broadly available to other researchers and to the general public, through posting and publication of the "Research Outline" and the "Report on the Research Achievements" on the Grants-in-Aid for Scientific Research Database (KAKEN) operated by the National Institute of Informatics.
Moreover, the expenses for outreach-related activities including dissemination of international research achievements by

publishing research papers, etc., can be covered by direct expenses. The KAKENHI grantees are urged to actively pursue public promotion of their international research achievements through the aid of KAKENHI so as to make them widely known to the public at large.

Upon disseminating the research achievements, please take note of the following issues as well.

(1) The acknowledgement for KAKENHI grant in research publications

When publishing research achievements of the KAKENHI project, researchers should be sure to express that the project has been supported by the KAKENHI grant, by stating in the "Acknowledgment" or other designated section of the paper the "JSPS KAKENHI Grant Number JP8 digits" in the case of English publication or "JSPS 科研費 JP8 桁の課題番号" in the case of Japanese publication.

〈Example〉
【English】This work was supported by JSPS KAKENHI Grant Number JP12K34567.
【Japanese】本研究は JSPS 科研費 JP12K34567 の助成を受けたものです。

(2) The implementation of the fair and conscientious research activities

The research using the KAKENHI should be carried out based on researcher's own self-awareness and responsibility. Therefore, the implementation of a KAKENHI research project and publication of the research results are solely attributed to the researchers' responsibility and view, and do not reflect that of the funding sector nor of the government.
On the occasion such as researchers release the research achievements using the KAKENHI broadly to the public, the examples of the indication noting that the research achievements are based on the personal views are given below.

〈Example〉
【English】Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the author's(s') organization, JSPS nor MEXT.
【Japanese】本研究の成果は著者自らの見解等に基づくものであり、所属研究機関、資金配分機関及び国の見解等を反映するものではありません。

(3) Promotion of open access to research papers, etc.

As we have been witnessing increasing openness of research results on an international scale to aim for global knowledge sharing, the promotion of open access through, for example, the publication of scientific papers is expected to return research results widely to the public and to help develop science and technology, create innovation, and solve global issues.

As a government policy of Japan, starting from a new KAKENHI call for proposals in FY2025, the publication of KAKENHI-funded, peer-reviewed academic papers and supporting data on "institutional repositories and other information infrastructure" will be required immediately after they are published in academic journals, in accordance with the Basic Policy for the Realization of Immediate Open Access to Academic Papers, etc. (February 16, 2024, Decision of Council for Integrated Innovation Strategy; hereinafter referred to as the "Basic Policy") and the Concrete Measures to Implement the "Basic Policy for the Realization of Immediate Open Access to Academic Papers, etc." (February 16, 2024, Decision of Council for Integrated Innovation Strategy) (Revised on October 8, 2024, Agreement of Related Offices and Ministries; hereinafter referred to as the "Concrete Measures").

"Institutional repositories and other information infrastructure" here means those that enable search for academic papers and supporting data on the research data infrastructure system (NII Research Data Cloud). Under the KAKENHI program, they will become searchable on the research data infrastructure system through the linkage of information on research results entered in Reports on the Results (and Reports on the State of Implementation) via the KAKEN database.

Moreover, we plan to add and revise items related to the information on research results to be entered in Reports on the Results and other documents in order to grasp the implementation status of open access efforts. In addition to existing items, researchers will be required to enter the following items: whether their academic papers and supporting data are subject to immediate open access, whether they have given immediate open access, reason(s) why immediate open access is difficult (if they have not given immediate open access), and identifiers, such as URLs to landing pages of the "institutional repositories and other information infrastructure" on which their academic papers and supporting data are published.

○Promotion of Open Access to KAKENHI-funded Research Papers (JSPS website)
URL: https://www.jsps.go.jp/j-grantsinaid/01_seido/08_openaccess/index.html

(4) Management of Research Data

On October 23, 2023, JSPS established and published its policy on the handling of research data. This policy stipulates JSPS's basic principles regarding the storage, management, and publication of research data generated during research activities funded by KAKENHI and other research grants provided by JSPS.
As such, the Principal Investigator of an adopted KAKENHI-funded research project must prepare a Data Management Plan (DMP) based on the data policy and other rules of his/her research institution, including the storage and management of research data generated as results during research activities as well as the publication or non-publication of such data, and conduct research activities while storing, managing, and publishing research data in accordance with the plan. In addition, he/she must add metadata specified by JSPS to research data that is subject to management in accordance with the DMP, etc.
The plan can be revised in the process of carrying out research activities.
Research institutions are requested to formulate their data policies stipulating such matters as the scope of data managed under and covered by the policies and criteria for publishing and sharing such research data. At the same time, they are asked to create an environment, develop a support system, and take other measures, so that researchers can conduct research data management based on data policies.
JSPS asks researchers to report information on published research data that is generated during their KAKENHI-funded projects to JSPS in their Reports on the Results or Reports on the State of Implementation as well as to publish them as research results on the Grants-in-Aid for Scientific Research Database (KAKEN), in accordance with their DMPs.

○Management and Utilization of Research Data in KAKENHI (JSPS website)
URL: https://www.jsps.go.jp/j-grantsinaid/01_seido/10_datamanagement/index.html

II. Call for Proposals

1. Research Categories for Which a Call for Proposals is Organized

The Ministry of Education, Culture, Sports, Science and Technology (hereinafter "MEXT") is organizing a call for proposals for the following research category.

Transformative Research Areas (A) (Publicly Offered Research)

2. Schedule from Application to Grant Delivery

(1) Procedures that Need to Be Completed Prior to the Deadline for the Submission of the Application Documents

Principal Investigator should sufficiently cooperate with his/her affiliated research institution, and should adequately respond to its requests.

The Date and Time	Procedures to be Performed by the Principal Investigator (See "III. Instructions for Prospective Applicants")	Procedures to be Performed by the Research Institution (See "IV. Instructions for Administrative Staff of Research Institution")
Start of Call for Proposals Monday, July 14, 2025		[Procedures to be completed, if the need arises] 1) The research institution obtains an ID and Password for e-Rad from the person in charge of the operation of e-Rad (This does not apply if the research institution already obtained them) *The issue of the ID and the Password takes about up to 2 weeks. 2) Registration of the Researcher Information in e-Rad and other matters 3) The research institution issues an ID and password to the Principal Investigator (This does not apply if the researcher already obtained an ID and a password)
	1) Preparing the Application Investigators should access the Electronic Application System using the ID and the e-Rad Password which has been provided by the research institution and preparing the application.	
	2) Submission (Sending) of the Application Documents The Principal Investigator should submit (send) the application documents to the research institution he/she belongs to, by the deadline decided by the research institution.	4) Submission of the "Checklist Pertaining to the Current Status" based on the "Guidelines for Responding to Misconduct in Research" **Deadline for submission: Tuesday, September 30** 5) Submission of the "Self-Assessment Checklist on the Improvement of the System" based on the "Guidelines on the Management and Audit of Public Research Funds at Research Institutions" **Deadline for submission: Monday, December 1**
Deadline for the Submission 4:30 pm on Wednesday, September 17 (to be strictly observed)		6) Submission (Sending) of the Application Documents

Notes:
1. After the Principal Investigator submits (sends) the application to the research institution (mentioned in "Procedures to be Performed by the Principal Investigator" 2)), the research institution should submit (send) to the MEXT the application by the deadline for the submission (mentioned in "Procedures to be Performed by the Research Institution" 6)).
   Next, the Principal Investigator should verify the section "III. Instructions for Prospective Applicants 3. Preparation of the KAKENHI

Application Form (Research Proposal Document), etc.", etc. as well as verify the procedures designated by the research institution, etc. (deadline for the submission of the application, etc., in the research institution) with the administrative staff in charge in the research institution.

2. When a researcher is applying for KAKENHI, he/she should register the researcher information beforehand in e-Rad. The research institution should perform the registration in e-Rad. Therefore, the researcher who is planning to apply should verify the state of the registration with the administrative staff in charge in the research institution.

3. The research institution should submit a "Self-assessment Checklist on the Improvement of the System" based on the "Guidelines on the Management and Audit of Public Research Funds at Research Institutions (Implementation Standards)" and a "Checklist Pertaining to the Current Status" based on "Guidelines for Responding to Misconduct in Research" (mentioned in "Procedures to be Performed by the Research Institution" 4) and 5)). If these checklists have not been submitted, no official grant decision will be made for the researchers belonging to the research institution in question.

(2) Schedule after the Submission of the Application Documents (plan)

The current schedule is as below. There may be changes in the plan including the timing of the provisional grant decision. When the changes occur it will be announced on the MEXT website and through the research institutions.

Transformative Research Areas (A) (Publicly Offered Research)	
October 2025 to January 2026	Review*1
Middle of February 2026	Notice of Review Results
Early April	Provisional grant decision
Late April	Formal application for grant delivery
Around April	Disclosure of review results
Middle of June	Official grant decision
Middle of July	Grant delivery (part of the first term) *2
Around October	Grant delivery (part of the second term) *2

Notes:

*1 Reviews are conducted by MEXT and the grant delivery after provisional grant decision is conducted by JSPS.

*2 The amount requested for funding (direct costs) will be remitted separately in two installments, i.e., one during the first term (from April until September) and the other during the second term (from October until March), if this amount for the fiscal year in question is 3 million yen or more, and it will be remitted in a lump sum during the first term, if it is less than 3 million yen.

3. Details of the Research Category

Transformative Research Areas (A) (Publicly Offered Research): KAKENHI (Series of Single-year Grants)

A) Intended for:
Research projects of Publicly Offered Research related to 31 research areas (which start in FY2023 or FY2025) shown in Attached Table 1 and Attached Table 2

B) Budget provided and number of research projects scheduled to be selected:
Budget and number per research area shown in Attached Table 1 and Attached Table 2

C) Research period:
Two years (application for research period other than the left is not subject to screening)

D) Important points:

- It is not possible to involve the Co-Investigators in the research (However, it is possible to involve the Research Collaborators in the research when necessary).
- Each reviewer in the committee dedicated to the particular research area (which will also include researchers who are outside of the research area in question) will conduct a two-stage document review. The panel reviews will not be conducted.
- When applying, for the details of research area in the "Grant-in-Aid for Transformative Research Areas (A)", please refer to "[references] New Research Area"

[References] New Research Area (Extraction from "Application Procedures for Grants-in-Aid for Scientific Research - KAKENHI – (Grant-in-Aid for Transformative Research Areas (A/B) and Grant-in-Aid for Special Purposes)" FY2026)

A) Purpose:
Research areas proposed through co-creative and interdisciplinary efforts of diverse researchers, which aim to create research areas that will lead to radical transformation of and change in the existing framework and/or direction of research as well as upgrade and level-up of scientific research in Japan and nurturing of young researchers, and will contribute to the development of the proposed research areas through efforts for collective research and shared use of equipment, etc.

B) Intended for:
Research areas that aim to generate renovation and/or transformations in academic areas so as to create emerging and interdisciplinary areas transcending the existing framework of academic disciplines, or research areas that aim for a truly drastic advancement of the leading-edge portions of a particular academic discipline, which are expected to develop innovative and creative scientific research by promotion of collective research with new perspectives or methods under organic coordination of diverse researcher groups, and meet all requirements of the following 1) to 3), and if applicable, 4):

1) Basic research area (including the area aiming for development from basic to applied research) which is expected to create a research area across multiple areas or develop innovative scientific research;
2) "(i) Area having (or expected to have) international superiority," or "(ii) Japanese unique area or unprecedented area having (or expected to have) creativity and novelty";
3) Area in which each research project is expected to bring sufficient results, and such results are expected to achieve transformation of concepts or methodologies of existing research disciplines after research period ended;
4) In the case of proposals to further develop the research area adopted in "Grants-in-Aid for Scientific Research on Innovative Areas (Research in a Proposed Research Area)" or other research fund programs in the past, the area for which results expected from the grants-in-aid in question were sufficiently achieved and whose contents aim for further significant and drastic development of the leading-edge portions based on the results.

C) Range of total budget:

The budget provided per research area is set at 50 million yen or greater up to 300 million yen per fiscal year. In a truly necessary case, a budget exceeding the maximum limit for each research area may be requested.

* In case the total budget per fiscal year per research area exceeds 300 million yen
Applicants will be required to provide a detailed description of the reason for such need in the Research Area Proposal, and the necessity will be assessed.

D) Research period (set period of the area):
Five years (application for research period other than the left is not subject to screening.)

E) Number of research areas scheduled to be selected:
Around 18 research areas

F) Review section:
In application, the applicant should always select the desired category for screening from the following categories according to the contents of the research plan:
"Transformative Research Areas, Section (I)": Research project focusing mainly on the content of Broad Section "A."
"Transformative Research Areas, Section (II)": Research project focusing mainly on the contents of Broad Sections "B," "C," "D," or "E."
"Transformative Research Areas, Section (III)": Research project focusing mainly on the contents of Broad Sections "F," "G," "H," or "I."
"Transformative Research Areas, Section (IV)": Research project focusing mainly on the contents of Broad Sections "J" or "K."
(For a description on each broad section, see Attached Table 2 "Grants-in-Aid for Scientific Research - KAKENHI- Review Section Table".)

G) Constitution of research area: (An applied research area that does not meet the review criteria is not subject to screening.)
- A research area should consist of "Planned Research" and "Publicly Offered Research."
- The "Planned Research" consists of "Administrative Group" and "Planned Research other than Administrative Group."
- One "Administrative Group" must be established. Sizable numbers of "Planned Research other than Administrative Group" and "Publicly Offered Research" must be established.
- The Administrative Group is an organization which provides the overall management of the research area. A plan for the purpose of conducting research is not permitted.
- A research area should be composed to include two or more "Planned Research other than Administrative Group" with researchers who will be bearers of the next generation of research (researchers of age 45 or under as of April 1, 2026) participating as Principal Investigators.
- A plan in which Planned Research is intended to be added during the research period is not permitted.
- "Publicly Offered Research" should be set so that the research period is two years (the second to third year and fourth to fifth year of the set period of the area), and organize a call for proposals for FY2027-2028 in the first year of the set period of the area and a call for proposals for FY2029-2030 in the third year of the set period of the area, and exceed either of the following minimum standards. In such case, the applicant should ensure that the number of research projects and amounts not only exceed the minimum requirement, but also be enough to aim for broader development of research in the research area, considering the purpose of Transformative Research Areas (A) and characteristics of the research area in question.
  1) Each number of research projects scheduled to be selected exceeds 15 in the first year and the third year
  2) The total amount of budget for Publicly Offered Research (the total from FY2027-2030) exceeds 15% of the budget (the total for five years) for the whole research area

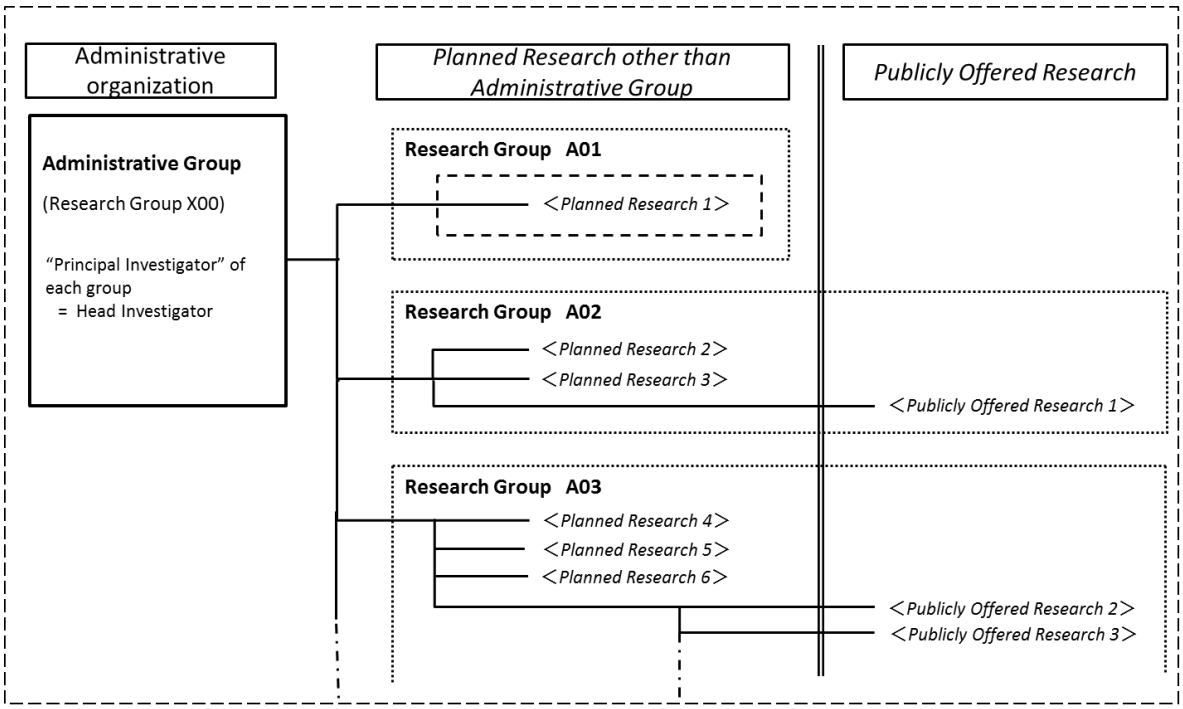
● Constitution of research area and roles

Planned Research	Administrative Group	Organization which formulates research policy for the whole research area, adjusts projects, and conducts research support activities (provision of support for international activities (formulation of optimum policy for international development (strengthening of the research area by finding current international researches, development of new international network, etc.), analysis of international trends, and performance of support activities (promotion of international joint researches and formulation of overseas network (invitation of overseas researchers who are highly evaluated internationally, mutual dispatch of postdoctoral researchers, etc.))), purchase, development, and operation of equipment and devices shared in the research area, or provision of experimental samples and materials, etc.), and other activities (an organization which does not

		conduct research)
	Planned Research other than Administrative Group	Research projects in which a Head Investigator (Principal Investigator of "Administrative Group") organizes researchers in the research area in question in advance and systematically makes progress in order to develop the research area
Publicly Offered Research	Research projects which one researcher performs in cooperation with "Planned Research" in order to further promote research in the research area in question	

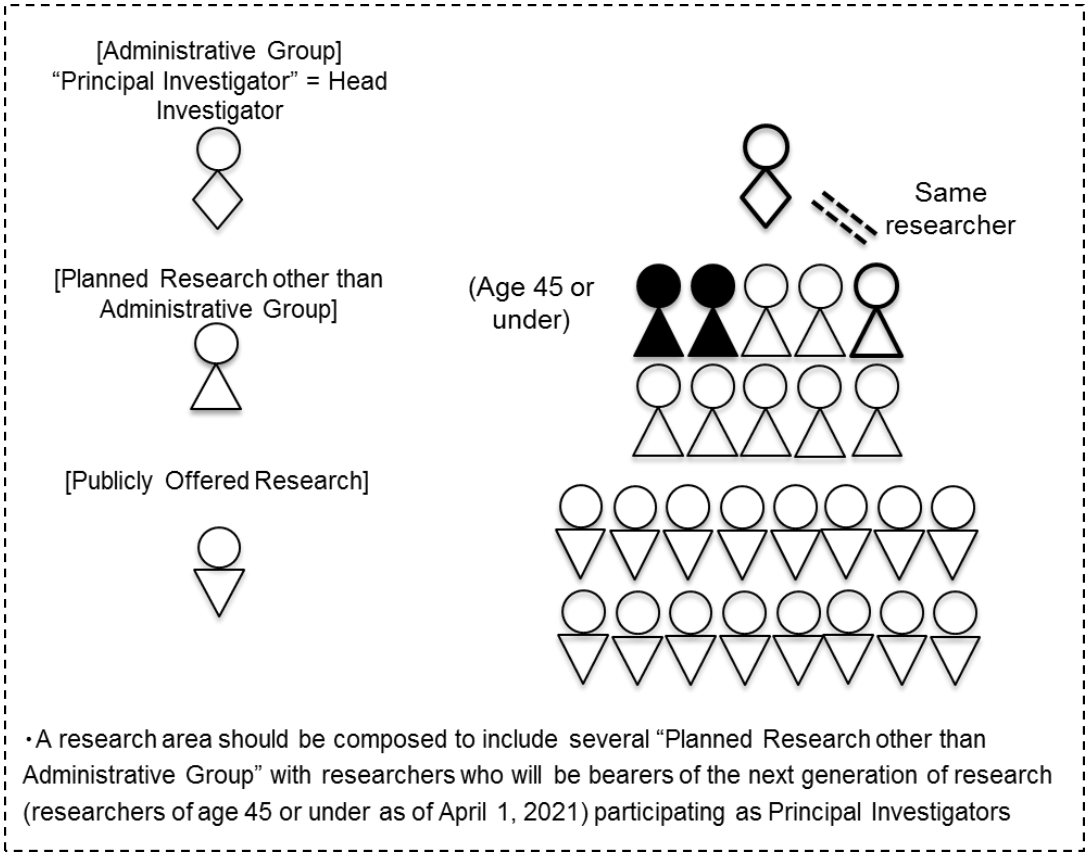
*1: When setting up the budget for Publicly Offered Research, please post annual budget enough to achieve research per project.
*2: The call for proposals and review of research projects for "Publicly Offered Research" will be conducted in the first year and third year of research period. For a description on review process, see "II. Call for Proposals 4. Review Panels and Other Matters (2) Review Methods and Other Matters."
*3: In order to efficiently develop the research area, a research group can be established, in which "Planned Research" or "Publicly Offered Research" are grouped by research theme or role in the research area.
*4: The replacement of the Principal Investigator is not permitted in principle except for the "Administrative Group." If a Principal Investigator of Planned Research lacks (due to death, etc.), however, it may be permitted as a special case via screening by the Academic Deliberation Council for Science and Technology.
*5: It is not permitted to allot direct expenses for research projects of "Administrative Group" to costs directly required for achieving other research projects in the research area in question.
6. Personnel costs regarding research and development management human resources engaged in the management of the research area can be recorded for direct expenses of "Administrative Group" research projects.
* Please refer to the "Identification of Issues Surrounding Management Work and Human Resources Related to Research and Development toward the Creation of Science and Technology Innovation and the Direction Going Forward" (June 2024, Working Group on Management Work and Human Resources Related to the Creation of Research and Development Innovation, Committee on Human Resources, the Academic Deliberation Council for Science and Technology).

● Image of constitution of research area



*A research group needs to have a number of research group such as "A01" for the sake of convenience for electronic processing ("X00" is used for Administrative Group), and please see "Supplementary edition to the Application Procedures for Grants-in-Aid for Scientific Research-KAKENHI- for FY2026 (Grant-in-Aid for Transformative Research Areas (A/B)) (Forms/Procedures for Preparing and Entering a Research Proposal Document)" (Japanese only) for detailed numbering method.

● Image of participation of researchers who will be bearers of the next generation of research



● Participation of members of research area in "Administrative Group"

The Principal Investigator and Co-Investigator of the "Administrative Group" are as shown below:

"Administrative Group"		Position in the Research Area
Principal Investigator	=	Head Investigator
Co-Investigator	=	Principal Investigator or Co-Investigator of "Planned Research other than Administrative Group"

The Principal Investigator of "Planned Research other than Administrative Group" must be a member (Co-Investigator or Research Collaborator) of the "Administrative Group."

H) Interim assessment, ex-post assessment:

- Interim assessment is conducted in the fourth fiscal year of the set period of the area and ex-post assessment is conducted in the fiscal year following completion of the set period of the area.
- Research plan may be reviewed and adjusted and the allotted amount may be subject to change (including the halt of funding) based on the result of the interim assessment.

I) Others:

- During the second fiscal year of the set period of the area, follow-up will be conducted to check whether improvements are made based on issues, etc. pointed out in the opinions expressed upon selection.
- It is possible to perform procedures after screening for review of continuous Planned Research or other matters based on the progress situation of research in the area.
- For Grant-in-Aid for Transformative Research Areas, there are no plans for calls for "budget for compiling the research achievements of Finished Research Area."

Attached Table 1 List of Research Areas in which "Publicly Offered Research" is Solicited in Grant-in-Aid for Transformative Research Areas (A) (31 Research Areas)

Note: See "Attached Table 2: Research Outline of Research Areas Showed on Attached Table 1" for the outline of Publicly Offered Research projects in each Research Area.

No	Number of Research Area	Title	Term of Project	Research Period	Number of projects scheduled to be selected	Upper Limit of Annual Budget (in million yen)
1	23A101	Qualia Structure: Bridging a gap between subjective conscious experience and scientific objectivity by establishing a super interdisciplinary research program	FY2023-2027	2 years	10 10 7	1.5 3 5
2	23A102	Integrative bioarchaeological studies on human prehistory in the Japanese archipelago	FY2023-2027	2 years	10 6	2 5
3	23A103	Establishing the Field of "Dignity Studies":Toward an Interdisciplinary Paradigm of Social Integration Based on the Concept of Dignity	FY2023-2027	2 years	1 4 5 6	0.8 0.9 1 1.1
4	23A201	1000-Tesla Chemical Catastrophe : Science of Chemical Bonding under Non-perturbative Magnetic Fields	FY2023-2027	2 years	10 14	1.5 2.5
5	23A202	Unveiling, Design, and Development of Asymmetric Quantum Matters	FY2023-2027	2 years	10 28	1 2.5
6	23A203	Materials Science of Meso-Hierarchy	FY2023-2027	2 years	5 6 12	2 3 3.5
7	23A204	Latent Chemical Space Based on Diverse Natural Products for Bio-active Molecular Design	FY2023-2027	2 years	21	3
8	23A205	The creation of multi-messenger astrophysics -- The unified picture of dynamical universe driven by births of black holes	FY2023-2027	2 years	8 8 2	1 3 5
9	23A206	Green Catalysis Science for Renovating Transformation of Carbon-Based Resources	FY2023-2027	2 years	20	3
10	23A301	Shin-biology regulated by protein lifetime	FY2023-2027	2 years	17	4
11	23A302	Integration of extracellular information by multimodal ECM activity	FY2023-2027	2 years	4 12	3 4
12	23A303	Hibernation biology 2.0: understanding regulated hypometabolism and its function	FY2023-2027	2 years	16	4.3
13	23A304	Dynamic reproductive lifespan: Life-long changes and fluctuations in germ cell function and risk for next generation	FY2023-2027	2 years	15	4
14	23A305	Photosynthesis ubiquity: Supramolecular complexes and their regulations to enable photosynthesis all around the globe	FY2023-2027	2 years	10 10	3 5
15	23A401	Plant Climate Feedbacks	FY2023-2027	2 years	5 13	2 4
16	23A402	Extension and validation of unified theories of prediction and action	FY2023-2027	2 years	5 7 4	3 5 10
17	25A101	Face-body design: Deepening and Sublimating Face-Body Based on Practical, Empirical and Constructive Research	FY2025-2029	2 years	8 14 5	1 2 4
18	25A102	Establishing the Digital History	FY2025-2029	2 years	12 4 2 7	1.5 2 2.5 4
19	25A201	Exploring quantum emergence through correlation design science	FY2025-2029	2 years	8 9	1.5 3.5
20	25A202	The Pursuit of Functionality Woven by π-Molecular Complexity	FY2025-2029	2 years	13 6	3 3.1

21	25A203	Quantum Matter Science in the Universe Opened Up by Precise Numerical Calculations	FY2025-2029	2 years	15 9 10	1.5 2.5 5
22	25A204	Drug development through data-driven evolutionary engineering of precision polymers	FY2025-2029	2 years	16	3.5
23	25A205	Multi Scale Muon Imaging : From Signs to Discovery	FY2025-2029	2 years	14 2	3 7
24	25A301	Biodiversity driven by mobile DNA elements and hosts : host response and trans-generation	FY2025-2029	2 years	14	4.5
25	25A302	Integrated understanding of RNA-induced perturbations in living systems and their adaptive mechanisms	FY2025-2029	2 years	20	4
26	25A303	Autophagy expanded: decoding membrane interface biology	FY2025-2029	2 years	16	4
27	25A304	Establishment of pH Biology	FY2025-2029	2 years	16	4.2
28	25A305	Symplast; intercellular communication mechanism in plants under environmental changes	FY2025-2029	2 years	16	3.5
29	25A306	Next-Generation Developmental Engineering	FY2025-2029	2 years	14	4.5
30	25A401	EPIC assembly: emergence of novel functional assembly by Evo-Physico Information Coupling	FY2025-2029	2 years	10 10	2.5 5
31	25A402	Life in Space: the Exploration of Environmental Responses and Robustness of Biological Systems to Predict the Future of Life on and Beyond Earth	FY2025-2029	2 years	12 6	3 5

Attached Table 2 Research Outline of Research Areas Showed on Attached Table 1

When applying for Publicly Offered Research, the applicant should note the following points.

- Research period is 2 years (Application of research period other than this period is not subject to screening).

- The Principal Investigator cannot set up a team of project members together with a Co-Investigator. (However, Research Collaborator is allowed to participate in research project when necessary.)

- Please be aware that the maximum application amount listed is not the total amount for the research period (two years) but the amount equal to a single fiscal year.

- Please note that in principle, the allotted amount is in units of 100,000 yen.

- It is possible to apply and receive grants for up to 2 projects in Transformative Research Areas (A) (Publicly Offered Research) at the same time.

  For example, in case that grants have been received for 1 project continuation of which will be in FY2026 in Transformative Research Areas (A) (Publicly Offered Research), it is possible to apply for only 1 project in Transformative Research Areas (A) (Publicly Offered Research) for FY2026.

- Please refer to the website of each research area for the details of application contents.

Research Outline of Research Areas

Qualia Structure: Bridging a gap between subjective conscious experience and scientific objectivity by establishing a super interdisciplinary research program
https://sites.google.com/monash.edu/a2023-2027/home_english

Number of Research Area	:	23A101	Term of Project :	FY2023-2027
Head Investigator	:	TSUCHIYA Naotsugu		
Research Institution	:	Advanced Advanced Telecommunications Research Institutes International		

1. Details of Research Area

Do subjective consciousness and the brain as objective matter belong to completely different domains? How are qualia, the contents of consciousness, related to the brain? The question of consciousness and the brain is not only of scientific interest. It is also directly related to everyday situations associated with difficulties in understanding feelings in others. Quality of experience, or qualia, is difficult to verbalize. To avoid this difficulty, conventional studies of consciousness have focused on the experimental paradigms, where experience can be reducible to a binary judgment (e.g., seeing vs. not seeing) by fixing perceptual stimuli, then they tried to isolate the neural correlates of consciousness. Recently, we have established a new paradigm to characterize Qualia Structures: by measuring a massive number of similarity judgements between a range of visual qualia. From there, we are to reveal their neural correlates and their information structures. This Research Area will expand the Qualia Structure paradigm by adding phenomenological studies, cognitive development, and constructivist approaches. By targeting perceptual and emotional qualia, this Research Area aims to establish the Qualia Structure paradigm. The outcome of this Research Area includes a better understanding of the consciousness of others, including animals and artifacts, aiming to address the issues that matter in real society.

2. Call for Proposals and Expectations for Publicly Offered Research, etc.

The overall aim of this Research Area is to understand the relationship between the structure of qualia and the structure of information obtained from brain information. Towards this aim, this Research Area takes the following basic strategy: 1) to focus on perception and emotional qualia, 2) to employ various theoretical and empirical methods, which generates synergy between them. However, with this limited strategy, it is difficult to arrive at our ultimate goal of a better understanding of the consciousness of others in a way that tackles the issues in real society. Thus, we invite Publicly Offered Research to collaborate with our Planned Research. In particular, those research that 1) deals with **research topics or employing methods, which are not employed by Planned Research**, 2) deals with **qualia with a structural approach,** 3) without focusing on a particular type of qualia, deals with **the relationship between the unconscious and consciousness**, **self-consciousness, changes of qualia structures associated with changes in levels of consciousness** (e.g., dreams, sleep, anesthesia, etc.). Those Publicly Offered Research will be overseen by relevant Planned Research to enable effective collaboration. We hope to attract those represented less in the field (e.g., young, female, or non-Japanese researchers) to participate, either individually or in teams with collaborators. To promote diverse participants, meetings in Research Areas will be recorded via web conferencing as much as possible, and consideration will be given to researchers of child-rearing age. The selected researchers will be expected to actively participate in the research activities of this Research Area, such as public relations through YouTube and SNS, the Qualia Summer School (from 2024~) to promote this Research Area to be recognized at the international level. The following summarizes some example projects. See our website for details.

In this second call, we hope to intensify participation from researchers in the humanities and social sciences (e.g., ethical, legal, and social issues that may arise in consciousness research that may be relevant to qualia structure, linguistics, religious studies, cultural anthropology, linguistics, art, etc.). With the aim of increasing the number of applications from this field, we have added an additional 10 slots of 1.5 million yen per year.

A01: Using large-scale online experiments, try to deal with qualia for value, beauty, and free will. Approaches from ethics, aesthetics, and religious studies are welcomed. Similarities and other methods can be used to visualize their qualia structures. Mathematical approach such as quantum cognition, topological data analysis.

A02: Philosophy, religious studies, aesthetics. Dealing with the relationship between embodiment, culture, and qualia.

A03: Human infants and mammals: comparative cognitive-behavioral research in atypical development (other than autism). Qualia structure approach from cultural psychology, evolutionary studies, etc.

B01: Qualia structure research by brain measurement and manipulation.

C01: Qualia structure research using information structure and model research and real neuronal data.

C02: Constructivism research using AI and robots (natural language processing, cognitive robotics, etc.). Also, research related to symbol emergence and consciousness in linguistics, sociology, cultural anthropology, etc.

3. Research Group, Upper Limit of Annual Budget and Number of research projects scheduled to be selected

Research Group Number	Research Group	Upper Limit of Annual Budget (Million yen)	Number of research projects scheduled to be selected
A01	Experimental psychology and mathematics of qualia structures		
A02	Phenomenological studies of qualia structures		
A03	Typical/atypical development of qualia structures		
B01	Measuring/manipulating brain activity related to qualia structures	5	7
C01	Correspondence between informational structures and qualia structures	3 1.5	10 10
C02	Symbol emergence from qualia structures		
D01	Unconsciousness, self, levels of consciousness and qualia structures		

Research Outline of Research Areas

Integrative bioarchaeological studies on human prehistory in the Japanese archipelago
https://i-bioarchaeology.org

Number of Research Area : 23A102 Term of Project : FY2023-2027
Head Investigator : YAMADA Yasuhiro
Research Institution : Tokyo Metropolitan University, graduate school of Humanities

1. Details of Research Area

Prehistoric archaeology is currently at a major turning point. It is clear that the results of many conventional, pure archaeological research methods, are forced to be revised due to recent results of natural scientific analyses.
Today, it is no longer possible to understand the real picture of the past using purely traditional archaeological methods. In order to escape from this crisis, archeology itself needs to shift from the traditional humanities academic field and be reborn as a new academic field.
Therefore, we advocate for the construction of a new form of integrative bioarchaeology, a comprehensive academic field that takes bioarchaeology and other current archaeological methods mainly focusing on excavated materials such as human bones, animal and plant remains, etc. in Japan and interweaves them with natural scientific methods such as radiocarbon dating, isotope analysis, and genomic analysis.

2. Call for Proposals and Expectations for Publicly Offered Research, etc.

The research area of this project consists of the following 11 Planned Research.
A01: Research on the social structure of prehistoric humans using archaeological methods,
A02: Research on the relationships among prehistoric peoples using genomic data and osteological features,
A03: Research on age, dietary restoration, and migration through the isotopic analysis of prehistoric bone,
B01: Dispersal of modern homo sapiens in the Japanese archipelago during the last glacial,
B02: Establishment of prehistoric humans and culture in Hokkaido,
B03: Establishment of prehistoric humans and culture in the Ryukyu Islands,
B04: Establishment of prehistoric humans and culture in the Honshu, Shikoku, and Kyushu regions,
B05: Research on the population dynamics of prehistoric humans,
C01: Research on paleoenvironmental changes in the Japanese archipelago,
C02: Research on artificial environment formation (fauna) by prehistoric humans,
C03: Research on artificial environment formation (flora) by prehistoric humans.
The aim of this project is to improve the quality of research and help advance the field in this Research Area, to further the broaden the scope of research in this entire field, and to recruit for focus areas not currently covered. If possible, we expect research application to cover multiple Research Groups. Please refer to the homepage of the relevant research area for details of the contents of recruitment for each Research Group. In addition, we welcome active applications from female and early career researchers to help further the goal of fostering and supporting female and young researchers and their research pursuits.

3. Research Group, Upper Limit of Annual Budget and Number of research projects scheduled to be selected

Research Group Number	Research Group	Upper Limit of Annual Budget (Million yen)	Number of research projects scheduled to be selected
A01	Research on Yayoi period tomb systems and social structure in Eastern Japan	2 5	10 6
A02	Research on the environmental conditions and kinship structures at archaeological sites using osteological features and genomic data		
A03	Research on improving the accuracy of dating and isotope ratios measurements on bone materials		
B01	Research on a high-resolution reconstruction of coastline changes in the Japanese archipelago in the late Pleistocene		
B02	Group Formation Theory, Ethnicity/Racial Theory, Multispecies Research, Environmental Change Research		
B03	Research on the movement and exchange of people, material goods, and culture in the Nansei Islands and Kyushu		
B04	Research on human migration and inter-regional networks in the Jomon, Yayoi, and Kofun periods		
B05	Research on population dynamics in the Yayoi and Zoku-Jomon periods		
C01	Environmental archaeological research on prehistoric human migration and population change based on high-precision climate change data		
C02	Research on the relationship between humans and animals in the Japanese archipelago using archaeological and genomic analyses		
C03	Research on the relationship between humans and plants in the Japanese archipelago using archaeological and genomic analyses		

Research Outline of Research Areas

Establishing the Field of "Dignity Studies": Toward an Interdisciplinary Paradigm of Social Integration Based on the Concept of Dignity

https://songengaku.jp/

Number of Research Area : 23A103 Term of Project : FY2023-2027
Head Investigator : KATO Yasushi
Research Institution : Sugiyama Jogakuen University, School of Foreign Studies

1. Details of Research Area

The concept of dignity originated with Cicero's translation of Plato's "axia" (the internal value of human beings) as "dignitas". In England, dignity became associated with social position or status and was characterized as a value that could fluctuate or disappear. In contrast, Kant characterized it as an "internal absolute value," a normative concept that could not fluctuate or disappear. This concept emerged as an ideal that supported the post-World War II international and social order, and it became an object of legal protection, being emphasized in documents like the Convention on the Elimination of All Forms of Discrimination against Women and the Convention on the Rights of Persons with Disabilities. In bioethics, dignity has been an important concept for questions of brain death, organ transplantation, genome editing, and "death with dignity." Dignity also offers a helpful ethical perspective for examining phenomena like A.I. (especially chatbots like ChatGPT), robots, and big data. The "basic guidelines" related to the Animal Welfare and Management Law also apply dignity to animals.

In this way, the concept of dignity was incorporated into the foundations of the international and social order. However, when "human dignity" was introduced into the E.U. constitution, differences in content between Germany's "Menschenwürde" and the U.K.'s "human dignity" were pointed out, with the former implying objective, absolute value and the latter subjective, relative value. While "dignity" has been applied to social issues, it lacks an all-inclusive definition. Hence, we synthesize research on dignity from various academic fields, including the sciences, discussing the concept comprehensively while also establishing "Dignity Studies" as a field that deals with the resolution of issues of clinical application and social implementation.

2. Call for Proposals and Expectations for Publicly Offered Research, etc.

This research area is made up of a mutual collaboration between "theoretical and conceptual historical research" (A01-04) and "clinical applied research" (B01-05), as well as "social implementation" (C01) based on both of them. We will examine the justification of "dignity" in terms of values, and construct a conceptual history that includes the non-Western world, taking into account both "the dignity of creatures" and "the dignity of life." Based on the results of this research, we will analyze the clinical application of advanced science and technology and advanced medical technology from the perspective of dignity. Moreover, we will deal with the "social implementation" of dignity by applying it to various educational settings. In this way, we will refine the concept of dignity. While the open call for publicly offered research proposals seeks research that will complement the above plan, we are also open to proposals that provide a broad understanding of our themes. We welcome proposals that offer perspectives and arguments that were not anticipated by our contributors, as well as proposals that offer a critical perspective on our research, including, for example, proposals that argue that the concept of dignity is unnecessary.

3. Research Group, Upper Limit of Annual Budget and Number of research projects scheduled to be selected

Research Group Number	Research Group	Upper Limit of Annual Budget (Million yen)	Number of research projects scheduled to be selected
A01	Animal Rights and Animal Dignity	1.1	1
	Gender and Dignity	0.9	1
A02	History of the Concept of Dignity (Ancient and Medieval Western Philosophy)	1	1
A03	A Study on Views of Humanity in Traditional Cultures of Non-Western Regions	1	1
B01	Dignity Provisions in the Constitutions of Asian Countries and their Interpretations	0.9	1
	The Concept of Dignity in Social Security (right to life) and Labor Rights	1.1	1
B02	The Atomic Bomb (Atomic Bomb Victims) and Dignity	1	1
B03	Nursing Ethics and Dignity	1	2
B04	Dignity in the Use of Care and Nursing Robots	1.1	1
	Dignity of Avatars in Digital Space	0.9	1
B05	Reproductive Genomics and Ethics	0.9	1
	Advanced Biotechnology and Human Dignity	1.1	1
C01	Disaster Prevention (Catastrophe) Policy and the Dignity of Disaster Victims	1.1	2
	Research and Development of the Educational, Medical and Caregiving System through the Introduction of the Concept of Dignity	0.8	1

Research Outline of Research Areas

1000-Tesla Chemical Catastrophe : Science of Chemical Bonding under Non-perturbative Magnetic Fields

https://1000tesla.issp.u-tokyo.ac.jp/

Number of Research Area : 23A201 Term of Project : FY2023-2027
Head Investigator : MATSUDA Yasuhiro
Research Institution : University of Tokyo, Institute for Solid State Physics

1. Details of Research Area

Magnetic fields are essential to the formation of nature, but on the Earth, their effects are generally weak and perturbative. On the other hand, the strong magnetic field in space, which is 16 orders of magnitude larger than the Earth's magnetic field, gives non-perturbative magnetic field effects. In this research area, we use the recently developed 1000 T ultrahigh magnetic field to clarify the non-perturbative magnetic field effects in the nature on the Earth. The 1000-T magnetic field gives electron spins an energy change of 1350 K in terms of thermal energy, which exceeds the Curie temperature of the iron and the melting point of gold. The phenomenon of Chemical catastrophe, which is a destructive effect on chemical bonds, is expected to be realized in solids. From solids to molecules, biomolecules, elementary particles, and plasma, innovative phenomena such as the creation of new crystals by magnetic fields will allow us to explore the essence of the mechanisms that shape the natural world.

There are six Research Groups in the Planned Research: A01 Molecular Orbital Catastrophe, A02 Spin Catastrophe, A03 Band Electron Catastrophe, A04 Chemical Reaction Catastrophe, A05 Elementary Particle Universe Catastrophe, and A06 Magnetic Field Catastrophe Theory, each with one Planned Research project.

A01 to A03 are on solid-state physics. One of the chemical catastrophe phenomena is crystal deformation due to a magnetic field. Through the wave function shape, Zeeman effect, Landau quantization, etc., the crystal structure is optimized in a magnetic field, which makes it possible to create new crystals in a magnetic field that cannot be realized in a low magnetic field. Solid oxygen, which undergoes a phase transition from monoclinic to cubic at 120 T by reconfiguration of molecular steric configuration, is one of the typical examples, but the research objectives of the field are to expand the research to a wider range of target materials and to understand the phase transition mechanism quantum mechanically. In A04, the main research target is non-perturbative magnetic field effects on photochemical reactions in molecules and polymers. Non-perturbative effects of magnetic fields, including photoexcited states, on chemical reaction processes through the Zeeman effect and Lorentz force will be the subject of research. The correlation between chirality and spin currents and magnetic fields will also be utilized to create new molecules in high magnetic fields and to understand their formation mechanisms. A05 studies non-perturbative magnetic field effects on plasma and elementary particle phenomena. The following phenomena are studied: production, scattering, and decay reactions of dark matter and dark energy, birefringence and anomalous synchrotron radiation in a quantized vacuum, and shock waves, jet collimation, and magnetic reconnection in magnetized plasmas, which are expected to occur when catastrophic phenomena in outer space are reproduced. We will conduct ultrahigh magnetic field experiments using a variety of quantum beams. We will elucidate the mechanisms at the microscopic level of elementary particles and plasmas, and clarify the role of magnetic fields in extreme space environments. A06 aims to theoretically elucidate the non-perturbative magnetic field effects of ultrahigh magnetic fields of up to 1000 T in molecules, polymers, plasmas, and elementary particles, with a focus on solids.

2. Call for Proposals and Expectations for Publicly Offered Research, etc.

As Research Group B01, we invite applications for experimental and theoretical studies of catastrophic phenomena induced by non-perturbative magnetic field effects in solids. The research topics include crystal deformations induced by magnetic field control of the spatial extent of wavefunctions, violation of the effective mass approximation due to interference with the crystal period, structural phase transitions caused by competitions of the magnetic energy and several excitations, nonperturbative magnetic field effects on phonons, and so on. We expect proposals beyond the framework of conventional magnetic field research. Plans to complement the target material groups in Planned Researches A01-A03 are also welcome. Research Group B02 invites experimental and theoretical studies of nonperturbative magnetic field effects on chemical reactions of molecules and macromolecules, and biological phenomena. Proposals for target molecules, macromolecules, and biological materials that complement Planned Research A04, and studies of magnetic field effects on catalysis and artificial photosynthesis are expected. For Research Group B03, we expect experimental or theoretical studies that pioneer non-perturbative magnetic field phenomena in astrophysics and particle physics. Hadron physics, solar physics, and other research topics that are related to Planned Research A05 are also open to applications. Researchers with no previous experience in high magnetic field experiments are also eligible to apply, as technical guidance will be provided after the proposal is accepted. (It is expected that high magnetic field experiments will be conducted using the shared use system of domestic magnetic field facilities and the portable pulsed magnetic field equipments developed in this research area.)

3. Research Group, Upper Limit of Annual Budget and Number of research projects scheduled to be selected

Research Group Number	Research Group	Upper Limit of Annual Budget (Million yen)	Number of research projects scheduled to be selected
B01	Non-perturbative magnetic field catastrophe in solids	Experiment 2.5 Theory 1.5	8 4
B02	Non-perturbative magnetic field catastrophe to chemical reactions	Experiment 2.5 Theory 1.5	3 3
B03	Non-perturbative magnetic field catastrophe to particles and space	Experiment 2.5 Theory 1.5	3 3

Research Outline of Research Areas

Unveiling, Design, and Development of Asymmetric Quantum Matters

https://asymmetry.hiroshima-u.ac.jp

Number of Research Area	:	23A202	Term of Project :	FY2023-2027
Head Investigator	:	ONIMARU Takahiro		
Research Institution	:	Hiroshima University, Graduate School of Advanced Science and Engineering		

1. Details of Research Area

In this research area, we transcend the understanding of electromagnetic effects such as cross-correlation response and non-reciprocal conduction that arise from the asymmetric electronic states in solids by employing the multipole concepts and develop innovative functions. Recent developments of quantum beam and physical properties measurements in high resolution facilitate the visualization of the orders of multipoles and the quantification of the susceptibility to the external fields. We construct a theoretical model describing the cross-correlation mechanism based on the obtained knowledge and it helps us to design new asymmetric quantum matters. We apply this model to molecular clusters, artificial materials, and broader target, to lead the evolution of next-generation material science and to frame the "asymmetronics". In planned research A01, we conduct microscopic analysis using quantum beams, and in A02, we develop new functions by combining microfabrication technology and various macroscopic measurements in high resolution. The theory group B01 constructs basic theoretical models that incorporate many-body effects and designs new materials. In C01, solid crystals are synthesized to develop new asymmetric quantum matters, and in C02, the strategy is to expand the material scales in wider range.

2. Call for Proposals and Expectations for Publicly Offered Research, etc.

In publicly offered research, promotion of strong research collaboration in the research area is highly expected. Research that advances complementary with the planned research and that expands this research area are expected. The former involves various measurements of polarized quantum beams, precise macroscopic measurements using microfabricated samples, and research using advanced many-body numerical calculation techniques. The latter includes research that expand the concept of asymmetric quantum matters to softer and broader materials such as organic compounds and molecular clusters, as well as artificial substances. We welcome themes that utilize shared equipment, such as a cryogen-free low-temperature automatic measurement system and a focused ion beam processing equipment, or themes related to sophistication of the equipment. We expect applications from young researchers working on ambitious themes.

A01: Researches using advanced quantum beam analysis techniques to investigate the electronic states of asymmetric quantum matters and the order parameters of multipoles. For example, they include resonant inelastic X-ray scattering (RIXS), neutron PDF analysis, μSR, and fluorescent X-ray holography to clarify the electronic states.
A02: Experimental researches that will lead to technological innovation, such as providing new functions of matters and realizing a huge response by microfabrication and the practical application of anisotropic superconductivity. The concept is widely applied to organic chemistry and metamaterials to detect electrical, magnetic, thermal, and elastic cross-correlation responses and control them using various external fields.
B01: Theoretical researches that construct basic theories based on multipoles and promote its application. For example, theory to evaluate responses to external fields, elucidation of mechanisms of multipole order, applications to mesoscales, and development of new asymmetric quantum matters using first-principles calculations and materials informatics.
D01: Experimental researches that can collaborate with C01 and C02, with sufficient prospects for development of new materials, novelty of synthetic methods, and development and control of functional properties. A wide range of materials are objects based on a scale-seamless perspective, e.g., not only crystals without inversion symmetry, but also molecular clusters, metal complexes, organic compounds, and artificial materials such as metamaterials.

3. Research Group, Upper Limit of Annual Budget and Number of research projects scheduled to be selected

Research Group Number	Research Group	Upper Limit of Annual Budget (Million yen)	Number of research projects scheduled to be selected
A01	Probing Microscopic Properties of Asymmetric Quantum Matters through Quantum Beam Analysis	Theoretical: 1.0 Experimental: 2.5	10 28
A02	Exploring Novel Functionalities in Asymmetric Quantum Matters through Precise Measurements		
B01	Fundamental Theories and Theoretical Design of Asymmetric Quantum Matters		
D01	Development of Asymmetric Quantum Matters		

Research Outline of Research Areas

Materials Science of Meso-Hierarchy
https://mesohierarchy.jp/en/

Number of Research Area	:	23A203	Term of Project :	FY2023-2027
Head Investigator	:	YAGAI Shiki		
Research Institution	:	Chiba University, Graduate School of Engineering		

1. Details of Research Area

Conventional bulk materials, including crystalline solids, liquid crystals, and polymers, are typically formed through the self-assembly or self-organization of synthesized molecules or inorganic substances. However, the structures of such materials often consist merely of nanoscale periodic or aggregated arrangements that extend directly to the macroscale, and thus lack any discernible hierarchy within the mesoscale domain bridging the nano and macro dimensions. This is in stark contrast to biological tissues, which exhibit intricately hierarchical structures and functions from the molecular to the cellular level. This research area aims to uncover novel functionalities that emerge from hierarchically organized structures formed through self-assembly and self-organization in the unexplored mesoscale regime, thereby pioneering an innovative field in materials science. Achieving this goal requires not only the advanced nanostructure construction techniques that have been vigorously studied to date, but also the development of a new theoretical framework for extending and organizing these structures into higher-order hierarchies. For instance, by controlling non-linear structure formation processes such as nucleation during self-assembly and secondary nucleation induced by pre-existing structures, it is anticipated that unprecedented functional mesoscopic architectures can be created. In this context, we define materials possessing hierarchically organized structures at the mesoscale as "mesohierarchical materials." The research area will promote interdisciplinary studies centered on the following topics: (1) supramolecular self-assembly chemistry at the mesoscale, (2) design and construction methodologies for mesohierarchical structures and their theoretical modeling, (3) visualization and quantification techniques for observing such structures, (4) energy manipulation technologies leveraging light–matter interactions at the nanoscale, and (5) evaluation of novel mechanical properties exhibited by mesohierarchical architectures. Through the collaboration of researchers from diverse fields working on these themes, we aim to build a comprehensive understanding of mesoscale hierarchical structures and establish a new academic domain—"Mesohierarchical Materials Science"—to drive a paradigm shift in materials development. The research will be structured around four major research components: A01 (“Morphology” and “Visualization”), A02 (“Photo-functional Science” and “Optical Measurement”), A03 (“Stimuli-responsive Materials” and “Nonlinear Responses”), and B01 (“Theoretical Computation”). Additionally, we will invite proposals for Publicly Offered Research to complement these core initiatives or to explore novel ideas unbound by existing frameworks.

2. Call for Proposals and Expectations for Publicly Offered Research, etc.

C01 Synthesis and Characterization of Meso-Hierarchical Structures: Proposals are sought for the hierarchical self-assembly of organic, inorganic, or hybrid materials in the mesoscale domain. π-Conjugated systems, functional dyes, metal clusters, and quantum dots are especially encouraged. Studies leveraging secondary nucleation or novel analytical methods are particularly welcome. → Linked to Planned Research A01

C02 We invite research exploring unique properties of mesohierarchical structures, such as long-range exciton transport, mechanical responses, and energy manipulation via light–matter interactions. Application-oriented studies and measurement innovations are also encouraged. → Linked to Planned Research A03

C03 Theoretical Analysis of Meso-Hierarchy: We seek proposals that elucidate the formation, stability, and properties of mesohierarchical structures using methods such as quantum chemistry (first-principles) calculations and (coarse-grained) molecular dynamics. Contributions from researchers in soft matter physics and (secondary) nucleation theory are highly valued. → Linked to Planned Research B01

3. Research Group, Upper Limit of Annual Budget and Number of research projects scheduled to be selected

Research Group Number	Research Group	Upper Limit of Annual Budget (Million yen)	Number of research projects scheduled to be selected
C01	Synthesis and Characterization of Meso-Hierarchical Structures, Meso-Hierarchy Synthesis and structural analysis of structures	3.5	12
C02	Analysis and Utilization of Photophysical/Mechanical Properties of Meso-Hierarchical Structures	3	6
C03	Theoretical Analysis of Meso- Hierarchy	2	5

Research Outline of Research Areas

Latent Chemical Space Based on Diverse Natural Products for Bio-active Molecular Design
https://latent.chemical.space

Number of Research Area	:	23A204	Term of Project :	FY2023-2027
Head Investigator	:	KIKUCHI Kazuya		
Research Institution	:	Osaka University, Graduate School of Engineering		

1. Details of Research Area

The discovery and identification of biologically active molecules using two typical compound resources, natural products (first) and synthetic compound libraries (second), has been a driving force in promoting chemical biology research, a field that integrates chemistry and biology. In this research area, we propose a third resource to follow these two. This third resource is virtually generated from the Latent Chemical Space, which is constructed by deep learning technology based on bioactivity data of natural products, and is realized in real space using robust organic synthesis. The Latent Chemical Space created by the fusion of natural products and informatics research will bring about a paradigm shift in data-driven chemical biology research and revolutionize the design of biologically active molecules. To realize this, we will launch the "Cyber Bioactive Molecule Design Lab" consisting of three groups: Chemical Biology, Informatics, and Organic Synthesis. The goal is to establish a new science of bioactive molecule design that can develop innovative molecules that lead to the clarification of new biological functions and to the seeds for pharmaceuticals and agrochemicals, starting from the compounds created from this third resource.

2. Call for Proposals and Expectations for Publicly Offered Research, etc.

We invite applications for research members to add depth and breadth to our research perspectives and backgrounds, and to strengthen our research system to achieve the goals of this research area, which aims to create new scientific principles for designing biologically active molecules by integrating chemical biology, informatics, and synthetic organic chemistry research. The goal is to create a new science of biologically active molecular design method. In order to achieve research objective, it is necessary to recruit a wide range of research topics that share the same sense of purpose and to accumulate successful research examples. In order to lay the foundation for the future development of the research field, we expect active applications from active female and young researchers who share the same vector of research goals. The following are the main points of the research topics for which applications are solicited.

For research item A01 (Chemical Biology Group), it is necessary to increase the variation of evaluation methods, and we invite applications from researchers who can strongly promote activity evaluation methods from unique viewpoints. In order to construct a high-quality compound potential space, a more comprehensive activity evaluation is desirable. For this purpose, we envision the adoption of group members specializing in bio-related chemistry and structural biology, which provide excellent activity evaluation methods and structural biological basis. Furthermore, we expect to receive applications from researchers specializing in natural product chemistry who are updating the first resource using original evaluation methods.

For research item B01 (Informatics Group), we are seeking researchers who can further expand the chemical latent space, which is constructed based on a deep learning method originally developed by the planned research members of this research area, from the knowledge of computer science. Specifically, we are widely inviting proposals for research on the application of latent spaces to virtual screening and chemoinformatics, the development of novel machine learning methods, and the learning and application of language models (not limited to natural language). Researchers specializing in deep learning, data mining, and graph information processing are also welcome, as this research area will collect various labeled data on compounds and organize them in graph data structures. Even if they have no previous experience in chemistry or biology, we expect applications from researchers who develop and apply excellent algorithms and methods in the fields of computer science and artificial intelligence.

In research item C01 (Organic Synthesis Group), the following two points will be pursued in parallel: (1) synthesis of novel bioactive candidate molecules derived from compound potential space, and (2) construction and expansion of a library of novel synthetic compounds based on bioactive molecules. In order to respond to the structural diversity of new molecules proposed by information analysis, it is important to advance and diversify the synthetic technologies possessed by this research area. Therefore, we expect applications from researchers who possess original technologies and high synthetic capabilities useful for the synthesis of complex molecules, and who can actively contribute to the deepening of the chemical space by working on the above items (1) and (2) through further advancement of these technologies.

3. Research Group, Upper Limit of Annual Budget and Number of research projects scheduled to be selected

Research Group Number	Research Group	Upper Limit of Annual Budget (Million yen)	Number of research projects scheduled to be selected
A01	Chemical Biology: Collection of bioactivity data from diverse compounds	3	7
B01	Informatics: Construction and application of latent chemical space		7
C01	Organic Synthesis: Construction of synthetic compounds for evaluation of biological activity		7

Research Outline of Research Areas

The creation of multi-messenger astrophysics -- The unified picture of dynamical universe driven by births of black holes
https://multimessenger.jp

Number of Research Area	:	23A205	Term of Project :	FY2023-2027
Head Investigator	:	YOSHIDA Shigeru		
Research Institution	:	International Center for Hadron Astrphysics		

1. Details of Research Area

The gravitational energy produced by the mighty gravity of black holes has been the primary energy source of the universe since the Big Bang, and is the source of the diversity of the universe, driving the growth of black holes, the synthesis of elements that are the origin of matter, and the creation of ultra-high energy cosmic ray nuclei with enormous energy that has never been explored by humans. However, the origin of these extreme cosmic phenomena is a great mystery, as the sites are hidden by the surrounding high-density matter. In this research area, we will promote multi-messenger observations that combine neutrino and gravitational wave cosmology observations with traditional electromagnetic wave observations, which have made overwhelming progress in recent years, in order to unify our understanding of the final fate of gravitational energy, from the growth process of ultra-dense fireball plasma produced by the strong gravitational field to elemental synthesis and high-energy radiation. The final fate of gravitational energy, from the growth process of ultra-dense fireball plasma produced by a strong gravitational field to elemental synthesis and high-energy radiation, will be understood in a unified manner. The new research field by a diverse group of researchers with different professional backgrounds will reveal why the universe is so diverse and dynamic.

This research area consists of three research groups: Group A, which is a planned research group to dramatically advance observational research in multi-messenger astrophysics by strengthening the observational experiments and facilities currently in operation; Group B, which conducts future-oriented development research; and Group C, which promotes theoretical research. Each of these research groups is as follows Cosmic neutrinos (IceCube - A01), gravitational waves (LIGO - A02), visible, near-infrared and radio waves (A03), X-rays (A04), gamma rays (CTA - A05), multi-particle space observation technology (B01), multi–Messenger Observation Satellite (B02), Neutrino Astrophysical Theory (C01), and Strong Gravity Research (C02). Five fusion research themes with neutrino, gravitational wave, and electromagnetic wave observations designed to make the most of the observational experiments and projects participating in the area have been established, and each planned research in group A will be promoted in cooperation with each other. The mission of the group C project is to provide guidance for this fusion research and to decipher the observational data to understand in a unified manner the processes leading to the emission of neutrinos, gravitational waves, and electromagnetic waves, starting from the accumulation and release of gravitational energy. In order to sustainably develop this fusion research in the future, B01, which focuses on the development of detectors, especially in the wavelength and energy bands for which advanced observation sensitivity is required, and B02 , which conducts the basic design and development of the HiZ-GUNDAM satellite led by Japan, will play the role of sowing seeds of growth.

Multi-messenger astrophysics is a nascent interdisciplinary field that requires the formation of a new community of researchers with expertise in different space observation techniques. The ultimate goal of this research area is to create a multi-messenger astrophysics expert group consisting of a diverse group of researchers, with Japan leading the way in the fierce international competition.

2. Call for Proposals and Expectations for Publicly Offered Research, etc.

Multimessenger astrophysics, by its very nature, is related to a wide range of astronomical, space, and particle physics research fields. Although each planned research item in the field integrates various specialized research fields by setting up top-down issues, there are many research themes and projects that cannot be covered by this approach. We expect bottom-up research proposals that broaden the base of interdisciplinary research in the open call for research. We welcome observation research proposals that are not part of the top-down fusion research agenda, such as observation research using balloons and other flying objects, survey observation specializing in a certain wavelength band, and cosmic particle observation research using ground-based detectors, as well as proposals for detector development based on novel ideas. We also expect seed research proposals that will develop fusion research, such as research on methods for integrating and analyzing data of different quality, and theoretical research proposals on cosmology, particle theory, gravity theory, etc., which will form the basis of the framework of multi-messenger astrophysics.

In addition, in order to promote relatively large-scale observation and development research, we invite truly pioneering research with a maximum application amount of 5 million yen per single year .

3. Research Group, Upper Limit of Annual Budget and Number of research projects scheduled to be selected

Research Group Number	Research Group	Upper Limit of Annual Budget (Million yen)	Number of research projects scheduled to be selected
E01	Multi-messenger Astrophysics Observation and Development Large scale Research	5	2
E02	Multi-messenger astrophysics observation, numerical simulation and development research	3	8
E03	Multi-messenger astrophysics theory research	1	8

Research Outline of Research Areas

Green Catalysis Science for Renovating Transformation of Carbon-Based Resources
https://greencatalysis.jp/

Number of Research Area	:	23A206	Term of Project :	FY2023-2027
Head Investigator	:	OOI Takashi		
Research Institution	:	Institute of Transformative Bio-Molecules (WPI-ITbM), Nagoya University		

1. Details of Research Area

Considering the sustainable development of society, organic synthesis must evolve into an environmentally benign technology that can efficiently convert any molecule for providing value-added organic molecules. In other words, there is an urgent need for a transformative shift toward greener organic synthesis in view of effective utilization of ubiquitous carbon resources, molecular transformations using renewable energy, and minimization of waste. However, achieving this goal within the framework of conventional organic synthesis is extremely challenging. This is mainly because most of the existing synthetic methods rely on ionic reactions using thermal energy, which require functional groups as a handle for executing precise transformations of starting materials. On the other hand, radical reactions are not dependent on functional groups and hold significant potential for implementing truly sustainable chemical synthesis with a wide range of carbon resources. However, it is very difficult to tame short-lived, highly reactive radicals, and no guiding principle has been established for the development of radical-mediated selective organic transformations. The research area "Green Catalysis Science" aims to realize precise control of radical reactions by the development of catalysts capable of harnessing light and/or electric energy based on the integration of inorganic coordination chemistry, solid surface chemistry, and organic chemistry, leading to transform organic synthesis into a form suitable for a sustainable society. Specifically, we will pursue the design of inorganic complexes and solid-state catalysts with the ability to generate radicals at targeted positions in starting materials through light excitation or electron transfer with electric energy. Meanwhile, organic molecular and metal catalysts will also be rationally designed for rigorous control of the subsequent bond-forming processes of radicals. These catalysts will be exploited in developing molecular transformations to assemble high value-added molecules, which were previously considered nearly impossible to synthesize, from small molecules such as methane and hexane, polymers, and biomass, which have been difficult to use as starting materials, in the shortest possible steps. This will revolutionize methods for the transformation of carbon resources, establishing the next-generation organic synthesis that embodies greenness and is independent of the structure of molecules.

2. Call for Proposals and Expectations for Publicly Offered Research, etc.

In this research area, research is conducted through the organization of three groups: Research Group A01 (Control of Radical Generation), Research Group A02 (Control of Radical Reactions), and Research Group A03 (Expansion of Synthetic Processes). To achieve the goal of the area, a fusion of a wide range of fields is essential. Particularly, collaborative research based on understanding and controlling radical species through photo- and electrochemical approaches, advanced measurement science, theoretical and computational science, and broad catalysis science creates a basis for exploring methodologies for the transformation of carbon resources. The content expected for publicly offered research in each research group is as follows:

In **Research Group A01**, the focus is on controlling radical generation and developing methodologies to generate radicals from a wide range of carbon resources, such as small molecules like CO_2 and methane, biomass, and polymers, for use as starting materials. Therefore, proposals related to the exploration of catalytic methods for radical generation are expected with an emphasis on the activation of molecules that have been difficult to use as starting materials in conventional organic synthesis.

In **Research Group A02**, the focus is on catalytic control of selectivity associated with radical-mediated bond formations. Proposals for catalyst development based on various approaches, such as enzymatic and supramolecular catalysis, are expected. Proposals related to molecular design and methodology development for the application of inorganic complexes and solid-state catalysts to the control of radical reactions are also welcome.

In **Research Group A03**, the focus is on expanding synthetic processes by radical reactions. This includes not only the development of new reactions with organic small molecules but also novel methods effective for natural product synthesis, polymer synthesis, and even the development of photo- and electrochemical reactions with polymers. Proposals to merge catalytic radical reactions utilizing light and electric energy with process chemistry and flow synthesis are also encouraged.

For each of the research group, proposals that contribute to the "understanding" to control radicals and develop new reactions are welcomed from theoretical science and advanced measurement science. As diversity is the foundation of interdisciplinary collaboration, applications from young and female researchers with diverse backgrounds are especially encouraged.

3. Research Group, Upper Limit of Annual Budget and Number of research projects scheduled to be selected

Research Group Number	Research Group	Upper Limit of Annual Budget (Million yen)	Number of research projects scheduled to be selected
A01	Control of radical generation	3	20
A02	Control of radical reactions		
A03	Expansion of synthetic processes		

Research Outline of Research Areas

Shin-biology regulated by protein lifetime
https://www.proteinlifetime.jp

Number of Research Area	:	23A301	Term of Project :	FY2023-2027
Head Investigator	:	MURATA Shigeo		
Research Institution	:	The University of Tokyo, Graduate School of Pharmaceutical Sciences		

1. Details of Research Area

Proteins are vital to living organisms, and the functions of cells and tissues are determined by the proteome, which consists of thousands of different proteins. Protein synthesis follows genetic information, but the correlation between mRNA, translation, and protein levels is weak. Post-translational regulation, especially proteolysis, plays a critical role. Proteins vary in lifetime, from minutes to years. Existing laws explain some protein lifetimes, but most remain elusive. The regulation of individual protein lifetime is extensively studied in key biological events, but only limited aspects of protein dynamics are observed. During major functional transformations, protein composition undergoes significant reconfiguration, affecting degradation and synthesis. The mechanisms behind selective and large-scale proteolysis in biological and pathological contexts are unknown. To unravel these mysteries, we'll explore new principles of protein lifetime regulation, establish techniques for in-depth lifetime measurements, and elucidate regulatory mechanisms that drive compositional changes. We'll integrate sequence, modification, and 3D structure information to study protein lifetime regulation factors. We'll also develop technologies for precise protein lifetime control and methods to manipulate cellular and tissue functions. This interdisciplinary research aims to understand, measure, and manipulate protein lifetime mechanisms to achieve a deep understanding of biological phenomena and pathological conditions.

2. Call for Proposals and Expectations for Publicly Offered Research, etc.

Research Group A01 seeks a new understanding of life phenomena through the comprehensive measurement of protein lifetime and the investigation of regulatory mechanisms. While the planned research will focus on cellular senescence, neural stem cell differentiation, and Moyamoya disease, publicly offered research is encouraged to address other life phenomena and disease mechanisms involving protein lifetime regulation. This research area will study the large-scale regulation of protein populations rather than individual proteins. Research Group A02 aims to uncover novel molecular mechanisms that determine protein lifetime. The planned research will focus on the ubiquitin-proteasome and autophagy-lysosome systems in eukaryotic cells, particularly on branched ubiquitin chains, ubiquitin chain discrimination, and the enhancement of degradation by liquid-liquid phase separation. Publicly offered research is not limited to these systems but should investigate diverse substrates and lifetime determination mechanisms that involve significant changes in protein composition rather than a regulatory system for a specific substrate. Research Group A03 aims to develop tools for in-depth measurement and computational analysis of protein half-lives and for controlling the lifetimes of target proteins. The planned research includes the establishment of high-resolution measurement techniques, the analysis of the correlation between lifetime and proteoforms, and the further development of techniques such as auxin-degron and PROTACs for protein lifetime control. Proposals should introduce new methods and tools for measurement, control, information analysis, and mathematical analysis of protein lifetimes, using diverse approaches such as synthetic biology, analytical chemistry, informatics, organic chemistry, and computational science. Administrative Group has established mass spectrometry and information analysis teams. We invite publicly offered research that synergizes with planned research and contributes to the development of this research area. Diverse and highly original research by young and female investigators is encouraged.

3. Research Group, Upper Limit of Annual Budget and Number of research projects scheduled to be selected

Research Group Number	Research Group	Upper Limit of Annual Budget (Million yen)	Number of research projects scheduled to be selected
A01	Biology of Protein Lifetime Dynamics	4	5
A02	Mechanisms of Protein Lifetime Determination	4	9
A03	Measurement and Control of Protein Lifetime	4	3

Research Outline of Research Areas

Integration of extracellular information by multimodal ECM activity
https://www.multimodal-ecm.com

Number of Research Area	:	23A302	Term of Project :	FY2023-2027
Head Investigator	:	FUJIWARA Hironobu		
Research Institution	:	RIKEN Center for Biosystems Dynamics Research		

1. Details of Research Area

The structure and function of multicellular organisms emerge from complex yet coordinated interactions between cells and the extracellular matrix (ECM). While biological research has long focused on cellular mechanisms, the ECM has often been regarded as merely a 'passive scaffold'. However, recent advancements in imaging, measurement and manipulation techniques have begun to unveil that the ECM is a dynamic structure, rich in diverse biochemical (e.g., molecular composition, adhesive and soluble signals) and physical (e.g., adhesion, viscoelasticity, geometry) information. These spatiotemporally distributed cues constitute 'multimodal information' that underlies the self-organisation and morphogenesis of multicellular systems. This research area aims to bring together experimental biologists, polymer materials scientists, and mathematical/data scientists to develop a comprehensive understanding of the dynamic and multimodal properties of the ECM. By elucidating how the ECM regulates multicellular behaviours across scales, we aim to transform the traditionally cell-centric perspective of biology.

2. Call for Proposals and Expectations for Publicly Offered Research, etc.

Despite recent progress, it remains challenging to fully visualise ECM dynamics or disentangle and manipulate the diverse parameters it comprises. To address this, we have defined three core research groups: A01, which investigates the operating principles of the ECM–multicellular dynamic unit; A02, which aims to manipulate extracellular information by developing designer matrices; and A03, which applies mathematical and data science to analyse ECM–multicellular interactions. We invite proposals for Publicly Offered Research that aligns with the aims of the area, including those that complement or expand the planned research, promote collaboration across research groups, or challenge existing paradigms with novel approaches. In this second phase of the project, we especially welcome interdisciplinary proposals that integrate perspectives from experimental biology, materials engineering, and mathematical/data sciences. For example, proposals may include efforts to manipulate cell behaviour through engineered ECM environments, or to link experimental observations with theoretical models to better predict and understand complex phenomena. We plan to select 12 experimental research projects, each with a funding limit of 4 million yen per year, and 4 theoretical research projects, each with a funding limit of 3 million yen per year. Young and female researchers are especially encouraged to apply.

Research Group A01 calls for studies that investigate how ECM spatiotemporal dynamics influence multicellular systems. We prioritise studies that extend beyond static analysis of specific ECM molecules and instead seek to quantitatively analyse their interactions with cells in a dynamic, spatially and temporally resolved manner. Topics may include the ECM's role in morphogenesis, tissue regeneration, fibrosis, cancer, and evolution, as well as its cross-scale dynamics and interactions with soluble factors.

Research Group A02 supports the development of designer matrices, such as reconstituted ECMs, artificial matrices, and synthetic polymer hydrogels, capable of decoupling, integrating, and manipulating individual ECM parameters. Proposals that combine such matrices with biological experimental systems, including cell-, tissue-, or organism-level models (e.g. organoids), to explore emergent cell behaviours and functions are especially encouraged. Projects focused on measuring, visualising or manipulating the physical properties or molecular organisation of the ECM are also welcome.

Research Group A03 seeks proposals grounded in mathematical or data science approaches. These may involve the integration of multidimensional datasets (e.g. gene expression, spatial distribution, live imaging, proteomics and mechanical properties), or the development of innovative mathematical models and simulations that capture the dynamics of ECM–multicellular interactions.

The above examples are illustrative. We welcome all proposals that align with the research area's objectives.

3. Research Group, Upper Limit of Annual Budget and Number of research projects scheduled to be selected

Research Group Number	Research Group	Upper Limit of Annual Budget (Million yen)	Number of research projects scheduled to be selected
A01	Operating principles of the ECM-multicellular dynamic unit	Experimental research: 4 Theoretical research: 3	12 4
A02	Manipulation of extracellular information by designer matrices		
A03	Mathematical and data science for ECM-multicellular systems		

Research Outline of Research Areas

Hibernation biology 2.0: understanding regulated hypometabolism and its function
https://hibernationbiology.jp

Number of Research Area	:	23A303	Term of Project :	FY2023-2027
Head Investigator	:	YAMAGUCHI Yoshifumi		
Research Institution	:	Institute of Low Temperature Science, Hokkaido University		

1. Details of Research Area

Most mammals are homeotherms that keep their core body temperature within a narrow body temperature range of 37°C. If the core body temperature continues to deviate from the range, a breakdown of systemic homeostasis occurs, leading to death. On the other hand, some mammals called hibernators can achieve hibernation, during which basal metabolisms and core body temperature become very low under conditions such as cold or starvation when a food, a source of body heat production, is insufficient. During hibernation and torpor, animals can maintain homeostasis and survive for a long period of time. Elucidating the mechanism of hibernation will lead to the clarification of the mechanism of whole-body homeostasis under extreme hypothermia, which could not be approached in non-hibernators such as humans, and has the potential to expand and spread to various fields. Recently, hibernation research is entering a new stage with the spread of genetic modification techniques in mammalian hibernators and the identification of neurons that induce a hibernation-like hypometabolic state in non-hibernators. This research area aims to take advantage of these breakthroughs and elucidate the mechanisms of induction and adaptation of "hibernation/torpor " and to derive new knowledge on the mechanism of "extended homeostasis," the mechanism by which homeostasis is maintained despite extreme low core body temperature.

2. Call for Proposals and Expectations for Publicly Offered Research, etc.

A wide range of research to deepen our understanding of the principles of hibernation and torpor in mammals is invited in each research category from A01 to A03. In addition to research that uses mammalian hibernators (e.g., hamsters and chipmunks), we are also seeking research that draws a picture of the essence of hibernation by comparing hibernation diversity, and research on the mechanisms that induce hibernation-like low metabolism and hypothermia in mice a hibernation-like hypometabolism (e.g. QIH: Q neurons-Induced Hypometabolism and hypothermia). Research that contributes to an understanding of the extended homeostasis observed during hibernation and torpor, not only with regard to central regulation, but also with regard to the nature of peripheral organs and the systemic organ connections with the central nervous system, is also welcome. Proposals from young and female researchers are also welcome in order to promote the future development of research in this area and to encourage research from diverse perspectives.

A01 Molecular and Neural Basis for Hibernation: Proposals are invited to examine the functions of genes, molecules, and neural circuits predicted to be involved in the control of hibernation and torpor. Although hamsters will be used as a model hibernator in this area, interspecies comparisons will be an important element in understanding the principles of hibernation. We welcome studies on torpor and hibernation-like low metabolism models in mice, as well as proposals related to the control and significance of hibernation and torpor in poikilotherms, which should contribute to our understanding of homeostasis mechanisms in mammals through comparative verification.
A02 Biological Responses Induced by Hibernation: Proposals are invited to elucidate the responses to the biological environment such as hypometabolism and hypothermia induced by hibernation and torpor, and their mechanisms at the cellular, tissue, or individual level using techniques from molecular biology, biochemistry, or neuroscience. Research that pursues not only the response in mammalian hibernators, but also the low temperature response and its mechanisms in non-hibernators such as mice and humans, as well as in organisms for which comparative physiological verification is possible, is included in this section.
A03: Elemental Technologies for Hibernation Research: Proposals are invited to introduce or propose emerging technologies and methods necessary to elucidate the mechanisms of hypometabolism induction, low temperature response, and stress tolerance that occur during hibernation and torpor. We also welcome research proposals that appropriately address problem setting in hibernation research, even for existing experimental techniques and methodologies that have not been addressed in hibernation research due to difficulties in their application at low temperatures or in mammalian hibernators.

3. Research Group, Upper Limit of Annual Budget and Number of research projects scheduled to be selected

Research Group Number	Research Group	Upper Limit of Annual Budget (Million yen)	Number of research projects scheduled to be selected
A01	Molecular and Neural Basis for Hibernation	4.3	7
A02	Biological Responses Induced by Hibernation	4.3	7
A03	Elemental Technologies for Hibernation Research	4.3	2

Research Outline of Research Areas

Dynamic reproductive lifespan: Life-long changes and fluctuations in germ cell function and risk for next generation
https://reproductivelifespan.jp

Number of Research Area	:	23A304	Term of Project :	FY2023-2027
Head Investigator	:	KITAJIMA Tomoya		
Research Institution	:	RIKEN Center for Biosystems Dynamics Research		

1. Details of Research Area

This research area aims to elucidate the dynamic nature of the reproductive lifespan by clarifying the changes and fluctuations of germ cell functions and properties across the lifespan. Traditionally, the reproductive lifespan has been defined as a period during which an individual has the ability to produce the next generation. This is based on a qualitative view in which an individual's reproductive capacity is turned on and off in a binary manner at physiological turning points. However, as recent technological innovations have quantitatively analyzed germ cell functions and properties at the cellular level, it has become clear that they can change and fluctuate throughout life in terms of reproductive capacity and risk to the next generation. In this research area, we will quantitatively characterize such changes and fluctuations in germ cells across the entire lifespan and elucidate their underlying mechanisms.

Our particular interest includes changes and fluctuations in germ cell function and the risk to the next generation throughout the adult stage. For example, in mammalian females, oocytes enter a dormant state after production and remain non-proliferative throughout the adult stage. However, as life progresses, functions such as chromosome segregation deteriorate, leading to infertility and miscarriage, and increasing the risk of aneuploidies in the next generation. In males, however, sperm stem cells acquire the ability to suppress genomic mutations, continue to proliferate, and produce numerous sperm throughout the adult stage. However, the risk of transmitting mutations to the next generation increases with age. Not limited to these examples, germ cell function and risks to the next generation change and fluctuate from various perspectives, and these changes and fluctuations shape a dynamic reproductive lifespan with the processes of "acquisition, maintenance, adjustment, and deterioration" in life. This research area brings together research and technological development focusing on "acquisition" during the developmental and juvenile stages, "maintenance and adjustment" during the adult stages, and "deterioration" during the aging stages, to conduct germ cell research throughout the entire life span, with the goal of elucidating the dynamic reproductive life span.

2. Call for Proposals and Expectations for Publicly Offered Research, etc.

Researches that focus on changes and fluctuations in germ cell function (A01) and risk to the next generation (A02) across the lifespan, as well as the development of technologies to facilitate these researches (A03), are eligible. We welcome research proposals that bring new approaches and perspectives not found in existing germ cell research, as well as research that takes advantage of technologies that have been developed in the field of germ cell research to date. While this research area is a group that gathers to elucidate the dynamic reproductive lifespan, it is intended to be a place where outstanding individual research can be enhanced through effective collaboration within the research area, and proposals based on open ideas that contribute to this concept are encouraged. In addition, as this research area seeks to promote diversity in human resources, proposals from young scientists and women scientists are strongly encouraged.

The following is a list of examples of research that we expect to see, but proposals are not limited to these, as long as a proposal contributes to the goals of this research area.

- Research to elucidate the dynamic changes and fluctuations in germ cells by taking advantage of mammalian or non-mammalian animal models.
- Research to elucidate cellular changes and mechanisms using techniques such as *in vitro* germ cell reconstitution and live imaging.
- Research that focuses on the fundamental processes of the reproductive cycle, such as germ cell differentiation, meiosis, and fertilization.
- Research to develop or utilize techniques such as micromanipulation or optical or magnetic tweezers to measure mechanical properties inside or outside of germ cells.
- Research focusing on the dynamics of long-term turnover of molecules and cells during the reproductive lifespan.
- Research that focuses on the effects of external factors, such as nutrition, on germ cell function and risk to the next generation.
- Research to elucidate mechanisms underlying reproductive lifespan by exploiting large-scale datasets such as genome cohorts related to reproductive aging.
- Research that develops or utilizes engineering and informatics technologies such as device fabrication and artificial intelligence, as well as original technologies.
- Research that theoretically elucidates the reproductive lifespan using quantitative data at the cellular level.
- Research to elucidate basic germ cell functions related to the reproductive lifespan of primates, including humans.

3. Research Group, Upper Limit of Annual Budget and Number of research projects scheduled to be selected

Research Group Number	Research Group	Upper Limit of Annual Budget (Million yen)	Number of research projects scheduled to be selected
A01	Reproductive lifespan by germ cell function	4	15
A02	Reproductive lifespan for next generation		
A03	Technology development for reproductive lifespan research		

Research Outline of Research Areas

Photosynthesis ubiquity: Supramolecular complexes and their regulations to enable photosynthesis all around the globe
https://www.photosynthesis-ubiquity.jp/en/

Number of Research Area	:	23A305	Term of Project :	FY2023-2027
Head Investigator	:	KURISU Genji		
Research Institution	:	The University of Osaka, Institute for Protein Research		

1. Details of Research Area

Photosynthesis is one of the most important topics in plant science, as it is an excellent light-driven chemical reaction in very diverse conditions from the tropics to the poles. Photosynthetic organisms cover the globe overcoming not only high or low light, but also dynamically changing light conditions, which embodies the concept of "photosynthesis everywhere". Thus, if we can address how photosynthetic organisms have adapted to diverse light conditions and understand and verify the principle of photosynthetic adaptation to diverse light environments, not only high academic impact but also pervasive social effects, such as the potential application to global warming or climate changes, will be expected.

The latest scientific research in plant biochemistry, plant physiology, and structural biology, elucidated that photosynthetic organisms have evolved specific proteins or the combination to adapt to their environments by diversifying light-harvesting antenna and its regulation system, without changing the core molecular apparatuses on the thylakoid membrane. Furthermore, these adaptations are thought to be strengthened by optimizing the regulation of gene expression, thylakoid membrane structure, and electron transfer activity. In other words, it is now becoming clear that it is important to understand environmental adaptation in photosynthesis based on the functional analysis and structural studies of various types of supramolecular protein complexes. However, it has not yet been accomplished to link the supramolecular complex structures, which are dynamically formed on the thylakoid membranes in response to environmental changes, and the physiology of various photosynthetic organisms. In this Research Area, leading scientists in structural biology, plant physiology, and biochemistry, team up with researchers in information science to tackle how the supramolecular complexes express their structural and functional features to accomplish the ubiquitous photosynthesis.

2. Call for Proposals and Expectations for Publicly Offered Research, etc.

For Publicly Offered Research, we seek for research proposals that cover biological diversity of environmental responses using non-model organisms (Research Group B01) and that pursue unique measurement techniques such as the development of new structural and functional analysis methods (Research Group B02) to fill the gaps in Planned Research Groups.

In Research Group B01, we will actively select research proposals using species that are not be covered by the Planned Research but expected to serve as important keystones in studying the principle of photosynthetic adaptation to diverse light environments. The strength of photosynthesis and plant/algal research in our country lies in the wealth of human resources who work with a wide range of photosynthetic organisms and make use of each characteristic to achieve high-quality results. Unfortunately, however, there are many researchers who are not sufficiently well funded despite their high-quality research. Therefore, in Research Group B01, we would like to encourage the participation of researchers who work with characteristic materials in a wide range of lineages, such as "Cyanobacteria in extreme environments", "Glaucophyta, one of the earliest divergent eukaryotic algal lineages without light-harvesting antennae of LHC", "Bangiophyceae, red algae with a hybrid light-harvesting antennae of LHC and PBS", and "Prasinophytes and streptophyte algae known for their characteristic physiological functions", which are important for investigating the principle of photosynthetic adaptation.

In Research Group B02, we will actively pursue research proposals that address the development of new methods for analyzing supramolecular functions based on the emerging atomic-level information. For example, vibrational spectroscopy such as Raman/IR or ultrafast spectroscopy, as well as new method development for molecular simulation using computational chemistry are expected to be applied.

In addition, we especially expect young researchers in Category II to actively apply for the program, since it is important for this Research Area to provide an appropriate environment of which they can take advantage for networking in early stages of their careers. In both B01 and B02, we expect active applications from young and female researchers.

3. Research Group, Upper Limit of Annual Budget and Number of research projects scheduled to be selected

Research Group Number	Research Group	Upper Limit of Annual Budget (Million yen)	Number of research projects scheduled to be selected
B01	Structural and environmental adaptation of supramolecules	Category I: 5	10
B02	New techniques to analyze structures/functions of supramolecules	Category II: 3	10

Research Outline of Research Areas

Plant Climate Feedbacks
https://www.plant-climate-feedback.com/

Number of Research Area	:	23A401	Term of Project :	FY2023-2027
Head Investigator	:	SATAKE Akiko		
Research Institution	:	Kyushu Univ.		

1. Details of Research Area

Volatile organic compounds (BVOCs) emitted by plant leaves and flowers play diverse roles in the Earth system. They contribute to forest scents, influence solar radiation and rainfall through aerosol formation, and drive ozone production in the troposphere. BVOC emissions vary both diurnally and seasonally, making them a phenological trait of growing importance for predicting future climate dynamics. Yet, understanding the complex interplay between plant seasonal activity and atmospheric processes remains challenging due to limited data and uncertainties in BVOC–climate interactions. To address this, we aim to establish a new interdisciplinary field, plant–climate feedback, linking genetic regulation of plant phenology with atmospheric and climate responses. Our research group is organized into two sections: Regulatory Mechanisms and Feedback. The former explores the genetic and molecular bases of BVOC emission, flowering, and leaf development, and builds models to predict plant responses to climate change. The latter focuses on developing observational tools and climate models to scale insights from individual plants to ecosystems. To integrate these efforts, we are launching the Plant Climate Integration Center, which will support advanced measurement technologies, modeling, and fieldwork. This center serves as a collaborative hub to unify expertise across plant biology, ecology, atmospheric chemistry, and climate science.

2. Call for Proposals and Expectations for Publicly Offered Research, etc.

The research scope of this field spans multiple biological and environmental levels, from genes to ecosystems and climate. To effectively analyze the resulting multilevel data, a multidimensional and integrative approach is essential. Accordingly, it is important to strengthen research areas beyond the capacity of the Core Research and Project Research Teams by engaging publicly solicited projects. Collaborations with the Planning Research Group are expected to generate strong synergistic effects. Examples of projects currently open for proposal include the following:

A01: Experimental and Monitoring Research (Biological Systems)

This category focuses on plant phenological responses and stress tolerance under climate change, aiming to elucidate underlying regulatory mechanisms. It welcomes studies on the biosynthesis of BVOCs, as well as the molecular mechanisms controlling the accumulation and release of BVOCs, including methane. Projects that examine organism–ecosystem interactions with a focus on dynamic gene expression changes are highly encouraged. Additionally, proposals integrating phytoclimatic feedback perspectives into paleoclimate and paleontology research are also invited.

B01: Experimental and Monitoring Research (Ecosystems, Atmospheric Science, Climate)

This category seeks six proposals that investigate phytoclimatic feedbacks driven by compounds other than BVOCs. It also encourages research using innovative technologies, such as automated remote systems for species identification, biomass and phenology monitoring, and the development of advanced instrumentation for measuring BVOCs and aerosols.

C01: Data Analysis and Modeling

This category, which emphasizes data science, will support five proposals focused on developing new methods for analyzing large-scale, multilevel, and high-dimensional data. It also promotes the creation of biodiversity models that incorporate genetic diversity, as well as theoretical studies that mathematically model plant–climate feedbacks for future projections. As this category does not involve experimental costs, the maximum funding per project is capped at 2 million yen, lower than in the experimental categories. All categories welcome research that extends beyond BVOCs to include other molecular systems, diverse plant species, and various geographical regions.

3. Research Group, Upper Limit of Annual Budget and Number of research projects scheduled to be selected

Research Group Number	Research Group	Upper Limit of Annual Budget (Million yen)	Number of research projects scheduled to be selected
A01	Experiment and monitoring (Biological systems)	4	7
B01	Experiment and monitoring (Ecosystem, Atmospheric Science, Climate)		6
C01	Data analyses and modeling	2	5

Research Outline of Research Areas

Extension and validation of unified theories of prediction and action
https://unifiedtheory.jp/en/

Number of Research Area	:	23A402	Term of Project :	FY2023-2027
Head Investigator	:	ISOMURA Takuya		
Research Institution	:	RIKEN Center for Brain Science		

1. Details of Research Area

Elucidating the computational principle of the brain and implementing it in artificial intelligence (AI) remains the greatest frontier of natural and computational sciences. Although AI has achieved great success by gaining inspiration from neuroscience, a significant gap still exists between human intelligence and AI.

The brain constructs a 'generative model' that expresses the dynamics of external states to enable prediction and action to minimise future risks. The Bayesian brain hypothesis and the free-energy principle have been proposed to account for the perception, learning, and action of biological organisms. However, the neuronal bases underlying these theories are yet to be elucidated. Recent developments in experimental techniques have enabled the identification of cell types and the acquisition of high-precision, large-scale data covering multiple layers and regions. Furthermore, reverse engineering of generative models has enabled the mapping of neural circuit quantities to quantities in generative models. These developments have made it practical to identify generative models from experimental data, facilitating an understanding of the brain and mind.

Thus, this project aims to use state-of-the-art techniques to measure highly accurate, large-scale neuronal activity data from the brains of various animals and reverse engineer generative models from these data, to develop a unified theory of the brain and empirically test its validity. We will measure the neural activity related to the prediction of the external world and behaviour in various species—including fish, rodents, monkeys, and humans—and test whether empirical generative models can predict brain activity, behaviour, and learning in animals. By integrating theoretical and experimental research, this project will develop a unified theory of the brain that explains perceptual prediction and action optimisation, paving the way for the development of AI with human-like thinking and early diagnostic methods for psychiatric disorders.

2. Call for Proposals and Expectations for Publicly Offered Research, etc.

To combine innovative ideas from diverse perspectives with original techniques and theories in a complementary manner, research proposals will be recruited from a wide range of fields. Emphasis will be placed on proposals that involve the necessary data science to link theory and experiments, and on the magnitude of the synergistic effect of collaborations between Publicly Offered and Planned Research. For example, we encourage applications from theoretical researchers who are willing to test their original theory empirically with data from the Planned Research, and experimental researchers who deal with functions and measurement scales—or who have unique measuring and controlling technologies—that are not handled in the Planned Research. We believe that Publicly Offered research conducted by multitalented researchers will play an extremely important role in the development of this research area. We expect active applications from young and female researchers with flexible and new perspectives. Research proposals of up to JPY 10, 5, and 3 million per year are invited. If your proposal spans both theory and experiment, please select the research group C01 or C02 that is more relevant.

C01: Theoretical research on unified theory—We invite proposals that will lead to the construction of a unified theory of the brain, proposals for theories with an original perspective targeting specific brain functions related to prediction and action, and proposals that will 'test theories by analysing data' measured by this research area and utilizing existing databases. We also emphasise AI applications and invite proposals that include ideas that could lead to the development of next-generation AI; for example, implementing energy-efficient computation using spiking neural networks.

C02: Experimental research on unification theory—We invite proposals with highly original measurement techniques and analysis methods to acquire highly accurate, large-scale neural activity in the brain related to prediction and behaviour in animals or humans. A specialised biological background is not a requirement for applicants. Proposals involving a variety of animal species will be obtained. Proposals focusing on the control and manipulation of biological information to verify theoretical predictions by examining causal relationships will also be invited.

3. Research Group, Upper Limit of Annual Budget and Number of research projects scheduled to be selected

Research Group Number	Research Group	Upper Limit of Annual Budget (Million yen)	Number of research projects scheduled to be selected
C01	Theoretical research on unified theory	10 5 3	1 4 3
C02	Experimental research on unified theory	10 5 3	3 3 2

Research Outline of Research Areas

Face-body design: Deepening and Sublimating Face-Body Based on Practical, Empirical and Constructive Research
https://face-body-design.tamacc.chuo-u.ac.jp/

Number of Research Area : 25A101 Term of Project : FY2025-2029
Head Investigator : YAMAGUCHI K. Masami
Research Institution : Chuo University

1. Details of Research Area

We aim to design the face and body of the future by expanding, deviating from, deepening, and sublimating traditional face-body studies. This effort is grounded in three key approach fields. We introduce [Practice], which integrates the face and body through artistic and performative expressions, encouraging exploration beyond conventional frameworks (expansion/deviation), and propose [Demonstrative Research], focusing on the analysis and theorization of interoception and deep bodily sensations for emotional connections among individuals (deepening/sublimation), and adopt a constructive approach [Designing] using body science and robotics to design the face and body of future humans and artificial entities (sublimation/evolution). We move beyond existing academic boundaries and establish a new interdisciplinary framework encompassing these three fields. We consider the rapid transformation of real face-body relationships driven by technological advancements and aim to foresee and support future forms of interpersonal interaction that transcend biological limitations by observing diverse face-body relationships across regions, age groups, and people with disabilities. Our ambition is to design a future society where the face and body are not sources of discrimination or suffering, but rather mediums for inclusive and empathetic expression. By simulating interoception as a body-brain network underpinning deep sensation, we explore new configurations of face-body interactions that merge biological and artificial perspectives. Ultimately, this project seeks to eliminate the distortions imposed on faces and bodies in contemporary society—such as prejudice, pain, and exclusion—by proposing a new vision of co-existence between humans and artificial entities toward a future in which the face-body serves as a platform for ethical development and inclusive education. Through this, we hope to foster a society that acknowledges embodied diversity, removes discriminatory structures, and reduces individual suffering, particularly by leveraging the transformative potential of arts and performance.

2. Call for Proposals and Expectations for Publicly Offered Research, etc.

We are accepting applications on the theme of "face and body" from various academic disciplines, including but not limited to philosophy, anthropology, psychology, cognitive science, engineering, and information science. We especially encourage applications from early-career researchers to support the development of future academic leaders by providing opportunities for cross-disciplinary and integrated collaborative research. We are particularly interested in proposals that explore areas not covered by the planned research, as well as in cross-sectional research in the three fields mentioned above. The number of cases and budget are shown in the table below. Each planned research group will provide opportunities for cross-disciplinary collaboration, shared use of equipment, access to regional surveys and performances. Research groups A and B: Various research including face and body practices such as video and theater, disability and performance, art, education and welfare, virtual reality and avatars, makeup, beauty, and body modification, etc. Research groups C, D, E: Research on AI, computer graphics, posthumous technologies including VR, unique facial features, and avatars, also including historical and sociological studies of faces and bodies. Empirical and design-oriented research is also encouraged, such as aging-related changes, bodily transformation and learning through technology, robotics, facial and bodily aesthetics, design engineering, and mathematical models of interaction, etc.

3. Research Group, Upper Limit of Annual Budget and Number of research projects scheduled to be selected

Research Group Number	Research Group	Upper Limit of Annual Budget (Million yen)	Number of research projects scheduled to be selected
A01	Joining bodies / Intercorporeal phenomenology of art	1	5
B01	Transformative face-body/ Field practice of embodied transformation	2	4
B02	Analyzing bodily habits and awareness / Ethics of face-body studies	4	1
C01	The body in death / The body in non-existence		
C02	Bodies in imagination: Between lived and symbolic embodiment		
D01	Encumbered body: Deep perception of body	1	3
D02	The face & body in the future / Habits and learning of face & body	2	10
E01	Designing artificial face & body with functional expression structure	4	4
E02	Interacting bodies: Elucidating emotion transmission processes and designing artistic performance		

Research Outline of Research Areas

Establishing the Digital History
https://dighis.rekihaku.ac.jp

Number of Research Area	:	25A102	Term of Project : FY2025-2029
Head Investigator	:	GOTO Makoto	
Research Institution	:	National Institutes for the Humanities, National Museum of Japanese History	

1. Details of Research Area

This research project proposes Digital History as a new paradigm in historical studies. Positioned within the Digital Humanities, it seeks to establish a field that integrates advanced informatics—including AI—and data infrastructure to achieve both the deepening of disciplinary expertise (vertical development; Component B) and the opening of historical knowledge to broader publics and fields (horizontal development; Component A).

Component A promotes the dissemination and democratization of historical knowledge. Through technologies such as data accumulation, open access, visualization, and crowdsourcing, it transforms historical research from an individual endeavor into a collaborative, interdisciplinary practice.

Component B aims to externalize interpretive processes traditionally performed by historians. By applying natural language processing, machine learning, and knowledge representation, it seeks a quantitative, reproducible historical methodology. Efforts include OCR for handwritten modern sources and automated extraction of named entities, enhancing both research scalability and human–machine collaboration.

By integrating Components A and B, the project theorizes a comprehensive approach to Digital History, reexamining its epistemological foundations while fostering wider participation. This integrated model—Historian in the Loop—offers a new research paradigm where human expertise and computational methods advance historical inquiry together.

2. Call for Proposals and Expectations for Publicly Offered Research, etc.

This research program aims to promote a collaborative practice of history that involves both computational approaches and participation by non-specialists. Through such collaboration, the project seeks to reconsider the essence of historical scholarship conducted by experts, while also exploring new, inclusive research frameworks that co-operate historians, computers, and broader communities. Accordingly, proposals that take distinct approaches or focus on different targets from the main planned research are welcome. Non-Japanese case studies are welcome where relevant to the project's aims.

A02 encourages studies that investigate the provenance and metadata of historical materials in relation to specific sources. Rather than merely producing catalogues, proposals should examine the transmission and transformation of historical documents from multiple perspectives. Collaborative approaches involving information scientists and archival scholars are particularly encouraged, especially those aiming to build knowledge infrastructures.

A03 focuses on the practical application of digital infrastructures to address urgent social issues in contemporary Japanese society, such as depopulation and natural disasters. It emphasizes collaborative historical practices and cultural heritage initiatives involving local communities. Proposals should consider the methodologies, ethics, and potential forms of "history as a team-based practice," engaging both experts and non-experts.

B01 seeks research that explores how computational methods, including current AI technologies, can transform specific aspects of historical methodology—such as transcription, language conversion, knowledge extraction, and visualization. Preference is given to approaches distinct from the core planned projects. Both (1) technically oriented studies developing algorithms and tools for historical source analysis, and (2) historically grounded research leveraging AI to propose new methods, are welcomed. All projects should include plans for communication with historians within and beyond the domain.

B03 invites proposals that embed scholarly knowledge into data to enhance the openness, reusability, and interpretative potential of historical datasets. The focus is not on conventional digital editions or database construction, but on innovative approaches such as: (1) encoding human reading practices into data to enable deeper computational analysis, or (2) embedding knowledge within data structures to generate new pathways for historical interpretation.

3. Research Group, Upper Limit of Annual Budget and Number of research projects scheduled to be selected

Research Group Number	Research Group	Upper Limit of Annual Budget (Million yen)	Number of research projects scheduled to be selected
A02	Advancing the methods for documentation of history information	2	4
A03	Collaborative Public Engagement for Sharing Historical Scholarship	1.5	12
B01	Advanced Information Extraction and Analysis of Historical Materials	4	7
B03	Creating Advanced Historical Texts through TEI Markup	2.5	2

Research Outline of Research Areas

Exploring quantum emergence through correlation design science
https://cds.phys.s.u-tokyo.ac.jp/

Number of Research Area	:	25A201	Term of Project :	FY2025-2029
Head Investigator	:	ARITA Ryotaro		
Research Institution	:	University of Tokyo, Graduate School of Science		

1. Details of Research Area

Emergent quantum phenomena arise from correlations among quantum degrees of freedom, such as charge, spin, orbital, and lattice, often exhibiting properties that surpass intuitive expectations. The complexity of these interactions cannot be fully explored through serendipitous discoveries alone. We aim to develop an integrated design science that spans phenomenological modeling, first-principles calculations, material synthesis, and measurement. Specifically, we focus on developing materials that demonstrate robust quantum properties under extreme conditions, exhibit extraordinary responses, and potentially serve as the foundation for discovering new fundamental laws and phenomena.

2. Call for Proposals and Expectations for Publicly Offered Research, etc.

The research teams are organized into the following six groups, with specific research objectives as follows:

Team A01 will conduct research on magnetic materials, focusing on the exploration of new quantum phases in frustrated magnets. Their work will include studying electron correlations and spin moiré engineering in topological magnetic structures, as well as investigating new systems such as altermagnets and multipolar ordered systems.

Team A02 will conduct research on novel quantum metals, focusing on the exploration of new quantum phases in materials such as kagome superconductors, multilayer graphene, cuprates, nickelates, and iron-based high-temperature superconductors. Specifically, they will focus on odd-parity orders, strong correlation-driven topological phase transitions, electron pair density waves, and quasicrystal superconductivity.

Team A03 will establish control and probing methods for exotic superconductors and explore new functionalities, particularly targeting spin-triplet superconductors, parity-lacking superconductors, and two-dimensional heterostructures.

Team B01 will design and explore novel topological materials and states by leveraging correlations in materials. Specifically, they will explore magnetic Weyl semimetals, propose and design spin devices, establish new methods for identifying symmetries in unconventional superconductors and elucidate new functionalities.

Team B02 will explore new non-equilibrium quantum phases that are not seen in equilibrium states, especially aiming for theoretical proposals and experimental observations of new electronic states on ultrafast timescales of picoseconds or less.

Team B03 will develop methodologies and construct databases fundamental to theory-driven materials development. They will also develop efficient strongly-correlated first-principles calculation methods.

As Publicly Offered Research, we envision projects that can synergize with the above plans, involving a significant expansion of research subjects. This will include the participation of surface science experts skilled in surface modification and atomic manipulation, along with specialists in crystal structure prediction and high-pressure synthesis above 20GPa. Researchers focusing on molecular solids and soft matter are also expected to join, potentially broadening the scope for new material development. We anticipate collaborating on research aimed at practical applications, such as spintronics. Furthermore, we plan to cooperate with experts who are developing foundational databases for generative AI and actively using quantum computers in theoretical research.

3. Research Group, Upper Limit of Annual Budget and Number of research projects scheduled to be selected

Research Group Number	Research Group	Upper Limit of Annual Budget (Million yen)	Number of research projects scheduled to be selected
A01	Emergent phenomena arising from spin correlations	3.5 1.5	9 8
A02	Correlation design in emergent phenomena of quantum metals		
A03	Correlation design in exotic superconductors		
B01	Design and development of topological materials		
B02	Emergent properties driven by non-equilibrium and nonlinear dynamics		
B03	Advancing materials design through data-driven and computational sciences		

Research Outline of Research Areas

The Pursuit of Functionality Woven by π-Molecular Complexity
https://pi-molecular-complexity.jp

Number of Research Area	:	25A202	Term of Project :	FY2025-2029
Head Investigator	:	YAMAGUCHI Shigehiro		
Research Institution	:	Nagoya University, Institute of Transformative Bio-Molecules		

1. Details of Research Area

The exploration of molecular photo- and electronic functions not only offers solutions to current energy and environmental issues, through the development of technologies such as thin-film solar cells, but also drives advances in biology and medicinal science through the progress of fluorescence imaging technologies. Thus, the chemistry of designing sophisticated π-conjugated molecules stands at the heart of functional molecular science. However, the creation of scientifically intriguing π-skeletons does not necessarily lead directly to the development of epoch-making materials. Bridging this gap, transforming novel molecular architectures into functional materials that address real-world societal challenges, remains a major issue in the field. In this project, we tackle this challenge by focusing on "π-molecular complexity" as a key concept for achieving outstanding molecular functionalities. Through a hierarchical approach, we aim to explore the elements of complexity in a synergistic manner. Specifically, by combining "structural complexity," which generates new classes of molecules, with "state complexity," which brings about exceptional physical properties and responsiveness, we seek to create superb π-conjugated molecules that forge new frontiers in science. Furthermore, by incorporating "functional-field complexity" optimized for these molecules, we will elaborate sophisticated π-electron systems, paving the way toward a diverse array of functional molecular science. By integrating quantum chemical understanding with advanced exploration methodologies, we aspire to establish a new integrated design principle for weaving π-molecular complexity.

2. Call for Proposals and Expectations for Publicly Offered Research, etc.

This research area consists of four groups, A01–A04, and invites cutting-edge research proposals for each as outlined below.

A01 Exploration of Structural Complexity: We invite researchers aiming to create unprecedented classes of π-skeletons through diverse approaches, such as incorporating antiaromatic or nonbenzenoid frameworks, introducing novel bonding modes or unsaturated bonds involving heavier main-group elements, and fusing two- and three-dimensional structures. Practical-scale synthesis of target molecules is also crucial. Thus, we encourage participation by those developing efficient synthetic routes to π-skeletons with high structural complexity.

A02 Control of State Complexity: This group seeks to realize distinctive physical properties by implementing strategies such as designing molecular systems with charges or spins, precisely managing excited states, and enabling reversible switching between states via molecular flexibility. "State complexity" encompasses phenomena like upconversion, reverse intersystem crossing between singlet and triplet states, and photochromism. We invite researchers focused on manipulating such states to achieve novel functionalities. In addition, given the importance of understanding molecular dynamics in complex environments, particularly in collaboration with Group A03, we also seek experts in advanced measurement and analysis techniques.

A03 Creation of Molecular Systems Incorporating Functional Field Complexity: This group aims to develop innovative molecular functions and technologies by comprehending and optimizing molecular behavior under specific conditions. The targeted functional fields include not only device and biological settings but also complex environments such as interfaces between different materials or phases. We welcome proposals with clear molecular design strategies tailored to specific functional fields, and encourage close collaboration with synthesis teams.

A04 Quantum Chemical Understanding and Exploration: This group advances the understanding of molecular behavior, such as excited-state dynamics and responses in complex environments, through high-precision quantum chemical calculations. By integrating these insights with computational exploration of chemical space, we aim to systematize essential knowledge for molecular design and materials discovery. We welcome researchers focused on enhancing high-accuracy quantum chemical methods in collaboration with experimentalists, as well as those skilled in *in-silico* screening of π-conjugated molecules.

3. Research Group, Upper Limit of Annual Budget and Number of research projects scheduled to be selected

Research Group Number	Research Group	Upper Limit of Annual Budget (Million yen)	Number of research projects scheduled to be selected
A01	Exploration of Structural Complexity	3	4
A02	Control of State Complexity	3	5
A03	Creation of Molecular Systems Incorporating Functional Field Complexity	3.1	6
A04	Quantum Chemical Understanding and Exploration	3	4

Research Outline of Research Areas

Quantum Matter Science in the Universe Opened Up by Precise Numerical Calculations
https://qm-science.org/

Number of Research Area : 25A203 Term of Project : FY2025-2029
Head Investigator : HIYAMA Emiko
Research Institution : Tohoku University, Graduate School of Science

1. Details of Research Area

We aim to construct a "unified platform for finite quantum many-body computation" based on the infinitesimally shifted Gaussian Lobe expansion method (GEM) proposed and developed by the project leader, and to describe the formation and evolution of matter in the universe from the fundamental particle level by using this platform. The goal is to obtain precise solutions for quantum many-body systems ranging from 3 to 100 particles by unifying GEM and other computational methods. Using this platform, we try to elucidate the internal materials of neutron stars and the interstellar molecular evolution process. We work on these issues in collaboration with experiments using the J-PARC accelerator and other facilities and with ultra-precise molecular spectroscopy experiments to determine heavy particle interactions and to verify the accuracy of calculations in order to improve the predictive power of calculations. We also collaborate with experiments on heavy-element nuclei to elucidate the heavy-element synthesis process in space. In addition, as a social contribution use of the unified platform, we support the development of RIKEN's compact neutron source (RAMS).

2. Call for Proposals and Expectations for Publicly Offered Research, etc.

Group A is mainly engaged in the development of GEM, and the unification of GEM with the shell model (LSM) and density functional theory (DFT), which have been used in nuclear physics over a wide range of particle numbers, to create a unified platform for high-precision quantum many-body calculations for particle numbers ranging from 3 to 100. Group B is mainly composed of experimental groups and promotes research on quantum matter in the universe. In order to achieve these goals, the theoretical groups A01, A02, and A03 will establish research items C01 and C02, which will establish calculation methods for small- to many-body systems and nuclear structure and reactions related to groups A01 and A02, and apply these calculation methods to the research to be conducted by group B. In C02, research that specializes in computational science related to the research of Group A03 is to be submitted. Details are described below.

C01: Resonant states from a rigorous few-many system viewpoint, research on solutions to quantum few-many system problems, research on the structure of hypernuclei, research on nuclear reaction calculations, research on low-density and high-density asymmetric nuclear matter, research on chiral effective theories of effective nuclear force and nuclear force, construction of energy density functional, research on nuclear response and nuclear reaction rate, calculation of heavy-element synthesis processes calculations, development of full-degree-of-freedom finite many-body quantum chemistry not based on the adiabatic approximation (BO approximation), development of multi-scale calculation methods, and theoretical studies related to B01, B02, B03, and B04.

C02: Porting and optimization of precise quantum many-body computation programs for different computational architectures such as GPUs

B01: Precision spectroscopy of interstellar molecules and other materials using optical combs and cooled molecules, precision spectroscopy to elucidate chemical reaction processes, and devices and catalysts using nuclear quantum effects.

B02: production, structure, and decay of hypernuclei, exotic hadronic many-body systems,baryon-baryon interactions taking particle correlations, etc, Baryon-baryon forces using experimental and lattice QCD data,structure of hypernuclei and high-density objects including hyperons, hadron EOS.

B03: Delayed fission in actinide regions using multi-nucleon transfer reactions, decay experiments in excited states using nuclear reactions, equation of state in dense matter by heavy ion collisions, isotope analysis in meteorites, observations of kilonovae after binary neutron star mergers, and component analysis of heavy element synthesis in metal-poor stars.

B04: Neutron reaction data observation, neutron utilization research, basic neutron physics experiments.

3. Research Group, Upper Limit of Annual Budget and Number of research projects scheduled to be selected

Research Group Number	Research Group	Upper Limit of Annual Budget (Million yen)	Number of research projects scheduled to be selected
B01	Optical Comb Precision Molecular Spectroscopy	5 2.5	10 9
B02	Baryon-Baryon interaction and hypernuclei		
B03	Heavy neutron-rich nuclei for study of heavy element synthesis		
B04	Advanced compact Neutron Sources		
C01	Theoretical Study of Finite Quantum many body system	1.5	15
C02	Theoretical study related computing science		

Research Outline of Research Areas

Drug development through data-driven evolutionary engineering of precision polymers
https://polymer-shinka.org/

Number of Research Area	:	25A204	Term of Project :	FY2025-2029
Head Investigator	:	HOSHINO Yu		
Research Institution	:	Department of Applied Chemistry, Kyushu University		

1. Details of Research Area

Synthetic polymers are promising as an inexpensive and stable next-generation drug discovery modality, since it is easy to construct a polymer library with infinite diversity by copolymerizing designed monomers. Recently, rapid progress in polymer synthesis and purification technologies has made it possible to synthesize "precision polymers" with completely defined molecular weights and monomer sequences. The precision polymers are capable of recognizing specific antigens.

In this research area, we aim to create a new interdisciplinary research area by integrating expertise from the rapidly evolving fields of precision polymer synthesis, interaction analysis, and structural analysis with data science—including computational chemistry, machine learning, and bioinformatics—and materials informatics platforms. In addition, we will work closely with researchers in pharmaceutical development–such as those specializing in chemical biology and directed molecular evolution– to integrate these approaches. Concurrently, we will conduct proof-of-concept studies using animal models in collaboration with researchers involved in pharmaceutical development and clinical practice, ultimately constructing a platform capable of continuously generating precision polymer-based therapeutics.

2. Call for Proposals and Expectations for Publicly Offered Research, etc.

This research area aims to establish a novel drug discovery modality using precision polymers through collaboration with this research area. The precision polymers are defined as "non-natural polymers consisting of repeating monomer structures with completely defined molecular weights and sequences". In addition to individual research proposals, we strongly encourage collaborative research in the area. Proposals based on the assumption that precision polymers will be supplied by Research group A are also acceptable. Studies that deal only with heterogeneous polymers are not eligible. Precision polymers include oligomers from dimers and medium-sized molecules. However, research consisting only of natural biopolymers such as nucleic acids and peptides is not eligible. At C04, we will accept research that includes only biopolymers on the premise that the research targets precision polymers.

A05 calls for technologies for creating precision polymers with defined structures. This is not limited to polyacrylics and polyolefins, but also includes polysiloxanes, polyesters, polythiophenes, peptoids, etc. Research on controlling the arrangement, conformation, topology (asymmetric synthesis, cyclization, template/template polymerization, side-chain transformation, and ligation reactions), isolation, and purification of precision polymers is also eligible. Nanoparticles, clusters, supramolecules, and complexes whose structures are precisely controlled at the atomic level are also eligible.

B04 focuses on advancing the structure and function of precision polymers in a data-driven manner. The aim is to develop precision polymer-based therapeutics that interact with target molecules with high affinity by utilizing data science technologies such as structure prediction using deep learning models and physics-based docking simulations. B04 also includes the methods to analyze the structure of precision polymers using structural analysis experiments such as NMR, chromatography, mass spectrometry, and VCD. Creating databases and combining machine learning and computational science are also eligible.

C04 calls for evolving precision polymers through evolutionary molecular engineering. developing highly functional precision polymers by applying various pharmaceutical and drug discovery technologies to synthetic polymers, realizing an unprecedented function of precision polymer through conjugation with biomacromolecules, and creating unique experimental libraries for evolutionary molecular engineering are acceptable. The development of binders (antibodies, peptides, or nucleic acids) that exhibit high affinity for precision polymers for their application as experimental tags are also acceptable.

D05 calls for pharmaceutical applications of precision polymers. Specifically, eligible research includes the development of technologies to facilitate the in vivo functionality of precision polymers, the creation of novel therapeutic strategies using precision polymers, and the evaluation and resolution of anticipated future barriers (immunogenicity, pharmacokinetics, safety) for the practical application of precision polymers.

3. Research Group, Upper Limit of Annual Budget and Number of research projects scheduled to be selected

Research Group Number	Research Group	Upper Limit of Annual Budget (Million yen)	Number of research projects scheduled to be selected
A05	Creation of precision polymers	3.5	4
B04	Data-driven evolution of precision polymers	3.5	4
C04	Co-evolving systems of precision polymers	3.5	4
D05	Pharmaceutical applications of precision polymers	3.5	4

Research Outline of Research Areas

Multi Scale Muon Imaging : From Signs to Discovery
https://msmi.jp/

Number of Research Area	:	25A205	Term of Project :	FY2025-2029
Head Investigator	:	MORISHIMA Kunihiro		
Research Institution	:	Graduate School of Science, Nagoya University		

1. Details of Research Area

Japan has long led international research on the muon, a third fundamental particle after the photon and electron. Recently, muons have gained attention beyond academia, particularly as a novel quantum probe for imaging in industry. The aim of this research area is to establish the scientific and technological foundations of Multi Scale Muon Imaging (MSMI) by harnessing the exceptional penetrating power of the fundamental particle known as the muon, and by integrating and advancing a wide range of muon measurement techniques with information science, in order to overcome the limitations of conventional measurement methods. Research Group A01–A04 will develop innovative technologies to enable new ways of visualizing diverse phenomena. B01 will demonstrate new imaging methods using accelerators, while C01 will integrate measurement techniques with mathematical and data processing tools to enhance imaging accuracy and utility. Through these efforts, we aim to accelerate and refine imaging technologies and deepen academic understanding across disciplines. MSMI will allow visualization over vast scales—from attometers to cosmic distances—revealing elementary particle phenomena, material functions, and the interiors of levees, pyramids, volcanoes, as well as atmospheric and space environments. These advances will drive a paradigm shift in imaging, fostering interdisciplinary innovation and contributing to a more prosperous future society.

2. Call for Proposals and Expectations for Publicly Offered Research, etc.

This research area promotes the advancement of muon imaging technologies and their application across a broad range of spatial and disciplinary scales. To this end, we have organized a set of Research Groups spanning particle physics, astrophysics, accelerator science, materials science, civil engineering, earth and planetary sciences, and signal processing. We are establishing the "MSMI Technology Platform" as a foundation for technical integration across these projects, to ensure that the entire research area progresses in a coordinated and synergistic manner. These Research Groups are designed to play complementary roles both in terms of technical focus and target scale. However, given the wide-ranging nature of muon imaging technologies and their applications, the Research Group alone cannot fully cover the potential of this field. Therefore, for the FY2026–2027 open call for proposals, we seek the following types of research that contribute to expanding the scope of the field beyond the current framework, while maintaining collaboration with the existing Research Groups. Integration with methods from other fields: We welcome collaborative proposals that combine approaches from this research area with different measurement principles or techniques, especially from researchers who possess unique technologies or valuable data. Novel approaches to muon generation, acceleration, detection, and imaging: Proposals introducing innovative methods not currently covered in this research area are also welcome. While they may initially be independent, we expect them to evolve through collaboration with the MSMI Technology Platform and the Research Groups. We also encourage bold and original ideas that contribute to the development of the field, even if they fall outside the standard categories. Applicants should select the most relevant research topic number from the existing Research Groups when submitting proposals. If the proposal relates to multiple topics, please indicate this clearly in the application. After selection, coordination with one of the Research Groups will be arranged by the program committee. The research proposal should clearly describe how the applicant's technologies or ideas will contribute to the goals of this research area, and provide concrete plans for potential collaboration or joint research with Research Groups. With a funding cap of 7 million yen per proposal, the call is designed to support relatively large-scale equipment development or experimental studies. Ambitious proposals from researchers with no prior experience in muon research are also welcome.

3. Research Group, Upper Limit of Annual Budget and Number of research projects scheduled to be selected

Research Group Number	Research Group	Upper Limit of Annual Budget (Million yen)	Number of research projects scheduled to be selected
A01	Imaging Phenomena	7 3	2 14
A02	Imaging Functions		
A03	Imaging Interiors		
A04	Imaging Environments		
B01	Expanding Imaging		
C01	Refining Imaging		

Research Outline of Research Areas

Biodiversity driven by mobile DNA elements and hosts : host response and trans-generation
https://mobilegenome.k.u-tokyo.ac.jp/

Number of Research Area	:	25A301	Term of Project :	FY2025-2029
Head Investigator	:	ISHIGURO Kei-ichiro		
Research Institution	:	Kumamoto University, Institute of Molecular Embryology and Genetics,		

1. Details of Research Area

In the human genome, only about 2% of the genetic material codes for proteins, while the remaining 98% is largely composed of transposons, endogenous retroviruses, or fragmented DNA sequences derived from them—collectively referred to as mobile DNA elements. Most organisms' genomes contain a substantial amount of mobile DNA elements. Due to their ability to transpose and amplify, mobile DNA elements have often been regarded from a negative perspective, as they introduce mutations into the host genome, potentially leading to diseases or even species collapse. However, recent research has revealed that they also contribute to genomic sequence variation and higher-order genome structural changes, facilitating the acquisition of novel genetic functions and phenotypic diversification. This suggests that mobile DNA elements are not merely harmful to their hosts but can also exert positive effects.

To fully understand the processes of phenotypic diversification, speciation, and evolution across various species, it is crucial to deepen our understanding of the positive roles of mobile DNA elements. This research area, therefore, aims to investigate past and present host–mobile DNA element interactions, exploring their potential contributions to novel trait acquisition, speciation, and evolution. While somatic mutations caused by mobile DNA elements are limited to individual lifetimes, their impact on speciation requires an understanding of how genomic structural changes—including those not involving direct sequence alterations—can be transmitted through the germline and persist across generations. Until recently, short-read sequencing technology has made it difficult to accurately annotate mobile DNA elements, preventing a comprehensive understanding of their role across nearly all species. Furthermore, experimentally reconstructing the evolutionary process poses significant challenges. However, the increasing adoption of long-read sequencing technologies has created new opportunities to explore the positive effects of mobile DNA elements in greater depth.

This research area is structured into two core research projects: A01: "Host Response" and A02: "Transgenerational Transmission". By integrating experimental biology with genomic informatics, this initiative aims to: 1. Develop experimental methodologies that compress natural evolutionary timescales to address questions that cannot be resolved by interspecies comparative orthology. 2. Establish collaborative research frameworks that incorporate the latest technologies and focus on a diverse range of organisms.

2. Call for Proposals and Expectations for Publicly Offered Research, etc.

Proposals involving diverse species or novel analytical techniques not covered by the core research teams are strongly encouraged. In particular, experimental research proposals that integrate with the mobile DNA element analysis support team are highly welcomed. To ensure the sustainable development of this field, applications from early-career and female researchers are also strongly encouraged.

A01: "Host Response – Mechanisms of Host-Element Interactions Induced by Internal and External Factors"

This research theme focuses on understanding the mechanisms by which various internal and external stressors—such as rising temperatures or viral infections—activate mobile DNA elements. It also explores how interactions between mobile DNA elements and endogenous systems influence host chromatin, gene expression, and phenotypic outcomes, particularly in the F1 generation. Proposals should consider the regulation of mobile DNA elements and their contribution to phenotypic variation, while clearly distinguishing this research from general chromatin or epigenetics studies.

A02: "Transgenerational Transmission – Functional Roles of Host-Element Interactions in Reproductive Cycles and Their Transmission Across Generations".

To understand how host responses to mobile DNA elements contribute to species diversification, this research theme investigates the transmission mechanisms of mobile DNA elements during reproductive cycles, including horizontal and transgenerational transmission. This project aims to determine how they contribute to individual variation, diversification, speciation, and ultimately, evolution.

3. Research Group, Upper Limit of Annual Budget and Number of research projects scheduled to be selected

Research Group Number	Research Group	Upper Limit of Annual Budget (Million yen)	Number of research projects scheduled to be selected
A01	Host Response	4.5	7
A02	Transgenerational Transmission	4.5	7

Research Outline of Research Areas

Integrated understanding of RNA-induced perturbations in living systems and their adaptive mechanisms
https://perturb-rna.m.chiba-u.ac.jp/

Number of Research Area	:	25A302	Term of Project :	FY2025-2029
Head Investigator	:	KAWAHARA Yukio		
Research Institution	:	The University of Osaka Graduate School of Medicine		

1. Details of Research Area

Organisms have adapted to invasive RNAs or the expression of RNAs that perturb their own systems over a long period of time by developing mechanisms to eliminate or suppress them, and sometimes by co-opting them. However, with the frequent emerging of viral infections in recent years and the practical application of artificial mRNAs, the opportunities to accept RNAs whose medium- to long-term effects are unclear are rapidly increasing. To address these pressing issues, we define perturbing RNAs (perRNAs) as a group of RNAs that perturb living systems, whether exogenous or endogenous, and aim to characterize them by bringing together researchers from different fields to comprehensively understand the regulatory mechanisms of perRNAs and their roles in disease and adaptation to environmental changes. These perRNAs include exogenous perRNA derived from viruses and other sources, and endogenous perRNA such as retrotransposon-derived RNA and endogenous double-stranded RNA with potential risk of perturbing living systems. Our attempt to reconsider RNA from the viewpoint of negative functions will bring about a paradigm shift from preconceived notions about RNA. The results of this research area will be widely disseminated as a "perRNA database" to share the novel concept of perRNA with researchers in Japan and overseas. This will make it possible to elucidate perRNAs associated with a wide range of species, diseases, and environmental changes, and to predict their physiological effects with a high degree of accuracy. As a result, physiological phenomena, causes of diseases, and adaptation mechanisms to environmental changes will be clarified, leading to the development of new disease treatments and RNA medicines with fewer adverse reactions.

2. Call for Proposals and Expectations for Publicly Offered Research, etc.

In Research Group A01, a group of perRNA candidates will be extracted from public databases and experimental data obtained by each research group based on their specific ability of perturbations in living systems, and characterized in terms of sequence, structure, and dynamics, using bioinformatics analysis that incorporates machine learning. Note that perturbations by proteins translated from mRNAs with aberrant splicing or mutations is, in principle, outside the scope of this research area due to the definition of perRNA. In Research Group A02, we aim to comprehensively understand the mechanisms that eliminate or suppress perRNAs and the co-opting mechanism that enables coexistence of perRNAs in the host. To achieve this goal, we call for publicly offered research proposals focusing on the following themes and promote collaboration with planned research groups to further broaden the scope of the field. In addition, this field offers a variety of technical support, including bioinformatics analysis, full-length RNA library production, cryo-electron microscopy analysis, and genome-edited mouse production, which are expected to be actively utilized.

1. Research to elucidate the characteristics of perRNAs in various viruses and organisms and the molecular mechanisms that control them (A01, A02): Proposals on viruses and organisms, especially bacteria, yeast and plants, are welcome, as they are important for gaining an overall picture of perRNAs through collaboration with the planned research groups. Research proposals that offer an adaptive model for perRNAs that perturb living systems in specific environments are also important. Exploratory research proposals on novel perRNAs that are not involved in existing RNA categories are also highly welcome.
2. Research on diseases and physiological functions involving perRNAs (A01, A02): since endogenous perRNAs that are suppressed in developmental and aging processes, and various types of cancer are expected to be expressed and play a significant role in metabolism and pathological conditions, we expect proposals focusing on certain perRNAs related to diverse physiological phenomena and diseases. We also welcome research on perRNA-mediated regulatory mechanisms in intractable diseases such as autoimmune and neurodegenerative diseases, as well as research that proposes therapeutic modalities targeting these diseases.
3. Research on extraction of perRNAs from public transcriptome database (A01, A02): research on comprehensive search and characterization of perRNAs from public transcriptome database for a wide range of virus species and diseases is welcome, as it will provide fundamental information to improve the accuracy of predicting physiological effect of perRNAs. Research proposals for development of original algorithms to enable prediction of physiological effects of perRNAs are also welcome.

3. Research Group, Upper Limit of Annual Budget and Number of research projects scheduled to be selected

Research Group Number	Research Group	Upper Limit of Annual Budget (Million yen)	Number of research projects scheduled to be selected
A01	Identification and characterization of perRNAs	4	20
A02	Elucidation of molecular mechanisms that manipulate perRNAs		

Research Outline of Research Areas

Autophagy expanded: decoding membrane interface biology
https://makukaimen.umin.jp/

Number of Research Area	:	25A303	Term of Project :	FY2025-2029
Head Investigator	:	NODA Nobuo		
Research Institution	:	Institute for Genetic Medicine, Hokkaido University		

1. Details of Research Area

It has become evident that proteins and lipids, which are the principal constituents of life, exhibit collective behavior that transcends molecular species at membrane interfaces. This molecular cooperation occurring at membrane interfaces has also been found to play a role in an extraordinarily diverse array of biological phenomena, including autophagy, in eukaryotic cells that possess a highly developed and complex intracellular membrane system. In this research area, researchers applying advanced methodologies to investigate various membrane interface phenomena are coming together to elucidate the diverse functions of membrane interface molecular cooperation and, by identifying the conserved mechanisms, to establish fundamental principles that will give rise to membrane interface biology. Furthermore, by clarifying the relationship between abnormalities in membrane interface phenomena and diseases, as well as advancing the development of artificial control methods, this endeavor seeks to lay the groundwork for pharmaceutical applications aimed at disease prevention and treatment.

2. Call for Proposals and Expectations for Publicly Offered Research, etc.

In this research area, we bring together researchers from biochemistry, cell biology, structural biology, physical theory, computational science, chemical biology, and other fields, with the aim of establishing "membrane interface biology." Our goals include understanding the mechanisms and physiological functions of molecular cooperation at membrane interfaces, particularly in autophagy and a variety of other life phenomena involving lipid membranes, and envisioning pharmaceutical and medical applications by artificially controlling this membrane interface molecular cooperation. Consequently, we are widely seeking research proposals in the publicly offered category that align with these objectives and address a breadth of topics not covered by the planned research projects. In this research area, it is crucial that researchers working on diverse life phenomena and methodologies gather and actively engage in collaborative research. We also welcome bold proposals from young researchers who represent the next generation.

A01 Membrane interface biology of autophagy

This category focuses on research aiming to elucidate the membrane interface molecular cooperation that underpins complex membrane dynamics in multimode autophagy and organelle membrane morphology control in selective autophagy. Research on autophagy that does not address membrane interface molecular cooperation is not eligible. We particularly encourage proposals that are not covered by the planned research, including those on membrane dynamics in microautophagy, the selective autophagy of various organelles, autophagy in a wide range of model organisms, and investigations that seek to clarify the operational principles of autophagy membrane dynamics.

A02 Expanding membrane interface biology

This category addresses research aimed at elucidating membrane interface phenomena that support various life processes other than autophagy, focusing on studies not covered by the planned research. The research must deal with membrane interface molecular cooperation. We especially invite unique proposals that will contribute to expanding and advancing membrane interface biology, such as studies related to diseases or phenomena that extend beyond a single cell.

A03 Analytical and control methods in membrane interface biology

This category focuses on research aimed at developing and applying analytical and control technologies that will propel the advancement of membrane interface biology. Relevant projects include those not covered by the planned research, such as special or advanced methods for analyzing membrane interface molecular cooperation, as well as proposals for the development of diverse approaches to artificially control membrane interface molecular cooperation.

3. Research Group, Upper Limit of Annual Budget and Number of research projects scheduled to be selected

Research Group Number	Research Group	Upper Limit of Annual Budget (Million yen)	Number of research projects scheduled to be selected
A01	Membrane interface biology of autophagy	4	6
A02	Expanding membrane interface biology	4	6
A03	Analytical and control methods in membrane interface biology	4	4

Research Outline of Research Areas

Establishment of pH Biology
https://phbiology.rcast.u-tokyo.ac.jp/

Number of Research Area	:	25A304	Term of Project : FY2025-2029
Head Investigator	:	OGINUMA Masayuki	
Research Institution	:	RIKEN Pioneering Research Institute (PRI) / RIKEN Center for Biosystems Dynamics Research (BDR)	

1. Details of Research Area

This research area explores the fundamental mechanisms by which living organisms respond to fluctuations in pH—one of the most essential chemical parameters of life. Historically, the prevailing belief has been that cytoplasmic pH remains constant and stable, a misconception that has limited global research into how organisms truly sense and adapt to pH changes. Our project challenges this outdated view by proposing a new paradigm: that organisms have evolved core mechanisms to cope with pH fluctuations ("pH stress response") and have further developed sophisticated systems to utilize pH changes as biological signals ("pH signaling"). Through an interdisciplinary and integrative approach—encompassing a wide diversity of species and leveraging cutting-edge technologies for pH visualization and manipulation—we aim to uncover the fundamental principles underlying these processes. In doing so, we seek to fundamentally redefine the role of pH in biology and establish a new academic field: pH-responsive biology

2. Call for Proposals and Expectations for Publicly Offered Research, etc.

To deepen our understanding of how organisms sense and respond to pH dynamics and to advance technologies for pH visualization and manipulation—the planned projects in this research area are conducting broad analyses across diverse organisms. Complementing these efforts, Publicly Offered Research projects will address fundamental biological questions beyond the scope of the planned projects, delving into the core of pH biology. These studies will explore the diverse roles of pH across the life course—from fertilization to aging—revealing how pH dynamics shape biological processes. We also encourage the integration of physical, chemical, and mathematical approaches, including simulations of pH-dependent changes in protein structure, biochemical reactions, and inorganic systems. Through such interdisciplinary efforts, we aim to further develop the emerging field of pH-responsive biology.

A01: Mechanisms of pH Stress Response: Publicly Offered Research projects are encouraged to explore physiological and pathophysiological mechanisms of pH stress responses that are not covered by the planned projects—for example, respiratory or renal functions, among others. We particularly welcome proposals focusing on organisms adapted to harsh pH environments, including freshwater and brackish-water species, as well as bacteria and archaea. These studies should aim to uncover molecular-level mechanisms by which organisms sense and respond to pH stress, and how disruptions in these responses may contribute to disease.

A02: Mechanisms of pH Signaling: Research on pH signaling remains a largely uncharted frontier. We therefore encourage proposals that offer novel perspectives and interdisciplinary approaches. In particular, we welcome studies that aim to elucidate pH-based or pH-associated chemical signaling mechanisms throughout the entire life course—from fertilization and embryonic development to growth and aging. We also invite investigations into unique pH-dependent phenomena across a broad spectrum of organisms, including unicellular species.

A03: Development of pH Visualization and Manipulation Technologies : Publicly Offered Research projects are also expected to propose innovative technologies for the quantitative analysis of pH responses, especially those that surpass current capabilities. This includes the development of real-time pH imaging techniques—using novel probes and techniques—at subcellular or whole-organism scales. We also welcome simulations that model how pH fluctuations affect protein structures, biochemical pathways, or inorganic systems. In particular, we encourage participation from researchers in AI and mathematical modeling, whose expertise can significantly enhance the overall progress of the program.

3. Research Group, Upper Limit of Annual Budget and Number of research projects scheduled to be selected

Research Group Number	Research Group	Upper Limit of Annual Budget (Million yen)	Number of research projects scheduled to be selected
A01	Mechanisms of pH Stress Response	4.2	16
A02	Mechanisms of pH Signaling		
A03	Development of pH Visualization and Manipulation Technologies		

Research Outline of Research Areas

Symplast; intercellular communication mechanism in plants under environmental changes
https://plant-symplast.jp

Number of Research Area	:	25A305	Term of Project :	FY2025-2029
Head Investigator	:	NOTAGUCHI Michitaka		
Research Institution	:	Kyoto University, Graduate School of Science		

1. Details of Research Area

Individual plant cells are not completely independent, but are connected by plasmodesmata that penetrate the cell walls of neighboring cells and connect protoplasms. The protoplasmic space continuously shared throughout the body via plasmodesmata and phloem sieve tubes is called symplast. The symplast pathway has been thought to be used for translocation of nutrients such as sugars and amino acids. However, recent studies have revealed that the symplast is a site of signal transduction, and that plant development and environmental responses are regulated by the sharing of various signaling molecules between cells and tissues. This research project will seek to elucidate the nature of plant growth regulation and environmental adaptation mechanisms under environmental fluctuations by reconsidering intercellular and systemic signal transduction from the viewpoint of the symplast.

2. Call for Proposals and Expectations for Publicly Offered Research, etc.

Researchers engaging in the Publicly Offered Research are expected to work toward the goal of this Research Area, which is to elucidate molecular mechanisms of plant growth regulation and environmental adaptation through the symplast, and to promote the research through active discussion and joint research with the Planned Research Group.

Superior research proposals are desired that fully reflect the target direction of the aforementioned Research Area, and take a bold approach to elucidating the regulatory mechanisms of symplast formation and function during various environmental responses and in individual developmental events. It is encouraged that proposals will embody diverse points of departure that leverage the strengths of each applicant, such as by complementing the goals of the Planned Research, or adopting a perspective that differs from that of the Planned Research. In addition, proposals are encouraged that address evolutionary aspects of symplast formation and functional patterns in the developmental processes of individual plants. As long as proposals seek ambitiously to elucidate growth regulation and environmental response mechanisms with a basis of symplast function, specific previous research achievement with respect to plasmodesmata and symplast is not necessarily required, but proposals are expected to encompass molecular mechanisms that involve in symplast systems.

With respect to research implementation of the Publicly Offered Research, the Research Support Center established in this Research Area (Imaging Section, Electron Microscopy Imaging Section, Next-generation Sequencing Section, Mass Spectrometry Section, Comprehensive Protein Interaction Analysis Section, and Evolutional Analysis Section) may be utilized. Furthermore, proposals for the Publicly Offered Research that involve extensive use of new research technologies complementing those of the Research Support Center, are encouraged. Innovative, interdisciplinary, and ambitious proposals capable of making major contributions to the symplast research from a broad plant science perspective are encouraged.

With respect to the three core research perspectives of this Research Area (symplast formation mechanism; intercellular and systemic mobile molecules; and plant growth regulation and environmental adaptation through the symplast), the objective is that each Research Group, while having its respective major research focus, will promote mutually cooperative, organically collaborative research; and to encourage achievement of this objective, Research Groups shall not be strictly divided. As such, all applications for the Publicly Offered Research shall be attached to Research Group A01.

3. Research Group, Upper Limit of Annual Budget and Number of research projects scheduled to be selected

Research Group Number	Research Group	Upper Limit of Annual Budget (Million yen)	Number of research projects scheduled to be selected
A01	Symplast; intercellular communication mechanism in plants under environmental changes	3.5	16

Research Outline of Research Areas

Next-Generation Developmental Engineering
https://nextdevbio.cira.kyoto-u.ac.jp

Number of Research Area	:	25A306	Term of Project :	FY2025-2029
Head Investigator	:	TAKASHIMA Yasuhiro		
Research Institution	:	Center for iPS Cell Research and Application (CiRA), Kyoto University		

1. Details of Research Area

The fundamental question of how an apparently simple cluster of cells develops into a living organism remains unresolved. In recent years, it has become possible to generate reconstructed embryos—referred to as stem cell-based embryo models (in vitro embryo models)—that mimic early pre- and post-implantation development using only stem cells in vitro. This breakthrough opens new avenues for investigating early human embryogenesis, which has long been challenging due to ethical and technical limitations.

However, all in vitro embryo models reported to date arrest shortly after implantation and fail to undergo organogenesis. This suggests that current in vitro embryo models lack the developmental robustness inherent to in vivo embryos generated by normal fertilization.

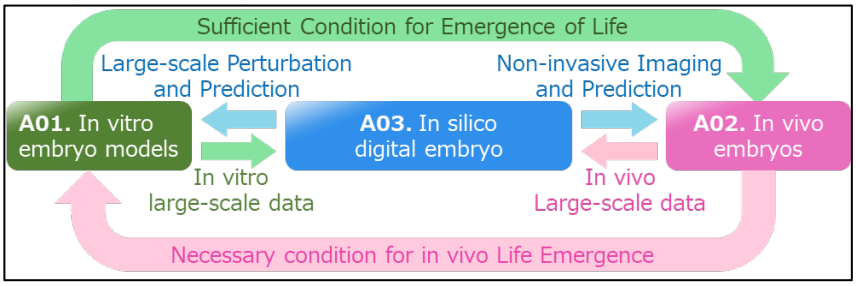
This research area aims to utilize in vitro embryo models to constructively elucidate the principles of the emergence of life, wherein a collective of cells functions and develops as a living entity. To systematically understand both the emergence of life and embryonic integrity control systems, we will employ cutting-edge technologies—such as omics-based analyses of intercellular interactions and transcription factor networks, single-cell profiling, and advanced optical measurements—to perform multidimensional and large-scale analyses. Based on the acquired data, we will construct digital embryo models to predicting the key factors driving the emergence of life by in silico simulations.

2. Call for Proposals and Expectations for Publicly Offered Research, etc.

In this research area, we aim to transform conventional developmental bioengineering—traditionally centered on the manipulation of In vivo embryos and whole organisms—into next-generation life engineering by integrating emerging technologies such as In vitro embryo models and In silico digital embryo models. The ultimate goal is to constructively understand and control the molecular mechanisms through which cellular assemblies give rise to life.

In Research Group A01, we will develop the foundational stem cells and construct In vitro embryo models that encompass implantation, organogenesis, and organismal formation. In Research Group A02, we will use In vivo embryos to elucidate the mechanisms ensuring embryonic development, through the analysis of maternal and paternal factors, transcriptional programs, epigenomic states, and advanced embryological manipulations.

To integrate these two contrasting approaches, Research Group A03 will apply the latest digital science methodologies to measure and predict the principles underlying life phenomena. Specifically, A03 will consolidate multimodal datasets acquired in A01 and A02 using cutting-edge measurement technologies, and construct a unified digital embryo models for In silico prediction. The three projects will operate in concert, forming a feedback loop of data acquisition, interpretation, and prediction to unravel the mysteries of the emergence of life and embryonic integrity control systems (see figure).



Publicly Offered Research is expected to contribute to the overall goals of the project by offering perspectives not covered by the Planned Research, and to complement and collaborate bidirectionally with A01–A03. Possible examples include studies using imaging, metabolism analysis, or AI to measure parameters of In vitro and In vivo embryos, as well as ex vivo embryo culture studies. Rather than modeling each component separately, it is crucial to build an integrated digital twin of the embryo. To this end, the development of novel algorithms such as multimodal foundation models that integrate multiple biological features is essential for In silico simulations, and proposals in this direction are highly encouraged. Beyond these examples, we welcome diverse and ambitious research proposals aligned with the goals of this research area.

3. Research Group, Upper Limit of Annual Budget and Number of research projects scheduled to be selected

Research Group Number	Research Group	Upper Limit of Annual Budget (Million yen)	Number of research projects scheduled to be selected
A01	In vitro embryo models	4.5	5
A02	In vivo embryos	4.5	4
A03	In silico digital embryos	4.5	5

Research Outline of Research Areas

EPIC assembly: emergence of novel functional assembly by Evo-Physico Information Coupling
https://epic-assembly.crmind.net/

Number of Research Area	:	25A401	Term of Project :	FY2025-2029
Head Investigator	:	KOBAYASHI Tetsuya J.		
Research Institution	:	The University of Tokyo , Institute of Industrial Science		

1. Details of Research Area

Our project seeks to elucidate the principles that govern the emergence and subsequent refinement of novel biological functions.
We tackle this question through the lens of assemblies—architectures constructed from heterotypic biological components. Proteins are molecular assemblies of amino-acid residues; intracellular reaction networks and neural circuits constitute circuit assemblies of chemicals or neurons; and multicellular organisms can be regarded as cellular assemblies. Because assemblies are intrinsically combinatorial, they furnish a structural framework through which evolution can explore an open-ended landscape of functional diversity and complexity. Most biological assemblies operate far from thermodynamic equilibrium, underscoring the need to understand how nonequilibrium physics and evolutionary dynamics are coupled to shape function. Leveraging state-of-the-art imaging and sequencing technologies, we will acquire quantitative data on molecular, circuit, and cellular assemblies, construct mathematical models, and develop informatic methods that seamlessly integrate experiment with theory. Drawing on nonequilibrium statistical physics, information theory, and large-deviation theory, we aim to reveal the universal and intertwined roles of energy dissipation, evolutionary processes, and information flow in the emergence of biological functionality. The experimental, computational, and theoretical technologies advanced in this project are expected to find broad application in biomimetics, bioengineering, and artificial intelligence.

2. Call for Proposals and Expectations for Publicly Offered Research, etc.

In this research area, we call for publicly offered research proposals for the three research groups, each of which aims to
(C01) broaden the range of systems covered in this area by linking biological function and its evolution across a wide spectrum of biological assemblies.
(C02) establish the technical foundation of the field by constructing the theories, informatics tools, and measurement or engineering technologies required to unravel the coupling of biological function and its evolution for diverse assemblies.
(C03) extend the area's impact by applying its findings to other disciplines—such as bioengineering and information science.
We strongly encourage applications from early-career researchers who can drive their own projects, as well as from scientists with a variety of research backgrounds. We especially welcome proposals offering distinctive experimental platforms, theoretical frameworks, or informatics technologies—and capable of advancing the research area in close collaboration with the planned research groups and with other publicly offered teams. While proposals integrating experiment and theory are highly desirable, we also invite (i) experimental studies on function and evolution of biological assemblies, which can be advanced by the aid of the theories or informatics methods developed in this research area, and (ii) theoretical models, computational analyses, or measurement/engineering techniques, which align with the experimental phenomena targeted by this area.
Other biological assemblies than molecular, circuit, and cellular ones also fall within the scope of this call, provided that the relationship between their function and evolution will be addressed. The term "informatics" encompasses bioinformatics, model inference, deep learning, and related methodologies. We also recognize the importance of general mathematical and information-engineering techniques that, even without direct link to assemblies, enable the prediction or exploration of exceptional events such as emergence and attainment of new function. Finally, while nonequilibrium processes are a central theme of the area, some equilibrium phenomena—such as protein folding—can also be pivotal for function and evolution; proposals therefore need not be restricted to nonequilibrium systems.

3. Research Group, Upper Limit of Annual Budget and Number of research projects scheduled to be selected

Research Group Number	Research Group	Upper Limit of Annual Budget (Million yen)	Number of research projects scheduled to be selected
C01	Experimental investigation of assembly phenomena	Experimental proposal: 5 Theoretical informatic proposal : 2.5	10
C02	Development of methodologies for analyzing assemblies		10
C03	Exploration of informatic and engineering applications of assemblies		

Research Outline of Research Areas

Life in Space: the Exploration of Environmental Responses and Robustness of Biological Systems to Predict the Future of Life on and Beyond Earth
https://www.life-in-space.org/home-en

Number of Research Area	:	25A402	Term of Project :	FY2025-2029
Head Investigator	:	MURATANI Masafumi		
Research Institution	:	University of Tsukuba		

1. Details of Research Area

In order to support humanity's long-term expansion into space, it is essential to develop novel approaches to health management and food production. This endeavor requires a deeper understanding of the diverse biological responses embedded within living organisms. Predicting the future of life as it ventures into space—after having evolved on Earth over the past 4 billion years—can also offer a new perspective for interpreting functions acquired by terrestrial life in response to ancient environmental changes. Biological experiments conducted in the microgravity environment aboard the International Space Station (ISS) have begun to reveal unique traits of life that are not readily observed under Earth conditions. Although such experiments are still limited in number, comparisons with well-established terrestrial life science data have uncovered previously hidden biological behaviors. The studies conducted in ISS have revealed that microgravity not only impairs the anti-gravitational functions of bones and muscles that support posture and movement in vertebrates but also causes broader physiological changes. Intriguingly, some of these changes appear to reflect a regression toward ancestral traits that were once acquired during the evolutionary transition from sea to land. In other words, physiological mechanisms and differentiated cellular states that are normally maintained to preserve homeostasis seem to revert to a state resembling ancestral characteristics in space—a phenomenon of great scientific interest.

This research area conceptualizes these changes as "space-induced atavistic phenotypes" and hypothesizes that traits previously considered evolutionarily fixed may in fact represent ongoing physiological adaptations to Earth's environment. Studies involving mice in space have also indicated the presence of transgenerational effects, suggesting that life, even over a few generations, might undergo profound transformations under low-gravity conditions like those on the Moon (1/6 G) or Mars (3/8 G), potentially giving rise to entirely novel biological states.

This area seeks to elucidate the robustness of regulatory systems that maintain homeostasis and cellular differentiation on Earth, as well as the plasticity that permits re-expression of ancestral traits under microgravity. We will investigate these opposing characteristics through the analysis of genome and epigenome regulation, as well as transgenerational effects. Moreover, methods to artificially induce latent physiological functions adapted to Earth's environment may lead to rediscovery of unknown genomic functions and open new avenues for their application in health care, food production, environmental sciences, and biomimetics—both on Earth and in space.

2. Call for Proposals and Expectations for Publicly Offered Research, etc.

In the A01 group, we welcome researchers with unique experimental systems capable of investigating how environmental or physical stimuli influence the homeostatic maintenance of tissues and organs from developmental, anatomical, or physiological perspectives. In A02 group, we invite research on environmental stress responses and transgenerational effects using unicellular or multicellular organisms, as well as cell culture models. Studies addressing extreme environmental conditions—such as temperature, pressure, desiccation, and radiation—within the realm of astrobiology are also within scope. A03 group and its associated studies aim to develop a transdisciplinary field that integrates theoretical frameworks and experimental systems across a wide variety of organisms, from microbes to humans, extrapolating findings from A01 and A02. These efforts will contribute to understanding and predicting the past and future of life on a cosmic scale. The establishment of novel experimental platforms for post-ISS space biology is also encouraged.

We particularly encourage proposals that aim to understand gravity response and mechanosensory systems through comparative biology of terrestrialization in plants and animals, with an emphasis on evolutionary diversity and phylogenetic breadth. For transgenerational research, we welcome approaches not only from the biological sciences but also from psychiatry, social sciences, and data science to explore phenomena potentially relevant to planetary migration.

3. Research Group, Upper Limit of Annual Budget and Number of research projects scheduled to be selected

Research Group Number	Research Group	Upper Limit of Annual Budget (Million yen)	Number of research projects scheduled to be selected
A01	Cellular differentiation and homeostasis of tissues and organs	5	6
A02	Environmental stress response and transgenerational effects	3	12
A03	Unique experimental systems across microorganisms, model and non-model animals, photosynthetic organisms, and humans		

4. Review Panels and Other Matters

(1) Concerning KAKENHI Review

Omitted

(2) Review Methods and Other Matters

The review for Grants-in-Aid for Scientific Research is carried out based on application documents in the Academic Deliberation Council for Science and Technology of MEXT. Moreover, the review takes place behind closed doors.

As applicants provide unpublished research results and research ideas, and other information in their Research Proposal Documents on the premise that the review will be conducted privately, JSPS asks reviewers to maintain their confidentiality obligations, including the following.

- In order to protect the intellectual property of the applicants and ensure fairness of the peer review system, reviewers must not disclose the content of the Research Proposal Documents or any other information, in whatever form, that they learn in the course of the review to any outside parties including their superiors, colleagues, or subordinates.
- Reviewers must not use any information that they learn in the course of the review for their own benefit.
- Reviewers have the obligation to keep the review materials under strict control.

For details on "assessment rules" ("Rules concerning the assessment for Grants-in-Aid for Scientific Research" (decided by the Research Grant Screening Section in the Subdivision on Science, the Academic Deliberation Council for Science and Technology on November 12, 2002) including the review criteria for each research category, please check the website for Grants-in-Aid for Scientific Research of MEXT (URL: https://www.mext.go.jp/a_menu/shinkou/hojyo/1284403.htm). ("Rules concerning the assessment for Grants-in-Aid for Scientific Research" for FY2026 have already been released as of the time of this call for proposals.)

In Transformative Research Areas (A) (Publicly Offered Research), each reviewer in the committee dedicated to the particular research area (which will also include researchers who are outside of the research area in question) will conduct a two-stage document review. The panel reviews will not be conducted.

① In reviews in the first stage, a few reviewers who are assigned to a proposal according to research group will conduct document reviews.

② In reviews in the second stage, all reviewers will conduct document review with referring comments made by other reviewers in the first stage.

※ In the review process, the reviewers can utilize, as necessary, the "researchmap" and the Grants-in-Aid for Scientific Research Database (KAKEN). See "III. Instructions for Prospective Applicants 6. Registration of the Researcher Information in 'researchmap'."

(3) Notification of the Review Results

① MEXT will issue a notification to the PIs and the research institutions via the electronic application system on whether the research area has been adopted or not, based on the results of the review.

② For Principal Investigators who had requested the disclosure of the first stage review results in the event that their research proposals were not adopted, MEXT will disclose the approximate ranking within each committee dedicated to the particular research area, the raw scores (average scores) as to each rating element, and the "standard-format opinions." Disclosure will be made on the electronic application system.

III. Instructions for Prospective Applicants

1. Procedures to be Completed Prior to Application

The following three items must be completed prior to the submission of the research proposal:

(1) Ascertainment of the Eligibility for KAKENHI Application
(2) Confirmation of the Researcher Information Registered in the e-Rad System
(3) Obtainment of an ID and a Password for the Electronic Application System

(1) Ascertainment of the Eligibility for KAKENHI Application

An applicant submitting a research proposal to Grants-in-Aid for Scientific Research (KAKENHI) as Principal Investigator (PI) must meet the requirements (i) and (ii) stated below.
A researcher carrying KAKENHI eligibility through more than one research institution can submit application(s) through any of the research institutions.
However, in the event of parallel submissions, they have to comply with the rules on restrictions on the parallel grant application/receipt (see "III. Instructions for Prospective Applicants 2. Restriction on Parallel Grant Application/Receipt").

(i) At the time of the proposal submission, a researcher needs to have been approved by his/her research institution(*1) as an eligible researcher who meets the Requirements a), b) and c) stated below, and have his/her Researcher Information properly registered in the e-Rad system as eligible for KAKENHI application(*2).
< Requirements >
a) The applicant must be an individual belonging to a research institution with a job assignment including a research activity within the said institution.
(Whether the job is paid/unpaid, or full-time/part-time is irrelevant.
It is not a prerequisite of eligibility that the research activity constitutes the main part of his/her job.)
b) The applicant must be actually engaged in a research activity in his/her research institution. (Those who are only engaged in research assisting jobs are ineligible.)
c) The applicant must not be a graduate student nor any other categories of student. (However, an individual who has a position in a research institution with a research activity as his/her main job (e.g., a university teaching staff, a researcher belonging to a company, etc.) and holds a student status at the same time is eligible.)

*1 Here, the research institution must be such that designated according to the Article 2 of the "Rules for the Handling of Grants-in-Aid for Scientific Research" (Notification of the Ministry of Education).
*2 JSPS Fellows (DC) are deemed to have met the application requirements by being nominated as a JSPS Fellow (DC), notwithstanding the items a) through c) in (i) above. However, please check with your research institution regarding the requirements that it must meet.

(Reference) Requirements that the research institution must meet (see "IV. Instructions for Administrative Staff of Research Institution 2. Issues to Be Completed Beforehand by the "Research Institution"):
< Requirements >
• The research institution must authorize the research project for which KAKENHI is granted, as its proper activity.
• The research institution must take responsibility for management and accounting of the KAKENHI delivered to its researchers.

(ii) The individual must not be categorized as ineligible for grant acquisition in the fiscal year covered by a call for proposals, as a penalty for his/her improper grant spending, fraudulent grant acquisition, or research misconduct using the KAKENHI or other Competitive Research Funds.

<Important Point 1>
A researcher who is employed with a KAKENHI grant (hereinafter referred to as "KAKENHI employee") is generally bound by their employment contract to concentrate on the research work relevant to the KAKENHI project for which he/she is employed (hereinafter referred to as "employment-related work") specified in his/her employment contract. Therefore, such a KAKENHI employee cannot apply for his/her own KAKENHI project which is to be conducted within the working hours for the employment-related work.
However, provided that he/she can clearly demarcate his/her own research hours from the working hours for the employment-related work and intends to conduct his/her own research project during his/her own research hours on his/her own initiative, the KAKENHI employee can submit his/her own KAKENHI proposal, on the condition that the following points are verified by his/her research institution. He/She can apply for KAKENHI as a PI or become a Co-I.

- The KAKENHI employee is granted on his/her employment contract, to conduct research on his/her own initiative, besides the employment-related work.
- The employment-related work and the work devoted to the research on his/her own initiative are clearly demarcated in regard to the working hours and the effort.
- The KAKENHI employee is able to secure enough research hours (besides the working hours for his/her employment-related work) to be allotted to his/her own KAKENHI project.

[Self-motivated research activities by young researchers employed with KAKENHI funding]

A young researcher (*) who is employed with KAKENHI funds (KAKENHI employee) and meets the following conditions, may conduct his/her own research during the working hours assigned for the employment-related work, after going through the necessary procedures set by his/her research institution. He/She can apply for KAKENHI as a PI or become a Co-I.

(1) A young researcher desires on his/her own will to conduct his/her own research.
(2) The PI and Co-I (the employer of the young researcher) desires that the said research has a positive contribution to the promotion of the funded research project for which he/she is employed, and his/her affiliated research institution approves the said decision.
(3) The PI and Co-I judges that the efforts to be spared by the young researcher to the said research within the extent that do not cause any hindrance to the execution of the funded research project for which he/she is employed, and his/her affiliated research institution approves the judgement. (The upper limit of the efforts to be spared to the self-motivated research is 20 percent of the efforts to be put into the funded research project for which he/she is employed.)

* In this context, "young researcher" is defined as an individual who is aged 39 or under or less than 8 years after Ph.D. acquisition (including an individual who has acquired a Ph.D. within the past 8 years excluding periods of maternity and/or childcare leave taken after his/her Ph.D. acquisition) as of April 1 of the fiscal year for the funded project (hereinafter referred to as a "KAKENHI-employee young researcher"), and whose job assignment includes research activities. When applying for Grants-in-Aid for Scientific Research (KAKENHI) he/she must meet the eligibility requirements for KAKENHI application.
Provided that the KAKENHI employer approves such self-motivated research activities in accordance with its funding resources (project) rules, if a researcher had originally met the eligibility requirements for KAKENHI's self-motivated research activities at the time of his/her application or participation, he/she may apply for KAKENHI and continue to engage in the adopted research project even if, during the research period, he/she no longer meets the requirements for a KAKENHI-employee young researcher. If there are changes to the funding resources (project) of the KAKENHI employer, the researcher must abide by the new funding resources (project) rules and reobtain the approval to conduct self-motivated research activities as a young researcher at the time of the changing of funding resources.

(Reference) Views on the self-motivated research activities by the KAKENHI employee

Attachment 1 to the "Changes in the FY2020 Call for Proposals for Grants-in-Aid for Scientific Research (KAKENHI) and Other Matters" (March 19, 2020) (Excerpt)
https://warp.ndl.go.jp/info:ndljp/pid/12367425/www.jsps.go.jp/j-grantsinaid/06_jsps_info/g_200316/index.html

Grants-in-Aid for Scientific Research (hereinafter referred to as "KAKENHI") is a funding scheme that is intended to promote development of scientific research (based on original ideas of researchers), encompassing basic to applied researches in all fields ranging from humanities and social sciences to natural sciences. Scientific research is a source of innovation i.e., value creation based on new knowledge and has a vital role in nurturing human resources for leading a knowledge-based society broadly. It is particularly important to foster young scientists who are responsible for the next generation in order that the scientific research may sustainably exercise its role in the society.
It enables young researchers employed with a KAKENHI grant to conduct self-motivated research activities (including research activities with other research funds and activities helping research/management capacity building; hereinafter the same). Allowing them to conduct research activities in an independent and free research environment contributes not only to fostering young researchers, but also to the further development of the KAKENHI projects of their research institutions through research based on their freewheeling thinking and to the development of scientific research of the entire country. Therefore, the concept of self-motivated research activities by young researchers is introduced in the KAKENHI scheme in this call for proposals.

For details refer to the following.
"Implementation Guidelines for Self-motivated Research Activities by Young Researchers Employed with Competitive Research Funds"
(Revised on December 18, 2020, Agreement of the Liaison Meeting of Related Offices and Ministries on Competitive Research Funds)
https://www.mext.go.jp/a_menu/shinkou/torikumi/1385716_00001.htm

<Important Point 2>

If a JSPS Research Fellow (PD, RPD, or CPD) meets the application requirements set forth above at the research institution which he/she registers as host research institution, he/she can also apply for the following research categories other than the "Grant-in-Aid for JSPS Fellows," but only from the registered host research institution. Unlike applying for KAKENHI as PI, he/she may apply for any of these research categories so long as he/she takes part in a KAKENHI proposal as Co-I. In making applications, he/she can apply even if the proposed research period outlasts the tenure of his/her JSPS fellowship.

① Publicly Offered Research of Transformative Research Areas (A)
② Scientific Research (B/C)

③ Challenging Research (Exploratory)
④ Grant-in-Aid for Early-Career Scientists
⑤ Fund for the Promotion of Joint International Research (Fostering Joint International Research) (Excluding CPD)

JSPS Fellows (DC) can apply for KAKENHI as Principal Investigators (PI) only for the Grant-in-Aid for JSPS Fellows and Fostering Joint International Research, but only from the host research institutions. JSPS Fellows (DC) can also participate in research projects under every research category as Co-Is. As JSPS Fellows (DC) are supposed to seek the acquisition of Ph.D. as doctoral students, their host researchers or PIs of said KAKENHI research projects and their affiliated institutions should take sufficient care, so that JSPS Fellows (DC) will not be burdened with excessive responsibilities in performing these research projects. The Researcher Number is required if JSPS Fellows (DC) apply for other research categories that they can apply for and receive grants in parallel with Grant-in-Aid for JSPS Fellows as PIs or Co-Is.

Please note that students (see Note), such as graduate students and other students excluding the abovementioned JSPS Fellows (DC), as well as International Research Fellows cannot apply for KAKENHI grants even if they are tasked with the job of conducting research activities at their affiliated research institutions or other research institutions.

(Note) The term "student" as defined here does not include such an individual who has a position to conduct research in his/her research institution, as the main job (e.g., university teaching staff, researcher belonging to company, etc.), and holds a student status at the same time.

<Important Point 3>

The PIs and the Co-Is constitute the "members of funded projects," as stipulated in the Law on the Improvement of the Administration of the Budget for Grants-in-Aid (1955, Law No. 179). In an event that they have committed improper grant spending, fraudulent grant acquisition, research misconduct, etc. the eligibility for KAKENHI application will be suspended for a period of time specified by the rule.
In the following cases, an individual registered in the e-Rad system as "eligible for KAKENHI application" may be subject to different treatment.

- In case the research institution to which the individual belongs has made a judgement that it is not appropriate to let the individual conduct the said research activity as a part of his/her work within the research institution, the research institution may withhold the submission of his/her KAKENHI proposal, or may withhold the formal application for delivery of a provisionally adopted KAKENHI grant resulting in declination of the grant in question.
- In case a KAKENHI recipient has failed to submit the "Report on the Research Achievements" that is due after the completion of the research period of his/her KAKENHI without justified reason, no new KAKENHI grant(s) will be delivered to him/her, even if the grant(s) have been provisionally adopted. Moreover, if a KAKENHI recipient has failed to submit the "Report on the Research Achievements" by the due date without justified reason, then the delivery of KAKENHI grant(s) for that fiscal year will be suspended.

(2) Confirmation of the Researcher Information Registered in the e-Rad System

A researcher who intends to submit a research proposal document as the PI to any of the KAKENHI research categories for which "Call for Proposals" is announced, must carry the eligibility for KAKENHI application at the time of submission (sending) of the "Research Proposal Document" from his/her research institution to MEXT, and must be registered in the e-Rad system as such.
Therefore, it is important for the researcher to ascertain proper registration of his/her Researcher Information in the e-Rad system.
The registration in the e-Rad system is handled by the research institution to which the researcher belongs. The PI should check with the administrative section of his/her institution about the registration procedures including the registration deadline within the institution, the method of confirmation of the current contents of registration, etc. If any of the entry items (such as "affiliation," "position," etc.) of the researcher who has been already registered in the e-Rad system need updating, it should be duly completed.

*Registration of researcher information in e-Rad and linkage to the electronic application system regarding the implementation of research integrity measures
Starting from the FY2025 call for proposals, research integrity information registered in e-Rad has been linked to the electronic application system, and you are requested to enter the necessary information in your Research Proposal Document based on the e-Rad registered research integrity details.
Please note, in particular, that you cannot make application if the Principal Investigator and/or Co-Investigators have not registered in e-Rad the status of pledge regarding their research integrity information for their affiliated institution. Therefore, please make sure to confirm the registration status of the relevant

information in advance. For details, please check carefully the Supplement to the Application Procedures for Grants-in-Aid for Scientific Research. The linkage of e-Rad and the electronic application system usually takes approximately 30 to 60 minutes, but it may require several additional hours when the system is busy. **Please make registration well in advance, as registration attempts on the deadline date may not lead to successful linkage in time, and thus you may not be able to make application.**

(3) Obtainment of an ID and a Password for the Electronic Application System

When the research institution completes the e-Rad registration of a researcher, an ID and a password will be issued for him/her. The researcher can access the KAKENHI Electronic Application System using the ID and password and prepare the Research Proposal Document.
The ID and the password issued to a researcher remain valid after he/she moves to another research institution. Every researcher should exercise due care in handling his/her ID and password so as to prevent their leakage and abuse.

(Reference) "Grant-in-Aid for Research Activity Start-up"
The "Grant-in-Aid for Research Activity Start-up" is aimed at supporting researchers who are not able to apply for this round of call for proposals, such as those who are newly obtaining research position, and those who are returning from their leave of absence for childcare, etc. after the regular submission deadline.
The FY2026 Call for Proposals in this category is scheduled for March 2026, and the provisional conditions of the eligibility for application will be as follows:

A) An individual who obtains eligibility for KAKENHI application on or after September 18, 2025, and has not submitted an application under the call for proposals for the following research categories (*1) announced by MEXT and JSPS.

(B) An individual who has not submitted an application under the call for proposals for the following research categories (*1) announced by MEXT and JSPS because he/she was on maternity leave or was raising a preschooler (*2) in FY2025.

(*1) FY2026 Grants-in-Aid for Specially Promoted Research, Transformative Research Areas, Scientific Research, Challenging Research, and Early-Career Scientists
(*2) Including the period of childcare leave.

(For details, refer to the Application Procedures for "Grant-in-Aid for Research Activity Start-up" to be announced in March 2026.)
Since the registration to the e-Rad system is handled by the research institution, researchers who may come to fall under the category (A) above, should act accordingly by contacting the administrative section of their respective research institutions.

(Note) JSPS Research Fellows (PD, RPD, CPD, or DC) are not eligible for application to the "Grant-in-Aid for Research Activity Start-up," even if they satisfy the above application conditions.

2. Restrictions on Parallel Grant Application/Receipt

A researcher who intends to submit research proposal(s) to KAKENHI should be well acquainted with the "Restrictions on Parallel Grants Application/Receipt" before starting preparation of research proposal document(s) to check if applications to the intended research categories are permitted.

(1) The Basic Policy for Restriction on Parallel Grant Application/Receipt

KAKENHI consists of different "Research Categories" and "Application Sections" set on the basis of budget scale, content, and other factors of the intended research, so as to meet various needs and research styles of the applicants. On the other hand, in consideration of the necessity to support many excellent researchers with limited funding resources, and of the possible detrimental influence of overcrowding applications on the proper management of the review process, the "Rules for Restrictions on Parallel Submission of Research Proposals" have been set up, according to the following basic principles.

- ○ Give considerations so as to ensure that as many excellent researchers as possible can be supported with limited funding resources.
- ○ Give considerations so as to ensure that the number of applications does not become excessive in comparison with the review scheme of each research category.
- ○ The restrictions to be enforced are primarily directed to the applicant as Principal Investigator (PI) who bears all responsibility for the implementation of the research project. In some cases such as the research categories with large budget scale, however, the restrictions may be also extended to individuals as the Co-Investigator (Co-I).
- ○ The restriction on parallel submission of research proposals and the restriction on simultaneous receipt of grants are separately set on each of the KAKENHI research categories, in accordance with the basic concepts outlined above and by taking into consideration the purpose, characteristics and other factors of each KAKENHI research category.

Restrictions on parallel grant application/receipt do apply to the current round of call for proposals. Accordingly, the applicant should be well acquainted with the description of the rules given below, and the "Attached Table 3 Table of Restriction on Parallel Grant Application/Receipt".
In case a particular research project falls under the concept of "unreasonable duplication" as put forward in the "Guidelines on the Proper Implementation of Competitive Research Funds" (see "I. Outline of the Grants-in-Aid for Scientific Research-KAKENHI- 5. "Guidelines on the Proper Implementation of Competitive Research Funds," etc."), it may be judged as such in the review process. Therefore, the applicant should take due precautions in preparing his/her research proposal document.

(2) Restrictions on Parallel Grant Application/Receipt

○ Restrictions on parallel grant application/receipt related to "Grant-in-Aid for Transformative Research Areas (A) (Publicly Offered Research)"

- In case that there are no projects of Publicly Offered Research for which grants have currently been received, it is possible to apply and receive grants for new 2 projects. However, it is not possible to apply and receive grants for 2 projects in the same research area.
- In case that grants have been received for 2 projects continuation of which will be in FY2026 in Publicly Offered Research, it is not possible to apply for another project.

[Reference] Restrictions on parallel grant application/receipt related to "Grant-in-Aid for Transformative Research Areas (A/B)" and "Grant-in-Aid for Scientific Research on Innovative Areas"

(i) In Grant-in-Aid for "Transformative Research Areas (A)" and "Transformative Research Areas (B)", cases in which the applicant intends to submit to the same research area

In Grant-in-Aid for "Transformative Research Areas (A)" and "Transformative Research Areas (B)", the application for the same research area by one researcher is limited to one research project, regardless of whether he/she is a Principal Investigator or a Co-Investigator (except for the research project of "Administrative Group"). (If a researcher holds an on-going KAKENHI research project in a particular research area, he/she cannot submit a new KAKENHI research proposal in the same research area.)
However, Principal Investigators of "Planned Research other than Administrative Group" must participate as Co-Investigator or Research Collaborator of "Administrative Group." In addition, Co-Investigator of "Planned Research other than Administrative Group" can participate in "Administrative Group" when necessary.

(cases marked with "ー" in the Table)

(ii) Cases in which the applicant intends to submit two research proposals as the "Principal Investigator" for both 【"PI → PI" type】

In case an applicant intends to submit two research proposals (to different research categories) as PI for both, or an applicant who is the PI of the prospected on-going project in FY2026 intends to submit a new research proposal as PI, the following rules (cases A to D) of restrictions on parallel grant application /receipt apply.
Cases in which a researcher carried over all or prat of a KAKENHI grant (Series of Single-year Grants) to the next fiscal year, or a researcher extended the research period for a KAKENHI grant (Multi-year Fund) or a KAKENHI grant (Partial Multi-year Fund) in the final fiscal year (except the extension of research period due to maternity/childcare leave, research stay abroad, etc.), constitute exception to the rules given below.

A Cases where a researcher can submit only one research proposal.

(cases marked with "×" in the Table)

B Cases where a researcher cannot submit a new research proposal, as he/she holds an on-going research project.

(cases marked with "▲" in the Table)

C Cases where a researcher can make parallel submission of research proposals, but if both proposals are adopted, only one of them is granted in accordance with the rules.

[For cases marked with "■" the research category in the column A is given priority.
For cases marked with "□" the research category in the column B is given priority.]

D Cases of accepting up to 2 research projects which are applied for and on-going Publicly Offered Research of "Grant-in Aid for Transformative Research Areas" (the application for the same area is not permitted).
(cases marked with "◆" in the Table)

(iii) Cases in which an applicant submitting a research proposal as PI to a category in column A participates as Co-I in another research proposal submitted to a category in column B
【"PI → Co-I" type】

For cases in which a researcher submitting a certain research proposal as a PI intends to participate in another research project as a Co-I, or a researcher who is the PI of the prospected on-going project in FY2026 intends to participate in another research project as a Co-I, there are no restrictions in general so that the researcher can participate in both projects.
However, for some research categories, the following rules (cases A to C) of restrictions on parallel grant application/receipt as stated below do apply.

A Cases where a researcher can submit only one research proposal.
(cases marked with "×" in the Table)

B Cases where a researcher cannot submit a new research proposal, as he/she holds an on-going research project.
(cases marked with "▲" in the Table)

C Cases where a researcher can make parallel submission of research proposals, but if both proposals are adopted, only one of them is granted in accordance with the rules.
(For cases marked with "■" the research category in the column A is given priority.)

(iv) Cases where a researcher who participates as Co-I in a newly-submitted research proposal or a researcher who is a Co-I of an on-going project intends to submit a new research proposal as the PI of another research project.
【"Co-I → PI" type】

For cases in which a researcher participating in a certain research project (on-going or newly submitted) as a Co-I intends to submit another research proposal as a PI, or a researcher who is a Co-I of the prospected on-going project in FY2026 intends to submit another research proposal as PI, there are no restrictions in general, so that the researcher can participate in both projects.

However, for some research categories, the following rules (cases A to C) of restrictions on parallel grant application/receipt as stated below do apply.

A Cases where a researcher can submit only one research proposal.
(cases marked with "×" in the Table)

B Cases where a researcher cannot submit a new research proposal, as he/she holds an on-going research project.
(cases marked with "▲" in the Table)

C Cases where a researcher can make parallel submission of research proposals, but if both proposals are adopted, only one of them is granted in accordance with the rules.
(For cases marked with "□" the research category in the column B is given priority.)

(v) Cases in which a researcher who participates as Co-I in more than one research projects (on-going or newly submitted) also intends to participate as Co-I in another research proposal.
【"Co-I → Co-I" type】

For cases in which a researcher participating in a certain research project (on-going or newly submitted) as a Co-I intends to participate in another research project as a Co-I, or a researcher who is a Co-I of the prospected on-going project in FY2026 intends to participate in another research project as a Co-I, there are no restrictions in general, so that the researcher can participate in both projects.
However, the following rules (cases A and B) of restrictions on parallel grant application/receipt as stated below do apply.

A Cases where a researcher can submit only one research proposal.
(cases marked with "×" in the Table)

B Cases where a researcher cannot submit a new research proposal, as he/she holds an on-going research project. (cases marked with "▲" in the Table)

(3) Restrictions on Simultaneous Receipt of Grants

According to the "Restriction on Parallel Grant Application/Receipt," cases in which parallel submission of research projects is permitted, but only one of them can be granted even if both are adopted, are handled as follows.

Handling of the cases marked with "■" or "□" when both projects are adopted

A For the "PI → PI" type (such as the case of PI of a Specially Promoted Research project and PI of another project in other research categories), the researcher must decline the grant delivery of the project in the lower priority category, or abolish the on-going project in the lower priority. In particular, note that if a PI of a Planned Research project in the Transformative Research Areas is selected as PI for a Specially Promoted Research, such Planned Research project is not allowed to replace its PI and must be abolished. The relative priority of the research categories is indicated by the marks "■" and "□" in the Table.

B If the PI of a newly adopted Specially Promoted Research project has been acting as Co-I of on-going project(s) in other research categories, he/she must withdraw the Co-I status of the latter project(s) if it has been decided that he/she will conduct only the former project (as the PI).
In an event that the withdrawal of the Co-I status makes the implementation of the latter project(s) unsustainable, the said project(s) have to be abolished (or withdrawn).

(4) Important Notes

i) Even for the cases in which parallel grant application/receipt is not prohibited by the rules, the applicant should give a careful consideration so as not to fall in such situation that he/she cannot carry his/her responsibility as PI or Co-I, by committing him/herself to too many research projects. The applicant should be well acquainted with the content of "Elimination of Unreasonable Duplication and/or Excessive Overconcentration in the Grant Allocation" (see "I. Outline of the Grants-in-Aid for Scientific Research-KAKENHI- 5. "Guidelines on the Proper Implementation of Competitive Research Funds," etc.").

ii) Starting from the FY2022 call for proposals, the schedule for the call for proposals has been changed to earlier dates, and as such, the timing of the call for proposals for some research categories subject to the restriction on parallel grant application/receipt may vary. Applicants should check the Attached Table 3 "Table of Restriction on Parallel Grant Application/Receipt" carefully. In a case for which the restriction on parallel grant application/receipt applies, applicants are not eligible to submit a new application for the other research category even if he/she withdraws the research project that he/she had already submitted (sent) through the electronic application system after the deadline for submitting (sending) the Research Proposal Document under the other research category.

Example: A researcher cannot apply for Grant-in-Aid for Transformative Research Areas (A) (Publicly Offered Research) as PI after applying for Grant-in-Aid for Transformative Research Areas (A) (Planned Research) as PI (even if he/she withdraws the application for Grant-in-Aid for Transformative Research Areas (A) (Planned Research) after the deadline for submitting (sending) the Research Proposal Document).

iii) In some cases, even after a research proposal has been duly submitted via the Electronic Application System, it may be eliminated from the subsequent review process on the basis of the rules of restrictions on parallel grant application/receipt. This may happen, for example, in a case where the said proposal becomes in conflict with the "Restrictions on Parallel Submission of Research Proposals" by a change in the project members of an on-going research project. The applicant should check against such possibility before submitting the research proposal document. The applicant should also conduct procedures to change the Project Members List of his/her continued research project well in advance, as the acceptance or approval of such changes takes around one month.

iv) The rules of restrictions on parallel submission of research proposals do apply to a case in which a researcher carrying eligibility for applications in more than one research institutions intends to submit different proposals from each of those institutions.

v) In regard to the "Attached Table 3 Table of Restriction on Parallel Grant Application/Receipt," the participation to the "Administrative Group" in the "Transformative Research Areas" are deemed exceptional (see "Application

Procedures for Grants-in-Aid for Scientific Research-KAKENHI- FY2026 (MEXT)"). The following points should be noted.

A The PIs of the research projects of the "Transformative Research Areas Administrative Group" should check the restriction on parallel submission of proposal as PI or Co-I of other research proposals they intend to submit in parallel by referring to the relevant entries of the "Attached Table 3 Table of Restriction on Parallel Grant Application/Receipt."

B The Co-Is of the research projects of the "Transformative Research Areas Administrative Group" should check the restriction on the participation as PI or Co-I to the "Planned Research (Planned Research other than the research projects of the "Administrative Group") and the parallel submission of proposal as PI or Co-I of other research proposals they intend to submit in parallel by referring to the relevant entries of the "Attached Table 3 Table of Restriction on Parallel Grant Application/Receipt."

vi) In regard to the Restrictions on Parallel Grant Application/Receipt relevant to "the researcher submitting a research proposal as PI or Co-I" or "the PI or Co-I of the prospected on-going project in FY2026" for the research categories for which the call for proposals is announced by JSPS, applicants should refer to the "Attached Table 3 Table of Restriction on Parallel Grant Application/Receipt."

vii) As for the restrictions on parallel grant application/receipt for JSPS Fellows (PD, RPD, or CPD), the applicant should read the description in the section "Grant-in-Aid for JSPS Fellows (JSPS Research Fellow)" of the "Attached Table 3 Table of Restriction on Parallel Grant Application/Receipt," even if he/she does not receive the "Grant-in-Aid for JSPS Fellows."

viii) If an individual is granted his/her application in those research categories for which the rule of restrictions on parallel grant application/receipt applies ("Specially Promoted Research," "Planned Research" of the "Transformative Research Areas (including the research projects of the "Administrative Group")", "Scientific Research (S/A)," "Challenging Research (Pioneering)," and "Research Activity Start-up,") and if subsequently he/she is adopted as a JSPS Fellow, he/she has to choose either the JSPS fellowship or the KAKENHI project.
A JSPS Research Fellow (PD, RPD, or CPD), during the period of his/her term, cannot submit any research proposals to those research categories for which the rules of restrictions on parallel grant application/receipt apply.
Therefore, even after a submitted proposal has been duly filed in the Electronic Application System, it may be eliminated from the subsequent review process by the rules of restrictions on parallel grant application/receipt. The applicant should check against such possibility before submitting the research proposal document.

ix) There are no restrictions on parallel grant application/receipt between KAKENHI and other competitive research funds schemes. Still, applicants should read the description in the column "Elimination of Unreasonable Duplication and/or Excessive Overconcentration in the Grant Allocation" (see "I. Outline of the Grants-in-Aid for Scientific Research-KAKENHI- 5. "Guidelines on the Proper Implementation of Competitive Research Funds," etc.").

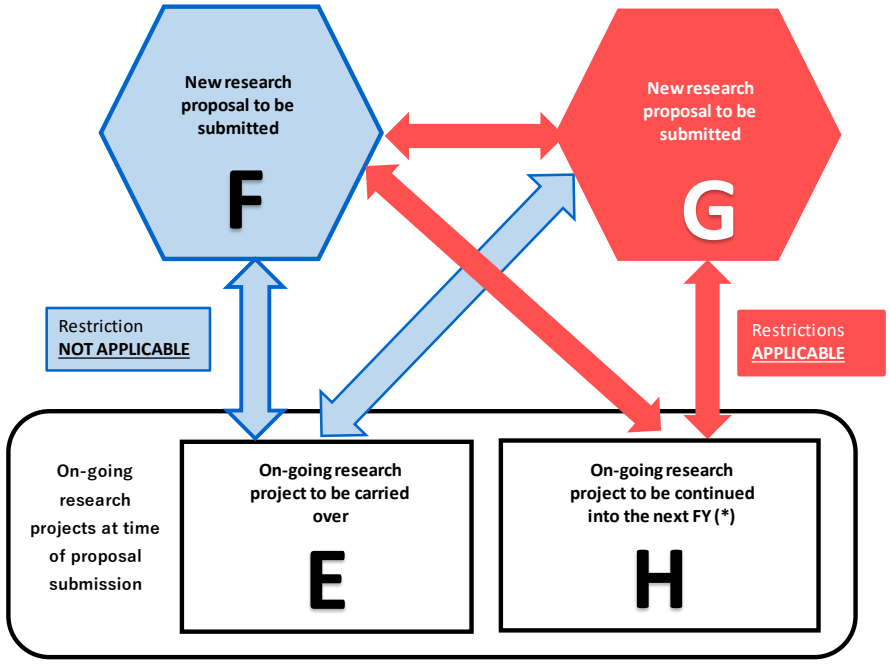
(5) Special Provisions for the Restriction on Parallel Grant Application/Receipt

(Handling of the Restrictions on Parallel Grant Application/Receipt in Relation to carry-over of KAKENHI (Series of Single-year Grants) to the following fiscal year)

(i) When a PI of an on-going project of KAKENHI (Series of Single-year Grants) carries over all or parts of the grant to be used in the following fiscal year, the restriction on parallel grant application/receipt does not apply between the project approved for carry-over and the new research proposal he/she intends to submit.

(ii) On the other hand, the restriction on parallel grant application/receipt does apply between the new research proposal and other new research proposal(s) (including the on-going project(s)) to be submitted by the same PI.

Figure 1: Image of restrictions on parallel grant application/receipt in relation to carry-over of KAKENHI (Series of Single-year Grants) to the following fiscal year



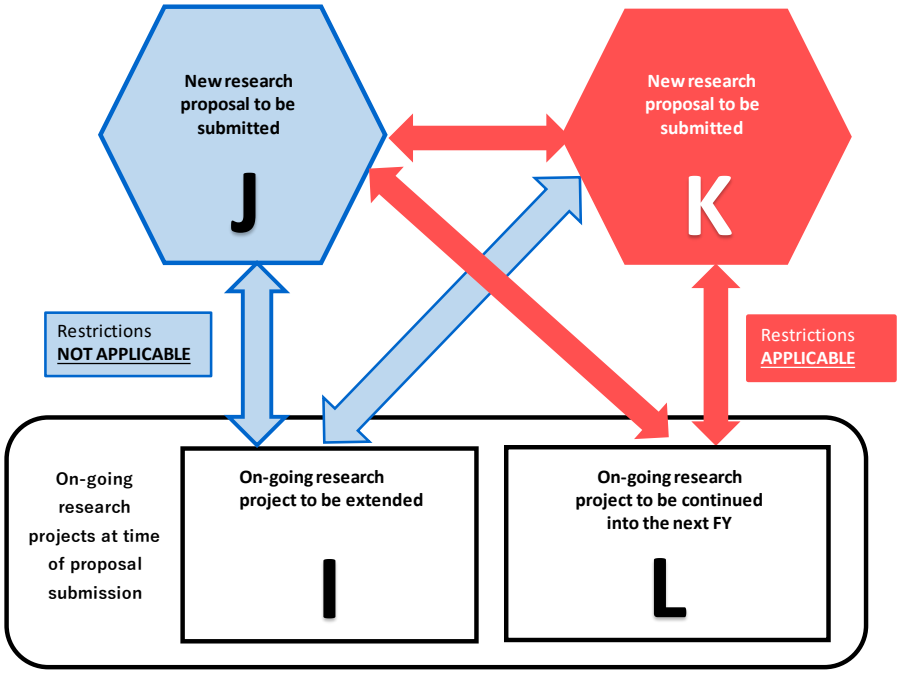
Whereas: "E" is an on-going research project to be carried over to the next fiscal year; and "F" is a new research proposal to be submitted. In this case, the restriction on parallel grant application/receipt does not apply between E and F. However, if the researcher intends to submit a different research proposal "G" (in addition to F) for this call for proposals, the restriction on parallel grant application/receipt does not apply between E and G, but shall apply between F and G.
Furthermore, if the researcher has an on-going research project "H" (in addition to E) which will be continued into the next fiscal year, restrictions on parallel grant application/receipt shall apply between F and H. Similarly, if the researcher intends to submit a research proposal for G, restrictions on parallel grant application/receipt shall also apply between G and H.
* Here, the same research project as E to be conducted in the fiscal year following the fiscal year in which it is to be carried over will fall under H. (For example, if a research project is an on-going project that will be continued into FY2026, the research project to be carried over will fall under E in Figure 1 during FY2025, and will fall under H in FY2026.)

(Handling of the Restrictions on Parallel Grant Application/Receipt in Relation to Extension of the Research Period of KAKENHI (Multi-year Fund))

(i) When a PI of an on-going project of KAKENHI (Multi-year Fund) extends the research period in the final fiscal year (except the case with the interruption of the research due to maternity/childcare leave, research stay abroad, etc.), the restriction on parallel grant application/receipt does not apply between the on-going project and a new research proposal he/she intends to submit.

(ii) On the other hand, the restriction on parallel grant application/receipt does apply between the new research proposal and other new research proposal(s) (including the on-going project(s)) to be submitted by the same PI.

Figure 2: Image of restrictions on parallel grant application/receipt in relation to extension of the research period of KAKENHI (Multi-year Fund)



Whereas: "I" is an on-going research project in the final fiscal year of the research period, and the researcher intends to extend the research period (not including cases where researcher suspends the research for maternity/childcare leave, etc.); and "J" is a new research proposal to be submitted. In this case, the restriction on parallel grant application/receipt does not apply between I and J. However, if the researcher intends to submit a different research proposal "K" (in addition to J) for this call for proposals, the restriction on parallel grant application/receipt does not apply between I and K, but shall apply between J and K.
Furthermore, if the researcher has an on-going research project "L" (in addition to I) which will be continued into the next fiscal year, restrictions on parallel grant application/receipt shall apply between J and L. Similarly, if the researcher intends to submit a research proposal for K, restrictions on parallel grant application/receipt shall also apply between K and L.

Attached Table 3 Table of Restrictions on Parallel Grant Application/Receipt for “Grant-in-Aid for Transformative Research Areas (A/B)”

Attached Table 1　Table of Restrictions on Parallel Grant Application/Receipt for "Grant-in-Aid for Transformative Research Areas（A/B）"

1) Type "Principal Investigator (New Proposal/Continued) (Column A) ➞ Principal Investigator (Column B)"

This table shows the restrictions on parallel grant application/receipt in case of "a person who tries to apply as Principal Investigator for a research project mentioned in Column A (research categories for which MEXT organizes a call for proposals), or a person who has already become Principal Investigator of a research project that is scheduled to be continued in FY2026(continued research project) mentioned in Column A" applies as Principal Investigator for mentioned in Column B.

Column A ＼ Column B			Transformative Research Areas (A)						Transformative Research Areas (B)				Specially Promoted Research	Scientific Research(S)	Scientific Research (A)	Scientific Research (B)	Scientific Research (C)	Early-Career Scientists	Challenging Research	
			Research area same as the one in Column A				Research area different from the one in Column A		Research area same as the one in Column A			Research area different from the one in Column A								
			New Research Area		Continued				New Research Area		Continued									
			Administrative group	Planned research	Planned research *2	Publicly offered research	Planned research *2	Publicly offered research	Administrative group	Planned research	Planned research *2	Planned research *2			General	General	General		Pioneering	Exploratory
			New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal
			PI	PI	PI	PI	PI	PI	PI	PI	PI	PI	PI	PI	PI	PI	PI	PI	PI	PI
Transformative Research Areas (A)	Administrative group	New Proposal PI	—			—	×	■				×	×	■					×	
		Continued PI				—	▲	▲				▲	▲	▲					▲	
	Planned research	New Proposal PI		—	—	—	×	■				×	□						×	
		Continued PI			—	—	▲	▲				▲	□						▲	
	Publicly offered research	New Proposal PI			—	—	□	◆				□	□						×	
		Continued *1 PI			—		□	◆				□	□						▲	
Transformative Research Areas (B)	Administrative group	New Proposal PI					×	■	—			×	×							
		Continued PI					▲	▲				▲	▲							
	Planned research	New Proposal PI					×	■		—	—	×	□							
		Continued PI					▲	▲			—	▲	□							

Blank cell:The researcher can apply for both research projects.
—:A researcher can only apply for one research project (except for the research project of "Administrative Group") in one and the same research area regardless of Principal Investigators or Co-Investigators.
(In case he or she has a continued research project mentioned in Column A, he or she cannot apply for a research project mentioned in Column B)
×:The researcher can only apply for one research project (in case he or she applied for a research project mentioned in Column A, he or she cannot apply for a research project mentioned in Column B).
▲:The researcher cannot apply for a research project mentioned in Column B (He or she only implements the research of a continued research project mentioned in Column A).
■:The researcher can apply for both research projects. However, in case both are adopted, he or she only implements the research of the research project in Column A.
□:The researcher can apply for both research projects. However, in case both are adopted, he or she only implements the research of the research project in Column B.
◆:The researcher can only apply for one reserch project mentioned in Column B in addition to the research project mentioned in Column A.
Shaded cell: There are not cases that the researcher apply for both research projects mentioned in Column A and Column B.
Note that if a PI of a Planned Research project in the Transformative Research Areas is selected as PI for a Specially Promoted Research, such Planned Research project is not allowed to replace its PI and must be abolished.
*1 Research projects in Innovative Areas (Publicly Offered Research) are subject to the restriction on parallel grant application/receipt similar to the restriction which applies to those in Transformative Research Areas (A) (Publicly Offered Research).
*2 In regards to the "continued research area" under "Research area same as the one in Column A" and the "research area different from the one in Column A", the Administrative Group has the same restrictions on duplication as for "Planned research."

2) Type "Principal Investigator (New Proposal/Continued) (Column A) → Co-Investigator (Column B)"

This table shows the restrictions on parallel grant application/receipt in case of "a person who tries to apply as Principal Investigator for a research project mentioned in Column A (research categories for which MEXT organizes a call for proposals), or a person who has already become Principal Investigator of a research project that is scheduled to be continued in FY2026 (continued research project) mentioned in Column A" participates in a research project mentioned in Column B as Co-Investigator.

Column A				Column B	Transformative Research Areas (A)				Transformative Research Areas (B)				Specially Promoted Research	Scientific Research (S)	Scientific Research (A)	Scientific Research (B)	Scientific Research (C)	Challenging Research	
					Research area same as the one in Column A			Research area different from the one in Column A	Research area same as the one in Column A			Research area different from the one in Column A							
					New Research Area		Continued		New Research Area		Continued								
					Administrative group	Planned research	Planned research *2	Planned research *2	Administrative group	Planned research	Planned research *2	Planned research *2			General	General	General	Pioneering	Exploratory
					New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal
					Co-I	Co-I	Co-I	Co-I	Co-I	Co-I	Co-I	Co-I	Co-I	Co-I	Co-I	Co-I	Co-I	Co-I	Co-I
Transformative Research Areas (A)	Administrative group	New Proposal	PI		—		—	×				×	×						
		Continued	PI					▲				▲	▲						
	Planned research	New Proposal	PI			—	—	×				×							
		Continued	PI				—	▲				▲							
	Publicly offered research	New Proposal	PI				—												
		Continued *1					—												
Transformative Research Areas (B)	Administrative group	New Proposal	PI					×	—		—	×							
		Continued	PI					▲				▲							
	Planned research	New Proposal	PI					×		—	—	×							
		Continued	PI					▲			—	▲							

Blank cell:The researcher can apply for both research projects.
—:A researcher can only apply for one research project (except for the research project of "Administrative Group") in one and the same research area regardless of Principal Investigators or Co-Investigators.
(In case he or she has a continued research project mentioned in Column A, he or she cannot apply for a research project mentioned in Column B)
×:The researcher can only apply for one research project (in case he or she applied for a research project mentioned in Column A, he or she cannot apply for a research project mentioned in Column B).
▲:The researcher cannot apply for a research project mentioned in Column B (He or she only implements the research of a continued research project mentioned in Column A).
Shaded cell: There are not cases that the researcher apply for both research projects mentioned in Column A and Column B.

*1 Research projects in Innovative Areas (Publicly Offered Research) are subject to the restriction on parallel grant application/receipt similar to the restriction which applies to those in Transformative Research Areas (A) (Publicly Offered Research).
*2 In regards to the "continued research area" under "Research area same as the one in Column A" and the "research area different from the one in Column A", the Administrative Group has the same restrictions on duplication as for "Planned research."

3) Type "Co-Investigator (NewProposal/Continued) (Column A) → Principal Investigator (Column B)"

This table shows the restrictions on parallel grant application/receipt in case of "a person who tries to participate as Co-Investigator in a research project mentioned in Column A (research categories for which MEXT organizes a call for proposals), or a person who has already become Co-Investigator of a research project that is scheduled to be continued in FY2026 (continued research project) mentioned in Column A" applies as Principal Investigator for mentioned in Column B.

Column A \ Column B				Transformative Research Areas (A)						Transformative Research Areas (B)				Specially Promoted Research	Scientific Research (S)	Scientific Research (A)	Scientific Research (B)	Scientific Research (C)	Early-Career Scientists	Challenging Research	
				Research area same as the one in Column A				Research area different from the one in Column A		Research area same as the one in Column A			Research area different from the one in Column A								
				New Research Area		Continued				New Research Area		Continued								Pioneering	Exploratory
				Administrative group	Planned research	Planned research *1	Publicly offered research	Planned research *1	Publicly offered research	Administrative group	Planned research	Planned research *1	Planned research *1			General	General	General			
				New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal
				PI	PI	PI	PI	PI	PI	PI	PI	PI	PI	PI	PI	PI	PI	PI	PI	PI	PI
Transformative Research Areas (A)	Planned research	New Proposal	Co-I		—	—	—	×					×	□							
		Continued	Co-I			—	—	▲					▲	□							
Transformative Research Areas (B)	Planned research	New Proposal	Co-I					×			—	—	×	□							
		Continued	Co-I					▲				—	▲	□							

4) Type "Co-Investigator (New/Continued) (Column A) → Co-Investigator (Column B)"

This table shows the restrictions on parallel grant application/receipt in case of "a person who tries to participate as Co-Investigator in a research project mentioned in Column A (research categories for which MEXT organizes a call for proposals), or a person who has already become Co-Investigator of a research project that is scheduled to be continued in FY2026 (continued research project) mentioned in Column A" participates in a research project mentioned in Column B as Co-Investigator.

Column A \ Column B				Transformative Research Areas (A)				Transformative Research Areas (B)				Specially Promoted Research	Scientific Research (S)	Scientific Research (A)	Scientific Research (B)	Scientific Research (C)	Challenging Research	
				Research area same as the one in Column A			Research area different from the one in Column A	Research area same as the one in Column A			Research area different from the one in Column A							
				New Research Area		Continued		New Research Area		Continued								
				Administrative group	Planned research	Planned research *1	Planned research *1	Administrative group	Planned research	Planned research *1	Planned research *1			General	General	General	Pioneering	Exploratory
				New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal	New Proposal
				Co-I	Co-I	Co-I	Co-I	Co-I	Co-I	Co-I	Co-I	**Co-I**	**Co-I**	**Co-I**	**Co-I**	**Co-I**	**Co-I**	**Co-I**
Transformative Research Areas (A)	Planned research	New Proposal	Co-I		—	—	×				×							
		Continued	Co-I			—	▲				▲							
Transformative Research Areas (B)	Planned research	New Proposal	Co-I				×		—	—	×							
		Continued	Co-I				▲			—	▲							

Blank cell:The researcher can apply for both research projects.
—:A researcher can only apply for one research project (except for the research project of "Administrative Group") in one and the same research area regardless of Principal Investigators or Co-Investigators.
(In case he or she has a continued research project mentioned in Column A, he or she cannot apply for a research project mentioned in Column B)
×:The researcher can only apply for one research project (in case he or she applied for a research project mentioned in Column A, he or she cannot apply for a research project mentioned in Column B).
▲:The researcher cannot apply for a research project mentioned in Column B (He or she only implements the research of a continued research project mentioned in Column A).
□:The researcher can apply for both research projects. However, in case both are adopted, he or she only implements the research of the research project in Column B.
Shaded cell: There are not cases that the researcher apply for both research projects mentioned in Column A and Column B.

*1 In regards to the "continued research area" under "Research area same as the one in Column A" and the "research area different from the one in Column A", the Administrative Group has the same restrictions on duplication as for "Planned research."

5) Type "Research categories for which JSPS organizes a call for proposals (Column A) → Principal Investigator (Column B)"

This table shows the restrictions on parallel grant application/receipt in case of "a person who as Principal Investigator tries to apply for or as Co-Investigator particiapte in a research project mentioned in Column A (research categories for which JSPS organizes a call for proposals), or a person who has already become Principal Investigator or Co-Investigator of a research project that is scheduled to be continued in FY2026 (continued research project) mentioned in Column A" applies as Principal Investigator for mentioned in Column B.
There is no restriction on parallel grant application/receipt between a research category, which JSPS organizes a call for proposals and which this table does not describe, and a research project mentioned in Column B.

Column A			Column B	Transformative Research Areas (A)			Transformative Research Areas (B)	
				Administrative group	Planned Research	Publicly offered research	Administrative group	Planned Research
				New Proposal	New Proposal	New Proposal	New Proposal	New Proposal
				PI	PI	PI	PI	PI
Specially Promoted Research		New Proposal	PI	×	■	■	×	■
		Continued	PI	▲	▲	▲	▲	▲
		New Proposal	Co-I	×				
		Continued	Co-I	▲				
Scientific Research (S)		New Proposal	PI	□				
		Continued	PI	▲				
Scientific Research (B)	Generative Research Fields	Continued	PI	□	□		□	□
Scientific Research (C)	Generative Research Fields	Continued	PI	□	□		□	□
Challenging Research (Pioneering)		New Proposal	PI	×	×	×		
		Continued	PI	▲	▲	▲		
JSPS Fellows (JSPS Research Fellow)*1		Continued	PI	▲	▲		▲	▲
Home-Returning Researcher Development Research		Continued	PI	□	□	□	□	□

6) Type "Research categories for which JSPS organizes a call for proposals (Column A) → Co-Investigator (Column B)"

This table shows the restrictions on parallel grant application/receipt in case of "a person who as Principal Investigator tries to apply for in a research project mentioned in Column A (research categories for which JSPS organizes a call for proposals), or a person who has already become Principal Investigator of a research project that is scheduled to be continued in FY2026 (continued research project) mentioned in Column A" participates in a research project mentioned in Column B as Co-Investigator.
There is no restriction on parallel grant application/receipt between a research category, which JSPS organizes a call for proposals and which this table does not describe, and a research project mentioned in Column B.

Column A			Column B	Transformative Research Areas (A)	Transformative Research Areas (B)
				Planned Research*2	Planned Research*2
				New Proposal	New Proposal
				Co-I	Co-I
Specially Promoted Research		New Proposal	PI	■	■
		Continued	PI	▲	▲

Blank cell:The researcher can apply for both research projects.
×:The researcher can only apply for one research project (in case he or she applied for a research project mentioned in Column A, he or she cannot apply for a research project mentioned in Column B).
▲:The researcher cannot apply for a research project mentioned in Column B (He or she only implements the research of a continued research project mentioned in Column A).
■:The researcher can apply for both research projects. However, in case both are adopted, he or she only implements the research of the research project in Column A.
□:The researcher can apply for both research projects. However, in case both are adopted, he or she only implements the research of the research project in Column B.

*1 This restriction on parallel grant application/receipt does not apply if the researcher continues to use the Grant-in-Aid for JSPS Fellows (JSPS Research Fellow) in the case that he/she has declined a JSPS Research Fellowship and become disqualified and thus he/she remains eligible to apply for KAKENHI grants.
*2 The Administrative Group has the same restrictions on duplication as for "Planned research."

3. Preparation of the KAKENHI Application Form (Research Proposal Document), etc.

Grants-in-Aid for Scientific Research is a competitive research funding intended to provide financial support for creative and pioneering research conducted by individual researchers. Therefore, the contents of the Research Proposal Document must be original planned by the applicant.
In preparing Research Proposal Document, plagiarism and/or misappropriation of the research contents of others are strictly impermissible. Applicants must comply with research ethics.
In addition, if the research plan involves traveling abroad, etc., applicants should carefully determine the feasibility of the plan.
Applicants should note that the entire Research Proposal Document, including the title of the research project will be reviewed, and will be publicized widely in the Grants-in-Aid for Scientific Research (KAKENHI) Database (KAKEN) if the research proposal is adopted. Therefore, make sure to select a title that effectively reflects the content of the research project.

For submission of a research proposal, the applicant (PI) has to complete the relevant Research Proposal Document. The Research Proposal Document consists of two parts: "Items to be entered in the Website" and "Forms to be uploaded as an attached file."
The PI (applicant) should complete the Research Proposal Document (PDF file) by entering the "Items to be entered in the Website" and by uploading the "Forms to be uploaded as an attached file" to the Electronic Application System. Then he/she should submit the Research Proposal Document to the administrative section of his/her research institution, by the deadline set by the institution.
Preparation and submission of the KAKENHI Research Proposal Document should follow the procedures detailed below.

(1) Preparation of KAKENHI Research Proposal Document

For the preparation of the KAKENHI research proposal document, the applicant must first access the Electronic Application System using his/her e-Rad ID and Password.

On the Research Proposal Document

The KAKENHI Research Proposal Document consists of the following two parts:

Items to be entered in the Website: Items to be directly entered by the PI (applicant) on the website of the KAKENHI Electronic Application System
Forms to be uploaded: A part containing such entries as "Research Objectives, Research Method, etc." to be prepared by downloading the form from the "Grants-in-Aid for Scientific Research-KAKENHI-" page within the MEXT website
(URL: http://www.mext.go.jp/a_menu/shinkou/hojyo/boshu/1351544.htm), and by uploading the filled form to the KAKENHI Electronic Application System so as to compile a PDF file of the research proposal document. (Paper-based applications will not be accepted.)

Research category Application Section	Research Proposal Document		
	Items to be entered in the Website (First part)	Forms to be uploaded (File ID)	Items to be entered in the Website (Second part)
Transformative Research Areas (A) (Publicly Offered Research)	To be entered in the electronic application system (title of research project, fundamental data on the research project such as total budget, etc.)	S-74	To be entered in the electronic application system (details of research expenditure and their necessity, status of application and acquisition of research grants, etc.)

* Forms can be downloaded from the "Grants-in-Aid for Scientific Research-KAKENHI-" page within the MEXT website (URL: http://www.mext.go.jp/a_menu/shinkou/hojyo/boshu/1351544.htm) even before the obtaining of the e-Rad ID and password.

(Reference) Revision of the Research Proposal Document

Starting from the FY2019 call for proposals, the "Research Achievements of the Principal Investigator (PI) and Co-Investigator(s) (Co-I(s))" column in the Research Proposal Document was revised as the "Applicant's Ability to Conduct the Research and the Research Environment" column, based on the idea that "research achievements are necessary to confirm the applicant's ability to conduct the research under the research plan for application, and the

exhaustive description of such achievements will not be required."
Please read the Supplement to the Application Procedures "Forms/Procedures for Preparing and Entering a Research Proposal Document" carefully in preparing a Research Proposal Document.

(2) Electronic Submission of the Research Proposal Document

i) A researcher who applies as a Principal Investigator should prepare his/her Research Proposal Document (PDF file) by entering the "Items to be entered in the Website" and by uploading the separately prepared "Forms to be uploaded as an attached file" to the Electronic Application System, following the instructions in the "FY2026 Procedures for Preparing and Entering a Research Proposal Document" and "FY2026 Procedures for Preparing and Entering a Research Proposal Document (Items to be entered in the Website)" for each applicable research category (application section).

ii) The Research Proposal Documents are collected and submitted to JSPS by the research institution to which the PIs (applicant) belong.
Therefore, the applying PI should submit his/her Research Proposal Document to the administrative section of his/her research institution by the deadline set by the institution. (It is not allowed to submit the Research Proposal Document directly to JSPS.)
Before submission, the applying PI should carefully check the contents of the Research Proposal Document (PDF file) he/she prepared, and subsequently proceed to the "Check Completed and Submission" stage of the submission process. (This amounts to submitting the Research Proposal Document (PDF file) to the administrative section of his/her research institution.) After the "Approval" process by his/her institution, no further corrections or modifications to the submitted Research Proposal Document (PDF file) are possible after the due date of submission (transmission) to JSPS. (See "IV. Instructions for Administrative Staff of Research Institution 4. Submission and Other Matters of the Research Proposal Document (Preparing the Research Proposal Document).")

iii)The personal information contained in the Research Proposal Document and any personal information registered in Electronic Application System will be used for purposes such as the elimination of unreasonable duplication and/or excessive concentration in the allocation of competitive research funds, the appropriate funding of KAKENHI grants, and to conduct questionnaires on scientific technology policies including KAKENHI grants (this includes providing the data to external contractor(s) in charge of electronic processing and management of the KAKENHI data). Any such information will also be provided to the e-Rad system. (The information registered in the e-Rad system is utilized for proper assessment of research and development by national funding, development of effective and efficient comprehensive strategy, planning and development of resource allocation policy, etc. Therefore, the information will be supplied to the Cabinet Office through the e-Rad system. The applicant may be requested to cooperate in verification of the information and other related works.)
The information on the adopted KAKENHI projects (the title of research project, the name of PI and his/her affiliated research institution, the grant to be delivered, research period, etc.) is categorized as "information planned to be made public," as laid down in Article 5, item (i) (a) of the "Act on Access to Information Held by Administrative Organs" (Act No. 42 of 1999) and in Article 5, item (i) (a) of the "Act on Access to Information Held by Incorporated Administrative Agencies" (Act No. 140 of 2001). The information will be made public through press release materials, the Grants-in-Aid for Scientific Research Database (KAKEN) of the National Institute of Informatics, and other means.
The researchers and their affiliated research institutions are requested to carry out the application procedures (including ii) above) with full understanding of the information handling (utilization, provision and disclosure) stated above.

(3) Important Checkpoints of the Research Proposal Document

In preparing a Research Proposal Document, the applicant should pay attention to the following points among others, so as to avoid "outright rejection by incompleteness of the research proposal document."

1. Qualification as a KAKENHI Project

The following kinds of research plans fall outside the scope of funding target:

A) A research plan which merely aims at purchasing ready-made research equipment.
B) A research plan whose purpose is to build a large-size research facility or equipment which is more appropriate to be funded by other resources.

C) A research plan whose purpose lies at developing and selling goods and/or services (including market research associated with such as them).
D) An entrusted research conducted as regular business.
E) A research plan with a yearly research expenditure for any of the fiscal years in its research period less than 100,000 yen.

2. Eligibility of the Project Members

The PI may organize a research team with appropriate combination of Co-Investigator(s) (Co-I), and Research Collaborator(s), as needed by the nature of the research project. (In the case of Publicly Offered Research, the Principal Investigator cannot set up a team of project members together with a Co-Investigator.) When organizing project members comprised of multiple members, the PI should ensure that the team has an appropriate system toward the achievement of research objectives, for example by giving due consideration to diversity.
As is the case for PI, Co-Investigator(s) is also subject to verification of their KAKENHI eligibility by their respective research institutions by the time of proposal submission (see "III. Instructions for Prospective Applicants 1. Procedures to Be Completed Prior to Application (1) Ascertainment of the Eligibility for KAKENHI Application").
On the other hand, to be a Research Collaborator(s), registration to the e-Rad system is not a requirement.

1) Principal Investigator (PI) (Applicant)

(A) Principal Investigator is the main recipient of the grant who bears full responsibility for the implementation of the research project (including compiling the research achievements).
An individual who is anticipated to become unable to carry through the PI's responsibility over the entire research period due to, for example, loss of the KAKENHI eligibility caused by PI's own accord, should refrain from becoming a PI. (See note below.)

(Note) The Principal Investigator is the researcher who plays the central role in the implementation of the research plan and thus bears a heavy responsibility. An individual who is anticipated to lose his/her eligibility for KAKENHI application during the research period due to his/her own accord so that is anticipated to be unable to carry through the responsibility, should refrain from becoming a Principal Investigator. Substitutions of the PI of an on-going KAKENHI project are not permitted.

As an exception, for the "Planned Research" of "Transformative Research Areas" replacements of PI may be accepted by going through required procedures.

(B) When organizing project members, the Principal Investigator must obtain a consent to become a Co-Investigator from the researcher via electronic application system in advance.

(C) The PI must be registered in the e-Rad system as "Eligible for KAKENHI Application." It is also required that he/she is not designated as "ineligible for grant receipt" in the fiscal year covered by a call for proposals (suspension of eligibility), as a penalty for such misconducts as improper grant spending, fraudulent grant acquisition or research misconduct associated with KAKENHI or any other competitive research funds.

2) Co-Investigator (Co-I) (*In the case of Publicly Offered Research, the Principal Investigator cannot set up a team of project members together with a Co-Investigator.)

(A) The Co-Investigator is a recipient of the grant who, in cooperation with the PI, bears responsibility for the implementation of the research project in accordance with the clear share of his/her roles. The Co-I must be a member of the project who receives a share of the grant based on the contents of the share as a recipient of the grant. (This rule applies even when the Co-I belongs to the same institution as the PI.)
An individual who is anticipated to become unable to carry through the Co-I's responsibility over the entire research period due to, for example, the loss of the KAKENHI eligibility caused by Co-I's own accord, should refrain from becoming a Co-I.

(B) The Co-I must be registered in the e-Rad system as being "Eligible for KAKENHI Application." It is also required that he/she is not designated as being "ineligible for grant receipt" in the fiscal year covered by a call for proposals (a suspension of eligibility), as a penalty for such misconducts as an improper grant spending, a fraudulent grant acquisition or a research misconduct associated with the KAKENHI or any other competitive research funding.

About the Process of Participation of Co-Investigator in Project Members

A consent process to become a Co-Investigator is conducted via the electronic application system if the applicant adds a Co-Investigator to project members. Following processes for both Principal Investigator and Co-Investigator(s) are necessary in the application process.

[Actions to be taken by the Principal Investigator]

・The Principal Investigator must enter the information on the researcher whom he/she wants to add to the project members in the "Project Members List" column on the "Application Information Input" screen of the electronic application system, request the researcher to become a Co-Investigator, and obtain a consent from the Co-Investigator-to-be by the time of submitting (sending) the Research Proposal Document to his/her research institution.

[Actions to be taken by the researcher who is requested to become a Co-Investigator]

・If the researcher is requested to become a Co-Investigator by the Principal Investigator via the electronic application system, the researcher must select "Consent" or "Dissent" after confirming the contents to be consented.

Procedures to be Performed by the Principal Investigator	Procedures to be Performed by the Co-Investigator-to-be	Procedures to be Performed by the Research Institution to which Co-Investigator-to-be belongs
① Request to become a Co-Investigator →	② Give a consent to become a Co-Investigator →	③ Give a consent to become a Co-Investigator as a standpoint of the research institution
The Principal Investigator requests to the researcher who is to be requested to become a Co-Investigator to participate in the project as a Co-Investigator via the electronic application system	The Co-Investigator-to-be is requested to participate in the project as a Co-Investigator from the Principal Investigator via the electronic application system and then the Co-Investigator-to-be selects a consent (or a dissent)	The information consented by the Co-Investigator-to-be is shown via the electronic application system and then the research institution also conducts the process such as giving consent to him/her

・The organization of the project members should be completed through all necessary procedures mentioned above to be carried out with the approximate target of two weeks prior to the deadline for the submission of the application documents set by JSPS. (All application procedures are workable on the system after two weeks prior to the deadline for the submission of the application documents. To submit (send) application documents to the research institution to which the Principal Investigator belongs, it is necessary to obtain consents from all the Co-Investigators-to-be.

* Please refer to the KAKENHI (Grants-in-Aid for Scientific Research) Electronic Application System Operation Manual for the detailed information such as operating environments, operating methods, and so on.
URL: https://www-shinsei.jsps.go.jp/kaken/topkakenhi/shinsei_ka.html
* After the researcher has given a consent to become a Co-Investigator, the information on the Co-Investigator-to-be will be shown to the research institution to which he/she belongs via the electronic application system, and then it will be necessary to obtain a consent, etc. from the research institution as well.
* Since the Principal Investigator cannot submit (send) the Research Proposal Document to his/her research institution until the research institution to which the Co-Investigator-to-be belongs gives the consent, etc., be sure to finish the process in time for the deadline of the submission.

3) Research Collaborator

(A) Research Collaborator is an individual who cooperates in the implementation of a research project other than the PI and the Co-I(s).

(B) Registration as "Eligible for KAKENHI application" in the e-Rad system is *not* a requirement for becoming a Research Collaborator.
For example, the following people can also participate in the research project as a Research Collaborator: a postdoctoral researcher, a graduate student, a research assistant (RA), JSPS Research Fellows (PD, RPD, CPD or DC) who are not registered as eligible for KAKENHI application in their host research institution, a researcher belonging to an overseas research institution, a researcher belonging to a corporation not designated as a research institution according to Article 2 of the Rules for the Handling of Grants-in-Aid for Scientific Research, and an individual offering research support such as technician and intellectual property specialist.

3. Requirements for the Appropriation of Research Expenditure

1) Expenditures that can be covered by direct expense

Expenditures necessary for the implementation of the research plan (including those necessary for compiling the research achievements)

* If any of the expenditure categories (equipment costs, travel expenses, or personnel cost/honoraria) exceeds 90% of the total yearly expenditure in any fiscal year of the research period, or if the expenditure in category Consumables or Miscellaneous constitutes a significant portion of the total expenditure, the necessity of that spending should be clarified in Research Proposal Document.

[Direct Expense of Competitive Research Funds to Cover the Costs of Assignments Other Than Research]

The cost of "buyout" (*i.e.*, the cost for hiring someone taking over a part of the duties other than research (*) of the Principal Investigator or Co-Investigator(s)) can be covered by the direct expense so that they can secure ample amount of time for research projects (the buyout system).

* The kinds of duties that can be covered by the buyout system are those authorized as proper jobs of the researcher at his/her affiliated research institution, excluding (i) research activities, and (ii) administrative work for institutional management. They include educational and related activities, e.g., educational activities (teaching and preparation for teaching, supervising students) and social engagement activities (medical practices, outreach activities). Activities associated with business profit are excluded.

Starting from the FY2021 Call for Proposals, the buyout system is applicable in the research categories listed below. A KAKENHI applicant who wishes to use the buyout system should do so according to the buyout scheme agreed upon between him/her and his/her research institution.
When an applicant wishes to use the buyout system, enter the cost of the buyout in the "Miscellaneous expense" column, and enter the word "buyout" in the "Item" column of the Research Proposal Document form. (Please refer to the supplementary volume of "Application Procedures for Grants-in-Aid for Scientific Research-KAKENHI-" (Forms/Procedures for Preparing and Entering a Research Proposal Document).)

[Research categories subject to the buyout system]

Specially Promoted Research, Transformative Research Areas (excluding "Platforms for Advanced Technologies and Research Resources"), Scientific Research on Innovative Areas (Research in a Proposed Research Area) (excluding "Platforms for Advanced Technologies and Research Resources"), Scientific Research, Challenging Research (including "Challenging Exploratory Research"), Early-Career Scientists (including "Young Scientists (A/B)"), Research Activity Start-up, International Leading Research, International Collaborative Research(including the Fostering Joint International Research (B) before name change), Home-Returning Researcher Development Research (limited to those who belong to the domestic research institutions), Special Purposes.

[Research categories *not* subject to the buyout system]

Encouragement of Scientists, Publication of Scientific Research Results, JSPS Fellows, Transformative Research Areas (Platforms for Advanced Technologies and Research Resources), Scientific Research on Innovative Areas (Research in a Proposed Research Area) (Platforms for Advanced Technologies and Research Resources), Fostering Joint International Research (including the Joint International Research (A) before name change). As for the research category of Fostering Joint International Research (including the Joint International Research (A) before name change) it is possible to budget the cost for hiring replacements.

As for the details of the expenses covered by the buyout system and matters to be done by the research institution refer to the following.
"Amendment Enabling Direct Expense of Competitive Research Funds to Cover the Costs of Duties Other Than Research (Introduction of Buyout System)" (October 9, 2020, Agreement of the Liaison Meeting of Related Offices and Ministries on Competitive Research Funds)
URL: https://www.mext.go.jp/a_menu/shinkou/torikumi/1385716_00003.htm

The objective of the buyout system is to increase the number of hours the PI (or Co-I) can devote to the funded project on the basis of his/her own needs and request. Accordingly, items such as the actual presence of the PI's (or Co-I's) needs and request, and the resulting expansion of research time devoted to the funded project (increased number of hours for research) may be subject to later inspection in relation to the grant spending. In the event that the buyout expenditure is found to be used improperly (e.g., the increase in hours devoted to the funded project is not verified), an order to return the delivered grant may be issued. Therefore, the research institution should ensure the appropriate implementation of the buyout system.

2) Expenditures that cannot be covered by KAKENHI

A. Costs associated with buildings and other facilities (excluding expenditure for installations necessary for installation of research equipment purchased by the KAKENHI direct expense)

B. Expenditures for measures to deal with accidents or disasters that occurred during the implementation of funded project

C. Personnel cost/honoraria for the PI or Co-I(s)

D. Other expenditures that are apt to be covered by indirect expense*

* Indirect expense which amounts to 30% of the direct expense, is intended for use by the research institution in covering expenditures needed by the research institution for the management and other things associated with the implementation of the funded project. Indirect expense will be placed for all the research categories of this call for proposals. PIs do not need to state the indirect expense in his/her Research Proposal Document.

4. Other points to note

(i) No garbled characters and so on

The electronic form of the Research Proposal Document (PDF files) submitted through the electronic application system will be used as they appear in the review. It is the PI's responsibility to check whether the contents of the Research Proposal Document converted to the PDF file are without problem (missing characters, charts, garbled characters, etc.) before submitting. Research Proposal Documents using colored figures and text will be used as they appear in the review.

(ii) Verification of the Application Forms

It should be verified whether the application format is in conformity with the prescribed format. As for the forms to be uploaded as an attached file, in particular, verify not only the total number of pages but also the number of pages instructed for each column is met. For example neither following case 1 in which the total number of pages is different nor following case 2 in which the total number of pages is same but the number of pages instructed for each column is different are inconformity with prescribed format.

(Example) Forms to be Uploaded: Grant-in-Aid for Transformative Research Areas (A) (Publicly Offered Research) (Form S-74)

	Number of page(s) of each column			Total Number of Pages
	"Research Objectives, Research Method, etc." Column	"Applicant's Ability to Conduct the Research and the Research Environment" Column	"Issues Relevant to the Protection of Human Right and Compliance with Laws and Regulations" Column	
Correct Number of Pages	**5**	**2**	**1**	**8**
Incorrect Number Case 1	4	2	1	7
Incorrect Number Case 2	6	1	1	8

For application forms, etc. under each research category, see "III. Instructions for Prospective Applicants 3. Preparation of the KAKENHI Application Form (Research Proposal Document), etc. (1) Preparation of KAKENHI Research Proposal Document."

(iii) No errors or omissions in application information

Application documents cannot be corrected after the application deadline. Therefore, please use utmost care to check for any errors or omissions in application information (in particular, errors in the digit number of the budget amount and typos, omissions, or spelling errors in the name of the research project, etc.).

4. Code of Conduct for Scientists to Adhere

To ensure the quality of scientific knowledge and to gain trust of society on scientists and scientific communities, it is essential to exercise fair and conscientious research activities with the adherence to the code of conduct for scientists. Applicants must understand and practice the contents of both the Statement "Code of Conduct for Scientists -Revised Version-" (section I. "Responsibilities of Scientists") by the Science Council of Japan and the booklet "For the Sound Development of Science -The Attitude of a Conscientious Scientist-" (especially section I "What Is a Responsible Research Activity?") issued by the Japan Society for the Promotion of Science (JSPS).

[Extraction from the Statement "Code of Conduct for Scientists -Revised Version-" by the Science Council of Japan dated January 25, 2013]

I. Responsibilities of Scientists

(Basic Responsibilities of Scientists)

1 Scientists shall recognize that they are responsible for assuring the quality of the specialized knowledge and skills that they themselves create, and for using their expert knowledge, skills and experience to contribute to the health and welfare of humankind, the safety and security of society and the sustainability of the global environment.

(Attitude of Scientists)

2 Scientists shall always make judgments and act with honesty and integrity, endeavoring to maintain and improve their own expertise, abilities and skills, and shall make the utmost effort to scientifically and objectively demonstrate the accuracy and validity of the knowledge they create through scientific research.

(Scientists in Society)

3 Scientists shall recognize that scientific autonomy is upheld by public trust and the mandate of the people, understand the relationships between science, technology, society, and the natural environment from a wide-ranging perspective, and act in an appropriate manner.

(Research that Answers to Social Wishes)

4 Scientists shall recognize that they are responsible for answering to the wishes of society to investigate into truths and to resolve various issues. When using research funds that are to be provided for establishing the research environment and for conducting research scientists shall always recognize that such broad social expectations exist.

(Accountability and Disclosure)

5 Scientists shall strive to disclose and actively explain the roles and significance of their own research, evaluate the possible effects of their research on people, society and the environment as well as the changes that their research might engender, neutrally and objectively disclose the results of this evaluation, and build a constructive dialogue with society.

(Dual Use of Scientific Research Outcomes)

6 Scientists shall recognize that there exist possibilities that their research results, contrary to their own intentions, may be used for destructive actions, and shall select appropriate means and methods as allowed by society in conducting research and publicizing the results.

* URL: http://www.scj.go.jp/ja/scj/kihan/

["For the Sound Development of Science – The Attitude of a Conscientious Scientist –" by JSPS]
(Japanese version (text version)) ("For the Sound Development of Science" Editorial Committee on JSPS)

* URL: https://www.jsps.go.jp/file/storage/general/j-kousei/data/rinri.pdf

5. Completion of Research Ethics Education Coursework, etc.

Principal Investigator (PI) and Co-Investigator(Co-I) taking part in a research funded by KAKENHI are requested to have completed properly the following procedures including research ethics, by the time they submit the formal application for grant delivery of a newly adopted research project in the FY2026 Grants-in-Aid for Scientific Research, and upon the formal application for a grant delivery, it shall be confirmed through the electronic application system whether they will have taken the research ethics education coursework, etc.
If a PI or Co-I completed the research ethics related procedures in the past, or has moved from the research institution at which he/she completed the procedure, he/she should check with the administrative section of his/her current institution for the validity of the procedure he/she conducted in the past.

[Actions to be taken by the Principal Investigator]

- The PI must either read through and learn the teaching materials by him/herself concerning the research ethics education coursework such as "For the Sound Development of Science - The Attitude of a Conscientious Scientist" published by the JSPS Editorial Committee of "For the Sound Development of Science," the "e-Learning Course on Research Ethics [eL CoRE]" or "APRIN e-learning program (eAPRIN)," etc., or attend a lecture on research ethics conducted by research institutions based on the "Guidelines for Responding to Misconduct in Research" (adopted by MEXT on August 26, 2014), by the time of the formal application for grant delivery.
- The PI must understand thoroughly and exercise the proper research practices in conducting his/her research, from amongst the contents of both the Statement "Code of Conduct for Scientists -Revised Version-" by the Science Council of Japan and the booklet "For the Sound Development of Science -The Attitude of a Conscientious Scientist-" issued by JSPS, by the time of the formal application for grant delivery.
- From each Co-Investigator-to-be, the PI must
  (i) obtain a consent of participation in the research project as a Co-I through the electronic application system and also a consent expressing "the completion of a seminar attendance or other kinds of coursework relevant to research ethics by the time of the formal application for the grant delivery of the research project in question," by the time of submitting (sending) the Research Proposal Document to the research institution which the PI belongs to, and;
  (ii) ascertain that the Co-I has actually completed the coursework such as an attendance at the lecture on research ethics by the time of the formal application for the grant delivery.

[Actions to be taken by the Co-Investigator-to-be]

- The Co-I must provide the PI with both a consent of the participation in the research project as a Co-I via the electronic application system and a consent expressing "the completion of a seminar attendance or other kinds of coursework relevant to research ethics by the time of the formal application for the grant delivery of the research project in question."
- The Co-I must either read through and learn the teaching materials by him/herself concerning the research ethics education coursework such as "For the Sound Development of Science - The Attitude of a Conscientious Scientist" published by the JSPS Editorial Committee of "For the Sound Development of Science," the "e-Learning Course on Research Ethics [eL CoRE]" or "APRIN e-learning program (eAPRIN)," etc., or attend a lecture on research ethics conducted by research institutions based on "Guidelines for Responding to Misconduct in Research" (adopted by MEXT on August 26, 2014), and report the PI to the effect by the time of the formal application for the grant delivery by the PI.
- The Co-I must understand thoroughly and exercise the proper research practices in conducting their research, from amongst the contents of both the statement "Code of Conduct for Scientists -Revised Version-" by the Science Council of Japan and the booklet "For the Sound Development of Science - The Attitude of a Conscientious Scientist-" issued by JSPS, and report the PI to the effect that he/she has done, by the time of the formal application for the grant delivery by the PI.

6. Registration of the Researcher Information in “researchmap”

The “researchmap (URL: https://researchmap.jp/)” is the Japan’s largest researcher information database as a general guide to Japanese researchers. The information on the research achievements registered in the researchmap is ready to be openly available over the Internet and the database itself is linked to the e-Rad, many university faculty databases and so on. The Japanese Government as a whole is going to further utilize the researchmap.
Furthermore, since the posted information in the researchmap and/or the Grants-in-Aid for Scientific Research Database (KAKEN) is to be handled as a reference according to the necessity in the review of the KAKENHI applications, the registration of the researcher information into the researchmap is encouraged. In addition, when doing so, make sure to register the “Researcher Number” because the posted information is to be searched with the “Researcher Number” when referring to the posted information in the researchmap in the course of the review.

< Inquiries >

Service Support Center (in charge of the “researchmap”), Department for Information Infrastructure, Japan Science and Technology Agency
Web inquiry form: https://researchmap.jp/public/inquiry/

7. Cooperation to Review

The Grants-in-Aid for Scientific Research-KAKENHI- adopt a peer-review process in which the researchers selected from their own community engage themselves in the assessment and reviewing of each research proposals on the basis of its scientific merit. The KAKENHI review is conducted thanks to the participation of more than 8,000 researchers as reviewers. The peer review forms the basis of the autonomy of academic community and plays an important role in ensuring quality of scientific research and its improvement. The review of applications is carried out with the constructive and mutually critical spirit of scientists and based on the purely academic value. It is no exaggeration to say that the KAKENHI review system is indispensable in supporting Japan’s scientific research into the future among other research funds.

The Grants-in-Aid for Scientific Research (KAKENHI) program is supported by researchers who have responsibilities not only to conduct the funded research projects as applicants and grant recipients but also as reviewers. It is important for researchers to find out excellent research proposals as reviewers in order to support the scientific research as is the case of putting out excellent research results with KAKENHI funds. It is expected that the above-stated understanding is shared in the academic community. Furthermore, participating to the review process has an aspect of fostering researchers through enhancing their capability to conduct the objective and academic assessments based on the various views of fellow reviewers leading up to broaden their horizons.

In order to support the peer-review system of KAKENHI by the whole body of researchers by appropriately sharing the burden of proposal review without putting an extra load on some researchers. The researchers’ positive participation in the review process is well appreciated when they are requested to become the KAKENHI reviewer by JSPS or MEXT in the future.

JSPS has registered the Principal Investigators’ information including their names and affiliated research institutions in the Database of Review Committee Candidate and has utilized it so as to select the fair reviewers. In order to keep the information in this Database updated at all times, JSPS makes a request every year to update the registered information through your affiliated research institutions. Kindly cooperate in updating the information in accordance with the Spending Rules for researchers (supplementary conditions or funding conditions).

IV. Instructions for Administrative Staff of Research Institution

(Omitted)

V. Other Relevant Issues

1. Support through Platforms for Advanced Technologies and Research Resources

In order to respond effectively to the diverse needs of researchers of KAKENHI research projects, the Grant-in-Aid for Transformative Research Areas - Platforms for Advanced Technologies and Research Resources forms a resource and technical support platform for research (hereinafter referred to as "Platform") under the close coop eration of relevant institutes with inter-university research institutes and Joint Usage/Research Centers, or Interna tional Joint Usage / Research Center as core institutes. Together with providing technical support towards indivi dual KAKENHI research projects and providing advanced problem solving methods to researchers, it provides a n integral promotion of cooperation between researchers, interdisciplinary integration, and human resources devel opment.
Applications for technical support, etc. are open for each of the Platforms below where it concerns research projects carried out through KAKENHI. Researchers desiring technical support, etc. from each of the Platforms are requested to check their respective websites, etc. for the details and schedule of the call for proposals and actively apply.

* "Technical Support, etc." points to the sharing of equipment with researchers from a wide range of research fields, technical support and the collecting, conservation, and providing of resources (documents, data, experiment samples, specimen, etc.), and support for conservation techniques, etc.

"Advanced Technology Support Platform Program" has scientific value and an advanced nature through the combination of multiple facilities and equipment, and provides shared use of equipment and technical support to researchers in a wide variety of research areas.

"Research Platform Resource Support Program" collects, conserves, and supplies the resources that are the basis of research (documents, data, experiment samples, specimen, etc.) and also conducts support for conservation techniques, etc.

Area	Platform Name	Core Institution	Support Function
Advanced Technology Support Platform Program	Platform of Advanced Bioimaging Support (*)	National Institute for Physiological Sciences National Institute for Basic Biology	Advanced technical support and user training for: • Light microscopy • Electron microscopy • Magnetic resonance imaging • Imaging analysis
	Platform of Advanced Animal Model Support (*)	The Institute of Medical Science, The University of Tokyo	Support for constructing animal models, Support for pathological analysis, Support for physiological analysis, and Support for molecular profiling
	Platform for Advanced Genome Science (*)	National Institute of Genetics	Advanced genome analysis (de novo genome sequencing; re-sequencing for genome variation detection; analysis of transcriptome, epigenome and metagenome; ultra-high sensitivity analysis for single cells, single molecules, etc.; big-data analysis and advanced bioinformatics; by using of the latest facilities and technologies)
Research Resource Platform Program	Platform of Supporting Cohort Study and Biospecimen Analysis (*)	The Institute of Medical Science, The University of Tokyo	Support for cohort study using bioresources, Support for maintaining and utilizing human brain resources, and Support using biospecimen
Support	Supply Platform of Short-lived Radioisotopes for Fundamental Research	Research Center for Nuclear Physics, Osaka University	Supply short-lived radioisotopes produced by accelerators for fundamental research in various scientific fields.

Also, Committee on Promoting Collaboration in Life Sciences that functions as a general information point and coordinator across the four Platforms marked with an asterisk (*) above is set up. (Core Institution: The Institute of Medical Science, The University of Tokyo)

Each Platform's website can be found in the links on the site below:
URL: https://www.mext.go.jp/a_menu/shinkou/hojyo/mext_01901.html

2. Promotion of the Shared Use of Research Equipment

In “Reform of Competitive Research Funds: Towards a Sustained Output of Research Achievements (Interim Summary)” (June 24, 2015, Competitive Research Fund Reform Review meeting) it was decided that, when the original research objectives were fully achieved, versatile and large equipment should, in principle, be shared.
The government also addresses the need to promote the implementation and common use of research facilities and equipment, to establish a framework for the introduction, renewal, and utilization of organizational research facilities (core facilities), and to formulate and publicize policies for the internal and external sharing of research facilities and equipment in the Comprehensive Package to Strengthen Research Capacity and Support Young Researchers (January 23, 2020, Council for Science, Technology, and Innovation) and the Sixth Science, Technology, and Innovation Basic Plan (Cabinet Decision on March 26, 2021).
Given these circumstances, in order to promote efficient use of research funds and joint use of facilities, starting from fiscal year 2025, researchers will be requested to work to promote joint use with those inside and/or outside the research institution of research facilities and equipment that have been purchased with direct expenses of KAKENHI and that meet conditions stipulated by the spending rules. Please visualize such research facilities and equipment for those inside and/or outside the research institution, by, in particular, registering them on a search system, etc. For details, please refer to the Guidelines toward the Promotion of the Joint Use of Research Facilities and Equipment (March 2022, Study Group on the Formulation of the Guidelines, etc. toward the Joint Use of Research Facilities and Equipment at Universities and Other Institutions) and the KAKENHI spending rules (supplementary conditions, funding conditions, etc.).

○“Reform of Competitive Research Funds: Towards a Sustained Output of Research Achievements (Interim Report)” (June 24, 2015, Competitive Research Fund Reform Review meeting)
URL: https://www.mext.go.jp/b_menu/shingi/chousa/shinkou/039/gaiyou/1359306.htm

○“The Sixth Science, Technology, and Innovation Basic Plan (Cabinet Decision on March 26, 2021)”
URL: https://www8.cao.go.jp/cstp/kihonkeikaku/6honbun.pdf

○Unified Rules for Administrative Procedures, Etc. Pertaining to Competitive Research Funds (March 5, 2021, Agreement of the Liaison Meeting of Related Offices and Ministries on Competitive Research Funds; revised on May 24, 2023)
URL: https://www8.cao.go.jp/cstp/compefund/toitsu_rule_r50524.pdf

○Guidelines toward the Promotion of the Joint Use of Research Facilities and Equipment (March 2022, Study Group on the Formulation of the Guidelines, etc. toward the Joint Use of Research Facilities and Equipment at Universities and Other Institutions)
URL: https://www.mext.go.jp/b_menu/shingi/chousa/shotou/163/toushin/mext_00004.html

3. Promotion of Dialogue and Collaboration with Society

According to the “Promotion of the ‘Dialogue on Science and Technology with Citizens’ (A Basic Course of Action)” (Adopted by the Minister of State for Science and Technology Policy and the Executive Members of the Council for Science and Technology Policy on June 19, 2010), it is essential to adopt a stance of returning scientific and technological achievements to citizens, gaining their understanding and support, and working together to promote science and technology, so that we can constantly create outstanding results of science and technology and further develop science and technology of Japan. Researchers with adopted KAKENHI projects who receive an allotment of public research funds amounting more than 30 million yen per year per case are requested to positively work on the “Dialogue on Science and Technology with Citizens.” Universities and other research institutions are also requested to make systematic efforts in order for researchers who have received public research funds to ensure the proper implementation of the “Dialogue on Science and Technology with Citizens,” for example, by setting up support systems.
For KAKENHI, there is the question “Are you positively trying to publicize and disseminate the research content and research achievements?” especially in the interim/ex-post assessment of Transformative Research Areas (A). Therefore, based on the above-mentioned basic policy, researchers should disseminate the achievements of research funded with KAKENHI to society and citizens in an even more positive way.

4. Cooperation with the National Bioscience Database Center

The National Bioscience Database Center (URL: https://biosciencedbc.jp/) has been established in the Japan Science and Technology Agency (JST, a national research and development agency), in order to promote the integrated use of

databases in the area of life science that have been created by various research institutions and other institutions.
This Center spurs the active participation of related institutions, and based on four pillars, namely (1) the planning of strategies, (2) creation and operation of portal websites, (3) research on and development of core technology for the integration of databases and (4) the promotion of the integration of biotechnology-related databases, it is promoting projects aiming at the integration of databases in the area of life science. In this way, through wide sharing and utilization of the research achievements in the area of life science produced in Japan in the researcher community, the Center aims at invigorating overall research in the area of life science, including research and development connected to basic research and industrial applied research.
JSPS would like to request researchers to cooperate by providing to the Center copies of raw data related to achievements published in research papers and other output in the area of life science, or copies of created open databases.
Moreover, the copies provided will be able to be utilized on a non-exclusive basis as reproductions, alterations, or in other necessary forms.
JSPS would like researchers to understand in advance that, in response to the requests of the institutions that received copies, it would also like to request researchers to cooperate by providing all the information necessary for utilizing the copies.
Furthermore, the National Bioscience Database Center has developed guidelines for data on humans, in order to promote the sharing and use of data related to research in the area of life science, with due considerations to the protection of personal information.

NBDC Human Data Sharing Guidelines
URL: https://humandbs.dbcls.jp/guidelines/data-sharing-guidelines

5. Inter-University Bio-Backup Project

The purpose of the Inter-University Bio-Backup Project (IBBP) is to “back up” biological genetic resources, which are indispensable research resources in various research areas, and to avoid damage or loss of biological genetic resources due to unforeseen accidents, disasters, etc. The project newly commenced from 2012.
In the National Institute for Basic Biology of the Inter-University Research Institute Corporation National Institutes of Natural Sciences, which is the core of this project, the Inter-University Bio-Backup Project for Basic Biology (IBBP Center, URL: https://ibbp.nibb.ac.jp) has been established as a backup center for biological genetic resources. It is equipped with the newest equipment necessary for the backup of biological genetic resources.
Any researcher who belongs to a university or a research institution may apply for storage. Biological genetic resources that can be stored in the IBBP Center are samples that can be proliferated (amplified) or cryopreserved (for vegetable seeds, the refrigeration or deep-freezing preservation condition needs to be definite), and being not pathogenic is also a condition. Since backup is provided free of charge, researchers should make use of the IBBP Center.

6. National BioResource Project

The National BioResource Project (NBRP) strategically collects and preserves important bioresources that are the basic and foundation of life science research at the core bases of this project and provides them to universities and research institutes, thereby contributing to the development of life science research in Japan. In the future, in order to contribute to the development of life science research in Japan, it is necessary to continually collect useful bioresources.
For that matter, please deposit (*) available bioresources among bioresources developed by Grants-in-Aid for Scientific Research (limited to the bioresource targeted for NBRP). Please cooperate with the NBRP collecting activities.
It is recommended to utilize the resources already collected in NBRP from the viewpoint such as efficient implementation of research.

(*) Deposit: This is a procedure to approve the use (preservation/provision) in this project without transferring the various rights related to the resource. By specifying specific conditions in the deposit agreement, you can add usage conditions such as restrictions on usage and quotation of articles to users.

List of NBRP core bases upgrading program representative agencies
URL: https://nbrp.jp/resource/

7. Security Export Control Policy (Coping with Technology Leakage Overseas)

In implementing various research activities including research projects funded with KAKENHI, research institutions are asked to take systematic measures to ensure that the research achievements which have potential risks of being diverted to military use are not transferred to WMD developers, terrorist organizations, or people carrying out other dubious activities.
In Japan, export controls (*1) are carried out under the Foreign Exchange Act. Therefore, in principle, in order to export (provide) cargo and technology regulated by the Foreign Exchange Act, it is necessary to obtain permission of the Minister of Economy, Trade and Industry. It is reminded that KAKENHI grantees must observe the Foreign Exchange Act as well as other laws, guidelines and circular notices issued by the government.

(*1) Japan's Security Export Control System established on the basis of international agreements mainly consists of (i) "List rules" which require permission of the Minister of Economy, Trade and Industry in principle when exporting cargo or providing technology that carry specifications and/or functions higher than certain levels, such as carbon fiber and numerically controlled machine tool, etc., and (ii) "Catch-all regulation" which requires permission of the Minister of Economy, Trade and Industry when exporting cargo or providing technology that are not subject to regulation under the List rules but do fall under certain regulatory requirements (application requirements, consumer requirements and/or informed requirements).

Please note in particular that not only export of cargo but also provision of technology will be subject to the regulation by the Foreign Exchange Act. When providing a "List rules" technology to non-residents or providing it in a foreign country, prior permission for provision is required. "Provision of technology" includes not only providing technical information such as design drawings, specifications, manuals, samples, and prototypes via storage media such as paper, mail, CD, DVD, and USB memory, but also providing work knowledge and technical assistance at seminars through technical instruction, skill training, etc. Researchers should be aware that there may be cases in which technologies subject to regulation by the Foreign Exchange Act are involved when mentoring foreign students and/or joint research activities with overseas groups. Please also bear in mind that the provision of technologies, etc. acquired in KAKENHI-funded projects or the provision of technologies, etc. already in possession with the use of KAKENHI may also be subject to restrictions.

Pursuant to the Foreign Exchange Act, exporting "List Rules" cargo or providing "List Rules" technology to a foreign country requires the development of a security export control system (*2). Therefore, JSPS may, by the time of official grant decision, confirm whether the provision of cargo and technology subject to export controls under the Foreign Exchange Act is planned in KAKENHI-funded projects and whether a control system has been established if there is an intent to provide them.
In case there is an intent to provide them but no control system has been established, JSPS requires the development of such system by the time of the provision or by the end of the relevant project, whichever is earlier. JSPS may also report the status of confirmation to the Ministry of Economy, Trade and Industry at its request.
In addition, any violation of the Foreign Exchange Act regulations with regard to technologies, etc. acquired in KAKENHI-funded projects may result in no official grant decision being made or cancellation of grant delivery.

(*2) Exporters or persons conducting similar transactions are obliged to observe "compliance standards for exporters and persons conducting similar transactions" as prescribed in Article 55-10, Paragraph 1 of the Foreign Exchange Act. The security export control system as referred here means an internal control system of an organization to prevent illegal export, etc. through proper export of "List Rules" cargo or proper provision of "List Rules" technology to a foreign country, based on the control system prescribed in the "compliance standards for exporters and persons conducting similar transactions."

Details of the security trade control are published on the websites including the Ministry of Economy, Trade and Industry website.

○Ministry of Economy, Trade and Industry: Security Trade Control (General)
URL: https://www.meti.go.jp/policy/anpo/

○Ministry of Economy, Trade and Industry: "Handbook on Security Trade Control"
URL: https://www.meti.go.jp/policy/anpo/seminer/shiryo/handbook.pdf

○Center for Information on Security Trade Controls
URL: https://www.cistec.or.jp/index.html

○"Guidance for the Control of Sensitive Technologies for Security Export for Academic and Research Institutions 3rd Edition"
URL: https://www.meti.go.jp/policy/anpo/law_document/tutatu/t07sonota/t07sonota_jishukanri03.pdf

8. Strict Implementation of United Nations Security Council Resolution 2321

In the face of the nuclear test by Democratic People's Republic of Korea (DPRK) in September 2016 and repeated launches of ballistic missiles, the United Nations Security Council adopted the United Nations Security Council Resolution 2321 on November 30, 2016 (ET, New York) deciding to impose additional and stronger sanctions on DPRK. In this regard, MEXT issued a letter of request entitled, "Strict Implementation of United Nations Security Council Resolution 2321 (Request)" (28 受文科際第 98 号) to relevant organizations as of February 17, 2017.
"Scientific and technical cooperation" as set forth in Paragraph 11 in the main text of the Resolution not only includes technologies regulated by the Foreign Exchange and Foreign Trade Act of Japan, but all cooperative activities except for medical exchanges. Therefore, it is critical that research institutions exercise strict implementation of the Resolution when conducting various research activities including said sponsored research.
The UNSC Resolution 2321 can be found at:

○ MOFA: United Nations Security Council Resolution 2321, Japanese translation (MOFA Notice No. 463 (issued on December 9, 2016)
URL: https://www.mofa.go.jp/mofaj/files/000211409.pdf

9. Improvement of Treatment of Students in the Doctoral Course

"The 6th Science, Technology, and Innovation Basic Plan (Cabinet Decision on March 26, 2021)" addresses the need to enhance financial support for doctoral students in particular, in order to attract outstanding talents from home and abroad, and calls for research institutions to provide greater employment opportunities for doctoral students as research assistants (RAs) and to improve their treatment. To this end, the Basic Plan, for example, sets a numerical target to triple the number of doctoral students to receive subsidy roughly equivalent to their living cost (which is equivalent to about 30% of students enrolling in doctoral courses to receive such subsidy).
Furthermore, the "Guideline on Recruiting and Fostering Postdoctoral Fellows, Etc. (December 3, 2020, Committee on Human Resources, the Academic Deliberation Council for Science and Technology)" states that doctoral students "are students, but at the same time, also researchers in a certain way, and therefore it is the key responsibility of universities that foster researchers to provide the environment for research activities and to ensure proper treatment…It is of particular importance to treat them based on appropriate assessment of their contribution, by establishing compensations that meet the nature and content of their jobs and paying hourly wages according to the actual work hours under the proper labor management…When submitting applications to competitive research funds and other grants, universities and institutions must record the expenditures necessary to employ RAs as direct expense, and revise the school rules as necessary to make sure that the RAs are paid proper compensations."
Based on the above, when employing a doctoral student as RA, etc. for a KAKENHI project, set the hourly wage according to the nature and content of his/her job based on the standard of each research institution and pay the wage according to the actual work hours under the proper labor management.

Furthermore, when employing a doctoral student as RA, etc., be mindful not to overload him/her with excessive work hours and make sure that he/she can maintain a good balance between the work and his/her own research and study hours.

10. Securing University Research Administrators (URAs) and other Management Personnel

The Sixth Science, Technology, and Innovation Basic Plan (Cabinet Decision on March 26, 2021) identifies the importance of efforts to improve the security of professional quality and treatment so that the positions of University Research Administrators (URAs) and other management personnel will become attractive. The Comprehensive Package to Strengthen Research Capacity and Support Young Researchers (January 23, 2020, Council for Science, Technology, and Innovation) also addresses the need to establish career paths for management personnel, URAs, engineers, etc.
In light of these initiatives, research institutions are encouraged, to the extent possible, to secure certain lengths of fixed-term employment (of about five years or longer) for URAs and other management personnel (who are currently hired or will be hired newly by research institutions) when engaging them in the management of KAKENHI research programs, by using not only KAKENHI, but also funds such as indirect expenses and basic costs under other external funds, and donations, for example.
In addition, please make active efforts to provide support in securing career paths for these management personnel, for example, enrolling them in URA training, etc. Also consider utilizing the indirect expenses for such efforts.

11. Promoting Efforts to Support Gender Equality and Foster Human Resources

The Science, Technology, and Innovation Basic Plan (Cabinet Decision on March 26, 2021), the Basic Plan for Gender Equality (Cabinet Decision on December 25, 2020), and Education and Human Resource Development Policy Package toward the Realization of Society 5.0 (Decision by the Council for Science, Technology and Innovation on June 2, 2022) aim to create research environments that make it easier for both men and women to continue their research activities when life events occur, such as childbirth, childcare, and nursing care, as well as to promote the appointment of excellent female researchers as project leaders, among other measures. Another goal is to increase the proportion of female students in middle and high school who advance to master's and doctoral courses especially in the science and engineering fields through initiatives to communicate the fascination of these areas to female students in middle and high school, their parents, and their teachers, thereby overcoming the current situation with a low percentage of female students going to doctoral courses in natural science and increasing the number of potential bearers of knowledge in Japan.
In addition, if due consideration is not paid to sexual differences in research and development processes that require such consideration, it may cause inappropriate impact at the stage of social implementation. As such, research and technological development that properly give attention to sexual differences, such as those in physique and the structure and functioning of bodies, are needed.
In light of these points, in KAKENHI-funded projects, JSPS will take into account efforts to promote the participation and advancement of female researchers and expand the range of human resources that will play a role in science and technology in the future.
To advance science, it is important to secure an environment that allows diverse researchers to exercise their potentials and advance their activities. In September 2023, JSPS established the “Basic Guidelines for Promoting Gender Equality in JSPS Programs” to promote gender equal participation in areas of science.
As part of this initiative, JSPS opened a new website CHEERS! (URL: https://cheers.jsps.go.jp/) in an aim to support the diverse careers of all researchers, such as balancing research and life events. JSPS will release useful information on, for example, how to balance research and childcare and actively carry out various initiatives through CHEERS! to create a network among researchers. Researchers are encouraged to visit the website.

12. ”HIRAMEKI☆TOKIMEKI SCIENCE – Welcome to a University Lab – Science That Inspires and Inspirits”

The “HIRAMEKI☆TOKIMEKI SCIENCE” program is designed to offer opportunities to gain a deeper understanding of the meaning of science and its roles in daily life to society, as part of efforts to give back to society and promote KAKENHI-funded research achievements.
Based on their KAKENHI-funded academic studies, researchers themselves communicate the fun and fascination of scientific pursuit directly to the younger generation in an easy-to-understand manner. They thus instill intellectual curiosity and a rich sense of creativity in pupils in their fifth and sixth years of elementary school and students in middle and high school, who will go on to shoulder the future of Japan. As we are looking for such experience-based programs, regardless of areas of research, please take advantage of this opportunity.
URL: https://www.jsps.go.jp/j-hirameki/

13. Undergoing External Verification in accordance with the Basic Guidelines for Proper Conduct of Animal Experiments

Research institutions such as universities that conduct animal experiments are required to comply with the “Basic Guidelines for Proper Conduct of Animal Experiments at Research Institutions” (Ministry of Education, Culture, Sports, Science and Technology Notification No. 71, 2006, hereinafter referred to as the “Basic Guidelines”). In particular, the Basic Guidelines emphasize the proper conduct of animal experiments based on the 3Rs principle: use of alternatives (Replacement), reduction in the number of animals used (Reduction), and refinement of procedures to minimize pain and distress (Refinement).
In particular, the Basic Guidelines stipulate that the head of a research institution shall ensure transparency in the implementation of animal experiments by regularly inspecting and evaluating the institution’s compliance with the Basic Guidelines. Additionally, it is stipulated that effort should be made to have the results of these inspections and evaluations verified by external parties outside the institution. If when applying for KAKENHI your research involves animal experimentation, ensure that your affiliated research institution undergoes external verification. If only certain facilities within your affiliated research institution have undergone external verification, ensure that the institution as a whole undergoes the verification process.

Basic Guidelines for Proper Conduct of Animal Experiments at Research Institutions (Ministry of Education, Culture, Sports, Science and Technology, Notification No. 71, 2006)
URL: https://www.mext.go.jp/b_menu/hakusho/nc/06060904.htm

Attached Table 4 Grants-in-Aid for Scientific Research-KAKENHI- “Review Section Table”

March 9, 2022

Subdivision on Research Grant Screening Section of the Academic Deliberation in the Subdivision on Science, Council for Science and Technology

About the Review Section Table

○The Review Section Table is classified by sections for the KAKENHI's review criteria. Applicants should select a review section that is most suitable for their own research proposal.

○There are three review sections: Basic, Medium-sized and Broad. The Review Section Table contains 1) Overview, 2) Table for Basic Section, 3) Table for Medium-sized and Broad Sections. Looking at the Overview, the applicants can understand an overall picture of sections. In addition, check each Review Section Table for the detailed contents of each section and select a review section for their research proposal.

○The Basic Section is the fundamental unit. The Basic Section applies to "Grant-in-Aid for Scientific Research (B/C) (application section "General")" and for "Grant-in-Aid for Early-Career Scientists." Each Basic Section offers some examples related to the research contents. They are to help applicants understand the content of the Basic Section, so applicants are allowed to submit proposals even if the content is not given as examples.

○The Medium-sized Section applies to "Grant-in-Aid for Scientific Research (A) (application section "General")" and "Grant-in-Aid for Challenging Research (Pioneering/Exploratory)." Several Basic Sections are attached to indicate the scope of review for the Medium-sized Section. However, applicants are allowed to submit proposals even if the content does not fall under the Basic Sections included in the Medium-sized Section. It should be noted that some Basic Sections are included in several Medium-sized Sections, so applicants can select the Medium-sized Section that they consider most suitable for their own research proposal.

○The Broad Section applies to "Grant-in-Aid for Scientific Research (S)."
Several Medium-sized Sections are attached to indicate the scope of review of the Broad Section. However, applicants are allowed to submit proposals even if the content does not fall under the Medium-sized Sections included in the Broad Section. It should be noted that some Medium-sized Sections are included in several Broad Sections, so applicants can select the Broad Section that they consider most suitable for their own research proposal.

○To respond flexibly to research diversity in the review process, application in the Basic, Medium-sized and Broad Sections is made in the following formats: Basic Section: "○○ -related"; Medium-sized Section: "○○ and related fields," and Broad Section: listed alphabetically.

The Review Section Table (Overview)

Broad Section A

Medium-sized Section 1 : Philosophy, art, and related fields

Basic Section	
01010	Philosophy and ethics-related
01020	Chinese philosophy, Indian philosophy and Buddhist philosophy-related
01030	Religious studies-related
01040	History of thought-related
01050	Aesthetics and art studies-related
01060	History of arts-related
01070	Theory of art practice-related
01080	Sociology of science, history of science and technology-related
90010	Design-related

Medium-sized Section 2 : Literature, linguistics, and related fields

Basic Section	
02010	Japanese literature-related
02020	Chinese literature-related
02030	English literature and literature in the English language-related
02040	European literature-related
02050	Literature in general-related
02060	Linguistics-related
02070	Japanese linguistics-related
02080	English linguistics-related
02090	Japanese language education-related
02100	Foreign language education-related
90020	Library and information science, humanistic and social informatics-related

Medium-sized Section 3 : History, archaeology, museology, and related fields

Basic Section	
03010	Historical studies in general-related
03020	Japanese history-related
03030	History of Asia and Africa-related
03040	History of Europe and America-related
03050	Archaeology-related
03060	Cultural assets study-related
03070	Museology-related

Medium-sized Section 4 : Geography, cultural anthropology, folklore, and related fields

Basic Section	
04010	Geography-related
04020	Human geography-related
04030	Cultural anthropology and folklore-related
80010	Area studies-related
80020	Tourism studies-related
80030	Gender studies-related

Broad Section A (continued)

Medium-sized Section 5 : Law and related fields

Basic Section	
05010	Legal theory and history-related
05020	Public law-related
05030	International law-related
05040	Social law-related
05050	Criminal law-related
05060	Civil law-related
05070	New fields of law-related

Medium-sized Section 6 : Political science and related fields

Basic Section	
06010	Politics-related
06020	International relations-related
80010	Area studies-related
80030	Gender studies-related

Medium-sized Section 7 : Economics, business administration, and related fields

Basic Section	
07010	Economic theory-related
07020	Economic doctrines and economic thought-related
07030	Economic statistics-related
07040	Economic policy-related
07050	Public economics and labor economics-related
07060	Money and finance-related
07070	Economic history-related
07080	Business administration-related
07090	Commerce-related
07100	Accounting-related
80020	Tourism studies-related

Medium-sized Section 8 : Sociology and related fields

Basic Section	
08010	Sociology-related
08020	Social welfare-related
08030	Family and consumer sciences, and culture and living-related
80020	Tourism studies-related
80030	Gender studies-related

Broad Section A (continued)

Medium-sized Section 9 : Education and related fields

Basic Section	
09010	Education-related
09020	Sociology of education-related
09030	Childhood and nursery/pre-school education-related
09040	Education on school subjects and primary/ secondary education-related
09050	Tertiary education-related
09060	Special needs education-related
09070	Educational technology-related
09080	Science education-related
02090	Japanese language education-related
02100	Foreign language education-related

Medium-sized Section 10 : Psychology and related fields

Basic Section	
10010	Social psychology-related
10020	Educational psychology-related
10030	Clinical psychology-related
10040	Experimental psychology-related
90030	Cognitive science-related

Broad Section B

Medium-sized Section 11 : Algebra, geometry, and related fields

Basic Section	
11010	Algebra-related
11020	Geometry-related

Medium-sized Section 12 : Analysis, applied mathematics, and related fields

Basic Section	
12010	Basic analysis-related
12020	Mathematical analysis-related
12030	Basic mathematics-related
12040	Applied mathematics and statistics-related

Medium-sized Section 13 : Condensed matter physics and related fields

Basic Section	
13010	Mathematical physics and fundamental theory of condensed matter physics-related
13020	Semiconductors, optical properties of condensed matter and atomic physics-related
13030	Magnetism, superconductivity and strongly correlated systems-related
13040	Biophysics, chemical physics and soft matter physics-related

Medium-sized Section 14 : Plasma science and related fields

Basic Section	
14010	Fundamental plasma-related
14020	Nuclear fusion-related
14030	Applied plasma science-related
80040	Quantum beam science-related

Medium-sized Section 15 : Particle-, nuclear-, astro-physics, and related fields

Basic Section	
80040	Quantum beam science-related
15010	Theoretical studies related to particle-, nuclear-, cosmic ray and astro-physics
15020	Experimental studies related to particle-, nuclear-, cosmic ray and astro-physics

Medium-sized Section 16 : Astronomy and related fields

Basic Section	
16010	Astronomy-related

Medium-sized Section 17 : Earth and planetary science and related fields

Basic Section	
17010	Space and planetary sciences-related
17020	Atmospheric and hydrospheric sciences-related
17030	Human geosciences-related
17040	Solid earth sciences-related
17050	Biogeosciences-related

Broad Section C

Medium-sized Section 18 : Mechanics of materials, production engineering, design engineering, and related fields

Basic Section	
18010	Mechanics of materials and materials-related
18020	Manufacturing and production engineering-related
18030	Design engineering-related
18040	Machine elements and tribology-related

Medium-sized Section 19 : Fluid engineering, thermal engineering, and related fields

Basic Section	
19010	Fluid engineering-related
19020	Thermal engineering-related

Medium-sized Section 20 : Mechanical dynamics, robotics, and related fields

Basic Section	
20010	Mechanics and mechatronics-related
20020	Robotics and intelligent system-related

Medium-sized Section 21 : Electrical and electronic engineering and related fields

Basic Section	
21010	Power engineering-related
21020	Communication and network engineering-related
21030	Measurement engineering-related
21040	Control and system engineering-related
21050	Electric and electronic materials-related
21060	Electron device and electronic equipment-related

Medium-sized Section 22 : Civil engineering and related fields

Basic Section	
22010	Civil engineering material, execution and construction management-related
22020	Structure engineering and earthquake engineering-related
22030	Geotechnical engineering-related
22040	Hydroengineering-related
22050	Civil engineering plan and transportation engineering-related
22060	Environmental systems for civil engineering-related

Medium-sized Section 23 : Architecture, building engineering, and related fields

Basic Section	
23010	Building structures and materials-related
23020	Architectural environment and building equipment-related
23030	Architectural planning and city planning-related
23040	Architectural history and design-related
90010	Design-related

Medium-sized Section 24 : Aerospace engineering, marine and maritime engineering, and related fields

Basic Section	
24010	Aerospace engineering-related
24020	Marine engineering-related

Medium-sized Section 25 : Social systems engineering, safety engineering, disaster prevention engineering, and related fields

Basic Section	
25010	Social systems engineering-related
25020	Safety engineering-related
25030	Disaster prevention engineering-related

Broad Section D

Medium-sized Section 26 : Materials engineering and related fields

Basic Section	
26010	Metallic material properties-related
26020	Inorganic materials and properties-related
26030	Composite materials and interfaces-related
26040	Structural materials and functional materials-related
26050	Material processing and microstructure control-related
26060	Metals production and resources production-related

Medium-sized Section 27 : Chemical engineering and related fields

Basic Section	
27010	Transport phenomena and unit operations-related
27020	Chemical reaction and process system engineering-related
27030	Catalyst and resource chemical process-related
27040	Biofunction and bioprocess engineering-related

Medium-sized Section 28 : Nano/micro science and related fields

Basic Section	
28010	Nanometer-scale chemistry-related
28020	Nanostructural physics-related
28030	Nanomaterials-related
28040	Nanobioscience-related
28050	Nano/micro-systems-related

Medium-sized Section 29 : Applied condensed matter physics and related fields

Basic Section	
29010	Applied physical properties-related
29020	Thin film/surface and interfacial physical properties-related
29030	Applied condensed matter physics-related

Medium-sized Section 30 : Applied physics and engineering and related fields

Basic Section	
30010	Crystal engineering-related
30020	Optical engineering and photon science-related

Medium-sized Section 31 : Nuclear engineering, earth resources engineering, energy engineering, and related fields

Basic Section	
31010	Nuclear engineering-related
31020	Earth resource engineering, Energy sciences-related

Medium-sized Section 90 : Biomedical engineering and related fields

Basic Section	
90110	Biomedical engineering-related
90120	Biomaterials-related
90130	Medical systems-related
90140	Medical technology assessment-related
90150	Medical assistive technology-related

Broad Section E

Medium-sized Section 32 : Physical chemistry, functional solid state chemistry, and related fields

Basic Section	
32010	Fundamental physical chemistry-related
32020	Functional solid state chemistry-related

Medium-sized Section 33 : Organic chemistry and related fields

Basic Section	
33010	Structural organic chemistry and physical organic chemistry-related
33020	Synthetic organic chemistry-related

Medium-sized Section 34 : Inorganic/coordination chemistry, analytical chemistry, and related fields

Basic Section	
34010	Inorganic/coordination chemistry-related
34020	Analytical chemistry-related
34030	Green sustainable chemistry and environmental chemistry-related

Medium-sized Section 35 : Polymers, organic materials, and related fields

Basic Section	
35010	Polymer chemistry-related
35020	Polymer materials-related
35030	Organic functional materials-related

Medium-sized Section 36 : Inorganic materials chemistry, energy-related chemistry, and related fields

Basic Section	
36010	Inorganic compounds and inorganic materials chemistry-related
36020	Energy-related chemistry

Medium-sized Section 37 : Biomolecular chemistry and related fields

Basic Section	
37010	Bio-related chemistry
37020	Chemistry and chemical methodology of biomolecules-related
37030	Chemical biology-related

Broad Section F

Medium-sized Section 38 : Agricultural chemistry and related fields

Basic Section	
38010	Plant nutrition and soil science-related
38020	Applied microbiology-related
38030	Applied biochemistry-related
38040	Bioorganic chemistry-related
38050	Food sciences-related
38060	Applied molecular and cellular biology-related

Medium-sized Section 39 : Agricultural and environmental biology and related fields

Basic Section	
39010	Science in plant genetics and breeding-related
39020	Crop production science-related
39030	Horticultural science-related
39040	Plant protection science-related
39050	Insect science-related
39060	Conservation of biological resources-related
39070	Landscape science-related

Medium-sized Section 40 : Forestry and forest products science, applied aquatic science, and related fields

Basic Section	
40010	Forest science-related
40020	Wood science-related
40030	Aquatic bioproduction science-related
40040	Aquatic life science-related

Medium-sized Section 41 : Agricultural economics and rural sociology, agricultural engineering, and related fields

Basic Section	
41010	Agricultural and food economics-related
41020	Rural sociology and agricultural structure-related
41030	Rural environmental engineering and planning-related
41040	Agricultural environmental engineering and agricultural information engineering-related
41050	Environmental agriculture-related

Medium-sized Section 42 : Veterinary medical science, animal science, and related fields

Basic Section	
42010	Animal production science-related
42020	Veterinary medical science-related
42030	Animal life science-related
42040	Laboratory animal science-related

Broad Section G

Medium-sized Section 43 : Biology at molecular to cellular levels, and related fields

Basic Section	
43010	Molecular biology-related
43020	Structural biochemistry-related
43030	Functional biochemistry-related
43040	Biophysics-related
43050	Genome biology-related
43060	System genome science-related

Medium-sized Section 44 : Biology at cellular to organismal levels, and related fields

Basic Section	
44010	Cell biology-related
44020	Developmental biology-related
44030	Plant molecular biology and physiology-related
44040	Morphology and anatomical structure-related
44050	Animal physiological chemistry, physiology and behavioral biology-related

Medium-sized Section 45 : Biology at organismal to population levels and anthropology, and related fields

Basic Section	
45010	Genetics-related
45020	Evolutionary biology-related
45030	Biodiversity and systematics-related
45040	Ecology and environment-related
45050	Physical anthropology-related
45060	Applied anthropology-related

Medium-sized Section 46 : Neuroscience and related fields

Basic Section	
46010	Neuroscience-general-related
46020	Anatomy and histopathology of nervous system-related
46030	Function of nervous system-related

Broad Section H

Medium-sized Section 47 : Pharmaceutical sciences and related fields

Basic Section	
47010	Pharmaceutical chemistry and drug development sciences-related
47020	Pharmaceutical analytical chemistry and physicochemistry-related
47030	Pharmaceutical hygiene and biochemistry-related
47040	Pharmacology-related
47050	Environmental and natural pharmaceutical resources-related
47060	Clinical pharmacy-related

Medium-sized Section 48 : Biomedical structure and function and related fields

Basic Section	
48010	Anatomy-related
48020	Physiology-related
48030	Pharmacology-related
48040	Medical biochemistry-related

Medium-sized Section 49 : Pathology, infection/immunology, and related fields

Basic Section	
49010	Pathological biochemistry-related
49020	Human pathology-related
49030	Experimental pathology-related
49040	Parasitology-related
49050	Bacteriology-related
49060	Virology-related
49070	Immunology-related

Broad Section I

Medium-sized Section 50 : Oncology and related fields

Basic Section	
50010	Tumor biology-related
50020	Tumor diagnostics and therapeutics-related

Medium-sized Section 51 : Brain sciences and related fields

Basic Section	
51010	Basic brain sciences-related
51020	Cognitive and brain science-related
51030	Pathophysiologic neuroscience-related

Medium-sized Section 52 : General internal medicine and related fields

Basic Section	
52010	General internal medicine-related
52020	Neurology-related
52030	Psychiatry-related
52040	Radiological sciences-related
52050	Embryonic medicine and pediatrics-related

Medium-sized Section 53 : Organ-based internal medicine and related fields

Basic Section	
53010	Gastroenterology-related
53020	Cardiology-related
53030	Respiratory medicine-related
53040	Nephrology-related
53050	Dermatology-related

Medium-sized Section 54 : Internal medicine of the bio-information integration and related fields

Basic Section	
54010	Hematology and medical oncology-related
54020	Connective tissue disease and allergy-related
54030	Infectious disease medicine-related
54040	Metabolism and endocrinology-related

Medium-sized Section 55 : Surgery of the organs maintaining homeostasis and related fields

Basic Section	
55010	General surgery and pediatric surgery-related
55020	Digestive surgery-related
55030	Cardiovascular surgery-related
55040	Respiratory surgery-related
55050	Anesthesiology-related
55060	Emergency medicine-related

Medium-sized Section 56 : Surgery related to the biological and sensory functions and related fields

Basic Section	
56010	Neurosurgery-related
56020	Orthopedics-related
56030	Urology-related
56040	Obstetrics and gynecology-related
56050	Otorhinolaryngology-related
56060	Ophthalmology-related
56070	Plastic and reconstructive surgery-related

Broad Section I (continued)

Medium-sized Section 57 : Oral science and related fields

Basic Section	
57010	Oral biological science-related
57020	Oral pathobiological science-related
57030	Conservative dentistry-related
57040	Regenerative dentistry and dental engineering-related
57050	Prosthodontics-related
57060	Surgical dentistry-related
57070	Developmental dentistry-related
57080	Social dentistry-related

Medium-sized Section 58 : Society medicine, nursing, and related fields

Basic Section	
58010	Medical management and medical sociology-related
58020	Hygiene and public health-related: including laboratory approach
58030	Hygiene and public health-related: excluding laboratory approach
58040	Forensics medicine-related
58050	Fundamental of nursing-related
58060	Clinical nursing-related
58070	Lifelong developmental nursing-related
58080	Gerontological nursing and community health nursing-related

Medium-sized Section 59 : Sports sciences, physical education, health sciences, and related fields

Basic Section	
59010	Rehabilitation science-related
59020	Sports sciences-related
59030	Physical education, and physical and health education-related
59040	Nutrition science and health science-related

Medium-sized Section 90 : Biomedical engineering and related fields

Basic Section	
90110	Biomedical engineering-related
90120	Biomaterials-related
90130	Medical systems-related
90140	Medical technology assessment-related
90150	Medical assistive technology-related

Broad Section J

Medium-sized Section 60 : Information science, computer engineering, and related fields

Basic Section	
60010	Theory of informatics-related
60020	Mathematical informatics-related
60030	Statistical science-related
60040	Computer system-related
60050	Software-related
60060	Information network-related
60070	Information security-related
60080	Database-related
60090	High performance computing-related
60100	Computational science-related

Medium-sized Section 61 : Human informatics and related fields

Basic Section	
61010	Perceptual information processing-related
61020	Human interface and interaction-related
61030	Intelligent informatics-related
61040	Soft computing-related
61050	Intelligent robotics-related
61060	Kansei informatics-related
90010	Design-related
90030	Cognitive science-related

Medium-sized Section 62 : Applied informatics and related fields

Basic Section	
62010	Life, health and medical informatics-related
62020	Web informatics and service informatics-related
62030	Learning support system-related
62040	Entertainment and game informatics-related
90020	Library and information science, humanistic and social informatics-related

Broad Section K

Medium-sized Section 63 : Environmental analyses and evaluation and related fields

Basic Section	
63010	Environmental dynamic analysis-related
63020	Radiation influence-related
63030	Chemical substance influence on environment-related
63040	Environmental impact assessment-related

Medium-sized Section 64 : Environmental conservation measure and related fields

Basic Section	
64010	Environmental load and risk assessment-related
64020	Environmental load reduction and remediation-related
64030	Environmental materials and recycle technology-related
64040	Social-ecological systems-related
64050	Sound material-cycle social systems-related
64060	Environmental policy and social systems-related

(Attachment 1)

The Review Section Table (Table for Basic Section)

When selecting a review section, applicants should first acquire an overall picture of the review sections based on the Review Section Table (Overview). In addition, check the Review Section Table (Table for Basic Section) for the detailed contents of each section and select a review section for their research proposal.

Also, some items of Basic Section may be presented in plural Medium-sized and Broad Sections. The items of Basic Section presented in plural Medium-sized Section are 9 and 3 items among 9 are presented in plural Medium-sized and Broad Sections (as shown below).

In addition, five other Basic Sections (90110-90150) may be presented in only one Medium-sized Section and two Broad Sections.

When selecting a Medium-sized or Broad Section, applicants should refer to the Attachment 2 “Review Section Table (Table for Medium-sized and Broad Sections), and select the one that seems to be most suitable for their own research proposal.

【Basic sections may be presented in plural Medium-sized and Broad Section】

Basic Section Item	Basic Section Description	Medium-sized Sections corresponding Basic Sections	Broad Sections corresponding Basic Sections
02090	Japanese language education-related	２，９	A
02100	Foreign language education-related	２，９	A
80010	Area studies-related	４，６	A
80020	Tourism studies-related	４，７，８	A
80030	Gender studies-related	４，６，８	A
80040	Quantum beam science-related	１４，１５	B
90010	Design-related	１，　２３，６１	A，C，J
90020	Library and information science, humanistic and social informatics-related	２，６２	A，J
90030	Cognitive science-related	１０，６１	A，J
90110	Biomedical engineering-related	９０	D，I
90120	Biomaterials-related	９０	D，I
90130	Medical systems-related	９０	D，I
90140	Medical technology assessment-related	９０	D，I
90150	Medical assistive technology-related	９０	D，I

Basic Section	Examples of related research content	Medium-sized Sections and Broad Section corresponding Basic Sections	
		Medium-sized Section	Broad Section
01010	Philosophy and ethics-related Philosophy in general, Ethics in general, Western philosophy, Western ethics, Japanese philosophy, Japanese ethics, Applied ethics, etc.	1	A
01020	Chinese philosophy, Indian philosophy and Buddhist philosophy-related Chinese philosophy/thought, Indian philosophy/thought, Buddhist philosophy, Bibliography, Philology, etc.	1	A
01030	Religious studies-related History of religions, Philosophy of religion, Theology, Sociology of religion, Psychology of religion, Anthropology of religion,Studies of religious folklore, Mythology, Bibliography, Philology, etc.	1	A
01040	History of thought-related History of thought in general, History of Western thought, History of Eastern thought, History of Japanese thought, History of Islamic thought, etc.	1	A
01050	Aesthetics and art studies-related Philosophy of art, Aesthetics, Music theory, Theatrical theory, Miscellaneous art studies, etc.	1	A
01060	History of arts-related Japanese art, Eastern art, Western art, Contemporary art, Craft, Design, Architecture, Costume, Photography, etc.	1	A
01070	Theory of art practice-related Art expression, Arts management, Art policy, Art production, etc.	1	A
01080	Sociology of science, history of science and technology-related Sociology of science, History of science, History of technology, History of medicine, Industrial archeology, Philosophy of science, Foundation of science, STS (Science, technology and society), etc.	1	A
02010	Japanese literature-related Japanese literature in general, Ancient literature, Medieval literature, Chinese classics in Japan, Bibliography, Philology, Premodern literature, Modern literature, Contemporary literature, Literary theory, etc.	2	A
02020	Chinese literature-related Chinese literature, Bibliography, Philology, Literary theory, etc.	2	A
02030	English literature and literature in the English language-related English literature, American literature, Literature in the English language, Literary theory, Bibliography, Philology, etc.	2	A
02040	European literature-related French literature, Literature in the French language, German literature, Literature in the German language, Classics, Russian and East European literature, Literature in other European languages, Literary theory, Bibliography, Philology, etc.	2	A
02050	Literature in general-related Literature in other languages and areas, Literary theory, Comparative literature, Bibliography, Philology, Literature education, etc.	2	A
02060	Linguistics-related Phonetics/phonology, Semantics/pragmatics, Morphosyntax, Sociolinguistics, Contrastive linguistics, Psycholinguistics, Neurolinguistics, Historical linguistics, Corpus linguistics, Endangered and minority languages, etc.	2	A
02070	Japanese linguistics-related Phonetics/phonology, Writing systems, Lexicon and semantics, Grammar, Stylistics, Pragmatics, Language life, Dialect, History of the Japanese language, History of Japanese linguistics, etc.	2	A
02080	English linguistics-related Phonetics/phonology, Lexicon and semantics, Grammar, Stylistics, Pragmatics, Sociolinguistics, Diversity of the English language, Corpus linguistics, History of the English language, History of English linguistics, etc.	2	A

Basic Section	Examples of related research content	Medium-sized Sections and Broad Section corresponding Basic Sections	
		Medium-sized Section	Broad Section
02090	Japanese language education-related Research on learners, Language acquisition, Teaching material, Curriculum evaluation, Japanese language education for specific purposes, Bilingual education, Research on teachers, Japanese language for Japanese language education, History of Japanese language education, Cross-cultural understanding, etc.	2, 9	A
02100	Foreign language education-related Learning method, Computer-assisted language learning (CALL), Teaching material, Language testing, Theory of second language acquisition, Early English education, History of foreign language education and language policies, Curriculum evaluation, Training foreign language teachers, Cross-cultural understanding, etc.	2, 9	A
03010	Historical studies in general-related Historical theory, Historical methodology, Research in historical materials, Memory and medium, World history, History of cultural and diplomatic exchange, Comparative history, Global history, Environmental history, History of emotions, etc.	3	A
03020	Japanese history-related History of ancient Japan, History of medieval Japan, History of early modern Japan, History of modern Japan, History of local Japan, History of external relations, History of culture and religion, History of Japanese environment, History of Japanese city, Research in historical materials, etc.	3	A
03030	History of Asia and Africa-related Chinese history, East Asian history, Central Eurasian history, Southeast Asian history, Oceanian history, South Asian history, West Asian history, African history, History of cultural and diplomatic exchange, Research in historical materials, etc.	3	A
03040	History of Europe and America-related Ancient European history, Medieval European history, Modern and contemporary West European history, Modern and contemporary East European history, North and South American history, History of cultural and diplomatic exchange, Comparative history, Research in historical materials, etc.	3	A
03050	Archaeology-related Archaeology in general, Prehistoric archaeology, Historical archaeology, Japanese archaeology, Ancient civilizations, History of material culture, Experimental archaeology, Information archaeology, Study of buried cultural property, Ecological archeology, etc.	3	A
03060	Cultural assets study-related Dating methods, Material analysis, Production techniques, Conservation science, Archaeological prospection, Plant and animal residues, Human remains, Cultural heritage, Cultural property policy, Restoration of cultural properties, etc.	3	A
03070	Museology-related Museum displays and exhibitions, Museum management, Museum collections and documentation, Museum conservation and preservation, Museum education and learning, Museum informatics and media studies, Museum finance and administration, History of museums and museology, etc.	3	A
04010	Geography-related Geography in general, Land use, Landscape, Environmental system, Geomorphology, Climatology, Hydrology, Cartography, Geographic information system, Regional planning, etc.	4	A
04020	Human geography-related Human geography in general, Economic geography, Social geography, Political geography, Cultural geography, Urban geography, Rural geography, Historical geography, Regional geography, Geography education, etc.	4	A
04030	Cultural anthropology and folklore-related Cultural anthropology in general, Folklore in general, Material culture, Ecology, Social relationship, Religion, Arts, Health care, Border crossing, Minority, etc.	4	A

Basic Section	Examples of related research content	Medium-sized Sections and Broad Section corresponding Basic Sections	
		Medium-sized Section	Broad Section
80010	Area studies-related Area studies in general, Cross-regional comparative studies, Aid, Social development, Interregional exchange, Environment, Transnationalism, Globalization, Refugees, Conflict, etc.	4, 6	A
80020	Tourism studies-related Tourism studies in general, Tourism resources, Tourism policy, Tourism industry, Tourist area, Tourists, Tourism culture, Tourism media, Sustainable tourism, Tourism ethics, etc.	4, 7, 8	A
80030	Gender studies-related Gender studies in general, Feminism, Men's studies, Sexuality, Queer studies, Labor, Violence, Prostitution, Reproductive technology, Gender equality, etc.	4, 6, 8	A
05010	Legal theory and history-related Legal philosophy, Roman law, Legal history, Sociology of law, Comparative law, Foreign law, Law and policy, Law and economics, Judicial system, etc.	5	A
05020	Public law-related Constitutional law, Administrative law, Tax law, etc.	5	A
05030	International law-related Public international law, Private international law, International human rights law, International economic law, EU law, etc.	5	A
05040	Social law-related Labor law, Economic law, Social security law, Education law, etc.	5	A
05050	Criminal law-related Criminal law, Criminal procedure, Criminology, Criminal justice policy, Juvenile law, Law and psychology, etc.	5	A
05060	Civil law-related Civil law, Commercial law, Civil procedure, Insolvency law, Alternative dispute resolution, etc.	5	A
05070	New fields of law-related Environmental law, Medical law, Information law, Consumer law, Intellectual property law, Law and gender, Legal profession, etc.	5	A
06010	Politics-related Political theory, History of political thought, Political history, Political process, Political participation, Political economy, Public administration, Local government, Comparative politics, Public policy, etc.	6	A
06020	International relations-related Theory of international relations, International history, Foreign policy, International security, International political economy, Global governance, International cooperation, Peace research, etc.	6	A
07010	Economic theory-related Microeconomics, Macroeconomics, Game theory, Behavioral economics, Experimental economics, Economic theory, Evolutionary economics, Economic institutions, Economic systems, etc.	7	A
07020	Economic doctrines and economic thought-related Economic doctrines, Economic thought, Social thought, Economic philosophy, etc.	7	A
07030	Economic statistics-related Statistical system, Statistical research, Economic statistics, Big data, Econometrics, Financial econometrics, etc.	7	A
07040	Economic policy-related Economic policy, Industrial organization, International economics, Development economics, Environmental and resource economics, Japanese economy, Regional economy, Urban economics, Transportation economics, Spatial economics, etc.	7	A

Basic Section	Examples of related research content	Medium-sized Sections and Broad Section corresponding Basic Sections	
		Medium-sized Section	Broad Section
07050	Public economics and labor economics-related Public finance, Public economics, Health economics, Labor economics, Social security, Education economics, Law and economics, Political economy, Demography, etc.	7	A
07060	Money and finance-related Monetary economics, Finance, International finance, Corporate finance, Financial engineering, Insurance, etc.	7	A
07070	Economic history-related Economic history, Business history, Industrial history, etc.	7	A
07080	Business administration-related Organization theory, Corporate strategy, Organizational behavior, Corporation theory, Corporate governance theory, Human resource management, Technology/Innovation management theory, International business, Management information, Business administration in general, etc.	7	A
07090	Commerce-related Marketing, Consumer behavior, Distributive sciences, Logistics, Commerce in general, etc.	7	A
07100	Accounting-related Financial accounting, Management accounting, Auditing, Accounting in general, etc.	7	A
08010	Sociology-related Sociology in general, Community, Family, Labor, Stratification, Culture, Media, Ethnicity, Social movements, Social research, etc.	8	A
08020	Social welfare-related Social work, Social policy, Social welfare history, Child welfare, Social welfare for people with disabilities, Social welfare for aging, Community welfare, Poverty, Volunteerism, Social welfare in general, etc.	8	A
08030	Family and consumer sciences, and culture and living-related Dress and fashion, Diet habits, Housing, Family resource management, Family relations, Lifestyle, Culture and living, Family and consumer education, Family and consumer sciences in general, etc.	8	A
09010	Education-related History of education, Philosophy of education, Curriculum and pedagogy, Teacher and trainer, School education, Social and community education, Institutions and administration, Comparative education, Educational administration, etc.	9	A
09020	Sociology of education-related Sociology of education, Socialization, Educational community, Destination and career formation, Class disparities, Gender, Education policy, Globalization and development, etc.	9	A
09030	Childhood and nursery/pre-school education-related Childhood, Nursery/pre-school education, Right of child, Development, Contents and methods of child care, Childcare facilities and kindergarten, Caregiver and pre-school teacher, Child care support, Childhood culture, History and thought, etc.	9	A
09040	Education on school subjects and primary/secondary education-related Education of individual subjects, Lessons of each subject area, Instructional guidance, Teacher education, Special activities, Integrated studies, Moral education, etc.	9	A
09050	Tertiary education-related Policy, Admission and articulation, Curriculum, Career guidance, Teacher and staff, Scientific research, Regional link and contribution, Globalization, Management and governance, Non-university higher education, etc.	9	A

Basic Section	Examples of related research content	Medium-sized Sections and Broad Section corresponding Basic Sections	
		Medium-sized Section	Broad Section
09060	Special needs education-related Philosophy and history, Inclusion and cohesive society, Instructions and supports, Developmental disabilities, Emotional disturbance, Intellectual disabilities, Language disorders, Physical disabilities, Career education, etc.	9	A
09070	Educational technology-related Curriculum development, Teaching-learning support systems, Utilization of media, Utilization of ICT, Teacher's education, Information literacy, etc.	9	A
09080	Science education-related Science education, Science communication, Scientific literacy, Science and society, STEM education, etc.	9	A
10010	Social psychology-related Social psychology in general, Self, Group, Attitude and behavior, Affection/emotion, Interpersonal relation, Social issues, Culture, etc.	10	A
10020	Educational psychology-related Educational psychology in general, Development, Family, School, Clinical practice, Personality, Learning, Assessment and evaluation, etc.	10	A
10030	Clinical psychology-related Clinical psychology in general, Psychological disorder, Assessment, Psychological intervention, Training, Mental health, Crime and delinquency, Community, etc.	10	A
10040	Experimental psychology-related Experimental psychology in general, Sensation, Perception, Attention, Memory, Language, Emotion, Learning, etc.	10	A
11010	Algebra-related Group theory, Ring theory, Representation theory, Algebraic combinatorics, Number theory, Arithmetic geometry, Algebraic geometry, Algebraic analysis, etc.	11	B
11020	Geometry-related Differential geometry, Riemannian geometry, Symplectic geometry, Complex geometry, Topology, Differential topology, Low dimensional topology, etc.	11	B
12010	Basic analysis-related Functional analysis, Complex analysis, Probability theory, Harmonic analysis, Operator theory, Spectral analysis, Operator algebras, Algebraic analysis, Representation theory, etc.	12	B
12020	Mathematical analysis-related Functional equations, Real analysis, Dynamical system, Variational method, Nonlinear analysis, Applied analysis, etc.	12	B
12030	Basic mathematics-related Mathematical logic and foundations, Information theory, Discrete mathematics, Computer mathematics, History of mathematics, etc.	12	B
12040	Applied mathematics and statistics-related Numerical analysis, Mathematical modelling, Optimal control, Game theory, Statistical mathematics, etc.	12	B
13010	Mathematical physics and fundamental theory of condensed matter physics-related Statistical physics, Fundamental theory of condensed matter physics, Mathematical physics, Nonequilibrium nonlinear physics, Fluid dynamics, Computational physics, Quantum information theory, etc.	13	B
13020	Semiconductors, optical properties of condensed matter and atomic physics-related Semiconductors, Dielectrics, Atoms and molecules, Mesoscopic systems, Crystals, Surfaces and interfaces, Optical properties of condensed matter, Quantum electronics, Quantum information, etc.	13	B
13030	Magnetism, superconductivity and strongly correlated systems-related Magnetism, Strongly correlated electron systems, Superconductivity, Quantum fluids and solids, Molecular solids, etc.	13	B
13040	Biophysics, chemical physics and soft matter physics-related Physics of biological phenomena, Physics of biological matters, Liquids and glasses, Soft matters, Rheology, etc.	13	B

Basic Section	Examples of related research content	Medium-sized Sections and Broad Section corresponding Basic Sections	
		Medium-sized Section	Broad Section
14010	Fundamental plasma-related Basic plasmas, Magnetized plasmas, Laser plasmas, Strongly coupled plasmas, Plasma diagnostics, Astrophysical and space plasmas, etc.	14	B
14020	Nuclear fusion-related Plasma confinement, Plasma control, Plasma heating, Plasma diagnostics, Edge plasma, Plasma wall interaction, Inertial fusion, Fusion material, Fusion system, etc.	14	B
14030	Applied plasma science-related Plasma processing, Plasma material science, General plasma applications, etc.	14	B
80040	Quantum beam science-related Accelerators, Beam physics, Radiation detectors, Beam control, Applied quantum beam science, etc.	14, 15	B
15010	Theoretical studies related to particle-, nuclear-, cosmic ray and astro-physics Particle physics, Nuclear physics, Cosmic-ray physics, Astrophysics, Relativity, Gravity, etc.	15	B
15020	Experimental studies related to particle-, nuclear-, cosmic ray and astro-physics Particle physics, Nuclear physics, Cosmic-ray physics, Astrophysics, Relativity, Gravity, etc.	15	B
16010	Astronomy-related Theoretical astronomy, Radio astronomy, Optical/infrared astronomy, X-ray/γ-ray astronomy, Astrometry, Solar physics, Exoplanet astronomy, etc.	16	B
17010	Space and planetary sciences-related Solar-terrestrial physics, Aeronomy, Planetary science, Exoplanetary science, Extraterrestrial material science, etc.	17	B
17020	Atmospheric and hydrospheric sciences-related Climate system, Atmospheric science, Ocean science, Limnology, Glaciology, Paleoclimatology, etc.	17	B
17030	Human geosciences-related Geoenvironmental science, Natural disaster science, Geospatial information science, Quaternary research, Earth resources science, etc.	17	B
17040	Solid earth sciences-related Solid earth geophysics, Geology, Earth's interior material science, Solid earth geochemistry, etc.	17	B
17050	Biogeosciences-related Origin and evolution of life, Extremophile biology, Biogeochemistry, Paleoenvironmental science, Paleontology, etc.	17	B
18010	Mechanics of materials and materials-related Structural mechanics, Fatigue, Fracture, Biomaterials, Material design, Material characteristics, Material evaluation, etc.	18	C
18020	Manufacturing and production engineering-related Machining, Non-traditional machining, Ultraprecision machining, Machine tools, Manufacturing systems, Precision metrology, Process planning, etc.	18	C
18030	Design engineering-related Mechanical design, Product design, Design theory, Design for reliability, Optimal design, Computer-aided design, etc.	18	C
18040	Machine elements and tribology-related Machine elements, Mechanisms, Tribology, Actuators, Micromachines, etc.	18	C
19010	Fluid engineering-related Fluid machinery, Flow measurement, Computational fluid dynamics, Turbulence, Multiphase flow, Compressible flow, Incompressible flow, etc.	19	C

Basic Section	Examples of related research content	Medium-sized Sections and Broad Section corresponding Basic Sections	
		Medium-sized Section	Broad Section
19020	Thermal engineering-related Heat transfer, Convection, Combustion, Thermophysical properties, Refrigeration and air-conditioning, Heat engine, Energy conversion, etc.	19	C
20010	Mechanics and mechatronics-related Kinematics, Kinetics, Vibration, Acoustics, Automation, Biomechanics, Instrument and control applications, Mechatronics applications, etc.	20	C
20020	Robotics and intelligent system-related Robotics, Intelligent system, Human mechanical system, Human interface, Planning, Intelligent spatial system, Virtual reality, Augmented reality, etc.	20	C
21010	Power engineering-related Electrical energy-related, Energy conservation, Power system engineering, Electric machinery, Power electronics, Effective utilization of electric energy, Electromagnetic compatibility, Wireless power transfer, etc.	21	C
21020	Communication and network engineering-related Information theory, Nonlinear theory, Signal processing, Communication systems, Modulation/demodulation, Antennas, Networks, Multimedia, Cryptography/security, etc.	21	C
21030	Measurement engineering-related Measurement theory, Measuring instruments, Applied wave metrology, Measurement systems, Signal processing, Sensing, etc.	21	C
21040	Control and system engineering-related Control theory, System theory, Control systems, Knowledge-based control systems, System information processing, System control applications, Biosystems engineering, etc.	21	C
21050	Electric and electronic materials-related Semiconductor, Dielectric materials, Magnetic materials, Organic materials, Superconductor, Composite materials, Thin films, Functional materials, Thick films, Fabrication/characterization methods, etc.	21	C
21060	Electron device and electronic equipment-related Electron devices, Circuit design, Optical devices, Spintronic devices, Millimeter wave/terahertz wave, Applied wave devices, Storage devices, Displays, Process technology, Implementation technology, etc.	21	C
22010	Civil engineering material, execution and construction management-related Concrete, Steel, Composite material, Wood, Pavement material, Repair and reinforce material, Execution, Maintenance, Construction management, etc.	22	C
22020	Structure engineering and earthquake engineering-related Applied mechanics, Structure engineering, Steel structure, Concrete structure, Composite structure, Wind engineering, Earthquake engineering, Aseismatic structure, Earthquake prevention, etc.	22	C
22030	Geotechnical engineering-related Soil mechanics, Foundation engineering, Rock engineering, Engineering Geology, Ground behavior, Geotechnical structures, Geo-disaster prevention, Geo-environment, Tunnel engineering, etc.	22	C
22040	Hydroengineering-related Hydraulics, Environmental hydraulics, Hydrology, River engineering, Water resource engineering, Coastal engineering, Port and harbor engineering, Ocean engineering, etc.	22	C
22050	Civil engineering plan and transportation engineering-related Civil engineering plan, Regional urban planning, Spatial planning, Disaster prevention plan, Transportation plan, Transportation engineering, Railway engineering, Surveying and remote sensing, Landscape design, Civil engineering history, etc.	22	C
22060	Environmental systems for civil engineering-related Environment plan, Environmental system, Environment conservation, Water serve and drainage systems, Waste, Water environment, Atmospheric circulation, Noise and vibration, Environment ecology, Environmental monitoring, etc.	22	C
23010	Building structures and materials-related Load theory, Structural analysis, Structural design, Structures, Earthquake resistant design, Foundation, Geotechnics, Structural material, Maintenance, Building construction method, etc.	23	C

Basic Section	Examples of related research content	Medium-sized Sections and Broad Section corresponding Basic Sections	
		Medium-sized Section	Broad Section
23020	Architectural environment and building equipment-related Sound environment, Vibration environment, Light environment, Heat environment, Air environment, Environmental psychology/physiology, Building equipment, Fire engineering, Urban environment, Environment design, etc.	23	C
23030	Architectural planning and city planning-related Planning theory, Design theory, Housing theory, Buildings, Urban/regional planning, Administration, Building economics, Production management, Disaster prevention planning, Landscape, etc.	23	C
23040	Architectural history and design-related Architectural history, Urban history, Architectural theory, Design, Landscape, Preservation, Renovation, etc.	23	C
24010	Aerospace engineering-related Thermo-fluid dynamics, Structural mechanics, Propulsion, Aerospace craft design, Production engineering, Aircraft system, Aerodynamics, Spacecraft system, Space utilization, etc.	24	C
24020	Marine engineering-related Navigation, Structural mechanics, Structural design, Production technology, Marine propulsion, Marine transport, Marine development, Underwater engineering, Polar engineering, Marine environmental technology, etc.	24	C
25010	Social systems engineering-related Social systems, Industrial engineering, Operations research, Industrial management, Reliability engineering, Policy science, Regulatory science, Quality control, etc.	25	C
25020	Safety engineering-related Safety engineering, Safety system, Risk engineering, Risk management, Work safety, Industrial safety, Product safety, Safety information, Human engineering, Liability engineering, etc.	25	C
25030	Disaster prevention engineering-related Disaster prediction, Hazard map, Building prevention against disaster, Lifeline prevention against disaster, Regional disaster prevention planning, Risk evaluation of disaster, Disaster prevention policy, Disaster resilience, etc.	25	C
26010	Metallic material properties-related Electric and magnetic properties, Metastable states, Diffusion, Phase transformation, Phase diagram, Lattice defect, Mechanical properties, Thermal and optical properties, Materials computational science, Microstructure analysis, etc.	26	D
26020	Inorganic materials and properties-related Functional ceramics, Glass, Engineering ceramics, Carbon-based materials, Crystal structure analysis, Microstructure, Electric properties, Mechanical properties, Physical and chemical properties, Grain boundary, etc.	26	D
26030	Composite materials and interfaces-related Functional composite materials, Structural composite materials, Biocompatible composite materials, Polymer composite, Surface treatment, Bonding and joining, Interface properties, Gradient function, etc.	26	D
26040	Structural materials and functional materials-related Infrastructural materials, Structural materials, Functional materials, Medical welfare materials, Reliability, Sensor materials, Energy materials, Battery materials, Environmental materials, etc.	26	D
26050	Material processing and microstructure control-related Processing and molding, Molding, Weld joining, Crystal microstructure control, Laser processing, Precision processing, Polishing, Powder metallurgy, Coating, Corrosion and protection, etc.	26	D
26060	Metals production and resources production-related Separation and purification, Melting and solidifying, Crystal growth, Casting, Scarce resources substitution, Low environment impact, Recycle, etc.	26	D
27010	Transport phenomena and unit operations-related Phase equilibrium, Transport properties, Fluid-phase unit operation, Adsorption, Membrane separation, Stir mixing, Powder and particle, Crystallization, Film formation, Supercritical, etc.	27	D

Basic Section	Examples of related research content	Medium-sized Sections and Broad Section corresponding Basic Sections	
		Medium-sized Section	Broad Section
27020	Chemical reaction and process system engineering-related Reaction operation, Novel reaction process, Reaction mechanism, Reactor design, Materials synthesis process, Microreactor, Process control, Process system design, Process informatics, etc.	27	D
27030	Catalyst and resource chemical process-related Catalyst preparation, Catalytic function, Energy conversion process, Energy technology, Resources effective utilization technology, Catalytic material, Active site analysis, etc.	27	D
27040	Biofunction and bioprocess engineering-related Biocatalyst engineering, Biofunction engineering, Food engineering, Medicochemical engineering, Bioproduction process, Bioreactor, Bioseparation, Biosensor, Biorefinery, etc.	27	D
28010	Nanometer-scale chemistry-related Nanoparticle chemistry, Mesoscopic chemistry, Nanostructure control, Self-assembly, Nanocarbons, Molecular devices, Nanointerface function, Nanospace function, etc.	28	D
28020	Nanostructural physics-related Physics in nanoscale materials and structures, Nanoprobes, Quantum dots, Quantum devices, Electron devices, Spin devices, Nano optical device, Nanotribology, Nanocarbon physics, etc.	28	D
28030	Nanomaterials-related Creation of nanomaterials, Analysis of nanomaterials, Nanosurfaces and nanointerfaces, Functional nanomaterials, Nanoparticles, Carbon nanomaterials, Two-dimensional materials, Nanocrystalline materials, Nanocomposites, Nanofabrication process, etc.	28	D
28040	Nanobioscience-related Biomolecular devices, Molecular manipulation, Molecular imaging, Nanomeasurements, Nanosynthesis, Single molecule science, Nano-bio interfaces, Biomolecular array, Genome engineering, etc.	28	D
28050	Nano/micro-systems-related MEMS, NEMS, BioMEMS, Nano/micro-fabrication, Nano/micro-chemical systems, Nano/micro-biosystems, Nano/micro-mechanics, Nano/micro-sensors, etc.	28	D
29010	Applied physical properties-related Magnetic materials, Superconductors, Dielectrics, Fine particles, Liquid crystals, New functional materials, Molecular electronics, Bioelectronics, Spintronics, etc.	29	D
29020	Thin film/surface and interfacial physical properties-related Thin-film engineering, Surface and interfacial engineering, Surface science, Vacuum, Measurement, Analysis, Nanoscopic technology, Advanced equipment, Electronics application, etc.	29	D
29030	Applied condensed matter physics-related Elementary quantities, Standards, Units, Physical quantity measurements and detection, Energy conversion, etc.	29	D
30010	Crystal engineering-related Metal, Semiconductor, Ceramics, Amorphous, Crystal growth, Artificial structures, Device structure, Crystal characterization, Plasma process, etc.	30	D
30020	Optical engineering and photon science-related Optical materials, Optical elements, Optical properties, Optical information processing, Laser, Optical sensing, Optical recording, Opto-electronics, Nonlinear optics, Quantum optics, etc.	30	D
31010	Nuclear engineering-related Reactor physics, Nuclear safety, Thermal-hydraulics and structure, Fuel material, Nuclear chemistry, Nuclear life cycle, Radiation safety, Radiation engineering, Fusion reactor engineering, Nuclear social environment, etc.	31	D
31020	Earth resource engineering, Energy sciences-related Resource prospecting, Resource development, Resource cycle, Resource economy, Energy system, Environmental load, Renewable energy, Natural resources and energy policy, etc.	31	D

Basic Section	Examples of related research content	Medium-sized Sections and Broad Section corresponding Basic Sections	
		Medium-sized Section	Broad Section
32010	Fundamental physical chemistry-related Gas, Liquid, Solid, Nanomaterials, Bio-related materials, Structure and properties, Chemical reactions, Spectroscopy, Theoretical calculation, Data science, etc.	32	E
32020	Functional solid state chemistry-related Molecular materials, Inorganic compounds, Hybrid compounds, Colloids, Surface/interface, Electrical properties, Optical properties, Magnetic properties, Energy conversion, Catalysis, etc.	32	E
33010	Structural organic chemistry and physical organic chemistry-related Chemistry of organic crystals, Molecular recognition, Supermolecules, Functional organic molecules, Extended π-electron molecules, Organoelement chemistry, Reaction mechanism, Molecular chirality, Theoretical organic chemistry, etc.	33	E
33020	Synthetic organic chemistry-related Development of reactions, Reaction mechanism, Selective reactions, Asymmetric synthesis, Development of catalysts, Biocatalysis, Sustainable organic synthesis, Natural product synthesis, Process chemistry, etc.	33	E
34010	Inorganic/coordination chemistry-related Coordination chemistry, Organometallic chemistry, Inorganic solid-state chemistry, Bioinorganic chemistry, Solution chemistry, Clusters, Supramolecular complexes, Coordination polymers, Typical elements, Physical properties and functions, etc.	34	E
34020	Analytical chemistry-related Spectrometric analysis, Advanced measurements, Surface/interface analysis, Separation analysis, Analytical reagents, Radiochemical analysis, Electrochemical analysis, Bioanalysis, New analysis methods, etc.	34	E
34030	Green sustainable chemistry and environmental chemistry-related Green process, Green catalysts, Recycle, Environmental assessment, Environmentally conscious materials, Reduction of environmental load, Environmental restoration, Resource saving, Geochemistry, Environmental radioactivity, etc.	34	E
35010	Polymer chemistry-related Polymer synthesis, Polymer reactions, Functional polymers, Self-assembled polymers, Non-covalent polymers, Chiral polymers, Bio-related polymers, Polymer properties, Polymer structures, Polymer interface, etc.	35	E
35020	Polymer materials-related Properties of polymer materials, Synthesis of polymer materials, Functional polymer materials, Environmentally friendly polymer materials, Liquid crystal polymers, Gel, Biopolymers, Polymer composites, Polymer processing, etc.	35	E
35030	Organic functional materials-related Organic semiconductors, Liquid crystals, Optical materials, Device-related materials, Electrically conductive materials, Hybrid materials, Molecular functional materials, Organic hybrid materials, Materials for energy conversion, etc.	35	E
36010	Inorganic compounds and inorganic materials chemistry-related Crystals, Amorphous, Ceramics, Semiconductors, Inorganic device-related materials, Low-dimensional compounds, Porous materials, Nanoparticles, Multicomponent compounds, Hybrid materials, etc.	36	E
36020	Energy-related chemistry Energy resources, Energy conversion materials, Energy carriers, Solar energy utilization, Material separation, Catalytic transformation, Battery and electrochemical materials, Energy-saving materials, Renewable energy, Unused energy, etc.	36	E
37010	Bio-related chemistry Bioorganic chemistry, Bioinorganic chemistry, Biological reaction engineering, Biofunctional chemistry, Biofunctional materials, Biotechnology, etc.	37	E

Basic Section	Examples of related research content	Medium-sized Sections and Broad Section corresponding Basic Sections	
		Medium-sized Section	Broad Section
37020	Chemistry and chemical methodology of biomolecules-related Natural product chemistry, Biologically active compounds, Molecular mechanism of biological activities, Biofunctional molecules, Combinatorial chemistry, Metabolomic analysis, etc.	37	E
37030	Chemical biology-related In vivo functional expression, Intracellular chemical reactions, Drug discovery science, Chemical library, Structure-activity relationship, Chemical probes, Biomolecular measurements, Molecular imaging, Proteomics, etc.	37	E
38010	Plant nutrition and soil science-related Plant metabolism and physiology, Nutritional elements in plants, Soil classification, Soil physical chemistry, Soil organisms, etc.	38	F
38020	Applied microbiology-related Microbial genetics/breeding, Microbial function, Microbial metabolism and physiology, Microbial applications, Control of microbes, Microbial ecology, Production of useful materials, etc.	38	F
38030	Applied biochemistry-related Cellular biochemistry, Applied biochemistry, Structural biology, Regulation of bioactivity, Metabolism and physiology, Cellular function, Molecular function, Production of useful materials, etc.	38	F
38040	Bioorganic chemistry-related Bioactive substances, Signal molecules, Natural products chemistry, Biosynthesis, Structure-activity relationship, Synthetic organic chemistry, Chemical biology, etc.	38	F
38050	Food sciences-related Food function, Food chemistry, Nutritional chemistry, Food analysis, Food engineering, Food safety, Functional food, Nutritional epidemiology, Clinical nutrition, etc.	38	F
38060	Applied molecular and cellular biology-related Molecular cell biology, Cellular bioengineering, Molecular engineering, Gene expression control, Cell-cell/intermolecular interactions, Cellular function, Production of useful materials, etc.	38	F
39010	Science in plant genetics and breeding-related Genetic resources, Breeding theories, Genomic breeding, Plants with novel traits, Quality components, Stress tolerance, Yielding ability, Reproduction and multiplication, Growth physiology, Development, etc.	39	F
39020	Crop production science-related Field crops, Crop yield, Crop product quality, Crop morphology, Growth prediction, Crop physiology, Field management, Low-cost cultivation techniques, Environmentally friendly agriculture, Field ecosystem, etc.	39	F
39030	Horticultural science-related Plant growth, flowering, and fruit development, Nursery plant propagation and production, Crop production systems, Cultivation techniques, Protected horticulture, Controlled environment systems, Breeding and development of new cultivars, Quality of horticultural products, Postharvest physiology and management, Socio-horticulture, etc.	39	F
39040	Plant protection science-related Plant pathology, Clinical plant science, Agricultural insect pest, Natural enemy, Weed, Agricultural chemicals, Integrated pest management, etc.	39	F
39050	Insect science-related Sericulture insect technology, Insect genetics, Insect pathology, Insect physiology and biochemistry, Insect ecology, Chemical ecology, Systematics, Symbiosis and parasitism, Social insects, Medical entomology, etc.	39	F
39060	Conservation of biological resources-related Conservation biology, Biodiversity conservation, Conservation of phylogenetic diversity, Genetic resources conservation, Ecosystem conservation, Conservation of microorganisms, Impacts of non-native species, etc.	39	F
39070	Landscape science-related Landscape architecture, Parks and open space planning, Landscape planning, Cultural landscape, Nature conservation, Landscape ecology, Parks and open space management, Parks, Environmental greening, Participatory community design, etc.	39	F

Basic Section	Examples of related research content	Medium-sized Sections and Broad Section corresponding Basic Sections	
		Medium-sized Section	Broad Section
40010	Forest science-related Forest ecology, Forest biodiversity, Forest genetics and breeding, Silviculture, Forest protection, Forest environments, Erosion control, Forest utilization, Forest planning, Forest policy, etc.	40	F
40020	Wood science-related Wood structure, Wood property, Lignocellulose, Trace element, Fungus, Wood processing, Biomass-refinery, Wood based material, Wooden building, Forest products education, etc.	40	F
40030	Aquatic bioproduction science-related Aquatic environment, Fisheries, Aquatic resource management, Aquatic organisms, Aquatic ecosystem, Aquaculture, Fisheries engineering, Fishing community/fisheries policy, Fisheries economics/management/marketing, Fisheries education, etc.	40	F
40040	Aquatic life science-related Aquatic nutrition, Aquatic pathology, Aquatic genetics/heredity/breeding, Aquatic physiology, Utilization of aquatic organisms and biomass, Aquatic biological chemistry, Aquatic biotechnology, Aquatic food sciences, etc.	40	F
41010	Agricultural and food economics-related Food economy, Agricultural production economy, Agricultural policy, Food system, Food marketing, International agricultural development, Trade of agricultural commodities and livestock products, Rural resources and environment, etc.	41	F
41020	Rural sociology and agricultural structure-related Farm organization, Farm management, Agricultural structure, Agricultural market, Agricultural history, Rural society, Rural life, Agricultural cooperative, etc.	41	F
41030	Rural environmental engineering and planning-related Irrigation and drainage, Reclamation and conservation of agricultural land, Rural planning, Rural environment, Circulation of resources and energy, Disaster prevention in rural area, Stock management of agricultural infrastructures, Hydrodynamics and hydrology, Soil physics, Design and construction materials, etc.	41	F
41040	Agricultural environmental engineering and agricultural information engineering-related Agricultural production facilities, Bioproduction machinery, Environmental control, Agricultural meteorology and micrometeorology, Agricultural information, Greenhouse horticulture, Plant factory, Postharvest and supply chain, Nondestructive measurement, Remote sensing and geographic information system, etc.	41	F
41050	Environmental agriculture-related Biomass, Environmental manipulation, Biodiversity, Environmental analysis, Ecosystem services, Resources circulation system, Low-carbon societies, Life-cycle assessment, Environmental friendly agriculture, Watershed management, etc.	41	F
42010	Animal production science-related Breeding/genetics, Reproduction, Nutrition/feeding, Anatomy/physiology, Product, Environment, Behavior, Therapy, Grassland, Grazing, etc.	42	F
42020	Veterinary medical science-related Basic veterinary science, Pathological veterinary science, Applied veterinary science, Clinical veterinary science, Animal nursing, Animal welfare, Wildlife, etc.	42	F
42030	Animal life science-related Homeostasis, Cellular function, Biological defense, Integrated genetics, Development/differentiation, Biotechnology, etc.	42	F
42040	Laboratory animal science-related Genetic engineering, Developmental engineering, Animal models of disease, Facility management, Laboratory animal welfare, Laboratory animal-related technology, Bioresource, etc.	42	F
43010	Molecular biology-related Chromosome function, Chromatin, Epigenetics, Genome maintenance, Genome transmission, Chromosome re-organization, Gene expression, Non-coding RNA, Regulation of protein function, Molecular genetics, Regulation of RNA function, etc.	43	G

Basic Section	Examples of related research content	Medium-sized Sections and Broad Section corresponding Basic Sections	
		Medium-sized Section	Broad Section
43020	Structural biochemistry-related Proteins, Nucleic acids, Lipids, Carbohydrates, Biological membrane, Molecular recognition, Denaturation, Three-dimensional structural analysis, Three-dimensional structural prediction, Molecular dynamics, etc.	43	G
43030	Functional biochemistry-related Enzymes, Sugar chain, Bioenergy conversion, Biological trace elements, Physiologically active substances, Cell signaling, Membrane transport, Proteolysis, Molecular recognition, Organelle, etc.	43	G
43040	Biophysics-related Structure biology, Physical property of biomolecules, Biomembrane, Photobiology, Molecular motor, Biometrics, Bioimaging, Systems biology, Synthetic biology, Theoretical biology, etc.	43	G
43050	Genome biology-related Genome organization, Genome function, Genome diversity, Molecular evolution of genome, Genome repair/maintenance, Trans-omics, Epigenome, Gene resource, Genome dynamics, etc.	43	G
43060	System genome science-related Network analyses, Synthetic biology, Biological databases, Bioinformatics, Genome analysis technology, Genome biotechnology, etc.	43	G
44010	Cell biology-related Cytoskeleton, Proteolysis, Organelle, Nuclear structure and function, Extracellular matrix, Signal transduction, Cell cycle, Cell motility, Cell-cell interaction, Cellular genetics, etc.	44	G
44020	Developmental biology-related Cell differentiation, Stem cells, Regeneration, Germ layer formation, Morphogenesis, Organogenesis, Fertilization, Germ cells, Developmental genetics, Evolution and development, etc.	44	G
44030	Plant molecular biology and physiology-related Photosynthesis, Growth physiology, Plant development, Organelle, Cell wall, Responses to environment, Plant-microbe interaction, Metabolism, Plant molecular function, etc.	44	G
44040	Morphology and anatomical structure-related Morphology, Comparative morphology, Morphological modeling, Ultrastructure, Morphological image analysis, Tissue organization, Microscopic technology, Imaging, etc.	44	G
44050	Animal physiological chemistry, physiology and behavioral biology-related Metabolic physiology, Neurophysiology, Neuroethology, Behavioral physiology, Animal physiological chemistry, Chronobiology, Comparative physiology, Comparative endocrinology, Behavioral genetics, etc.	44	G
45010	Genetics-related Molecular genetics, Cellular genetics, Developmental genetics, Behavioral genetics, Population genetics, Quantitative trait, Population genomics, Genome-wide association study, Genetic diversity, Epigenome diversity, etc.	45	G
45020	Evolutionary biology-related Molecular evolution, Evolutionary genetics, Phenotypic evolution, Evolutionary developmental biology, Evolution of ecological traits, Evolution of behaviors, Experimental evolution, Coevolution, Speciation, Evolutionary theory, etc.	45	G
45030	Biodiversity and systematics-related Taxonomic characters, Taxon, Classification system, Molecular phylogeny, Phyletic evolution, Speciation, Natural history, Biogeography, Rare species conservation, Biodiversity, etc.	45	G
45040	Ecology and environment-related Chemical ecology, Molecular ecology, Physiological ecology, Evolutionary ecology, Behavioral ecology, Population ecology, Community ecology, Conservation ecology, Biological interactions, Material cycles in ecosystems, etc.	45	G
45050	Physical anthropology-related Morphology and function, Bioarchaeology, Biological mechanism, Genome, Evolutionary genetics, Behavior, Ecology, Comparative cognition, Primates, Growth and aging, etc.	45	G

Basic Section	Examples of related research content	Medium-sized Sections and Broad Section corresponding Basic Sections	
		Medium-sized Section	Broad Section
45060	Applied anthropology-related Physiological anthropology, Ergonomics, Forensic anthropology, Medical anthropology, Physiological polymorphisms, Environmental adaptability, Somatic and physiological function, Anthropometry and bioengineering, Lifestyle, etc.	45	G
46010	Neuroscience-general-related Neurochemistry, Neuron, Glia, Genome, Epigenetics, Neurobiology, Information processing, Synapse, Neurogenesis, etc.	46	G
46020	Anatomy and histopathology of nervous system-related Neural development, Anatomy of nervous system, Neural network structure, Neuropathology, etc.	46	G
46030	Function of nervous system-related Neurophysiology, Neuropharmacology, Neurotransmission, Neuroinformatics, Behavioral neuroscience, Neural system physiology, Cerebral blood flow, Autonomic nervous system, etc.	46	G
47010	Pharmaceutical chemistry and drug development sciences-related Inorganic chemistry, Organic chemistry, Medicinal chemistry, Medicinal molecular design, Drug discovery, Bio-related materials, Chemical biology, etc.	47	H
47020	Pharmaceutical analytical chemistry and physicochemistry-related Environmental analysis, Bioanalysis, Physicochemistry, Biophysics, Structural biology, Radiochemistry, Bioimaging, Drug formulation design, Computer science, Information science, etc.	47	H
47030	Pharmaceutical hygiene and biochemistry-related Environmental hygiene, Healthful nutrition, Disease prevention, Toxicology, Drug metabolism, Host defense, Molecular biology, Cell biology, Biochemistry, etc.	47	H
47040	Pharmacology-related Pharmacology, Pharmacogenomics, Applied pharmacology, Signal transduction, Drug interactions, Drug response, Pharmacotherapy, Pharmacotoxicology, etc.	47	H
47050	Environmental and natural pharmaceutical resources-related Environmental resource science, Natural products chemistry, Bioactive natural compounds, Medicinal resources, Medicinal foods, Pharmaceutical microbiology, etc.	47	H
47060	Clinical pharmacy-related Pharmacokinetics, Medical informatics, Social pharmacy, Clinical pharmacy, Pharmaceutics, Regulatory science, Education for the pharmacist, etc.	47	H
48010	Anatomy-related Macroscopic anatomy, Histology, Embryology, etc.	48	H
48020	Physiology-related General physiology, Pathophysiology, Comparative physiology, Environmental physiology, etc.	48	H
48030	Pharmacology-related Genomic pharmacology, Molecular and cellular pharmacology, Pathological pharmacology, Behavioral pharmacology, Pharmacology for drug discovery, Clinical pharmacology, etc.	48	H
48040	Medical biochemistry-related Biofunctional molecular and medical biochemistry, Genome medical sciences, Human genetics, Disease model, etc.	48	H
49010	Pathological biochemistry-related Molecular pathology, Metabolic disorders, Molecular diagnosis, etc.	49	H
49020	Human pathology-related Molecular pathology, Cyto- and histo-pathology, Diagnostic pathology, etc.	49	H
49030	Experimental pathology-related Disease models, Pathological regulation, Tissue regeneration, etc.	49	H

Basic Section	Examples of related research content	Medium-sized Sections and Broad Section corresponding Basic Sections	
		Medium-sized Section	Broad Section
49040	Parasitology-related Parasite, Vector organism, Parasite pathogenicity, Epidemiology of parasites, Control of parasite infections, etc.	49	H
49050	Bacteriology-related Bacterium, Fungus, Antimicrobial resistance, Bacterial pathogenicity, Epidemiology of bacteria, Control of bacterial infections, etc.	49	H
49060	Virology-related Virus, Prion, Viral pathogenicity, Epidemiology of viruses, Control of viral infections, etc.	49	H
49070	Immunology-related Immune system, Immune response, Inflammation, Immune-related disorder, Immune regulation, etc.	49	H
50010	Tumor biology-related Cancer and gene, Tumor development, Invasion, Metastasis, Cancer microenvironment, Cancer and signal transduction, Characteristics of cancer cells, Cancer and immune cells, etc.	50	I
50020	Tumor diagnostics and therapeutics-related Genome analysis, Diagnostic markers, Molecule imaging, Chemotherapy, Nucleic acid therapy, Gene therapy, Immunotherapy, Molecular targeted therapy, Physical therapy, Radiation therapy, etc.	50	I
51010	Basic brain sciences-related Brain-machine interface, Model animal, Computational brain science, Brain information decoding, Control technologies, Brain imaging, Brain biometrics, etc.	51	I
51020	Cognitive and brain science-related Social behavior, Communication, Emotion, Decision making, Consciousness, Learning, Neuroeconomics, Neuropsychology, etc.	51	I
51030	Pathophysiologic neuroscience-related Clinical neuroscience, Dolorology, Sensory impairment, Movement disorder, Neurological disorder, Neurogenesis, Neuroimmunology, Cellular degeneration, Disease model, etc.	51	I
52010	General internal medicine-related Psychosomatic medicine, Laboratory medicine, General practice, Geriatrics, Psychosomatic internal medicine, Oriental medicine, Palliative medicine, etc.	52	I
52020	Neurology-related Neurology, Neurofunctional imaging, etc.	52	I
52030	Psychiatry-related Clinical psychiatry, Biological psychiatry, Forensic mental health, etc.	52	I
52040	Radiological sciences-related Diagnostic radiology, Therapeutic radiology, Radiation biology, Radiological technology, etc.	52	I
52050	Embryonic medicine and pediatrics-related Fetal medicine, Neonatal medicine, Pediatrics, etc.	52	I
53010	Gastroenterology-related Upper digestive tract, Lower digestive tract, Liver, Biliary tract, Pancreas, etc.	53	I
53020	Cardiology-related Ischemic heart disease, Valvular heart disease, Arrhythmia, Cardiomyopathy, Heart failure, Peripheral arterial disease, Arteriosclerosis, Hypertension, etc.	53	I
53030	Respiratory medicine-related Respiratory medicine, Asthma, Diffusive lung disease, COPD, Lung cancer, Pulmonary hypertension, etc.	53	I
53040	Nephrology-related Acute renal failure, Chronic kidney disease, Diabetic nephropathy, Hypertension, Aqueous electrolyte metabolism, Artificial dialysis, etc.	53	I

Basic Section	Examples of related research content	Medium-sized Sections and Broad Section corresponding Basic Sections	
		Medium-sized Section	Broad Section
53050	Dermatology-related Dermatology, Cutaneous immune disease, Cutaneous infection, Cutaneous tumor, etc.	53	I
54010	Hematology and medical oncology-related Hematological oncology, Medical oncology, Hematological immunology, Anemia, Thrombosis and hemostasis, Chemotherapy, etc.	54	I
54020	Connective tissue disease and allergy-related Connective tissue disease, Allergy, Clinical immunology, Inflammation, etc.	54	I
54030	Infectious disease medicine-related Infection diagnostics, Infection therapeutics, Host defense, International infection science, etc.	54	I
54040	Metabolism and endocrinology-related Energy balance, Glucose metabolism, Lipid metabolism, Purine metabolism, Bone metabolism, Electrolyte balance, Endocrinology, Neuroendocrinology, Reproductive endocrinology, etc.	54	I
55010	General surgery and pediatric surgery-related Surgical basic principles, Breast surgery, Endocrine surgery, Pediatric surgery, Transplant surgery, Artificial organs science, Regeneration, Operation support, etc.	55	I
55020	Digestive surgery-related Upper gastrointestinal surgery, Lower gastrointestinal surgery, Hepatic surgery, Biliary surgery, Pancreatic surgery, etc.	55	I
55030	Cardiovascular surgery-related Coronary artery surgery, Heart valve surgery, Surgery for myocardial disease, Aortic surgery, Vascular surgery, Congenital heart surgery, etc.	55	I
55040	Respiratory surgery-related Lung surgery, Mediastinal surgery, Chest wall surgery, Respiratory tract surgery, etc.	55	I
55050	Anesthesiology-related Anesthesiology, Perioperative management, Pain management, Resuscitology, Palliative medicine, etc.	55	I
55060	Emergency medicine-related Intensive care medicine, Emergency resuscitation science, Trauma surgery, Disaster medicine, Disaster medical care, etc.	55	I
56010	Neurosurgery-related Neurosurgery, Spine and spinal cord diseases, etc.	56	I
56020	Orthopedics-related Orthopedics, Rehabilitation medicine, Sports medicine, etc.	56	I
56030	Urology-related Urology, Male genitalia science, etc.	56	I
56040	Obstetrics and gynecology-related Obstetrics, Reproductive endocrinology, Gynecologic oncology, Female health care medicine, etc.	56	I
56050	Otorhinolaryngology-related Otorhinolaryngology, Head and neck surgery, etc.	56	I
56060	Ophthalmology-related Ophthalmology, Ophthalmological optics, etc.	56	I
56070	Plastic and reconstructive surgery-related Plastic surgery, Reconstructive surgery, Aesthetic plastic surgery, etc.	56	I

Basic Section	Examples of related research content	Medium-sized Sections and Broad Section corresponding Basic Sections	
		Medium-sized Section	Broad Section
57010	Oral biological science-related Oral anatomy, Oral histology and embryology, Oral physiology, Oral biochemistry, Pharmacology for hard tissues, etc.	57	I
57020	Oral pathobiological science-related Oral infectious diseases, Oral pathology, Oral experimental oncology, Immunity and inflammation, Laboratory medicine, etc.	57	I
57030	Conservative dentistry-related Operative dentistry, Endodontology, Periodontology, etc.	57	I
57040	Regenerative dentistry and dental engineering-related Regenerative dentistry, Biomaterial science, Dental materials science, Oral and maxillofacial prosthetics, Oral implantology, etc.	57	I
57050	Prosthodontics-related Prosthodontics, Oral rehabilitation, Gerodontology, etc.	57	I
57060	Surgical dentistry-related Oral and maxillofacial surgery, Oral maxillofacial reconstructive surgery, Dental anesthesiology, Psychosomatic medicine dentistry, Dental radiology, etc.	57	I
57070	Developmental dentistry-related Orthodontics, Pediatric dentistry, etc.	57	I
57080	Social dentistry-related Dental hygiene, Preventive dentistry, Oral health administration and management, Dental education, Forensic odontology, etc.	57	I
58010	Medical management and medical sociology-related Medical management, Medical social science, Ethics for medical science, Ethics for medical care, Biomedical education, History of medical science, Health policy and economics, Clinical trials, Health and medical services administration, Disaster medical science, etc.	58	I
58020	Hygiene and public health-related: including laboratory approach Hygiene, Public health, Epidemiology, Global health, etc.	58	I
58030	Hygiene and public health-related: excluding laboratory approach Hygiene, Public health, Epidemiology, Global health, etc.	58	I
58040	Forensics medicine-related Forensic medicine, Forensic pathology, Forensic toxicology, Forensic genetics, Suicide, Abuse, Clinical forensic medicine, Sudden death, etc.	58	I
58050	Fundamental of nursing-related Fundamental of nursing, Nursing education, Nursing administration, Nursing ethics, Global nursing, etc.	58	I
58060	Clinical nursing-related Critical care and emergency nursing, Perioperative nursing, Nursing of chronic illness, Oncology nursing, Psychiatric nursing, Palliative care nursing, etc.	58	I
58070	Lifelong developmental nursing-related Women's health nursing, Maternal nursing, Midwifery, Family health nursing, Child health nursing, School nursing, etc.	58	I
58080	Gerontological nursing and community health nursing-related Gerontological nursing, Community health nursing, Public health nursing, Disaster nursing, Home care nursing, etc.	58	I
59010	Rehabilitation science-related Rehabilitation medicine, Rehabilitation nursing, Rehabilitation medical care, Physicotherapeutics, Occupational therapy, Assistive technology, Speech and language therapy, etc.	59	I

Basic Section	Examples of related research content	Medium-sized Sections and Broad Section corresponding Basic Sections	
		Medium-sized Section	Broad Section
59020	Sports sciences-related Sports physiology, Sports biochemistry, Sports medicine, Sports sociology, Sports management, Sports psychology, Sports education, Training science, Sports biomechanics, Adapted sports science, etc.	59	I
59030	Physical education, and physical and health education-related Growth developmental science, Physical and health education, Physical education in school, Educational physiology, Physical systems science, Higher brain function science, Martial arts theory, Outdoor education, etc.	59	I
59040	Nutrition science and health science-related Nutritional physiology, Nutritional biochemistry, Nutritional education, Clinical nutrition, Functional food, Lifestyle-related disease, Health promotion, Aging, etc.	59	I
60010	Theory of informatics-related Discrete structure, Mathematical logic, Theory of computation, Mathematical theory of programs, Computational complexity theory, Algorithm theory, Information theory, Coding theory, Theory of cryptography, Learning theory, etc.	60	J
60020	Mathematical informatics-related Optimization theory, Mathematical systems theory, System control theory, System analysis, System methodology, System modeling, System simulation, Combinatorial optimization, Queueing theory, Mathematical finance, etc.	60	J
60030	Statistical science-related Statistics, Data science, Modeling, Statistical inference, Multivariate analysis, Time series analysis, Statistical quality control, Applied statistics, etc.	60	J
60040	Computer system-related Computer architecture, Circuit and system, LSI design, LSI testing, Reconfigurable system, Dependable architecture, Low power technology, Hardware/software codesign, Embedded system, etc.	60	J
60050	Software-related Programming language, Programming methodology, Operating system, Parallel and distributed computing, Software engineering, Virtualization technology, Cloud computing, Software dependability, Software security, etc.	60	J
60060	Information network-related Network architecture, Network protocol, Internet, Mobile network, Pervasive computing, Sensor network, IoT, Traffic engineering, Network management, Service platform technology, etc.	60	J
60070	Information security-related Cryptography, Tamper resistance technology, Authentication, Biometrics, Access control, Malware countermeasure, Countermeasures against cyber attacks, Privacy protection, Digital forensics, Security evaluation and authorization, etc.	60	J
60080	Database-related Data model, Database system, Multimedia database, Information retrieval, Content management, Metadata, Big data, Geographic information system, etc.	60	J
60090	High performance computing-related Parallel processing, Distributed processing, Cloud computing, Numerical analysis, Visualization, Computer graphics, High performance computing application, etc.	60	J
60100	Computational science-related Mathematical engineering, Computational mechanics, Numerical simulation, Multi-scale modeling, Large-scale computing, Massively parallel computing, Numerical computing methods, Advanced algorithms, etc.	60	J
61010	Perceptual information processing-related Pattern recognition, Image processing, Computer vision, Visual media processing, Acoustic media processing, Media editing, Media database, Sensing, Sensor fusion, etc.	61	J
61020	Human interface and interaction-related Human interface, Multi-modal interface, Human-computer interaction, Computer supported cooperative work, Virtual reality, Augmented reality, Realistic communication, Wearable device, Usability, Ergonomics, etc.	61	J

Basic Section	Examples of related research content	Medium-sized Sections and Broad Section corresponding Basic Sections	
		Medium-sized Section	Broad Section
61030	Intelligent informatics-related Search, Inference, Machine learning, Knowledge acquisition, Intelligent system, Intelligent information processing, Natural language processing, Data mining, Ontology, Agent system, etc.	61	J
61040	Soft computing-related Neural network, Evolutionary computation, Fuzzy theory, Chaos, Complex systems, Probabilistic information processing, etc.	61	J
61050	Intelligent robotics-related Intelligent robot, Behavior and environment recognition, Planning, Sensory behavior system, Autonomous system, Digital human, Real world information processing, Physical agents, Intelligent space, etc.	61	J
61060	Kansei informatics-related Kansei design, Kansei cognitive science, Kansei psychology, Kansei robotics, Kansei measurement evaluation, Kansei interface, Kansei physiology, Kansei material science, Kansei pedagogy, Kansei brain science, etc.	61	J
62010	Life, health and medical informatics-related Bioinformatics, Life informatics, Biological information, Neuroinformatics, Neural information processing, Molecular computing, DNA computing, Medical information, Health information, Medical image, etc.	62	J
62020	Web informatics and service informatics-related Web system, Semantic web, Web mining, Social network analysis, Service engineering, Educational service, Medical service, Welfare service, Social service, Information culture, etc.	62	J
62030	Learning support system-related Media literacy, Learning media, Social media, Learning content, Learning management, Learning support, Remote learning, e-Learning, etc.	62	J
62040	Entertainment and game informatics-related Music information processing, 3D content, Animation, Game programming, Network entertainment, Media art, Digital museum, Experience design, etc.	62	J
63010	Environmental dynamic analysis-related Global warming, Environmental change, Water and material cycle, Ocean, Land, Polar regions, Environmental measurements, Environmental model, Environmental information, Remote sensing, etc.	63	K
63020	Radiation influence-related Radiation, Measurement, Control, Repair, Biological effects, Risk, etc.	63	K
63030	Chemical substance influence on environment-related Toxicology, Toxic substance to human, Trace chemical substance, Endocrine disruptor, Repair, etc.	63	K
63040	Environmental impact assessment-related Atmosphere, Hydrosphere, Terrestrial impact, Impact assessment on human health, Social and economic impacts, Impact assessment on the future generation, Environmental impact assessment, Assessment methods, Monitoring, Simulation, etc.	63	K
64010	Environmental load and risk assessment-related Environmental analysis, Environmental load analysis, Environmental monitoring, Pollution dynamics assessment, Evaluation of radioactive substances dynamics, Environmental modeling, Exposure assessment, Toxicity evaluation, Environmental assessment, Chemical substance management, etc.	64	K
64020	Environmental load reduction and remediation-related Removal of contamination, Treatment of waste material, Control of contamination source, Disposal of waste material, Environmental load reduction, Remediation measure of contamination, Noise and vibration reduction, Countermeasure of ground settlement, Bioremediation, Radioactive decontamination, etc.	64	K

Basic Section	Examples of related research content	Medium-sized Sections and Broad Section corresponding Basic Sections	
		Medium-sized Section	Broad Section
64030	Environmental materials and recycle technology-related Recycle materials, Valuable materials recovery, Separation, refining and purification, Environment-conscious design, Recycle chemistry, Green production, Zero emission, Resource circulation, Renewable energy, Biomass utilization, etc.	64	K
64040	Social-ecological systems-related Biodiversity, Conservation biology, Natural capital, Impact of climate change, Impact analysis on ecosystem, Ecosystem management, Ecosystem restoration, Ecosystem services, Natural tourism resources, Regional environmental planning, etc.	64	K
64050	Sound material-cycle social systems-related Sound material-cycle systems, Material and energy budget analysis, Low carbon society, Unused energy, Regional revitalization, Water use system, Industrial symbiosis, Life cycle assessment (LCA), Integrated environmental management, 3R (reduction, reuse, recycle) social systems, etc.	64	K
64060	Environmental policy and social systems-related Environmental philosophy and ethics, Environmental laws, Environmental economics, Environmental information, Environmental education, Environmental activities, Environmental management and governance, Social and public system, Consensus forming, Sustainable development, etc.	64	K
90010	Design-related Information design, Environmental design, Industrial design, Spatial design, Design history, Theory of design, Design standard, Design support, Evaluation of design, Design education, etc.	1, 23, 61	A, C, J
90020	Library and information science, humanistic and social informatics-related Library science, Information services, Information organizing, Information retrieval, Bibliometrics, Information resources, Information ethics, Digital humanities, Social Informatics, Digital archives, etc.	2, 62	A, J
90030	Cognitive science-related Cognitive science in general, Cognitive models, Kansei, Human factors, Cognitive and brain science, Comparative cognition, Cognitive linguistics, Cognitive engineering, etc.	10, 61	A, J
90110	Biomedical engineering-related Medical imaging, Medical modeling, Biological simulation, Biometrics, Artificial organs, Tissue engineering, Biophysical properties, Biocontrol, Biomechanics, Nanobio systems, etc.	90	D, I
90120	Biomaterials-related Biofunctional materials, Tissue engineering materials, Biocompatible materials, Nanobio materials, Drug delivery systems, Stimuli-sensitive materials, Genetic engineering material, etc.	90	D, I
90130	Medical systems-related Medical ultrasound system, Diagnostic imaging system, Laboratory diagnosis systems, Minimally invasive treatment systems, Remote diagnosis and treatment systems, Organ preservation systems, Medical information systems, Computer-assisted surgery, Medical robot, etc.	90	D, I
90140	Medical technology assessment-related Regulatory science, Safety evaluation, Clinical study, Medical technology ethics, Medical devices, etc.	90	D, I
90150	Medical assistive technology-related Healthcare and rehabilitation engineering, Life assist technology, Care support technology, Accessibility design, Universal design, Rehabilitation and nursing robot, Assist device for artificial internal organ, Rehabilitation devices, Nursing science and engineering, etc.	90	D, I

(Attachment 2)

The Review Section Table (Table for Medium-sized and Broad Sections)

When selecting a review section, applicants should first acquire an overall picture of the review sections based on the Review Section Table (Overview). In addition, check the Review Section Table (Table for Medium-sized and Broad Sections) for the detailed contents of each section and select a review section for their research proposal.
Also, some items of Basic Section may be presented in plural Medium-sized and Broad Sections. The items of Basic Section presented in plural Medium-sized Section are 9 and 3 items among 9 are presented in plural Medium-sized and Broad Sections (as shown below).
In addition, five other Basic Sections (90110-90150) may be presented in only one Medium-sized Section and two Broad Sections.

【Basic sections may be presented in plural Medium-sized and Broad Section】

Basic Section Item	Basic Section Description	Medium-sized Sections corresponding Basic Sections	Broad Sections corresponding Basic Sections
02090	Japanese language education-related	２，９	Ａ
02100	Foreign language education-related	２，９	Ａ
80010	Area studies-related	４，６	Ａ
80020	Tourism studies-related	４，７，８	Ａ
80030	Gender studies-related	４，６，８	Ａ
80040	Quantum beam science-related	１４，１５	Ｂ
90010	Design-related	１，２３，６１	Ａ，Ｃ，Ｊ
90020	Library and information science, humanistic and social informatics-related	２，６２	Ａ，Ｊ
90030	Cognitive science-related	１０，６１	Ａ，Ｊ
90110	Biomedical engineering-related	９０	Ｄ，Ｉ
90120	Biomaterials-related	９０	Ｄ，Ｉ
90130	Medical systems-related	９０	Ｄ，Ｉ
90140	Medical technology assessment-related	９０	Ｄ，Ｉ
90150	Medical assistive technology-related	９０	Ｄ，Ｉ

【Medium-sized section may be presented in plural Broad Section】

Medium-sized Section Item	Medium-sized section Description	Broad Sections corresponding Medium-sized Section
９０	Biomedical engineering and related fields	Ｄ，Ｉ

Broad Section A

Medium-sized Section 1 : Philosophy, art, and related fields

Basic Section	Examples of related research content
01010	Philosophy and ethics-related
	Philosophy in general, Ethics in general, Western philosophy, Western ethics, Japanese philosophy, Japanese ethics, Applied ethics, etc.
01020	Chinese philosophy, Indian philosophy and Buddhist philosophy-related
	Chinese philosophy/thought, Indian philosophy/thought, Buddhist philosophy, Bibliography, Philology, etc.
01030	Religious studies-related
	History of religions, Philosophy of religion, Theology, Sociology of religion, Psychology of religion, Anthropology of religion, Studies of religious folklore, Mythology, Bibliography, Philology, etc.
01040	History of thought-related
	History of thought in general, History of Western thought, History of Eastern thought, History of Japanese thought, History of Islamic thought, etc.
01050	Aesthetics and art studies-related
	Philosophy of art, Aesthetics, Music theory, Theatrical theory, Miscellaneous art studies, etc.
01060	History of arts-related
	Japanese art, Eastern art, Western art, Contemporary art, Craft, Design, Architecture, Costume, Photography, etc.
01070	Theory of art practice-related
	Art expression, Arts management, Art policy, Art production, etc.
01080	Sociology of science, history of science and technology-related
	Sociology of science, History of science, History of technology, History of medicine, Industrial archeology, Philosophy of science, Foundation of science, STS (Science, technology and society), etc.
90010	Design-related
	Information design, Environmental design, Industrial design, Spatial design, Design history, Theory of design, Design standard, Design support, Evaluation of design, Design education, etc.

Medium-sized Section 2 : Literature, linguistics, and related fields

Basic Section	Examples of related research content
02010	Japanese literature-related
	Japanese literature in general, Ancient literature, Medieval literature, Chinese classics in Japan, Bibliography, Philology, Premodern literature, Modern literature, Contemporary literature, Literary theory, etc.
02020	Chinese literature-related
	Chinese literature, Bibliography, Philology, Literary theory, etc.
02030	English literature and literature in the English language-related
	English literature, American literature, Literature in the English language, Literary theory, Bibliography, Philology, etc.
02040	European literature-related
	French literature, Literature in the French language, German literature, Literature in the German language, Classics, Russian and East European literature, Literature in other European languages, Literary theory, Bibliography, Philology, etc.
02050	Literature in general-related
	Literature in other languages and areas, Literary theory, Comparative literature, Bibliography, Philology, Literature education, etc.
02060	Linguistics-related
	Phonetics/phonology, Semantics/pragmatics, Morphosyntax, Sociolinguistics, Contrastive linguistics, Psycholinguistics, Neurolinguistics, Historical linguistics, Corpus linguistics, Endangered and minority languages, etc.

(Broad Section A)

02070	Japanese linguistics-related
	Phonetics/phonology, Writing systems, Lexicon and semantics, Grammar, Stylistics, Pragmatics, Language life, Dialect, History of the Japanese language, History of Japanese linguistics, etc.
02080	English linguistics-related
	Phonetics/phonology, Lexicon and semantics, Grammar, Stylistics, Pragmatics, Sociolinguistics, Diversity of the English language, Corpus linguistics, History of the English language, History of English linguistics, etc.
02090	Japanese language education-related
	Research on learners, Language acquisition, Teaching material, Curriculum evaluation, Japanese language education for specific purposes, Bilingual education, Research on teachers, Japanese language for Japanese language education, History of Japanese language education, Cross-cultural understanding, etc.
02100	Foreign language education-related
	Learning method, Computer-assisted language learning (CALL), Teaching material, Language testing, Theory of second language acquisition, Early English education, History of foreign language education and language policies, Curriculum evaluation, Training foreign language teachers, Cross-cultural understanding, etc.
90020	Library and information science, humanistic and social informatics-related
	Library science, Information services, Information organizing, Information retrieval, Bibliometrics, Information resources, Information ethics, Digital humanities, Social Informatics, Digital archives, etc.

Medium-sized Section 3 : History, archaeology, museology, and related fields

Basic Section	Examples of related research content
03010	Historical studies in general-related
	Historical theory, Historical methodology, Research in historical materials, Memory and medium, World history, History of cultural and diplomatic exchange, Comparative history, Global history, Environmental history, History of emotions, etc.
03020	Japanese history-related
	History of ancient Japan, History of medieval Japan, History of early modern Japan, History of modern Japan, History of local Japan, History of external relations, History of culture and religion, History of Japanese environment, History of Japanese city, Research in historical materials, etc.
03030	History of Asia and Africa-related
	Chinese history, East Asian history, Central Eurasian history, Southeast Asian history, Oceanian history, South Asian history, West Asian history, African history, History of cultural and diplomatic exchange, Research in historical materials, etc.
03040	History of Europe and America-related
	Ancient European history, Medieval European history, Modern and contemporary West European history, Modern and contemporary East European history, North and South American history, History of cultural and diplomatic exchange, Comparative history, Research in historical materials, etc.
03050	Archaeology-related
	Archaeology in general, Prehistoric archaeology, Historical archaeology, Japanese archaeology, Ancient civilizations, History of material culture, Experimental archaeology, Information archaeology, Study of buried cultural property, Ecological archeology, etc.
03060	Cultural assets study-related
	Dating methods, Material analysis, Production techniques, Conservation science, Archaeological prospection, Plant and animal residues, Human remains, Cultural heritage, Cultural property policy, Restoration of cultural properties, etc.
03070	Museology-related
	Museum displays and exhibitions, Museum management, Museum collections and documentation, Museum conservation and preservation, Museum education and learning, Museum informatics and media studies, Museum finance and administration, History of museums and museology, etc.

Medium-sized Section 4 : Geography, cultural anthropology, folklore, and related fields

Basic Section	Examples of related research content
04010	Geography-related
	Geography in general, Land use, Landscape, Environmental system, Geomorphology, Climatology, Hydrology, Cartography, Geographic information system, Regional planning, etc.

(Broad Section A)

04020	Human geography-related
	Human geography in general, Economic geography, Social geography, Political geography, Cultural geography, Urban geography, Rural geography, Historical geography, Regional geography, Geography education, etc.
04030	Cultural anthropology and folklore-related
	Cultural anthropology in general, Folklore in general, Material culture, Ecology, Social relationship, Religion, Arts, Health care, Border crossing, Minority, etc.
80010	Area studies-related
	Area studies in general, Cross-regional comparative studies, Aid, Social development, Interregional exchange, Environment, Transnationalism, Globalization, Refugees, Conflict, etc.
80020	Tourism studies-related
	Tourism studies in general, Tourism resources, Tourism policy, Tourism industry, Tourist area, Tourists, Tourism culture, Tourism media, Sustainable tourism, Tourism ethics, etc.
80030	Gender studies-related
	Gender studies in general, Feminism, Men's studies, Sexuality, Queer studies, Labor, Violence, Prostitution, Reproductive technology, Gender equality, etc.

Medium-sized Section 5 : Law and related fields

Basic Section	Examples of related research content
05010	Legal theory and history-related
	Legal philosophy, Roman law, Legal history, Sociology of law, Comparative law, Foreign law, Law and policy, Law and economics, Judicial system, etc.
05020	Public law-related
	Constitutional law, Administrative law, Tax law, etc.
05030	International law-related
	Public international law, Private international law, International human rights law, International economic law, EU law, etc.
05040	Social law-related
	Labor law, Economic law, Social security law, Education law, etc.
05050	Criminal law-related
	Criminal law, Criminal procedure, Criminology, Criminal justice policy, Juvenile law, Law and psychology, etc.
05060	Civil law-related
	Civil law, Commercial law, Civil procedure, Insolvency law, Alternative dispute resolution, etc.
05070	New fields of law-related
	Environmental law, Medical law, Information law, Consumer law, Intellectual property law, Law and gender, Legal profession, etc.

Medium-sized Section 6 : Political science and related fields

Basic Section	Examples of related research content
06010	Politics-related
	Political theory, History of political thought, Political history, Political process, Political participation, Political economy, Public administration, Local government, Comparative politics, Public policy, etc.
06020	International relations-related
	Theory of international relations, International history, Foreign policy, International security, International political economy, Global governance, International cooperation, Peace research, etc.
80010	Area studies-related
	Area studies in general, Cross-regional comparative studies, Aid, Social development, Interregional exchange, Environment, Transnationalism, Globalization, Refugees, Conflict, etc.

(Broad Section A)

80030	Gender studies-related
	Gender studies in general, Feminism, Men's studies, Sexuality, Queer studies, Labor, Violence, Prostitution, Reproductive technology, Gender equality, etc.

Medium-sized Section 7 : Economics, business administration, and related fields

Basic Section	Examples of related research content
07010	Economic theory-related
	Microeconomics, Macroeconomics, Game theory, Behavioral economics, Experimental economics, Economic theory, Evolutionary economics, Economic institutions, Economic systems, etc.
07020	Economic doctrines and economic thought-related
	Economic doctrines, Economic thought, Social thought, Economic philosophy, etc.
07030	Economic statistics-related
	Statistical system, Statistical research, Economic statistics, Big data, Econometrics, Financial econometrics, etc.
07040	Economic policy-related
	Economic policy, Industrial organization, International economics, Development economics, Environmental and resource economics, Japanese economy, Regional economy, Urban economics, Transportation economics, Spatial economics, etc.
07050	Public economics and labor economics-related
	Public finance, Public economics, Health economics, Labor economics, Social security, Education economics, Law and economics, Political economy, Demography, etc.
07060	Money and finance-related
	Monetary economics, Finance, International finance, Corporate finance, Financial engineering, Insurance, etc.
07070	Economic history-related
	Economic history, Business history, Industrial history, etc.
07080	Business administration-related
	Organization theory, Corporate strategy, Organizational behavior, Corporation theory, Corporate governance theory, Human resource management, Technology/Innovation management theory, International business, Management information, Business administration in general, etc.
07090	Commerce-related
	Marketing, Consumer behavior, Distributive sciences, Logistics, Commerce in general, etc.
07100	Accounting-related
	Financial accounting, Management accounting, Auditing, Accounting in general, etc.
80020	Tourism studies-related
	Tourism studies in general, Tourism resources, Tourism policy, Tourism industry, Tourist area, Tourists, Tourism culture, Tourism media, Sustainable tourism, Tourism ethics, etc.

Medium-sized Section 8 : Sociology and related fields

Basic Section	Examples of related research content
08010	Sociology-related
	Sociology in general, Community, Family, Labor, Stratification, Culture, Media, Ethnicity, Social movements, Social research, etc.
08020	Social welfare-related
	Social work, Social policy, Social welfare history, Child welfare, Social welfare for people with disabilities, Social welfare for aging, Community welfare, Poverty, Volunteerism, Social welfare in general, etc.

(Broad Section A)

08030	Family and consumer sciences, and culture and living-related
	Dress and fashion, Diet habits, Housing, Family resource management, Family relations, Lifestyle, Culture and living, Family and consumer education, Family and consumer sciences in general, etc.
80020	Tourism studies-related
	Tourism studies in general, Tourism resources, Tourism policy, Tourism industry, Tourist area, Tourists, Tourism culture, Tourism media, Sustainable tourism, Tourism ethics, etc.
80030	Gender studies-related
	Gender studies in general, Feminism, Men's studies, Sexuality, Queer studies, Labor, Violence, Prostitution, Reproductive technology, Gender equality, etc.

Medium-sized Section 9 : Education and related fields

Basic Section	Examples of related research content
09010	Education-related
	History of education, Philosophy of education, Curriculum and pedagogy, Teacher and trainer, School education, Social and community education, Institutions and administration, Comparative education, Educational administration, etc.
09020	Sociology of education-related
	Sociology of education, Socialization, Educational community, Destination and career formation, Class disparities, Gender, Education policy, Globalization and development, etc.
09030	Childhood and nursery/pre-school education-related
	Childhood, Nursery/pre-school education, Right of child, Development, Contents and methods of child care, Childcare facilities and kindergarten, Caregiver and pre-school teacher, Child care support, Childhood culture, History and thought, etc.
09040	Education on school subjects and primary/secondary education-related
	Education of individual subjects, Lessons of each subject area, Instructional guidance, Teacher education, Special activities, Integrated studies, Moral education, etc.
09050	Tertiary education-related
	Policy, Admission and articulation, Curriculum, Career guidance, Teacher and staff, Scientific research, Regional link and contribution, Globalization, Management and governance, Non-university higher education, etc.
09060	Special needs education-related
	Philosophy and history, Inclusion and cohesive society, Instructions and supports, Developmental disabilities, Emotional disturbance, Intellectual disabilities, Language disorders, Physical disabilities, Career education, etc.
09070	Educational technology-related
	Curriculum development, Teaching-learning support systems, Utilization of media, Utilization of ICT, Teacher's education, Information literacy, etc.
09080	Science education-related
	Science education, Science communication, Scientific literacy, Science and society, STEM education, etc.
02090	Japanese language education-related
	Research on learners, Language acquisition, Teaching material, Curriculum evaluation, Japanese language education for specific purposes, Bilingual education, Research on teachers, Japanese language for Japanese language education, History of Japanese language education, Cross-cultural understanding, etc.
02100	Foreign language education-related
	Learning method, Computer-assisted language learning (CALL), Teaching material, Language testing, Theory of second language acquisition, Early English education, History of foreign language education and language policies, Curriculum evaluation, Training foreign language teachers, Cross-cultural understanding, etc.

Medium-sized Section 10 : Psychology and related fields

Basic Section	Examples of related research content
10010	Social psychology-related
	Social psychology in general, Self, Group, Attitude and behavior, Affection/emotion, Interpersonal relation, Social issues, Culture, etc.

(Broad Section A)	10020	Educational psychology-related
		Educational psychology in general, Development, Family, School, Clinical practice, Personality, Learning, Assessment and evaluation, etc.
	10030	Clinical psychology-related
		Clinical psychology in general, Psychological disorder, Assessment, Psychological intervention, Training, Mental health, Crime and delinquency, Community, etc.
	10040	Experimental psychology-related
		Experimental psychology in general, Sensation, Perception, Attention, Memory, Language, Emotion, Learning, etc.
	90030	Cognitive science-related
		Cognitive science in general, Cognitive models, Kansei, Human factors, Cognitive and brain science, Comparative cognition, Cognitive linguistics, Cognitive engineering, etc.

Broad Section B

Medium-sized Section 11: Algebra, geometry, and related fields

Basic Section	Examples of related research content
11010	Algebra-related
	Group theory, Ring theory, Representation theory, Algebraic combinatorics, Number theory, Arithmetic geometry, Algebraic geometry, Algebraic analysis, etc.
11020	Geometry-related
	Differential geometry, Riemannian geometry, Symplectic geometry, Complex geometry, Topology, Differential topology, Low dimensional topology, etc.

Medium-sized Section 12: Analysis, applied mathematics, and related fields

Basic Section	Examples of related research content
12010	Basic analysis-related
	Functional analysis, Complex analysis, Probability theory, Harmonic analysis, Operator theory, Spectral analysis, Operator algebras, Algebraic analysis, Representation theory, etc.
12020	Mathematical analysis-related
	Functional equations, Real analysis, Dynamical system, Variational method, Nonlinear analysis, Applied analysis, etc.
12030	Basic mathematics-related
	Mathematical logic and foundations, Information theory, Discrete mathematics, Computer mathematics, History of mathematics, etc.
12040	Applied mathematics and statistics-related
	Numerical analysis, Mathematical modelling, Optimal control, Game theory, Statistical mathematics, etc.

Medium-sized Section 13: Condensed matter physics and related fields

Basic Section	Examples of related research content
13010	Mathematical physics and fundamental theory of condensed matter physics-related
	Statistical physics, Fundamental theory of condensed matter physics, Mathematical physics, Nonequilibrium nonlinear physics, Fluid dynamics, Computational physics, Quantum information theory, etc.
13020	Semiconductors, optical properties of condensed matter and atomic physics-related
	Semiconductors, Dielectrics, Atoms and molecules, Mesoscopic systems, Crystals, Surfaces and interfaces, Optical properties of condensed matter, Quantum electronics, Quantum information, etc.
13030	Magnetism, superconductivity and strongly correlated systems-related
	Magnetism, Strongly correlated electron systems, Superconductivity, Quantum fluids and solids, Molecular solids, etc.
13040	Biophysics, chemical physics and soft matter physics-related
	Physics of biological phenomena, Physics of biological matters, Liquids and glasses, Soft matters, Rheology, etc.

(Broad Section B)

Medium-sized Section 14: Plasma science and related fields

Basic Section	Examples of related research content
14010	Fundamental plasma-related Basic plasmas, Magnetized plasmas, Laser plasmas, Strongly coupled plasmas, Plasma diagnostics, Astrophysical and space plasmas, etc.
14020	Nuclear fusion-related Plasma confinement, Plasma control, Plasma heating, Plasma diagnostics, Edge plasma, Plasma wall interaction, Inertial fusion, Fusion material, Fusion system, etc.
14030	Applied plasma science-related Plasma processing, Plasma material science, General plasma applications, etc.
80040	Quantum beam science-related Accelerators, Beam physics, Radiation detectors, Beam control, Applied quantum beam science, etc.

Medium-sized Section 15: Particle-, nuclear-, astro-physics, and related fields

Basic Section	Examples of related research content
80040	Quantum beam science-related Accelerators, Beam physics, Radiation detectors, Beam control, Applied quantum beam science, etc.
15010	Theoretical studies related to particle-, nuclear-, cosmic ray and astro-physics Particle physics, Nuclear physics, Cosmic-ray physics, Astrophysics, Relativity, Gravity, etc.
15020	Experimental studies related to particle-, nuclear-, cosmic ray and astro-physics Particle physics, Nuclear physics, Cosmic-ray physics, Astrophysics, Relativity, Gravity, etc.

Medium-sized Section 16: Astronomy and related fields

Basic Section	Examples of related research content
16010	Astronomy-related Theoretical astronomy, Radio astronomy, Optical/infrared astronomy, X-ray/γ-ray astronomy, Astrometry, Solar physics, Exoplanet astronomy, etc.

Medium-sized Section 17: Earth and planetary science and related fields

Basic Section	Examples of related research content
17010	Space and planetary sciences-related Solar-terrestrial physics, Aeronomy, Planetary science, Exoplanetary science, Extraterrestrial material science, etc.
17020	Atmospheric and hydrospheric sciences-related Climate system, Atmospheric science, Ocean science, Limnology, Glaciology, Paleoclimatology, etc.
17030	Human geosciences-related Geoenvironmental science, Natural disaster science, Geospatial information science, Quaternary research, Earth resources science, etc.
17040	Solid earth sciences-related Solid earth geophysics, Geology, Earth's interior material science, Solid earth geochemistry, etc.
17050	Biogeosciences-related Origin and evolution of life, Extremophile biology, Biogeochemistry, Paleoenvironmental science, Paleontology, etc.

Broad Section C

Medium-sized Section 18: Mechanics of materials, production engineering, design engineering, and related fields

Basic Section	Examples of related research content
18010	Mechanics of materials and materials-related
	Structural mechanics, Fatigue, Fracture, Biomaterials, Material design, Material characteristics, Material evaluation, etc.
18020	Manufacturing and production engineering-related
	Machining, Non-traditional machining, Ultraprecision machining, Machine tools, Manufacturing systems, Precision metrology, Process planning, etc.
18030	Design engineering-related
	Mechanical design, Product design, Design theory, Design for reliability, Optimal design, Computer-aided design, etc.
18040	Machine elements and tribology-related
	Machine elements, Mechanisms, Tribology, Actuators, Micromachines, etc.

Medium-sized Section 19: Fluid engineering, thermal engineering, and related fields

Basic Section	Examples of related research content
19010	Fluid engineering-related
	Fluid machinery, Flow measurement, Computational fluid dynamics, Turbulence, Multiphase flow, Compressible flow, Incompressible flow, etc.
19020	Thermal engineering-related
	Heat transfer, Convection, Combustion, Thermophysical properties, Refrigeration and air-conditioning, Heat engine, Energy conversion, etc.

Medium-sized Section 20: Mechanical dynamics, robotics, and related fields

Basic Section	Examples of related research content
20010	Mechanics and mechatronics-related
	Kinematics, Kinetics, Vibration, Acoustics, Automation, Biomechanics, Instrument and control applications, Mechatronics applications, etc.
20020	Robotics and intelligent system-related
	Robotics, Intelligent system, Human mechanical system, Human interface, Planning, Intelligent spatial system, Virtual reality, Augmented reality, etc.

Medium-sized Section 21: Electrical and electronic engineering and related fields

Basic Section	Examples of related research content
21010	Power engineering-related
	Electrical energy-related, Energy conservation, Power system engineering, Electric machinery, Power electronics, Effective utilization of electric energy, Electromagnetic compatibility, Wireless power transfer, etc.
21020	Communication and network engineering-related
	Information theory, Nonlinear theory, Signal processing, Communication systems, Modulation/demodulation, Antennas, Networks, Multimedia, Cryptography/security, etc.
21030	Measurement engineering-related
	Measurement theory, Measuring instruments, Applied wave metrology, Measurement systems, Signal processing, Sensing, etc.
21040	Control and system engineering-related
	Control theory, System theory, Control systems, Knowledge-based control systems, System information processing, System control applications, Biosystems engineering, etc.
21050	Electric and electronic materials-related
	Semiconductor, Dielectric materials, Magnetic materials, Organic materials, Superconductor, Composite materials, Thin films, Functional materials, Thick films, Fabrication/characterization methods, etc.

(Broad Section C)

21060	Electron device and electronic equipment-related
	Electron devices, Circuit design, Optical devices, Spintronic devices, Millimeter wave/terahertz wave, Applied wave devices, Storage devices, Displays, Process technology, Implementation technology, etc.

Medium-sized Section 22: Civil engineering and related fields

Basic Section	Examples of related research content
22010	Civil engineering material, execution and construction management-related
	Concrete, Steel, Composite material, Wood, Pavement material, Repair and reinforce material, Execution, Maintenance, Construction management, etc.
22020	Structure engineering and earthquake engineering-related
	Applied mechanics, Structure engineering, Steel structure, Concrete structure, Composite structure, Wind engineering, Earthquake engineering, Aseismatic structure, Earthquake prevention, etc.
22030	Geotechnical engineering-related
	Soil mechanics, Foundation engineering, Rock engineering, Engineering geology, Ground behavior, Geotechnical structures, Geo-disaster prevention, Geo-environment, Tunnel engineering, etc.
22040	Hydroengineering-related
	Hydraulics, Environmental hydraulics, Hydrology, River engineering, Water resource engineering, Coastal engineering, Port and harbor engineering, Ocean engineering, etc.
22050	Civil engineering plan and transportation engineering-related
	Civil engineering plan, Regional urban planning, Spatial planning, Disaster prevention plan, Transportation plan, Transportation engineering, Railway engineering, Surveying and remote sensing, Landscape design, Civil engineering history, etc.
22060	Environmental systems for civil engineering-related
	Environment plan, Environmental system, Environment conservation, Water serve and drainage systems, Waste, Water environment, Atmospheric circulation, Noise and vibration, Environment ecology, Environmental monitoring, etc.

Medium-sized Section 23: Architecture, building engineering, and related fields

Basic Section	Examples of related research content
23010	Building structures and materials-related
	Load theory, Structural analysis, Structural design, Structures, Earthquake resistant design, Foundation, Geotechnics, Structural material, Maintenance, Building construction method, etc.
23020	Architectural environment and building equipment-related
	Sound environment, Vibration environment, Light environment, Heat environment, Air environment, Environmental psychology/physiology, Building equipment, Fire engineering, Urban environment, Environment design, etc.
23030	Architectural planning and city planning-related
	Planning theory, Design theory, Housing theory, Buildings, Urban/regional planning, Administration, Building economics, Production management, Disaster prevention planning, Landscape, etc.
23040	Architectural history and design-related
	Architectural history, Urban history, Architectural theory, Design, Landscape, Preservation, Renovation, etc.
90010	Design-related
	Information design, Environmental design, Industrial design, Spatial design, Design history, Theory of design, Design standard, Design support, Evaluation of design, Design education, etc.

Medium-sized Section 24: Aerospace engineering, marine and maritime engineering, and related fields

Basic Section	Examples of related research content
24010	Aerospace engineering-related
	Thermo-fluid dynamics, Structural mechanics, Propulsion, Aerospace craft design, Production engineering, Aircraft system, Aerodynamics, Spacecraft system, Space utilization, etc.
24020	Marine engineering-related
	Navigation, Structural mechanics, Structural design, Production technology, Marine propulsion, Marine transport, Marine development, Underwater engineering, Polar engineering, Marine environmental technology, etc.

(Broad Section C)

Medium-sized Section 25: Social systems engineering, safety engineering, disaster prevention engineering, and related fields

Basic Section	Examples of related research content
25010	Social systems engineering-related Social systems, Industrial engineering, Operations research, Industrial management, Reliability engineering, Policy science, Regulatory science, Quality control, etc.
25020	Safety engineering-related Safety engineering, Safety system, Risk engineering, Risk management, Work safety, Industrial safety, Product safety, Safety information, Human engineering, Liability engineering, etc.
25030	Disaster prevention engineering-related Disaster prediction, Hazard map, Building prevention against disaster, Lifeline prevention against disaster, Regional disaster prevention planning, Risk evaluation of disaster, Disaster prevention policy, Disaster resilience, etc.

Broad Section D

Medium-sized Section 26: Materials engineering and related fields

Basic Section	Examples of related research content
26010	Metallic material properties-related Electric and magnetic properties, Metastable states, Diffusion, Phase transformation, Phase diagram, Lattice defect, Mechanical properties, Thermal and optical properties, Materials computational science, Microstructure analysis, etc.
26020	Inorganic materials and properties-related Functional ceramics, Glass, Engineering ceramics, Carbon-based materials, Crystal structure analysis, Microstructure, Electric properties, Mechanical properties, Physical and chemical properties, Grain boundary, etc.
26030	Composite materials and interfaces-related Functional composite materials, Structural composite materials, Biocompatible composite materials, Polymer composite, Surface treatment, Bonding and joining, Interface properties, Gradient function, etc.
26040	Structural materials and functional materials-related Infrastructural materials, Structural materials, Functional materials, Medical welfare materials, Reliability, Sensor materials, Energy materials, Battery materials, Environmental materials, etc.
26050	Material processing and microstructure control-related Processing and molding, Molding, Weld joining, Crystal microstructure control, Laser processing, Precision processing, Polishing, Powder metallurgy, Coating, Corrosion and protection, etc.
26060	Metals production and resources production-related Separation and purification, Melting and solidifying, Crystal growth, Casting, Scarce resources substitution, Low environment impact, Recycle, etc.

Medium-sized Section 27: Chemical engineering and related fields

Basic Section	Examples of related research content
27010	Transport phenomena and unit operations-related Phase equilibrium, Transport properties, Fluid-phase unit operation, Adsorption, Membrane separation, Stir mixing, Powder and particle, Crystallization, Film formation, Supercritical, etc.
27020	Chemical reaction and process system engineering-related Reaction operation, Novel reaction process, Reaction mechanism, Reactor design, Materials synthesis process, Microreactor, Process control, Process system design, Process informatics, etc.
27030	Catalyst and resource chemical process-related Catalyst preparation, Catalytic function, Energy conversion process, Energy technology, Resources effective utilization technology, Catalytic material, Active site analysis, etc.

(Broad Section D)

27040	Biofunction and bioprocess engineering-related
	Biocatalyst engineering, Biofunction engineering, Food engineering, Medicochemical engineering, Bioproduction process, Bioreactor, Bioseparation, Biosensor, Biorefinery, etc.

Medium-sized Section 28: Nano/micro science and related fields

Basic Section	Examples of related research content
28010	Nanometer-scale chemistry-related
	Nanoparticle chemistry, Mesoscopic chemistry, Nanostructure control, Self-assembly, Nanocarbons, Molecular devices, Nanointerface function, Nanospace function, etc.
28020	Nanostructural physics-related
	Physics in nanoscale materials and structures, Nanoprobes, Quantum dots, Quantum devices, Electron devices, Spin devices, Nano optical device, Nanotribology, Nanocarbon physics, etc.
28030	Nanomaterials-related
	Creation of nanomaterials, Analysis of nanomaterials, Nanosurfaces and nanointerfaces, Functional nanomaterials, Nanoparticles, Carbon nanomaterials, Two-dimensional materials, Nanocrystalline materials, Nanocomposites, Nanofabrication process, etc.
28040	Nanobioscience-related
	Biomolecular devices, Molecular manipulation, Molecular imaging, Nanomeasurements, Nanosynthesis, Single molecule science, Nano-bio interfaces, Biomolecular array, Genome engineering, etc.
28050	Nano/micro-systems-related
	MEMS, NEMS, BioMEMS, Nano/micro-fabrication, Nano/micro-chemical systems, Nano/micro-biosystems, Nano/micro-mechanics, Nano/micro-sensors, etc.

Medium-sized Section 29: Applied condensed matter physics and related fields

Basic Section	Examples of related research content
29010	Applied physical properties-related
	Magnetic materials, Superconductors, Dielectrics, Fine particles, Liquid crystals, New functional materials, Molecular electronics, Bioelectronics, Spintronics, etc.
29020	Thin film/surface and interfacial physical properties-related
	Thin-film engineering, Surface and interfacial engineering, Surface science, Vacuum, Measurement, Analysis, Nanoscopic technology, Advanced equipment, Electronics application, etc.
29030	Applied condensed matter physics-related
	Elementary quantities, Standards, Units, Physical quantity measurements and detection, Energy conversion, etc.

Medium-sized Section 30: Applied physics and engineering and related fields

Basic Section	Examples of related research content
30010	Crystal engineering-related
	Metal, Semiconductor, Ceramics, Amorphous, Crystal growth, Artificial structures, Device structure, Crystal characterization, Plasma process, etc.
30020	Optical engineering and photon science-related
	Optical materials, Optical elements, Optical properties, Optical information processing, Laser, Optical sensing, Optical recording, Opto-electronics, Nonlinear optics, Quantum optics, etc.

Medium-sized Section 31: Nuclear engineering, earth resources engineering, energy engineering, and related fields

Basic Section	Examples of related research content
31010	Nuclear engineering-related
	Reactor physics, Nuclear safety, Thermal-hydraulics and structure, Fuel material, Nuclear chemistry, Nuclear life cycle, Radiation safety, Radiation engineering, Fusion reactor engineering, Nuclear social environment, etc.

(Broad Section D)

31020	Earth resource engineering, Energy sciences-related
	Resource prospecting, Resource development, Resource cycle, Resource economy, Energy system, Environmental load, Renewable energy, Natural resources and energy policy, etc.

Medium-sized Section 90: Biomedical engineering and related fields

Basic Section	Examples of related research content
90110	Biomedical engineering-related
	Medical imaging, Medical modeling, Biological simulation, Biometrics, Artificial organs, Tissue engineering, Biophysical properties, Biocontrol, Biomechanics, Nanobio systems, etc.
90120	Biomaterials-related
	Biofunctional materials, Tissue engineering materials, Biocompatible materials, Nanobio materials, Drug delivery systems, Stimuli-sensitive materials, Genetic engineering material, etc.
90130	Medical systems-related
	Medical ultrasound system, Diagnostic imaging system, Laboratory diagnosis systems, Minimally invasive treatment systems, Remote diagnosis and treatment systems, Organ preservation systems, Medical information systems, Computer-assisted surgery, Medical robot, etc.
90140	Medical technology assessment-related
	Regulatory science, Safety evaluation, Clinical study, Medical technology ethics, Medical devices, etc.
90150	Medical assistive technology-related
	Healthcare and rehabilitation engineering, Life assist technology, Care support technology, Accessibility design, Universal design, Rehabilitation and nursing robot, Assist device for artificial internal organ, Rehabilitation devices, Nursing science and engineering, etc.

Broad Section E

Medium-sized Section 32: Physical chemistry, functional solid state chemistry, and related fields

Basic Section	Examples of related research content
32010	Fundamental physical chemistry-related
	Gas, Liquid, Solid, Nanomaterials, Bio-related materials, Structure and properties, Chemical reactions, Spectroscopy, Theoretical calculation, Data science, etc.
32020	Functional solid state chemistry-related
	Molecular materials, Inorganic compounds, Hybrid compounds, Colloids, Surface/interface, Electrical properties, Optical properties, Magnetic properties, Energy conversion, Catalysis, etc.

Medium-sized Section 33: Organic chemistry and related fields

Basic Section	Examples of related research content
33010	Structural organic chemistry and physical organic chemistry-related
	Chemistry of organic crystals, Molecular recognition, Supermolecules, Functional organic molecules, Extended π-electron molecules, Organoelement chemistry, Reaction mechanism, Molecular chirality, Theoretical organic chemistry, etc.
33020	Synthetic organic chemistry-related
	Development of reactions, Reaction mechanism, Selective reactions, Asymmetric synthesis, Development of catalysts, Biocatalysis, Sustainable organic synthesis, Natural product synthesis, Process chemistry, etc.

(Broad Section E)

Medium-sized Section 34: Inorganic/coordination chemistry, analytical chemistry, and related fields

Basic Section	Examples of related research content
34010	Inorganic/coordination chemistry-related
	Coordination chemistry, Organometallic chemistry, Inorganic solid-state chemistry, Bioinorganic chemistry, Solution chemistry, Clusters, Supramolecular complexes, Coordination polymers, Typical elements, Physical properties and functions, etc.
34020	Analytical chemistry-related
	Spectrometric analysis, Advanced measurements, Surface/interface analysis, Separation analysis, Analytical reagents, Radiochemical analysis, Electrochemical analysis, Bioanalysis, New analysis methods, etc.
34030	Green sustainable chemistry and environmental chemistry-related
	Green process, Green catalysts, Recycle, Environmental assessment, Environmentally conscious materials, Reduction of environmental load, Environmental restoration, Resource saving, Geochemistry, Environmental radioactivity, etc.

Medium-sized Section 35: Polymers, organic materials, and related fields

Basic Section	Examples of related research content
35010	Polymer chemistry-related
	Polymer synthesis, Polymer reactions, Functional polymers, Self-assembled polymers, Non-covalent polymers, Chiral polymers, Bio-related polymers, Polymer properties, Polymer structures, Polymer interface, etc.
35020	Polymer materials-related
	Properties of polymer materials, Synthesis of polymer materials, Functional polymer materials, Environmentally friendly polymer materials, Liquid crystal polymers, Gel, Biopolymers, Polymer composites, Polymer processing, etc.
35030	Organic functional materials-related
	Organic semiconductors, Liquid crystals, Optical materials, Device-related materials, Electrically conductive materials, Hybrid materials, Molecular functional materials, Organic hybrid materials, Materials for energy conversion, etc.

Medium-sized Section 36: Inorganic materials chemistry, energy-related chemistry, and related fields

Basic Section	Examples of related research content
36010	Inorganic compounds and inorganic materials chemistry-related
	Crystals, Amorphous, Ceramics, Semiconductors, Inorganic device-related materials, Low-dimensional compounds, Porous materials, Nanoparticles, Multicomponent compounds, Hybrid materials, etc.
36020	Energy-related chemistry
	Energy resources, Energy conversion materials, Energy carriers, Solar energy utilization, Material separation, Catalytic transformation, Battery and electrochemical materials, Energy-saving materials, Renewable energy, Unused energy, etc.

Medium-sized Section 37: Biomolecular chemistry and related fields

Basic Section	Examples of related research content
37010	Bio-related chemistry
	Bioorganic chemistry, Bioinorganic chemistry, Biological reaction engineering, Biofunctional chemistry, Biofunctional materials, Biotechnology, etc.
37020	Chemistry and chemical methodology of biomolecules-related
	Natural product chemistry, Biologically active compounds, Molecular mechanism of biological activities, Biofunctional molecules, Combinatorial chemistry, Metabolomic analysis, etc.
37030	Chemical biology-related
	In vivo functional expression, Intracellular chemical reactions, Drug discovery science, Chemical library, Structure-activity relationship, Chemical probes, Biomolecular measurements, Molecular imaging, Proteomics, etc.

Broad Section F

Medium-sized Section 38: Agricultural chemistry and related fields

Basic Section	Examples of related research content
38010	Plant nutrition and soil science-related
	Plant metabolism and physiology, Nutritional elements in plants, Soil classification, Soil physical chemistry, Soil organisms, etc.
38020	Applied microbiology-related
	Microbial genetics/breeding, Microbial function, Microbial metabolism and physiology, Microbial applications, Control of microbes, Microbial ecology, Production of useful materials, etc.
38030	Applied biochemistry-related
	Cellular biochemistry, Applied biochemistry, Structural biology, Regulation of bioactivity, Metabolism and physiology, Cellular function, Molecular function, Production of useful materials, etc.
38040	Bioorganic chemistry-related
	Bioactive substances, Signal molecules, Natural products chemistry, Biosynthesis, Structure-activity relationship, Synthetic organic chemistry, Chemical biology, etc.
38050	Food sciences-related
	Food function, Food chemistry, Nutritional chemistry, Food analysis, Food engineering, Food safety, Functional food, Nutritional epidemiology, Clinical nutrition, etc.
38060	Applied molecular and cellular biology-related
	Molecular cell biology, Cellular bioengineering, Molecular engineering, Gene expression control, Cell-cell/intermolecular interactions, Cellular function, Production of useful materials, etc.

Medium-sized Section 39: Agricultural and environmental biology and related fields

Basic Section	Examples of related research content
39010	Science in plant genetics and breeding-related
	Genetic resources, Breeding theories, Genomic breeding, Plants with novel traits, Quality components, Stress tolerance, Yielding ability, Reproduction and multiplication, Growth physiology, Development, etc.
39020	Crop production science-related
	Field crops, Crop yield, Crop product quality, Crop morphology, Growth prediction, Crop physiology, Field management, Low-cost cultivation techniques, Environmentally friendly agriculture, Field ecosystem, etc.
39030	Horticultural science-related
	Plant growth, flowering, and fruit development, Nursery plant propagation and production, Crop production systems, Cultivation techniques, Protected horticulture, Controlled environment systems, Breeding and development of new cultivars, Quality of horticultural products, Postharvest physiology and management, Socio-horticulture, etc.
39040	Plant protection science-related
	Plant pathology, Clinical plant science, Agricultural insect pest, Natural enemy, Weed, Agricultural chemicals, Integrated pest management, etc.
39050	Insect science-related
	Sericulture insect technology, Insect genetics, Insect pathology, Insect physiology and biochemistry, Insect ecology, Chemical ecology, Systematics, Symbiosis and parasitism, Social insects, Medical entomology, etc.
39060	Conservation of biological resources-related
	Conservation biology, Biodiversity conservation, Conservation of phylogenetic diversity, Genetic resources conservation, Ecosystem conservation, Conservation of microorganisms, Impacts of non-native species, etc.
39070	Landscape science-related
	Landscape architecture, Parks and open space planning, Landscape planning, Cultural landscape, Nature conservation, Landscape ecology, Parks and open space management, Parks, Environmental greening, Participatory community design, etc.

(Broad Section F)

Medium-sized Section 40: Forestry and forest products science, applied aquatic science, and related fields

Basic Section	Examples of related research content
40010	Forest science-related Forest ecology, Forest biodiversity, Forest genetics and breeding, Silviculture, Forest protection, Forest environments, Erosion control, Forest utilization, Forest planning, Forest policy, etc.
40020	Wood science-related Wood structure, Wood property, Lignocellulose, Trace element, Fungus, Wood processing, Biomass-refinery, Wood based material, Wooden building, Forest products education, etc.
40030	Aquatic bioproduction science-related Aquatic environment, Fisheries, Aquatic resource management, Aquatic organisms, Aquatic ecosystem, Aquaculture, Fisheries engineering, Fishing community/fisheries policy, Fisheries economics/management/marketing, Fisheries education, etc.
40040	Aquatic life science-related Aquatic nutrition, Aquatic pathology, Aquatic genetics/heredity/breeding, Aquatic physiology, Utilization of aquatic organisms and biomass, Aquatic biological chemistry, Aquatic biotechnology, Aquatic food sciences, etc.

Medium-sized Section 41: Agricultural economics and rural sociology, agricultural engineering, and related fields

Basic Section	Examples of related research content
41010	Agricultural and food economics-related Food economy, Agricultural production economy, Agricultural policy, Food system, Food marketing, International agricultural development, Trade of agricultural commodities and livestock products, Rural resources and environment, etc.
41020	Rural sociology and agricultural structure-related Farm organization, Farm management, Agricultural structure, Agricultural market, Agricultural history, Rural society, Rural life, Agricultural cooperative, etc.
41030	Rural environmental engineering and planning-related Irrigation and drainage, Reclamation and conservation of agricultural land, Rural planning, Rural environment, Circulation of resources and energy, Disaster prevention in rural area, Stock management of agricultural infrastructures, Hydrodynamics and hydrology, Soil physics, Design and construction materials, etc.
41040	Agricultural environmental engineering and agricultural information engineering-related Agricultural production facilities, Bioproduction machinery, Environmental control, Agricultural meteorology and micrometeorology, Agricultural information, Greenhouse horticulture, Plant factory, Postharvest and supply chain, Nondestructive measurement, Remote sensing and geographic information system, etc.
41050	Environmental agriculture-related Biomass, Environmental manipulation, Biodiversity, Environmental analysis, Ecosystem services, Resources circulation system, Low-carbon societies, Life-cycle assessment, Environmental friendly agriculture, Watershed management, etc.

Medium-sized Section 42: Veterinary medical science, animal science, and related fields

Basic Section	Examples of related research content
42010	Animal production science-related Breeding/genetics, Reproduction, Nutrition/feeding, Anatomy/physiology, Product, Environment, Behavior, Therapy, Grassland, Grazing, etc.
42020	Veterinary medical science-related Basic veterinary science, Pathological veterinary science, Applied veterinary science, Clinical veterinary science, Animal nursing, Animal welfare, Wildlife, etc.
42030	Animal life science-related Homeostasis, Cellular function, Biological defense, Integrated genetics, Development/differentiation, Biotechnology, etc.
42040	Laboratory animal science-related Genetic engineering, Developmental engineering, Animal models of disease, Facility management, Laboratory animal welfare, Laboratory animal-related technology, Bioresource, etc.

Broad Section G

Medium-sized Section 43: Biology at molecular to cellular levels, and related fields

Basic Section	Examples of related research content
43010	Molecular biology-related Chromosome function, Chromatin, Epigenetics, Genome maintenance, Genome transmission, Chromosome re-organization, Gene expression, Non-coding RNA, Regulation of protein function, Molecular genetics, Regulation of RNA function, etc.
43020	Structural biochemistry-related Proteins, Nucleic acids, Lipids, Carbohydrates, Biological membrane, Molecular recognition, Denaturation, Three-dimensional structural analysis, Three-dimensional structural prediction, Molecular dynamics, etc.
43030	Functional biochemistry-related Enzymes, Sugar chain, Bioenergy conversion, Biological trace elements, Physiologically active substances, Cell signaling, Membrane transport, Proteolysis, Molecular recognition, Organelle, etc.
43040	Biophysics-related Structure biology, Physical property of biomolecules, Biomembrane, Photobiology, Molecular motor, Biometrics, Bioimaging, Systems biology, Synthetic biology, Theoretical biology, etc.
43050	Genome biology-related Genome organization, Genome function, Genome diversity, Molecular evolution of genome, Genome repair/maintenance, Trans-omics, Epigenome, Gene resource, Genome dynamics, etc.
43060	System genome science-related Network analyses, Synthetic biology, Biological databases, Bioinformatics, Genome analysis technology, Genome biotechnology, etc.

Medium-sized Section 44: Biology at cellular to organismal levels, and related fields

Basic Section	Examples of related research content
44010	Cell biology-related Cytoskeleton, Proteolysis, Organelle, Nuclear structure and function, Extracellular matrix, Signal transduction, Cell cycle, Cell motility, Cell-cell interaction, Cellular genetics, etc.
44020	Developmental biology-related Cell differentiation, Stem cells, Regeneration, Germ layer formation, Morphogenesis, Organogenesis, Fertilization, Germ cells, Developmental genetics, Evolution and development, etc.
44030	Plant molecular biology and physiology-related Photosynthesis, Growth physiology, Plant development, Organelle, Cell wall, Responses to environment, Plant-microbe interaction, Metabolism, Plant molecular function, etc.
44040	Morphology and anatomical structure-related Morphology, Comparative morphology, Morphological modeling, Ultrastructure, Morphological image analysis, Tissue organization, Microscopic technology, Imaging, etc.
44050	Animal physiological chemistry, physiology and behavioral biology-related Metabolic physiology, Neurophysiology, Neuroethology, Behavioral physiology, Animal physiological chemistry, Chronobiology, Comparative physiology, Comparative endocrinology, Behavioral genetics, etc.

Medium-sized Section 45: Biology at organismal to population levels and anthropology, and related fields

Basic Section	Examples of related research content
45010	Genetics-related Molecular genetics, Cellular genetics, Developmental genetics, Behavioral genetics, Population genetics, Quantitative trait, Population genomics, Genome-wide association study, Genetic diversity, Epigenome diversity, etc.
45020	Evolutionary biology-related Molecular evolution, Evolutionary genetics, Phenotypic evolution, Evolutionary developmental biology, Evolution of ecological traits, Evolution of behaviors, Experimental evolution, Coevolution, Speciation, Evolutionary theory, etc.

(Broad Section G)

45030	Biodiversity and systematics-related
	Taxonomic characters, Taxon, Classification system, Molecular phylogeny, Phyletic evolution, Speciation, Natural history, Biogeography, Rare species conservation, Biodiversity, etc.
45040	Ecology and environment-related
	Chemical ecology, Molecular ecology, Physiological ecology, Evolutionary ecology, Behavioral ecology, Population ecology, Community ecology, Conservation ecology, Biological interactions, Material cycles in ecosystems, etc.
45050	Physical anthropology-related
	Morphology and function, Bioarchaeology, Biological mechanism, Genome, Evolutionary genetics, Behavior, Ecology, Comparative cognition, Primates, Growth and aging, etc.
45060	Applied anthropology-related
	Physiological anthropology, Ergonomics, Forensic anthropology, Medical anthropology, Physiological polymorphisms, Environmental adaptability, Somatic and physiological function, Anthropometry and bioengineering, Lifestyle, etc.

Medium-sized Section 46: Neuroscience and related fields

Basic Section	Examples of related research content
46010	Neuroscience-general-related
	Neurochemistry, Neuron, Glia, Genome, Epigenetics, Neurobiology, Information processing, Synapse, Neurogenesis, etc.
46020	Anatomy and histopathology of nervous system-related
	Neural development, Anatomy of nervous system, Neural network structure, Neuropathology, etc.
46030	Function of nervous system-related
	Neurophysiology, Neuropharmacology, Neurotransmission, Neuroinformatics, Behavioral neuroscience, Neural system physiology, Cerebral blood flow, Autonomic nervous system, etc.

Broad Section H

Medium-sized Section 47: Pharmaceutical sciences and related fields

Basic Section	Examples of related research content
47010	Pharmaceutical chemistry and drug development sciences-related
	Inorganic chemistry, Organic chemistry, Medicinal chemistry, Medicinal molecular design, Drug discovery, Bio-related materials, Chemical biology, etc.
47020	Pharmaceutical analytical chemistry and physicochemistry-related
	Environmental analysis, Bioanalysis, Physicochemistry, Biophysics, Structural biology, Radiochemistry, Bioimaging, Drug formulation design, Computer science, Information science, etc.
47030	Pharmaceutical hygiene and biochemistry-related
	Environmental hygiene, Healthful nutrition, Disease prevention, Toxicology, Drug metabolism, Host defense, Molecular biology, Cell biology, Biochemistry, etc.
47040	Pharmacology-related
	Pharmacology, Pharmacogenomics, Applied pharmacology, Signal transduction, Drug interactions, Drug response, Pharmacotherapy, Pharmacotoxicology, etc.
47050	Environmental and natural pharmaceutical resources-related
	Environmental resource science, Natural products chemistry, Bioactive natural compounds, Medicinal resources, Medicinal foods, Pharmaceutical microbiology, etc.
47060	Clinical pharmacy-related
	Pharmacokinetics, Medical informatics, Social pharmacy, Clinical pharmacy, Pharmaceutics, Regulatory science, Education for the pharmacist, etc.

(Broad Section H)

Medium-sized Section 48: Biomedical structure and function and related fields

Basic Section	Examples of related research content
48010	Anatomy-related Macroscopic anatomy, Histology, Embryology, etc.
48020	Physiology-related General physiology, Pathophysiology, Comparative physiology, Environmental physiology, etc.
48030	Pharmacology-related Genomic pharmacology, Molecular and cellular pharmacology, Pathological pharmacology, Behavioral pharmacology, Pharmacology for drug discovery, Clinical pharmacology, etc.
48040	Medical biochemistry-related Biofunctional molecular and medical biochemistry, Genome medical sciences, Human genetics, Disease model, etc.

Medium-sized Section 49: Pathology, infection/immunology, and related fields

Basic Section	Examples of related research content
49010	Pathological biochemistry-related Molecular pathology, Metabolic disorders, Molecular diagnosis, etc.
49020	Human pathology-related Molecular pathology, Cyto- and histo-pathology, Diagnostic pathology, etc.
49030	Experimental pathology-related Disease models, Pathological regulation, Tissue regeneration, etc.
49040	Parasitology-related Parasite, Vector organism, Parasite pathogenicity, Epidemiology of parasites, Control of parasite infections, etc.
49050	Bacteriology-related Bacterium, Fungus, Antimicrobial resistance, Bacterial pathogenicity, Epidemiology of bacteria, Control of bacterial infections, etc.
49060	Virology-related Virus, Prion, Viral pathogenicity, Epidemiology of viruses, Control of viral infections, etc.
49070	Immunology-related Immune system, Immune response, Inflammation, Immune-related disorder, Immune regulation, etc.

Broad Section I

Medium-sized Section 50: Oncology and related fields

Basic Section	Examples of related research content
50010	Tumor biology-related Cancer and gene, Tumor development, Invasion, Metastasis, Cancer microenvironment, Cancer and signal transduction, Characteristics of cancer cells, Cancer and immune cells, etc.
50020	Tumor diagnostics and therapeutics-related Genome analysis, Diagnostic markers, Molecule imaging, Chemotherapy, Nucleic acid therapy, Gene therapy, Immunotherapy, Molecular targeted therapy, Physical therapy, Radiation therapy, etc.

(Broad Section I)

Medium-sized Section 51: Brain sciences and related fields

Basic Section	Examples of related research content
51010	Basic brain sciences-related Brain-machine interface, Model animal, Computational brain science, Brain information decoding, Control technologies, Brain imaging, Brain biometrics, etc.
51020	Cognitive and brain science-related Social behavior, Communication, Emotion, Decision making, Consciousness, Learning, Neuroeconomics, Neuropsychology, etc.
51030	Pathophysiologic neuroscience-related Clinical neuroscience, Dolorology, Sensory impairment, Movement disorder, Neurological disorder, Neurogenesis, Neuroimmunology, Cellular degeneration, Disease model, etc.

Medium-sized Section 52: General internal medicine and related fields

Basic Section	Examples of related research content
52010	General internal medicine-related Psychosomatic medicine, Laboratory medicine, General practice, Geriatrics, Psychosomatic internal medicine, Oriental medicine, Palliative medicine, etc.
52020	Neurology-related Neurology, Neurofunctional imaging, etc.
52030	Psychiatry-related Clinical psychiatry, Biological psychiatry, Forensic mental health, etc.
52040	Radiological sciences-related Diagnostic radiology, Therapeutic radiology, Radiation biology, Radiological technology, etc.
52050	Embryonic medicine and pediatrics-related Fetal medicine, Neonatal medicine, Pediatrics, etc.

Medium-sized Section 53: Organ-based internal medicine and related fields

Basic Section	Examples of related research content
53010	Gastroenterology-related Upper digestive tract, Lower digestive tract, Liver, Biliary tract, Pancreas, etc.
53020	Cardiology-related Ischemic heart disease, Valvular heart disease, Arrhythmia, Cardiomyopathy, Heart failure, Peripheral arterial disease, Arteriosclerosis, Hypertension, etc.
53030	Respiratory medicine-related Respiratory medicine, Asthma, Diffusive lung disease, COPD, Lung cancer, Pulmonary hypertension, etc.
53040	Nephrology-related Acute renal failure, Chronic kidney disease, Diabetic nephropathy, Hypertension, Aqueous electrolyte metabolism, Artificial dialysis, etc.
53050	Dermatology-related Dermatology, Cutaneous immune disease, Cutaneous infection, Cutaneous tumor, etc.

(Broad Section I)

Medium-sized Section 54: Internal medicine of the bio-information integration and related fields

Basic Section	Examples of related research content
54010	Hematology and medical oncology-related Hematological oncology, Medical oncology, Hematological immunology, Anemia, Thrombosis and hemostasis, Chemotherapy, etc.
54020	Connective tissue disease and allergy-related Connective tissue disease, Allergy, Clinical immunology, Inflammation, etc.
54030	Infectious disease medicine-related Infection diagnostics, Infection therapeutics, Host defense, International infection science, etc.
54040	Metabolism and endocrinology-related Energy balance, Glucose metabolism, Lipid metabolism, Purine metabolism, Bone metabolism, Electrolyte balance, Endocrinology, Neuroendocrinology, Reproductive endocrinology, etc.

Medium-sized Section 55: Surgery of the organs maintaining homeostasis and related fields

Basic Section	Examples of related research content
55010	General surgery and pediatric surgery-related Surgical basic principles, Breast surgery, Endocrine surgery, Pediatric surgery, Transplant surgery, Artificial organs science, Regeneration, Operation support, etc.
55020	Digestive surgery-related Upper gastrointestinal surgery, Lower gastrointestinal surgery, Hepatic surgery, Biliary surgery, Pancreatic surgery, etc.
55030	Cardiovascular surgery-related Coronary artery surgery, Heart valve surgery, Surgery for myocardial disease, Aortic surgery, Vascular surgery, Congenital heart surgery, etc.
55040	Respiratory surgery-related Lung surgery, Mediastinal surgery, Chest wall surgery, Respiratory tract surgery, etc.
55050	Anesthesiology-related Anesthesiology, Perioperative management, Pain management, Resuscitology, Palliative medicine, etc.
55060	Emergency medicine-related Intensive care medicine, Emergency resuscitation science, Trauma surgery, Disaster medicine, Disaster medical care, etc.

Medium-sized Section 56: Surgery related to the biological and sensory functions and related fields

Basic Section	Examples of related research content
56010	Neurosurgery-related Neurosurgery, Spine and spinal cord diseases, etc.
56020	Orthopedics-related Orthopedics, Rehabilitation medicine, Sports medicine, etc.
56030	Urology-related Urology, Male genitalia science, etc.
56040	Obstetrics and gynecology-related Obstetrics, Reproductive endocrinology, Gynecologic oncology, Female health care medicine, etc.

(Broad Section I)

56050	Otorhinolaryngology-related
	Otorhinolaryngology, Head and neck surgery, etc.
56060	Ophthalmology-related
	Ophthalmology, Ophthalmological optics, etc.
56070	Plastic and reconstructive surgery-related
	Plastic surgery, Reconstructive surgery, Aesthetic plastic surgery, etc.

Medium-sized Section 57: Oral science and related fields

Basic Section	Examples of related research content
57010	Oral biological science-related
	Oral anatomy, Oral histology and embryology, Oral physiology, Oral biochemistry, Pharmacology for hard tissues, etc.
57020	Oral pathobiological science-related
	Oral infectious diseases, Oral pathology, Oral experimental oncology, Immunity and inflammation, Laboratory medicine, etc.
57030	Conservative dentistry-related
	Operative dentistry, Endodontology, Periodontology, etc.
57040	Regenerative dentistry and dental engineering-related
	Regenerative dentistry, Biomaterial science, Dental materials science, Oral and maxillofacial prosthetics, Oral implantology, etc.
57050	Prosthodontics-related
	Prosthodontics, Oral rehabilitation, Gerodontology, etc.
57060	Surgical dentistry-related
	Oral and maxillofacial surgery, Oral maxillofacial reconstructive surgery, Dental anesthesiology, Psychosomatic medicine dentistry, Dental radiology, etc.
57070	Developmental dentistry-related
	Orthodontics, Pediatric dentistry, etc.
57080	Social dentistry-related
	Dental hygiene, Preventive dentistry, Oral health administration and management, Dental education, Forensic odontology, etc.

Medium-sized Section 58: Society medicine, nursing, and related fields

Basic Section	Examples of related research content
58010	Medical management and medical sociology-related
	Medical management, Medical social science, Ethics for medical science, Ethics for medical care, Biomedical education, History of medical science, Health policy and economics, Clinical trials, Health and medical services administration, Disaster medical science, etc.
58020	Hygiene and public health-related: including laboratory approach
	Hygiene, Public health, Epidemiology, Global health, etc.
58030	Hygiene and public health-related: excluding laboratory approach
	Hygiene, Public health, Epidemiology, Global health, etc.
58040	Forensics medicine-related
	Forensic medicine, Forensic pathology, Forensic toxicology, Forensic genetics, Suicide, Abuse, Clinical forensic medicine, Sudden death, etc.

(Broad Section I)

58050	Fundamental of nursing-related
	Fundamental of nursing, Nursing education, Nursing administration, Nursing ethics, Global nursing, etc.
58060	Clinical nursing-related
	Critical care and emergency nursing, Perioperative nursing, Nursing of chronic illness, Oncology nursing, Psychiatric nursing, Palliative care nursing, etc.
58070	Lifelong developmental nursing-related
	Women's health nursing, Maternal nursing, Midwifery, Family health nursing, Child health nursing, School nursing, etc.
58080	Gerontological nursing and community health nursing-related
	Gerontological nursing, Community health nursing, Public health nursing, Disaster nursing, Home care nursing, etc.

Medium-sized Section 59 : Sports sciences, physical education, health sciences, and related fields

Basic Section	Examples of related research content
59010	Rehabilitation science-related
	Rehabilitation medicine, Rehabilitation nursing, Rehabilitation medical care, Physicotherapeutics, Occupational therapy, Assistive technology, Speech and language therapy, etc.
59020	Sports sciences-related
	Sports physiology, Sports biochemistry, Sports medicine, Sports sociology, Sports management, Sports psychology, Sports education, Training science, Sports biomechanics, Adapted sports science, etc.
59030	Physical education, and physical and health education-related
	Growth developmental science, Physical and health education, Physical education in school, Educational physiology, Physical systems science, Higher brain function science, Martial arts theory, Outdoor education, etc.
59040	Nutrition science and health science-related
	Nutritional physiology, Nutritional biochemistry, Nutritional education, Clinical nutrition, Functional food, Lifestyle-related disease, Health promotion, Aging, etc.

Medium-sized Section 90 : Biomedical engineering and related fields

Basic Section	Examples of related research content
90110	Biomedical engineering-related
	Medical imaging, Medical modeling, Biological simulation, Biometrics, Artificial organs, Tissue engineering, Biophysical properties, Biocontrol, Biomechanics, Nanobio systems, etc.
90120	Biomaterials-related
	Biofunctional materials, Tissue engineering materials, Biocompatible materials, Nanobio materials, Drug delivery systems, Stimuli-sensitive materials, Genetic engineering material, etc.
90130	Medical systems-related
	Medical ultrasound system, Diagnostic imaging system, Laboratory diagnosis systems, Minimally invasive treatment systems, Remote diagnosis and treatment systems, Organ preservation systems, Medical information systems, Computer-assisted surgery, Medical robot, etc.
90140	Medical technology assessment-related
	Regulatory science, Safety evaluation, Clinical study, Medical technology ethics, Medical devices, etc.
90150	Medical assistive technology-related
	Healthcare and rehabilitation engineering, Life assist technology, Care support technology, Accessibility design, Universal design, Rehabilitation and nursing robot, Assist device for artificial internal organ, Rehabilitation devices, Nursing science and engineering, etc.

Broad Section J

Medium-sized Section 60: Information science, computer engineering, and related fields

Basic Section	Examples of related research content
60010	Theory of informatics-related Discrete structure, Mathematical logic, Theory of computation, Mathematical theory of programs, Computational complexity theory, Algorithm theory, Information theory, Coding theory, Theory of cryptography, Learning theory, etc.
60020	Mathematical informatics-related Optimization theory, Mathematical systems theory, System control theory, System analysis, System methodology, System modeling, System simulation, Combinatorial optimization, Queueing theory, Mathematical finance, etc.
60030	Statistical science-related Statistics, Data science, Modeling, Statistical inference, Multivariate analysis, Time series analysis, Statistical quality control, Applied statistics, etc.
60040	Computer system-related Computer architecture, Circuit and system, LSI design, LSI testing, Reconfigurable system, Dependable architecture, Low power technology, Hardware/software codesign, Embedded system, etc.
60050	Software-related Programming language, Programming methodology, Operating system, Parallel and distributed computing, Software engineering, Virtualization technology, Cloud computing, Software dependability, Software security, etc.
60060	Information network-related Network architecture, Network protocol, Internet, Mobile network, Pervasive computing, Sensor network, IoT, Traffic engineering, Network management, Service platform technology, etc.
60070	Information security-related Cryptography, Tamper resistance technology, Authentication, Biometrics, Access control, Malware countermeasure, Countermeasures against cyber attacks, Privacy protection, Digital forensics, Security evaluation and authorization, etc.
60080	Database-related Data model, Database system, Multimedia database, Information retrieval, Content management, Metadata, Big data, Geographic information system, etc.
60090	High performance computing-related Parallel processing, Distributed processing, Cloud computing, Numerical analysis, Visualization, Computer graphics, High performance computing application, etc.
60100	Computational science-related Mathematical engineering, Computational mechanics, Numerical simulation, Multi-scale modeling, Large-scale computing, Massively parallel computing, Numerical computing methods, Advanced algorithms, etc.

Medium-sized Section 61: Human informatics and related fields

Basic Section	Examples of related research content
61010	Perceptual information processing-related Pattern recognition, Image processing, Computer vision, Visual media processing, Acoustic media processing, Media editing, Media database, Sensing, Sensor fusion, etc.
61020	Human interface and interaction-related Human interface, Multi-modal interface, Human-computer interaction, Computer supported cooperative work, Virtual reality, Augmented reality, Realistic communication, Wearable device, Usability, Ergonomics, etc.
61030	Intelligent informatics-related Search, Inference, Machine learning, Knowledge acquisition, Intelligent system, Intelligent information processing, Natural language processing, Data mining, Ontology, Agent system, etc.
61040	Soft computing-related Neural network, Evolutionary computation, Fuzzy theory, Chaos, Complex systems, Probabilistic information processing, etc.
61050	Intelligent robotics-related Intelligent robot, Behavior and environment recognition, Planning, Sensory behavior system, Autonomous system, Digital human, Real world information processing, Physical agents, Intelligent space, etc.

(Broad Section J)

61060	Kansei informatics-related
	Kansei design, Kansei cognitive science, Kansei psychology, Kansei robotics, Kansei measurement evaluation, Kansei interface, Kansei physiology, Kansei material science, Kansei pedagogy, Kansei brain science, etc.
90010	Design-related
	Information design, Environmental design, Industrial design, Spatial design, Design history, Theory of design, Design standard, Design support, Evaluation of design, Design education, etc.
90030	Cognitive science-related
	Cognitive science in general, Cognitive models, Kansei, Human factors, Cognitive and brain science, Comparative cognition, Cognitive linguistics, Cognitive engineering, etc.

Medium-sized Section 62: Applied informatics and related fields

Basic Section	Examples of related research content
62010	Life, health and medical informatics-related
	Bioinformatics, Life informatics, Biological information, Neuroinformatics, Neural information processing, Molecular computing, DNA computing, Medical information, Health information, Medical image, etc.
62020	Web informatics and service informatics-related
	Web system, Semantic web, Web mining, Social network analysis, Service engineering, Educational service, Medical service, Welfare service, Social service, Information culture, etc.
62030	Learning support system-related
	Media literacy, Learning media, Social media, Learning content, Learning management, Learning support, Remote learning, e-Learning, etc.
62040	Entertainment and game informatics-related
	Music information processing, 3D content, Animation, Game programming, Network entertainment, Media art, Digital museum, Experience design, etc.
90020	Library and information science, humanistic and social informatics-related
	Library science, Information services, Information organizing, Information retrieval, Bibliometrics, Information resources, Information ethics, Digital humanities, Social Informatics, Digital archives, etc.

Broad Section K

Medium-sized Section 63: Environmental analyses and evaluation and related fields

Basic Section	Examples of related research content
63010	Environmental dynamic analysis-related
	Global warming, Environmental change, Water and material cycle, Ocean, Land, Polar regions, Environmental measurements, Environmental model, Environmental information, Remote sensing, etc.
63020	Radiation influence-related
	Radiation, Measurement, Control, Repair, Biological effects, Risk, etc.
63030	Chemical substance influence on environment-related
	Toxicology, Toxic substance to human, Trace chemical substance, Endocrine disruptor, Repair, etc.
63040	Environmental impact assessment-related
	Atmosphere, Hydrosphere, Terrestrial impact, Impact assessment on human health, Social and economic impacts, Impact assessment on the future generation, Environmental impact assessment, Assessment methods, Monitoring, Simulation, etc.

Medium-sized Section 64: Environmental conservation measure and related fields

Basic Section	Examples of related research content
64010	Environmental load and risk assessment-related
	Environmental analysis, Environmental load analysis, Environmental monitoring, Pollution dynamics assessment, Evaluation of radioactive substances dynamics, Environmental modeling, Exposure assessment, Toxicity evaluation, Environmental assessment, Chemical substance management, etc.

(Broad Section K)		64020	Environmental load reduction and remediation-related
			Removal of contamination, Treatment of waste material, Control of contamination source, Disposal of waste material, Environmental load reduction, Remediation measure of contamination, Noise and vibration reduction, Countermeasure of ground settlement, Bioremediation, Radioactive decontamination, etc.
		64030	Environmental materials and recycle technology-related
			Recycle materials, Valuable materials recovery, Separation, refining and purification, Environment-conscious design, Recycle chemistry, Green production, Zero emission, Resource circulation, Renewable energy, Biomass utilization, etc.
		64040	Social-ecological systems-related
			Biodiversity, Conservation biology, Natural capital, Impact of climate change, Impact analysis on ecosystem, Ecosystem management, Ecosystem restoration, Ecosystem services, Natural tourism resources, Regional environmental planning, etc.
		64050	Sound material-cycle social systems-related
			Sound material-cycle systems, Material and energy budget analysis, Low carbon society, Unused energy, Regional revitalization, Water use system, Industrial symbiosis, Life cycle assessment (LCA), Integrated environmental management, 3R (reduction, reuse, recycle) social systems, etc.
		64060	Environmental policy and social systems-related
			Environmental philosophy and ethics, Environmental laws, Environmental economics, Environmental information, Environmental education, Environmental activities, Environmental management and governance, Social and public system, Consensus forming, Sustainable development, etc.

(References) Relevant Rules

See below for KAKENHI-related laws, regulations, and rules.

MEXT rules, etc. concerning Grants-in-Aid for Scientific Research

https://www.mext.go.jp/a_menu/shinkou/hojyo/1284421.htm

JSPS rules, etc. concerning Grants-in-Aid for Scientific Research

https://www.jsps.go.jp/j-grantsinaid/28_kitei/index.html

- **Rules for the Handling of Grants-in-Aid for Scientific Research**
  https://www.mext.go.jp/a_menu/shinkou/hojyo/1307764.htm

- **Procedures on the Handling of JSPS Grants-in-Aid for Scientific Research (KAKENHI (Series of Single-year Grants))**
  https://www.jsps.go.jp/file/storage/kaken_28_kitei_2024/yoryo_R70228.pdf

- **Procedures on the Handling of JSPS Grants-in-Aid for Scientific Research (KAKENHI (Multi-year Fund))**
  https://www.jsps.go.jp/file/storage/kaken_28_kitei_2024/kikin_yoryo_r70228.pdf

Inquiries

1. Inquiries about the invitation of applications should be directed to the following divisions through the research institution.

(1) For inquiries concerning the invitation of applications: Scientific Research Promotion Division, Research Promotion Bureau, MEXT

Division	Team in charge	Internal line and direct phone
○General inquiries about the Application Procedures ○Grant-in-Aid for Transformative Research Areas (A) (Publicly Offered Research)	Administrative Team for Grants-in-Aid Grants-in-Aid for Scientific Research Team	Direct phone: 03-6734-4183 Switchboard: 03-5253-4111 (ext. 4183) Direct phone: 03-6734-4094, 03-6734-4087 Switchboard: 03-5253-4111 (ext. 4094, 4087)

* Available every day except on Saturdays, Sundays, National Holidays, the New Year Holidays (from December 29 until January 3)

(2) For inquiries concerning the use of the KAKENHI Electronic Application System
Call center
Telephone: 0120-556-739 (toll-free)
* Available from 9:30 to 17:30 every day except Saturdays, Sundays, National Holidays and the New Year Holidays (from December 29 until January 3)

(3) For inquiries concerning the use of the Cross-ministerial Research and Development Management System (e-Rad)
e-Rad Help Desk:
Telephone: 0570-057-060 (Navi Dial)
* Available from 9:00 to 18:00 except on Saturdays, Sundays, National Holidays and the New Year Holidays (from December 29 until January 3)
* The following phone number is also available.
03-6631-0622

< Important points >

1) How to operate e-Rad
Manuals on how to operate e-Rad can be referred or downloaded from the portal site (URL: https://www.e-rad.go.jp). Please agree to the terms of service and apply.
2) Time period when e-Rad is available
Monday to Sunday, 00:00 - 24:00 (in operation 24 hours a day, 365 days a year)
However even during the above-mentioned time period, the operation of e-Rad may be disrupted or suspended, when maintenance and inspection is being carried out. If the operation is scheduled to be disrupted or suspended, this will be announced beforehand on the portal site.

(4) For matters related to the "Self-Assessment Checklist on the Improvement of the System" based on the "Guidelines on the Management and Audit of Public Research Funds at Research Institutions (Implementation Standards)"
Office of Competitive Research Funding Administration, Research Environment Division, Science and Technology Policy Bureau, MEXT
Telephone: 03-5253-4111 (ext. 3866, 3827)
E-mail: kenkyuhi@mext.go.jp

(5) For matters related to the "Checklist Pertaining to the Current Status" based on the "Guidelines for Responding to Misconduct in Research"
Office for Research Integrity Promotion, Research Environment Division, Science and Technology Policy Bureau, MEXT
Telephone: 03-6734-3874
E-mail: jinken@mext.go.jp

(6) For matters related to use of support through Platforms for Advanced Technologies and Research Resources
Scientific Research Promotion Team, Scientific Research Promotion Division, Research Promotion Bureau, MEXT
Telephone: 03-6734-4090

(7) For matters related to the "National Bioscience Database"
National Bioscience Database Center, Japan Science and Technology Agency (JST)
Telephone: 03-5214-8491

(8) For matters related to the "Inter-University Bio-Backup Project"
Executive Office, IBBP Center, Inter-University Research Institute Corporation National Institutes of Natural Sciences
Telephone: 0564-59-5930, 5931

(9) For matters related to the "National BioResource Project"
National BioResource Project (NBRP) Executive Office
(established in the Research Organization for Information and Systems, National Institute of Genetics)
Telephone: 055-981-6809

(10) For matters related to the "researchmap"
Service Support Center (in charge of the "researchmap"), Department for Information Infrastructure, Japan Science and Technology Agency
Web inquiry form: https://researchmap.jp/public/inquiry/

(11) For matters related to the "Security Export Control Policy"
Security Export Control Administration Division, Trade Control Department, Trade and Economic Cooperation Bureau, Ministry of Economy, Trade and Industry
Telephone: 03-3501-2800

(12) Upon application to the "Grant-in-Aid for Transformative Research Areas," applicants may make inquiries to the Senior Scientific Research Specialists (See note) of the MEXT about the system. Please contact the Scientific Research Promotion Division, Research Promotion Bureau, MEXT (see (1)).

(Note) Researchers in universities or other research institutions who make investigation, instruction, and advice on academic matters (Article 53 and 62 of "Ministry of Education, Culture, Sports, Science and Technology organization rules").

○"List of Senior Scientific Research Specialist (in charge of Grants-in-Aid for Scientific Research)"
URL: https://www.mext.go.jp/a_menu/shinkou/hojyo/1284449.htm

(13) For matters related to the Basic Guidelines for Proper Conduct of Animal Experiments at Research Institutions
Life Science Research Team, Life Sciences Division, Research Promotion Bureau, MEXT
Telephone: 03-6734-4366

2. Application forms can be downloaded from the following website.

MEXT's website on Grants-in-Aid for Scientific Research
URL: https://www.mext.go.jp/a_menu/shinkou/hojyo/boshu/1351544.htm