

2026

KAKENHI

GRANTS-IN-AID FOR SCIENTIFIC RESEARCH

Creating New Knowledge

—For Shaping and Transmitting World-leading Knowledge Assets



MEXT

MINISTRY OF EDUCATION,
CULTURE, SPORTS,
SCIENCE AND TECHNOLOGY-JAPAN



JSPS

JAPAN SOCIETY FOR THE PROMOTION OF SCIENCE
日本学術振興会



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*This booklet has been produced based on information as of July 2026, unless otherwise specified.

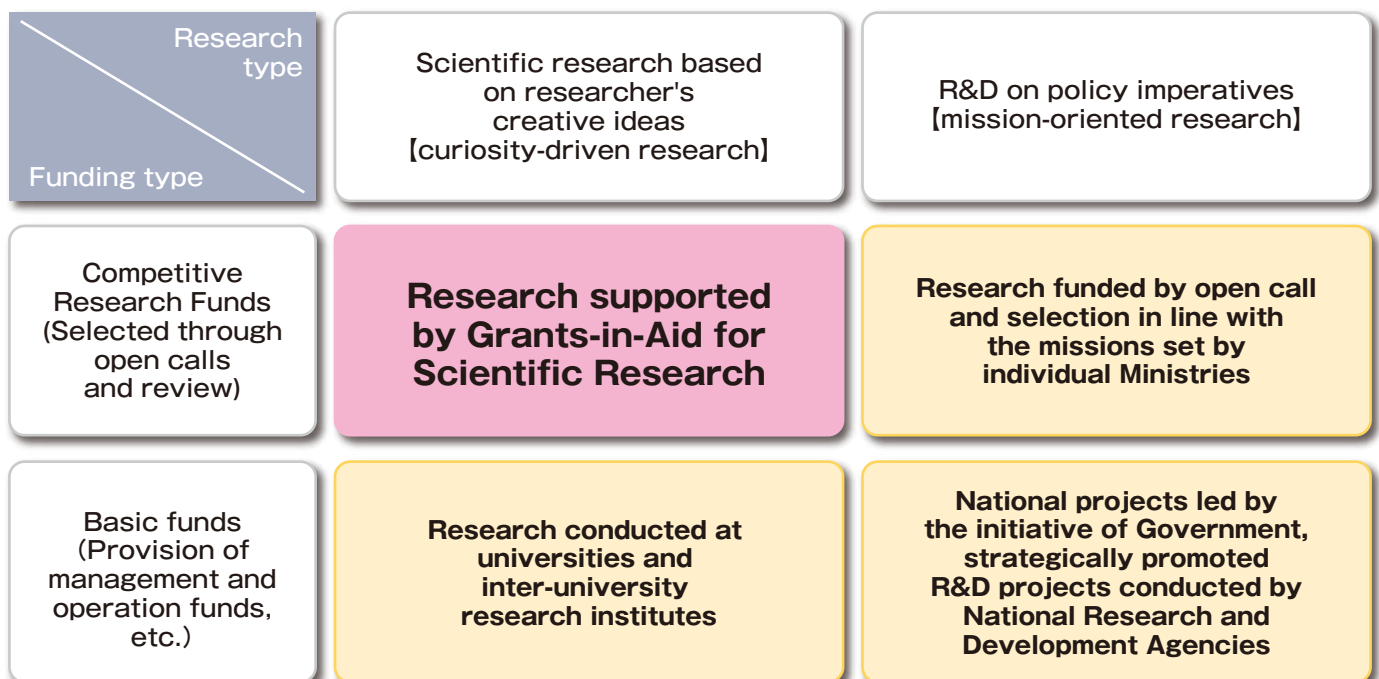
What is the Grants-in-Aid for Scientific Research (KAKENHI) program?

Universities and research institutions across Japan conduct many different kinds of research. As one means of supporting the research, the Grants-in-Aid for Scientific Research (KAKENHI) program supports scientific research across all fields from the humanities and social sciences to the natural sciences and across the spectrum from basic to applied research. The budget for fiscal 2026 is approximately 247.9 billion yen. In fiscal 2025, KAKENHI supported approximately 80,000 outstanding research projects, including newly adopted proposals and ongoing research projects that have already been adopted. These features make KAKENHI the largest competitive research funds in Japan.

Research activities take many forms, including those in which the researchers carry out their work with curiosity, projects in which the area of concentration and goals are defined in advance, and those intended to lead to specific product development. The starting point for all these activities is scientific research based on the researcher's creative ideas. By broadly supporting this scientific research, which is the foundation of all research activities, the KAKENHI program plays a major role, in the fostering and development of scientific advances.

KAKENHI provides funds necessary for research activities, following adoption based on the rigorous review of research plans submitted by researchers.

■ The placement of “KAKENHI” in the policy on the promotion of science, technology and scientific research in Japan



Research Categories

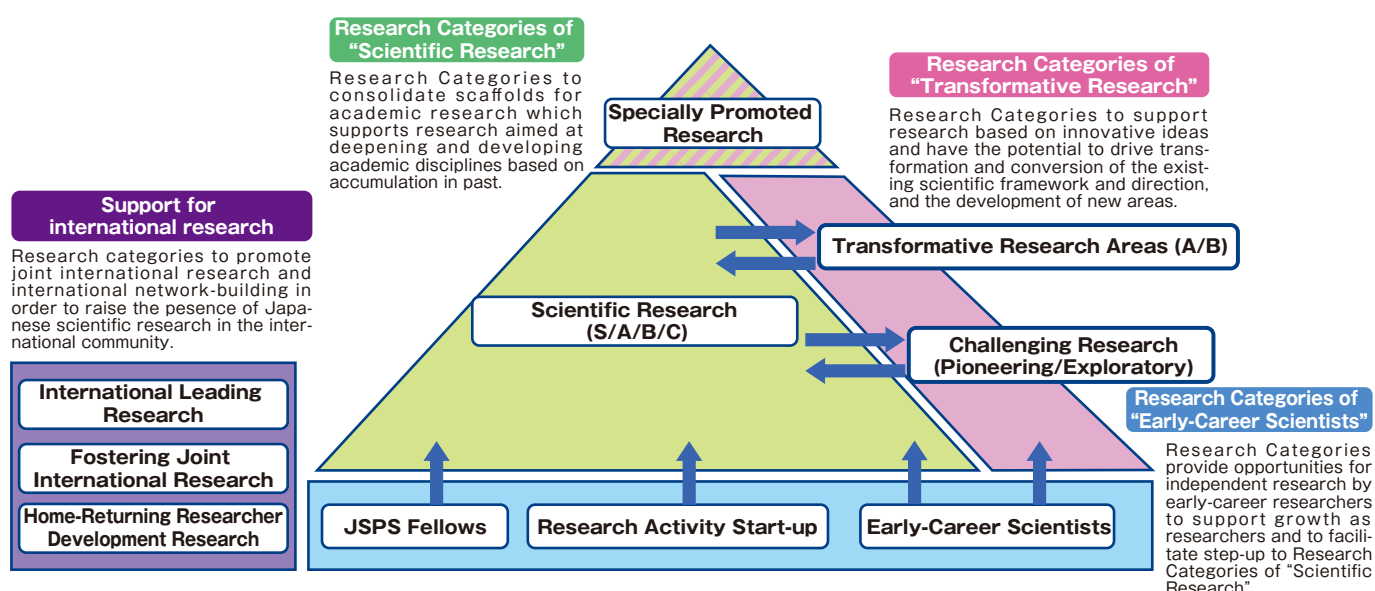
KAKENHI covers all fields of research.

This scheme offers a variety of research categories, depending on the contents and scale.

KAKENHI supports all types of curiosity-driven research (i.e. scientific research based on researcher's creative ideas) from basic research to applied research, covering all fields, from the humanities and social sciences to natural sciences.

Research categories are defined based on the stage and scale of the research. Researchers applying for KAKENHI can select a research category based on the contents and scale of their own research plan.

Image of research categories in FY2026



Details on each research category are as follows.

As of July 2026

Research categories	Purposes and description of each research category	Type of fund ^{*1}	
Grants-in-Aid for Scientific Research			
Grant-in-Aid for 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.))	(A)	SG
	(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)	(B)	MF

Research categories	Purposes and description of each research category	Type of fund*1	
Grants-in-Aid for Scientific Research			
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)	MF
		(A)	SG
		(B)	MF
		(C)	
Grant-in-Aid for Challenging Research	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 (*2) 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	
Grant-in-Aid for Encouragement of Scientists	Research conducted by an individual who is ineligible for application for other KAKENHI categories (e.g., Individuals who belong to educational or research institutions, private companies, etc. and engage 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	
Grant-in-Aid for Publication of Scientific Research Results			
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.	SG	
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 JSPS International Research Fellow).	MF	
Fund for the Promotion of Joint International Research			
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)	MF	
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 a 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.)		
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.)		

(*)1 SG: Series of Single-year Grants, MF: Multi-year Fund

(*)2 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.

Grant Applications

You may apply for KAKENHI grants if you meet the eligibility for KAKENHI application.

Researchers who meet the eligibility for KAKENHI application may apply for KAKENHI grants. Not only researchers at universities, but also researchers at research institutes of private corporations or other organizations designated by the MEXT Minister may apply for KAKENHI grants.

Any researcher considering applying is kindly requested to check with their research institution for specific procedures.

Under the KAKENHI, the schedule is set up in order to enable research projects to commence from April, the beginning of the fiscal year. Accordingly, a series of calls for proposals start in April or later of the previous year, and after a review process, a notice of review results is sent promptly to each research institution by the end of the previous fiscal year.

Application Procedures for KAKENHI and relevant documents, including the Research Proposal Document, which forms part of the application documents, are available on the respective KAKENHI websites of MEXT and JSPS. English versions of the Application Procedures and the Research Proposal Document forms are available, and applications may be submitted in English.

Applications are accepted online through the electronic application system.

Application Procedures (JSPS)
<https://www.jsps.go.jp/english/e-grants/howtoapply.html>

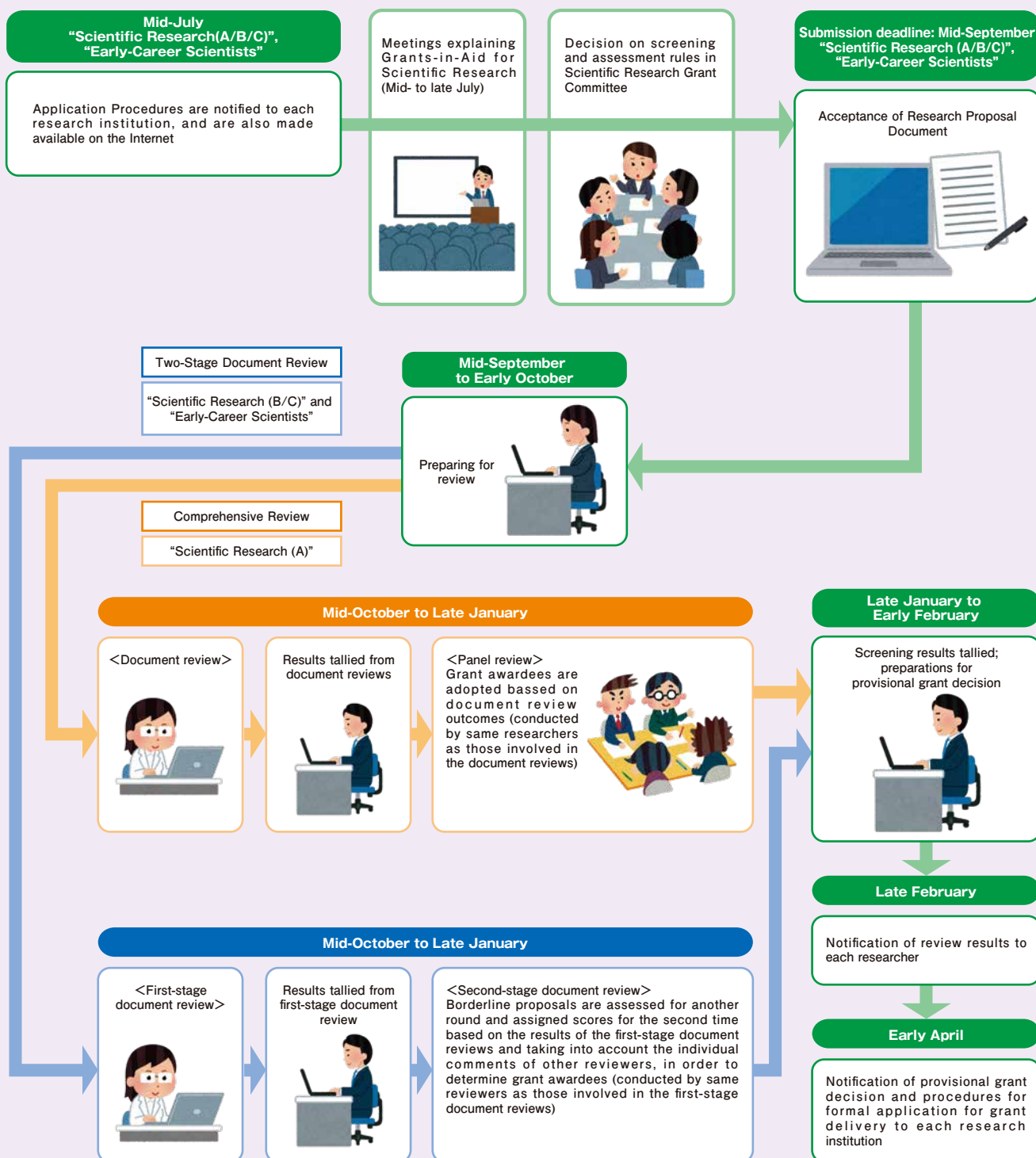


Application Procedures (MEXT) (Japanese version only)
https://www.mext.go.jp/a_menu/shinkou/hojyo/boshu/1351544.htm



Flow from Call for Proposals to Provisional Grant Decision

The diagram below describes the flow from call for proposals to provisional grant decision in the 2027 funding year in the case of the most common research categories, “Scientific Research (A/B/C)” and “Early-Career Scientists”.



■ Year-round schedule of KAKENHI process

Schedule for fiscal 2027 Call for Proposals and Notice of Review Results for Main Research Categories

	2026										2027					
	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	
Specially Promoted Research	Call for proposal		Review								●	Notice of Review Results				
Scientific Research (S)	Call for proposal		Review								●	Notice of Review Results				
Transformative Research Areas (A/B)	Call for proposal		Review								●	Notice of Review Results				
Transformative Research Areas (A) (Publicly Offered Research) Scientific Research (A/B/C), Early-Career Scientists			Call for proposal		Review						●	Notice of Review Results				
Encouragement of Scientists			Call for proposal		Review				●	Notice of Review Results						
Challenging Research (Pioneering/Exploratory)			Call for proposal		Review					Notice of Review Results						●
Publication of Scientific Research Results			Call for proposal		Review					●	Notice of Review Results					

Schedule for fiscal 2026 Call for Proposals and Notice of Review Results for Main Research Categories

	2026										2027					
	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	
Fostering Joint International Research Home-Returning Researcher Development Research				Call for proposal		Review					●	Notice of Review Results				

For the timeline for research categories not listed above, please refer to the respective Application Procedures and other documents.

Review

Researchers serve as reviewers to support a fair and highly transparent review system.

A peer review* process is carried out in order to select high quality research projects.

*A system in which researchers selected by the scientific community itself mutually evaluate and review the academic value of each research project according to their conscience as scientists.

Approximately 7,000 researchers participate in the review of KAKENHI annually as reviewers. A fair and highly transparent review is ensured by such measures as not allowing anyone to review research proposals submitted by interested parties or to divulge any information obtained during the review process, disclosing the results of review to the applicants, and publishing the list of the reviewers who conducted the review (*).

* Date of publication: The fiscal year in which the term of office of all the reviewers who reviewed the research proposals for the year of the call for proposals expires

* Place of publication: Website of JSPS (List of Reviewers | Grants-in-Aid for Scientific Research | Japan Society for the Promotion of Science (jspm.go.jp) (Japanese version only))

In addition, since it is necessary to conduct a fair review at all times, the Research Center for Science Systems (P15) within JSPS conducts the selection of reviewers. It also verifies and analyzes whether or not there is a profit inducement and the status of the review based on the review regulations (rules). (It is not involved in the review itself, such as deciding on the adopted research projects.)

Details of the selection of the reviewers, as well as the policies and standards for the review, can be found on the websites of MEXT and JSPS. [References: Selection of Reviewers P19][Review Criteria (KAKENHI website)]

Review Sections are established for review, and applicants choose their own Review Section for application.

Review methods include "Two-Stage Document Review" and "Comprehensive Review."

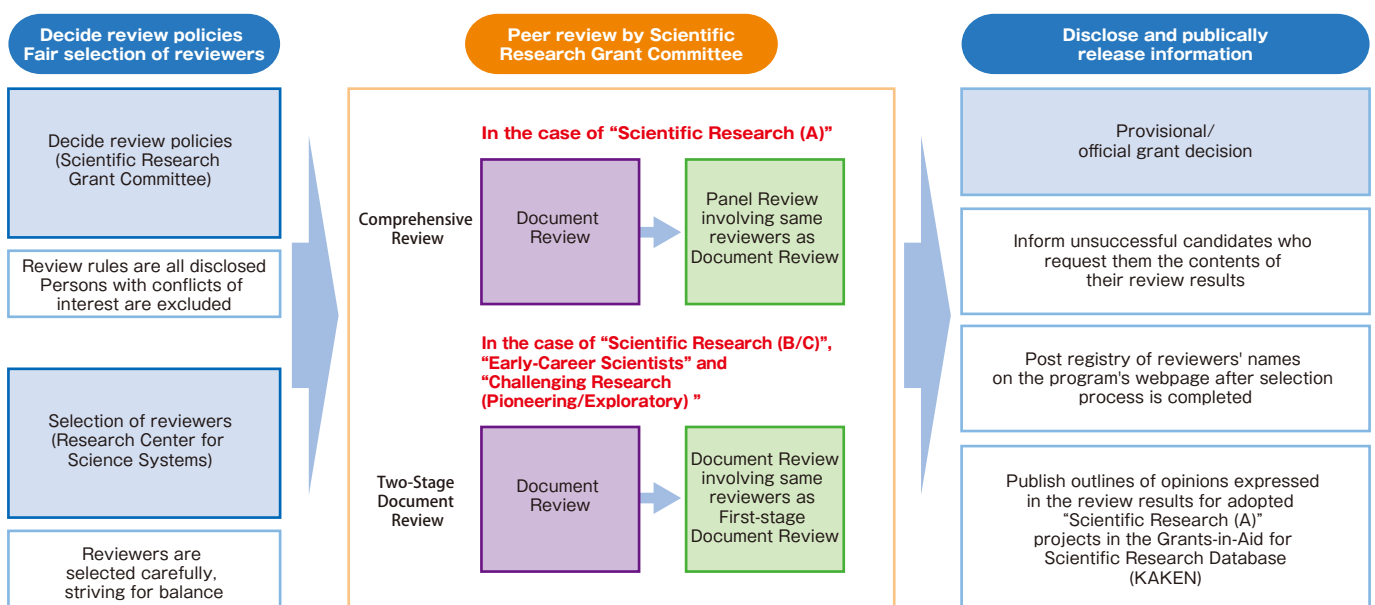
In the "Two-Stage Document Review," the same reviewers conduct document reviews in two stages and determine adoption.

In the "Comprehensive Review," adoption is determined pursuant to a document review followed by a multi-faceted review by a panel composed of the same reviewers who conducted the document review.

Review Criteria (KAKENHI website)
<https://www.jsps.go.jp/english/e-grants/grants03.html>



KAKENHI Review Methods —A Fair, Impartial and Transparent Review Process



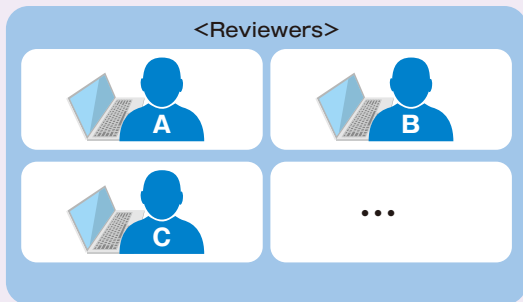
■ Review Process

■ [Two-Stage Document Review] (Examples)— “Scientific Research (B/C)”, “Early-Career Scientists” and “Challenging Research (Pioneering/Exploratory)” —

Each “Scientific Research (B)” proposal is reviewed by five reviewers*¹; each “Scientific Research (C)” and “Early-Career Scientists” proposal is reviewed by three reviewers; each “Challenging Research (Pioneering/Exploratory)” proposal is reviewed by seven to eight reviewers. In the event that the number of applications received is large, reviews are conducted following a preliminary screening (in the Challenging Research category only).

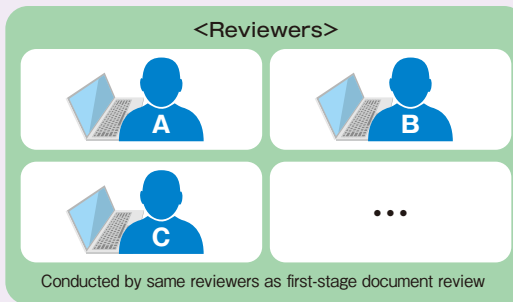
First-stage Document Review (in each Basic Section*^{1,2})

Each proposal undergoes a document review (relative evaluation) via the electronic application system, conducted by multiple reviewers appointed in the applicable Basic Section*^{1,2}



Second-stage Document Review (in each Basic Section*^{1,2})

Proposals mainly close to the borderline are awarded scores for the second time based on the results of the first-stage document reviews and taking into account the individual comments of other reviewers



Grant
Awards
Finalized

*1 For Grant-in-Aid for Scientific Research (B), joint reviews will be conducted by consolidating several Basic Sections for which the number of applications is notably small. Joint reviews will be conducted by five to ten reviewers.

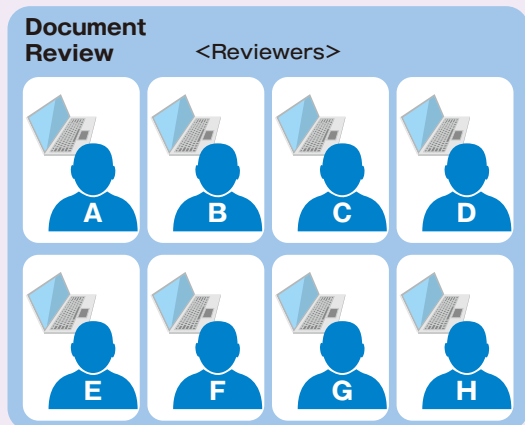
*2 For “Challenging Research (Pioneering/Exploratory)”, reviews are conducted in each Medium-sized Section.

■ [Comprehensive Review] (Examples)— “Scientific Research (A)” —

Between seven and eight reviewers are appointed for each proposal in the “Scientific Research (A)”, and each proposal is subject to both a document review and a more thorough and multi-faceted panel review. In the event that the number of applications received is large, reviews are conducted following random assignment*³ of research proposals.

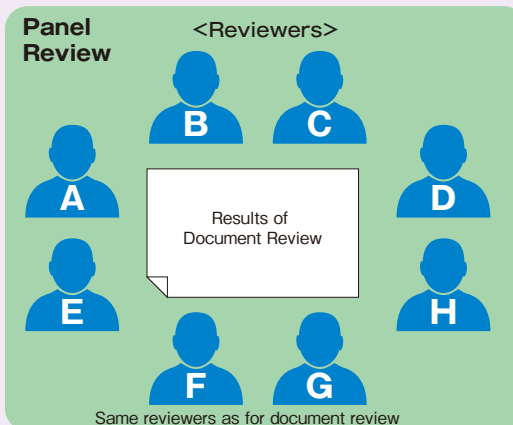
Document review (in Medium-sized Section)

The document review (relative evaluation) for each research project is conducted by multiple reviewers assigned (for each Medium-sized Section) across a broader range of disciplines.



Panel review (in Medium-sized Section)

Based on the cumulative results of the document review, a panel made up of the same reviewers who conducted the document review will carry out a multi-faceted review, and decide to adopt or not the application.



Grant
Awards
Finalized

*3 In order to alleviate the burden on reviewers in sections with large numbers of applications, multiple review groups are established and proposals assigned to them randomly.

Consideration is given to ensure that applications for research projects are not disproportionately concentrated from any single research institution.

*4 For such as “Scientific Research (S)”, in addition to the Comprehensive Review, we have introduced a system of review comments produced by researchers in closely-related specializations, taking into account the specialized nature of applications.

Assessment Following the Adoption of Research Projects

We conduct assessments after adoption based on the size and progress of the research.

Research funded by KAKENHI undergoes regular assessment by the scientific community, such as when the research results are published as academic papers. A research funding organization, however, also has a crucial role in properly assessing the results of KAKENHI-funded research. For researchers, as well, third-party assessment in addition to self-assessment is useful as a basis for reviewing research conducted up to now or for leading to development into new research.

For these reasons, the KAKENHI program, based on the “General Guidelines for Evaluating Government Funded R&D”, carries out assessment in certain categories (*) in keeping with the scope and progress stage of research, and makes public all the assessment results on the KAKENHI website and elsewhere.

Please note that, depending on the progress of the research, reduction or termination of research expenses may be considered as a result of the evaluation.

* The assessment is conducted, in principle, in the interim fiscal year and the fiscal year following the final year of the research period for Specially Promoted Research, Transformative Research Areas (A), and Scientific Research (S).

* The assessment is conducted in the third year of the grant period for Enhancement of International Dissemination of Information.

* The assessment is conducted in the fifth fiscal year and the fiscal year following the final year of the research period for International Leading Research.

Research Results of KAKENHI-funded Projects

KAKENHI-funded research projects have produced a wide variety of results, ranging from basic research to those that play a role in our daily lives.

Introducing Research Achievements Resulting



Research on Regulatory T Cells

SAKAGUCHI Shimon,
Distinguished Honorary Professor,
The University of Osaka

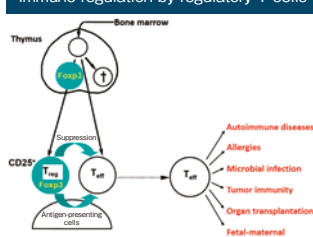
In 1979, Professor SAKAGUCHI began research on regulatory T cells, pursuing the possibility of the existence of T cells that suppress and regulate immune responses.

Research Outcome

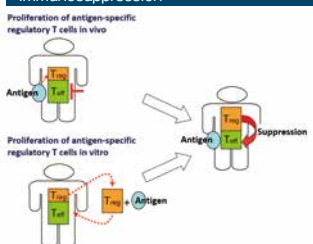
In 1995, he successfully identified regulatory T cells using specific molecular markers. He was the first in the world to demonstrate the existence of regulatory T cells and their immunological significance (maintenance of immune homeostasis and suppression of excessive immune responses).

In 2003, he identified the transcription factor FOXP3, which governs differentiation into regulatory T cells and the acquisition of their suppressive function, thereby establishing the core molecular basis for the formation and function of Tregs.

Immune regulation by regulatory T cells



Application of regulatory T cells for immunosuppression



KAKENHI financial support

"Molecular Mechanisms of Autoimmune Disease Onset: Control Mechanisms of Self-Reactive T Cells" (from fiscal 1996, Grant-in-Aid for Scientific Research on Priority Areas), etc.

Funding by KAKENHI began in the late 1990s

Further developments from research achievements

Progress has been made in elucidating the causes and mechanisms of onset of autoimmune diseases and allergies involving abnormalities in regulatory T cells. Furthermore, in addition to the development of therapeutics and preventive methods for immune diseases targeting regulatory T cells, a wide range of medical applications are expected in the future, such as the induction of immune responses against cancer cells and the induction of immune tolerance toward transplanted organs.



Professor SAKAGUCHI was awarded the Nobel Prize in Physiology or Medicine (2025) for the "discoveries concerning peripheral immune tolerance."

© Nobel Prize Outreach. Photo: Clément Morin



Development of Metal-Organic Frameworks (MOFs)

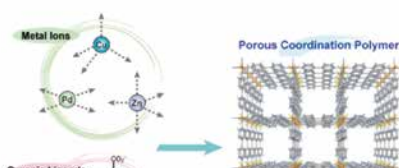
KITAGAWA Susumu, Distinguished Professor,
Kyoto University

Porous materials, such as activated carbon, which has been used since ancient Egyptian times, and zeolites, which are indispensable to the petrochemical industry, are essential to human life, and there has been a demand for materials that offer even higher performance and greater efficiency.

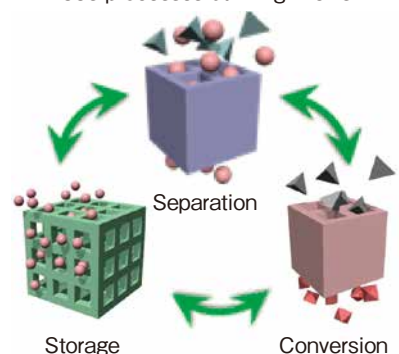
Research Outcome

Focusing on the regular "pores" within the crystal structure formed by the bonding of metal ions and organic molecules, Professor KITAGAWA developed a new porous material (metal-organic frameworks: MOFs) containing countless microscopic pores at the nanoscale. He demonstrated for the first time that these materials can adsorb large amounts of gas within their pores.

He discovered that these materials possess freely designable surface functionality, regularity, and flexibility, which are properties that cannot be achieved with conventional porous materials (such as zeolites), and clarified their potential applications in mass adsorption, selective separation, and high-efficiency catalysis.



Gas processes utilizing MOFs



KAKENHI financial support

"Synthesis and Physical Properties of Copper Complexes Cross-linked by Heterocondensed Ring Ligands with a 3D Network Structure" (from fiscal 1990, Grant-in-Aid for General Scientific Research (C))
"Chemistry of Coordination Space—Creation of Molecules-Assembling, Stressing, and Converting Fields—" (from fiscal 2004, Grant-in-Aid for Scientific Research on Priority Areas), etc.

Funding by KAKENHI began in the 1980s

Further developments from research achievements

MOF research has brought about major breakthroughs not only in chemistry but also in the field of materials science, and more than 100,000 types of MOFs with various functions have now been developed.

In addition to being put to practical use in gas storage and transport by utilizing their large surface area and ability to selectively adsorb large amounts of gas, they are expected to find applications in a wide range of fields spanning energy, the environment, and medicine, such as the recovery of carbon dioxide and moisture from the atmosphere and their use in drug delivery systems.

Professor KITAGAWA was awarded the Nobel Prize in Chemistry (2025) alongside Richard Robson and Omar M. Yaghi for their development of metal-organic frameworks (MOFs).



Artist: Johan Sandell Calligrapher: Marie A. Györi and Marianne Pettersson Sönd Book binder: Leonard Gustafssons Bokbinderi AB Photo reproduction: Dan Lepp © The Nobel Foundation 2025

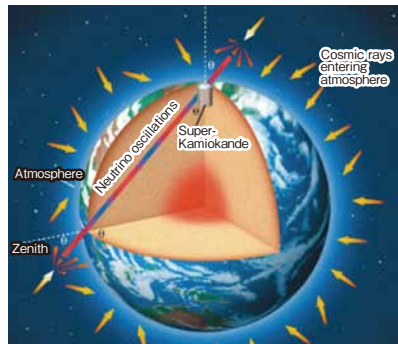
© Nobel Prize Outreach. Photo: Nanaka Adachi



Research on Neutrino Oscillations

KAJITA Takaaki, Distinguished University Professor,
The University of Tokyo

- Neutrinos are elementary particles, of which there are three "flavors"—electron neutrinos, muon neutrinos, and tau neutrinos. Being extremely light, for a long time they were believed to have zero mass.
- Based on the observation that the ratio of the electron neutrino and muon neutrino components of the Kamiokande experiment's atmospheric neutrino data did not agree with expectations, the issue of the "atmospheric neutrino anomaly" was raised. Then the study on atmospheric neutrinos which produced when cosmic rays collide with atoms in the atmosphere was begun.



Atmospheric neutrinos produced in the atmosphere on the other side of the Earth pass through the Earth and arrive at the detector.

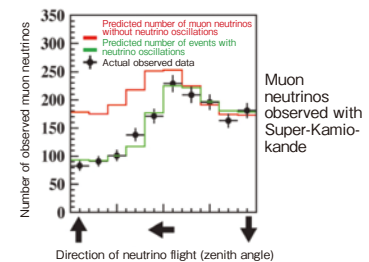
Further developments from research achievements

- Since this discovery, studies of neutrino mass and of elementary particle theory incorporating these findings have progressed, leading to the confirmation of oscillations of all three flavors of neutrinos in solar neutrino, T2K, and other experiments.
- It is hoped that learning about the properties of neutrinos will bring us closer to solving the mystery of how the Universe came to be made only of matter, instead of equal amounts of matter and antimatter that should have existed when the Universe first came into being.

KAKENHI financial support

"Study of atmospheric neutrinos" (from fiscal 1995, Scientific Research (C)), etc.

Funding by KAKENHI began in the 1990s



Inside of Super-Kamiokande

Photo:
Institute for Cosmic Ray Research, The University of Tokyo
Kamioka Observatory



© (R) The Nobel Foundation.
Photo: Lovisa Engblom.

The Nobel Prize in Physics was awarded in 2015 to Prof. KAJITA and Prof. Arthur B. McDonald "for the discovery of neutrino oscillations, which shows that neutrinos have mass."

Research Outcome

- Observations of atmospheric neutrinos using Super-Kamiokande revealed that of muon neutrinos produced on the other side of the Earth, some changed to tau neutrinos as a result of their long journey. Their number was only about half the number of neutrinos that came down from directly above the detector.

- This phenomenon came to be known as neutrino oscillation, neutrinos changing into other types of neutrinos while in flight. This occurs only if neutrinos have mass. The discovery of neutrino oscillations became definitive proof that neutrinos have a mass that is not zero.



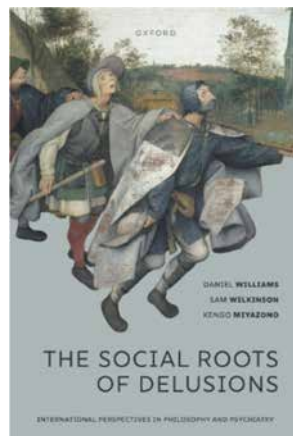
Philosophical Study of Irrational Beliefs

MIYAZONO Kengo, Associate Professor,
Hokkaido University

- What mechanisms underlie the delusions (e.g., persecutory delusions, delusions of control) that occur in schizophrenia and other forms of psychopathology?
- In previous research in cognitive science and psychiatry, the focus has primarily been on individualistic factors arising within individual patients with delusions, such as abnormal experiences (salience) and reasoning biases.

Research Outcome

- In the philosophical field known as "social epistemology," philosophers explain knowledge and judgment in terms of social factors such as testimonial information obtained from other agents, rather than individualistic factors such as perception or reasoning.
- This study applies the ideas and theories from social epistemology and evolutionary psychology to the explanation of delusions, suggesting that delusions in schizophrenia might be due to the failures in the process of trusting and evaluating testimony from other agents (Williams et al. 2026).



Williams, D., Wilkinson, S., & Miyazono, K., (2026) The Social Roots of Delusions, Oxford University Press

KAKENHI financial support

"Philosophical and Interdisciplinary Studies of Atypical Experience, Belief, and Cognition" (from fiscal 2024, Grant-in-Aid for Scientific Research (A)), etc.

Funding by KAKENHI began in 2016

Further developments from research achievements

- Dr. MIYAZONO is conducting research that compares delusions (which are symptoms of mental illness) with conspiracy theories (which do not necessarily involve mental illness) in terms of the inability to trust testimony from others, with the aim of clarifying their similarities and differences.
- This research is also expected to contribute to our understanding of "AI-induced psychosis," a condition in which delusions are triggered by conversations with AI. He is examining the process by which "human testimony" that refutes the content of delusions is underestimated, while "AI testimony" that affirms it is overestimated.



Dr. MIYAZONO received the 22nd JSPS Prize (fiscal 2025) for his "Philosophical and Interdisciplinary Studies of Rationality and Irrationality."



Research on Prediction and Design for Sustainable Geothermal Resource Utilization

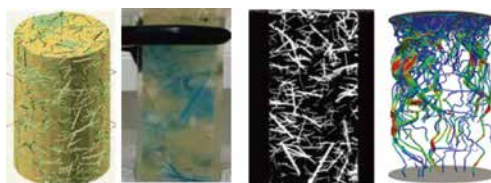
SUZUKI Anna, Associate Professor, Tohoku University

Japan is home to one of the world's largest geothermal energy reserves. But because the underground structures that hold it cannot be directly observed, developing this resource efficiently has remained a challenge.

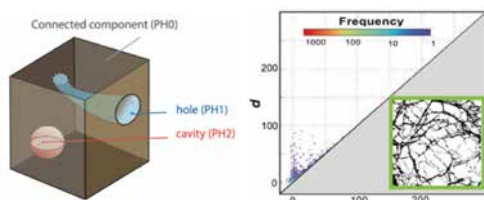
Research Outcome

Dr. SUZUKI developed a new method for estimating the flow paths of underground fracture networks by combining 3D-printed simulated fracture models with mathematical structural analysis (topological data analysis). Furthermore, by utilizing machine learning, she built a system capable of automatically estimating the structure of geothermal reservoirs from field data.

It is now possible to scientifically predict and design these previously elusive "invisible flow paths" underground based on data.



3D printer-based simulated rock fabrication, flow experiments, and simulation



Representation of geometric structures and quantification of rock structures using persistent homology

KAKENHI financial support

"Characterization of Fluid Flow in 3D Fracture Networks by Functional Nano-Particle Tracers" (from fiscal 2017, Grant-in-Aid for Early-Career Scientists), etc.

Funding by KAKENHI began in 2017

Further developments from research achievements

Building on the establishment of mathematical prediction and design methods for underground flow paths, the research is expanding toward the development of co-creation models with local communities regarding geothermal and hot spring resources. She is conducting research to demonstrate environmental impact reduction effects of promoting teleworking in hot spring regions and to study the social acceptance of geothermal power generation through dialogue with residents and business operators. Furthermore, the scope of research has expanded from design problems related to underground resources to the role of technology in society, evolving into research supporting co-creative dialogue.



Dr. SUZUKI received the Young Scientists' Award 2025 of the Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology for her "Research on Prediction and Design for Sustainable Geothermal Resource Utilization." She was also selected as a "Nice Step Researcher 2022" (National Institute of Science and Technology Policy, Ministry of Education, Culture, Sports, Science and Technology).



Discovery of the Channel Synapse and Its Biological Functions

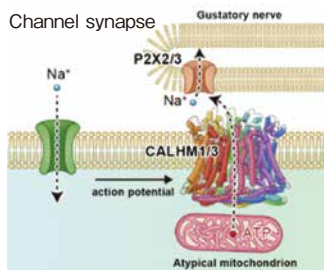
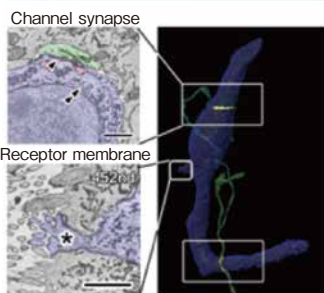
TARUNO Akiyuki, Professor, Kyoto University / Professor, Kyoto Prefectural University of Medicine

With regard to synapses, which mediate information transmission between neurons, vesicular exocytosis has traditionally been considered the sole mechanism. However, it has become known that some taste cells responsible for taste reception transmit information to neurons without synaptic vesicles, and the molecular mechanism behind this has been a major mystery in neuroscience.

Research Outcome

Professor TARUNO discovered a new type of chemical synapse, the "channel synapse," which releases neurotransmitters via the ATP-permeable channels CALHM1/3, and elucidated that it is responsible for the neural transmission of salty, sweet, umami, and bitter tastes.

He discovered a new population of sensory cells in the pharyngolaryngeal epithelium that connect to the vagus nerve via channel synapses. He elucidated that these cells respond to noxious chemical stimuli and are involved in the swallowing and cough reflexes, as well as cough hypersensitivity.



New sensory epithelial cells possessing channel synapses

KAKENHI financial support

"Elucidation of Channel Synapse-Mediated Neurotransmission of Tastes" (from fiscal 2019, Grant-in-Aid for Scientific Research (B)), etc.

Funding by KAKENHI began in 2013

Further developments from research achievements

The discovery of the channel synapse overturned the conventional wisdom that vesicular secretion was the sole mechanism of chemical neurotransmission, made an impact on the field of neuroscience, and is now featured in physiology and neuroscience textbooks both in Japan and abroad. Furthermore, the elucidation of the taste reception mechanism is expected to lead to applications in preventive medicine and food science based on the control of eating behavior and salt reduction. In addition, this research has led to the discovery of a new sensory organ responsible for the cough reflex and cough hypersensitivity, and it is attracting attention as a drug discovery target for intractable chronic cough.



© Japan society for the Promotion of Science

Professor TARUNO received the 22nd JSPS Prize (fiscal 2025) for his "Discovery of the Channel Synapse and Its Biological Functions," and the Young Scientists' Award 2021 of the Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology for his "Research on the Molecular Mechanisms of Taste Reception."

Other publications of research results can also be found in KAKEN (P26), Research Result Topics (P29) and Abstracts of Large-scale Research Projects (P30).

Research Results Topics

https://www.jsps.go.jp/j-grantsinaid/37_topics/
(Japanese version only)



KAKEN (National Institute of Informatics)
<https://kaken.nii.ac.jp/en/>



Abstracts of Large-scale Research Projects
<https://www.jsps.go.jp/english/e-grants/lsrcp/>



Furthermore, we implement an initiative called "HIRAMEKI☆TOKIMEKI SCIENCE" to share the fun and fascination of science with 5th and 6th graders in elementary school, middle and high school students.

Through this program, they can visit research labs at universities and other institutions across Japan and learn firsthand about cutting-edge research embodied in projects funded by KAKENHI. Since its launch in fiscal 2005, the program has attracted approx. 91,000 students.

We also welcome participation of teachers, parents and other family members of participating students.

HIRAMEKI☆TOKIMEKI SCIENCE
<https://www.jsps.go.jp/j-hirameki/>
(Japanese version only)



■ Scenes from HIRAMEKI☆TOKIMEKI SCIENCE



July 26, 2025 Chiba Institute of Technology

Protein Function Is All About Shape
- A Peek into the Microscopic World

YAMAMOTO Norifumi (Professor, Faculty of Engineering)



August 19-20, 2025 Nagoya University

Let's Learn About Artificial Intelligence in Medical Image Processing
- From AI Basics to Organ Model Generation

MORI Kensaku (Professor, Graduate School of Informatics)



August 4-6, 2025 University of Hyogo

Astronomical Observation with the Largest Telescope in Japan

ITO Yoichi (Professor, Institute of Natural and Environmental Sciences)



August 26-27, 2025 Saga University

To Copy Another's Painting

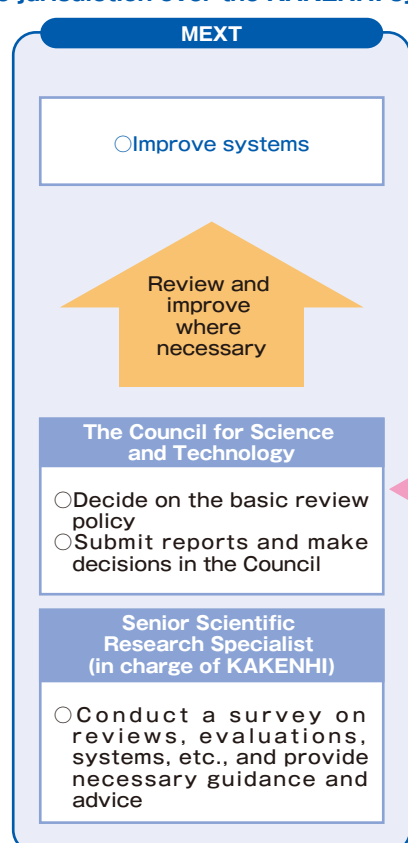
KONDO Keisuke (Associate Professor, Faculty of Art and Regional Design)

Supplementary Material and Data

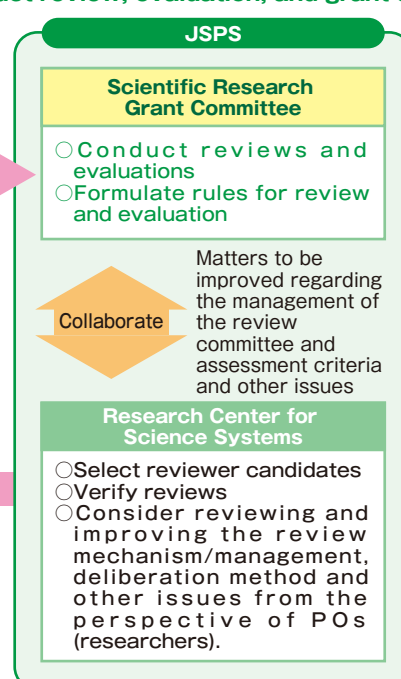
Management of the KAKENHI System

MEXT and JSPS operate the KAKENHI program under their cooperation and collaboration. While MEXT decides the basic policy of the program, JSPS conducts reviews in many research categories and grants all research funds. Sections under the Science Subdivision of the Council for Science and Technology as well as the Research Center for Science Systems* are working to improve the system based on the insights of currently active researchers.

Have jurisdiction over the KAKENHI system



Conduct review, evaluation, and grant delivery



Notify the review policy and other matters



Submit improvement requests and other issues



*The Center was established in the JSPS in July 2003, mainly based on the "System Reform in Competitive Research Funds" decided by the then Council for Science and Technology Policy. It plays a wide range of roles aimed at establishing an impartial and highly transparent review and evaluation system.

Research Center for Science Systems
<https://www.jsps.go.jp/english/e-center/>

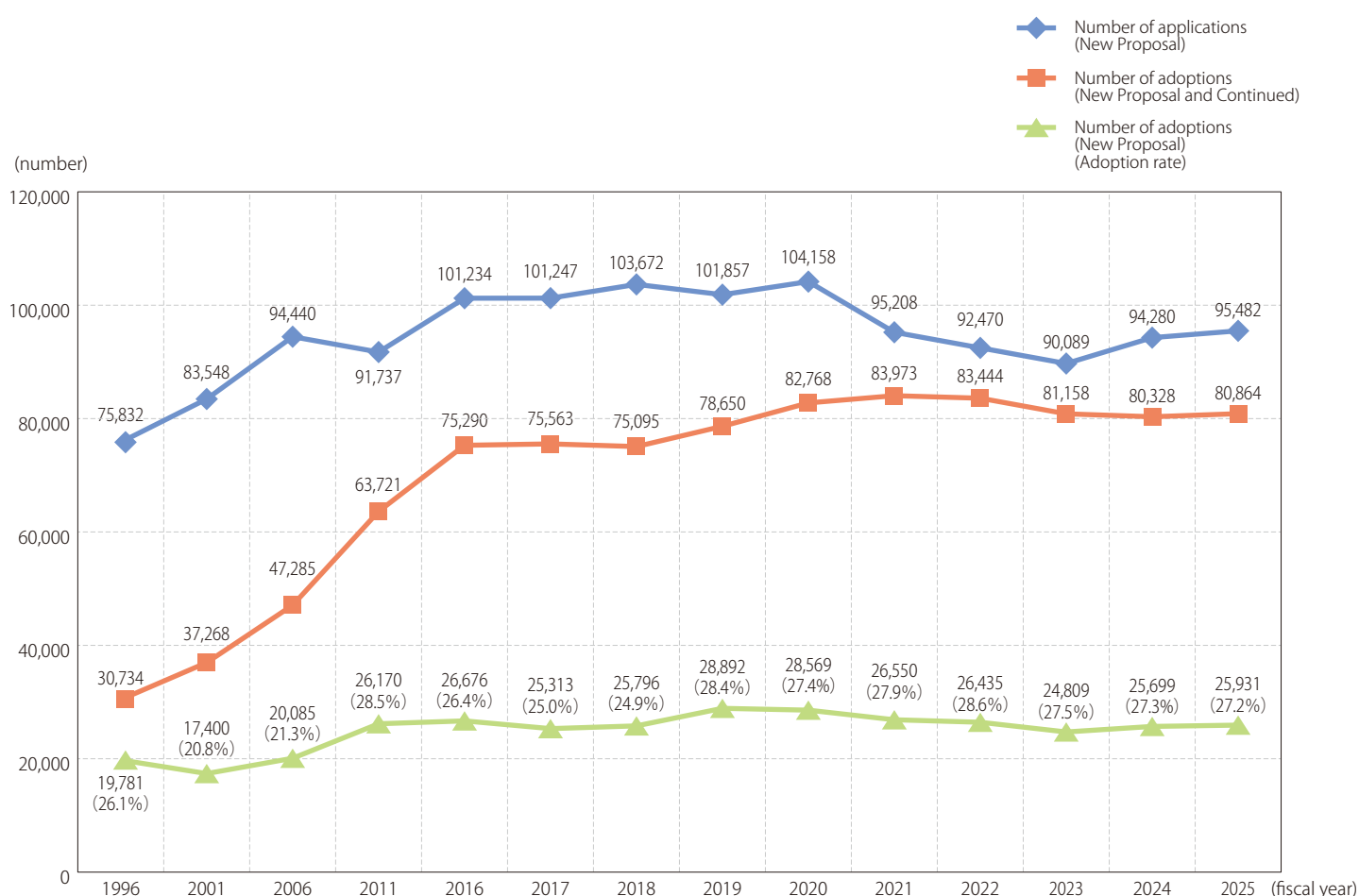


Application/Adoption Numbers and Annual Budgets

Trends in KAKENHI Applications, Adoptions, and Adoption Rate

Although the number of applications for KAKENHI has been on the decrease since fiscal 2021 due to the extension of continued research projects following the COVID-19 pandemic, the number of new applications in fiscal 2025 was 95,482, up 1,202 from the previous fiscal year.

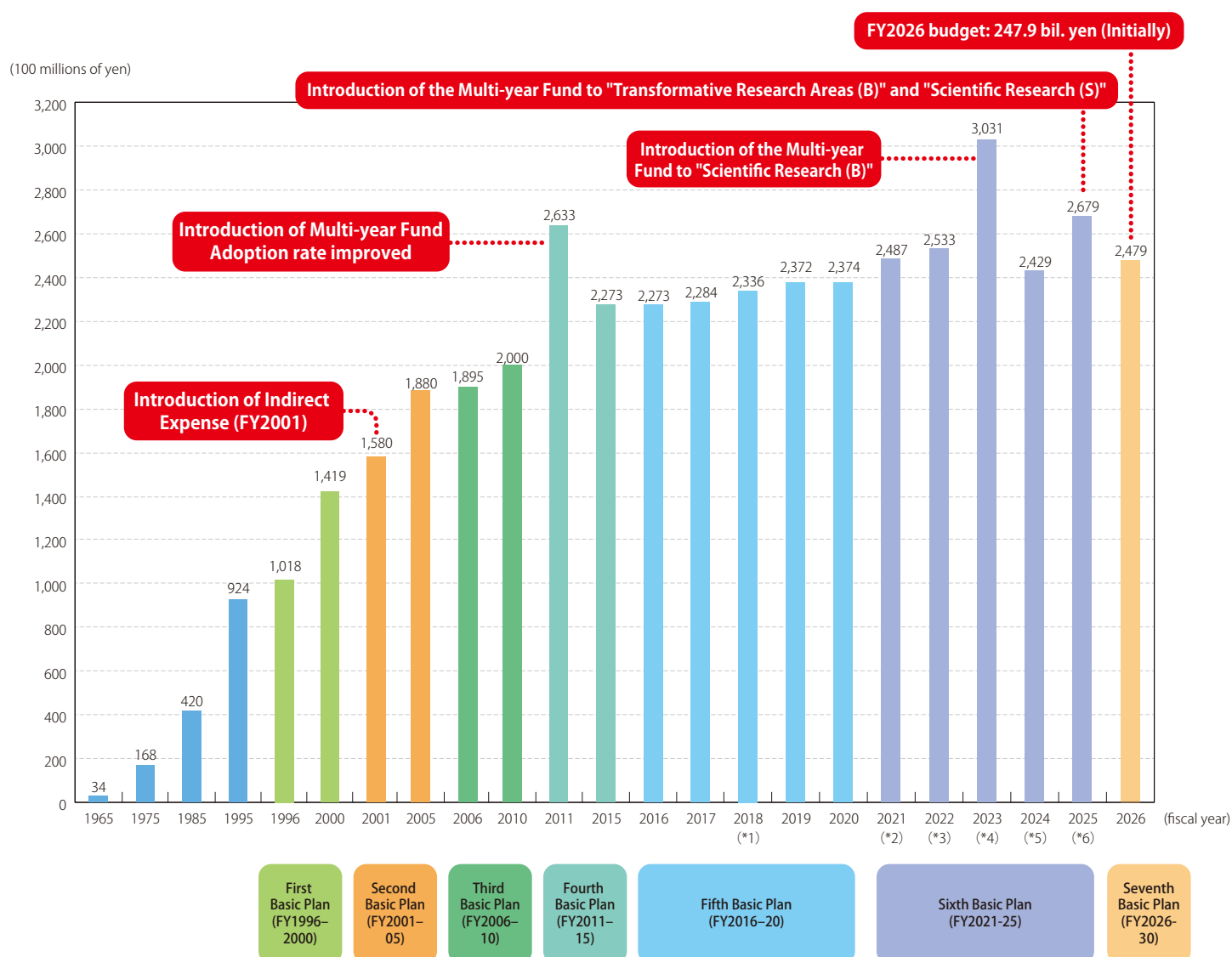
The adoption rate for fiscal 2025 stood at 27.2%, and bringing the total number of adopted projects to 80,864, including ongoing projects.



* Data for main research categories only.

Budget Transition

The amount budgeted for KAKENHI increased significantly during the periods of the First and Second Basic Plans for Science and Technology. However, growth was more gradual during the Third to Sixth Basic Plan periods due to national budgetary constraints. The initial budget for fiscal 2026, the first fiscal year of the Seventh Science, Technology, and Innovation Basic Plan, is 247.9 billion yen, up 10.1 billion yen from the initial budget for the previous fiscal year.



- *1 FY2018 budget includes supplementary budget of 5 billion yen
- *2 FY2021 budget includes supplementary budget of 11 billion yen
- *3 FY2022 budget includes supplementary budget of 15.6 billion yen
- *4 FY2023 budget includes supplementary budget of 65.4 billion yen
- *5 FY2024 budget includes supplementary budget of 5.2 billion yen
- *6 FY2025 budget includes supplementary budget of 30 billion yen

Review Sections

Review Sections Tailored to Research Categories

The Review Section Table is made up of an “Overview”, “Table for Basic Sections”, and “Table for Medium-sized and Broad Sections”. The overview allows applicants to grasp the overall picture of the review sections. The Basic Sections have been established to take into account the diversity of scientific research and address the varied themes cultivated to date. They comprise research categories which attracted large numbers of applications per research field in the review system that operated up to the 2017 funding year, such as “Scientific Research (B/C)” and “Early-Career Scientists”. The Basic Sections are not rigidly defined, but rather expressed as “-related” so they can flexibly encompass new advancements and diverse expansions in scientific research.

Several Basic Sections are brought together under each Medium-sized Section for use in the “Scientific Research (A)” and “Challenging Research (Pioneering/Exploratory)” research categories. These enable selection of outstanding research proposals in a competitive environment employing a broader scope in line with the aims and character of the research category in question. The content of each Medium-sized Section is not limited by the content of the Basic Sections it contains: applicants need not feel bound by the Basic Sections listed when choosing a Medium-sized Section.

Broad Sections bring together multiple Medium-sized Sections to enable selection of outstanding research proposals in a competitive environment under the “Scientific Research (S)” category.

Applicants should select a review section under which to apply after checking the examples of related research content shown in the “Table for Basic Sections” and “Table for Medium-sized and Broad Sections”.

The Broad Section applies to “Scientific Research (S)”. Applicants for this category select one of the Broad Sections listed, from A through K.

The Medium-sized Section applies to “Scientific Research (A)” and “Challenging Research”. Applicants for these categories select one of the Medium-sized Sections listed.

The Basic Section is the fundamental unit, and used in the “Scientific Research (B/C)” and “Early-Career Scientists”. Applicants for these categories select one of the Basic Sections listed.

Each item of Basic Section offers some examples related research contents. They help applicants understand the concrete contents.

■ The Review Section Table (Overview Excerpt)

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

■ The Review Section Table (Table for Basic Section Excerpt)

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]	1	A
	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]	1	A
	Chinese philosophy/thought, Indian philosophy/thought, Buddhist philosophy, Bibliography, Philology, etc.		

■ The Review Section Table (Table for Medium-sized and Broad Sections Excerpt)

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.

Selection of Reviewers (in the case of Scientific Research category)

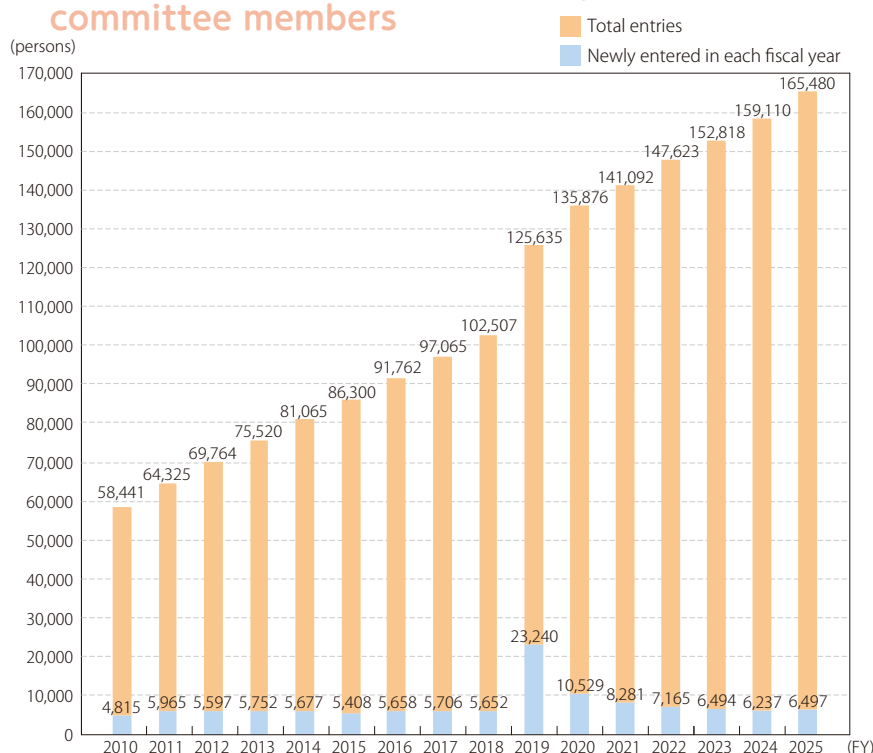
Efforts are made to ensure that reviewers are selected fairly and appropriately, to choose outstanding, high-quality research projects, and to raise the reliability of the KAKENHI review process. Program officers at the Research Center for Science Systems create a list of reviewer candidates from those in the database of potential review committee members. The reviewers are then selected by JSPS.

This database lists KAKENHI Principal Investigators and other potential reviewers, and continues to grow each year. (Number of candidates as of fiscal 2025: approx. 165,000.) To keep the database entries up to date, the researchers themselves are able to check and update their registered information when necessary.

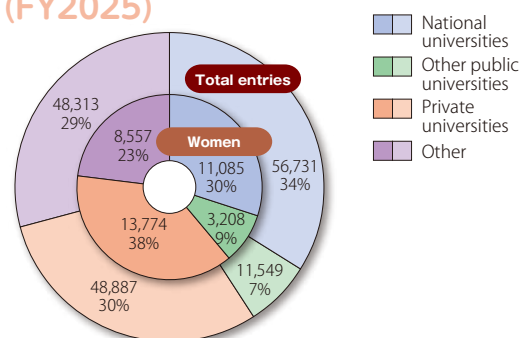
In the Research Center for Science Systems, several program officers in each field are responsible for preparing lists of potential reviewers, based on their discipline, published papers to date, awards received, and other factors. In putting together the list of candidates, the emphasis is on finding persons who are fully conversant in the field, fair, and sufficiently capable of conducting evaluations, while also enabling review to take into account a broad range of viewpoints. Moreover, from the standpoint of allowing for diversity of reviewers, program officers endeavor to make use of women researchers and those from public and private universities, independent administrative agencies, private enterprises and the like, ensuring that reviews are free from any bias in light of applicants' attributes.

In addition, with a view to cultivating the next generation of review committee members, from reviews conducted in fiscal 2019 the database is being expanded to include researchers who have received "Early-Career Scientists" and "Young Scientists (B)", and the assignment of first-time reviewers of a relatively young age (49 and under) is being pursued proactively for reviews in the "Scientific Research (B/C)" and "Early-Career Scientists" categories.

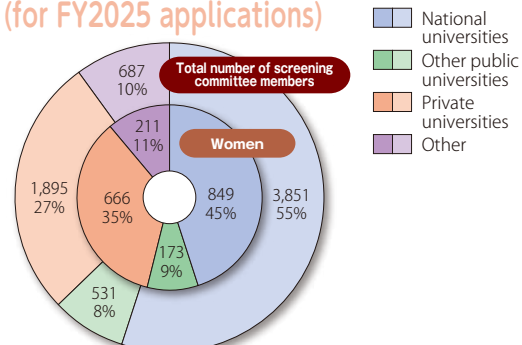
Trend in entries in database of potential review committee members



Status of database entries (FY2025)



Number of review committee members (for FY2025 applications)



Aiming for easy-to-use research grants

You can use research funds for a wide range of purposes, as long as they are necessary for your research. We are making improvements every day to make the funds easier to use.

Based on requests from researchers and research institutions, we are making various improvements of KAKENHI to facilitate the use of research grants.

■ Examples of major system improvements

■ Use of research grants free from the constraints of a single fiscal year system: Introduction of the Multi-year Fund to KAKENHI

JSPS has established the Multi-year Fund to enable the use of research grants over multiple fiscal years. You can flexibly use research grants for the entire research period of multi-year projects under the research categories eligible for the Multi-Year Fund.

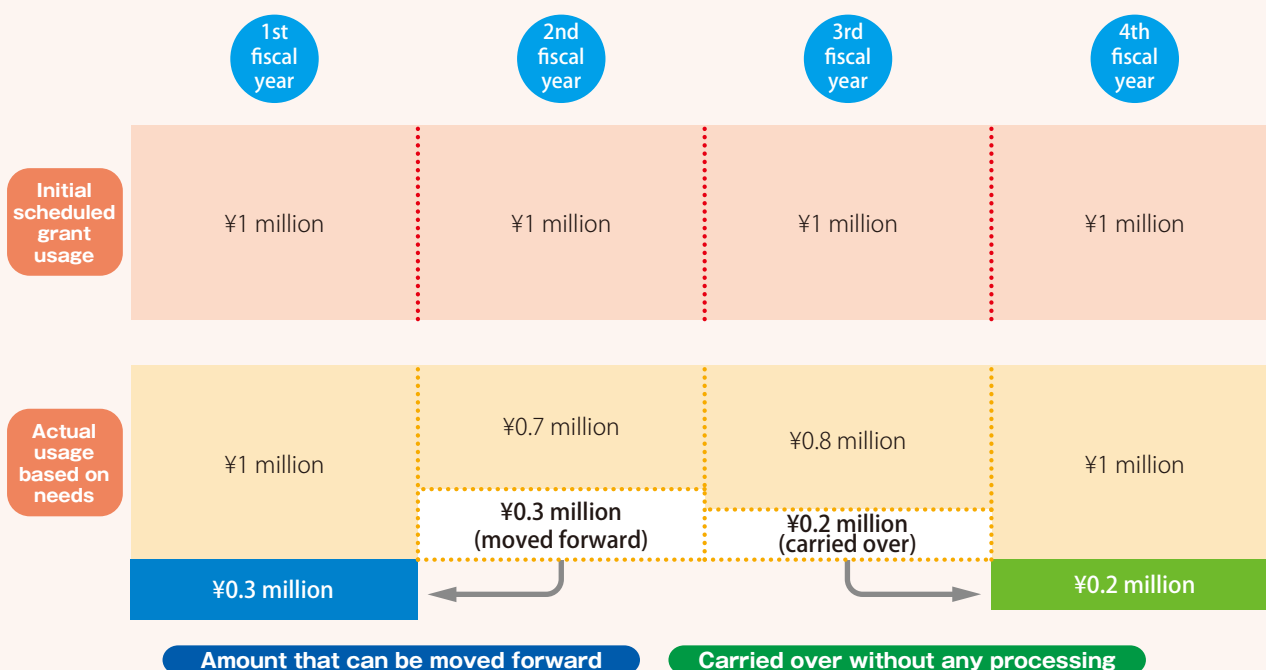
For the eligible research categories, please refer to the research category details on pages 3 to 4.

Advantages of Implementing the Multi-year Fund

- ◆ Flexible use of research grants
 - In pace with the progress of their research projects, researchers can front-load the spending of research funds scheduled to be used in the following fiscal year or later, or spend unused funds in the following fiscal year or later within the funded period.
 - Researchers can enter into multi-year contracts.
 - It is acceptable for goods ordered at the end of one fiscal year to be delivered in the next.
- ◆ No need to request carryover of unused funds

This helps researchers to secure their research time and research institutions to reduce their administrative burden.

■ Image of Multi-year Fund grant usage



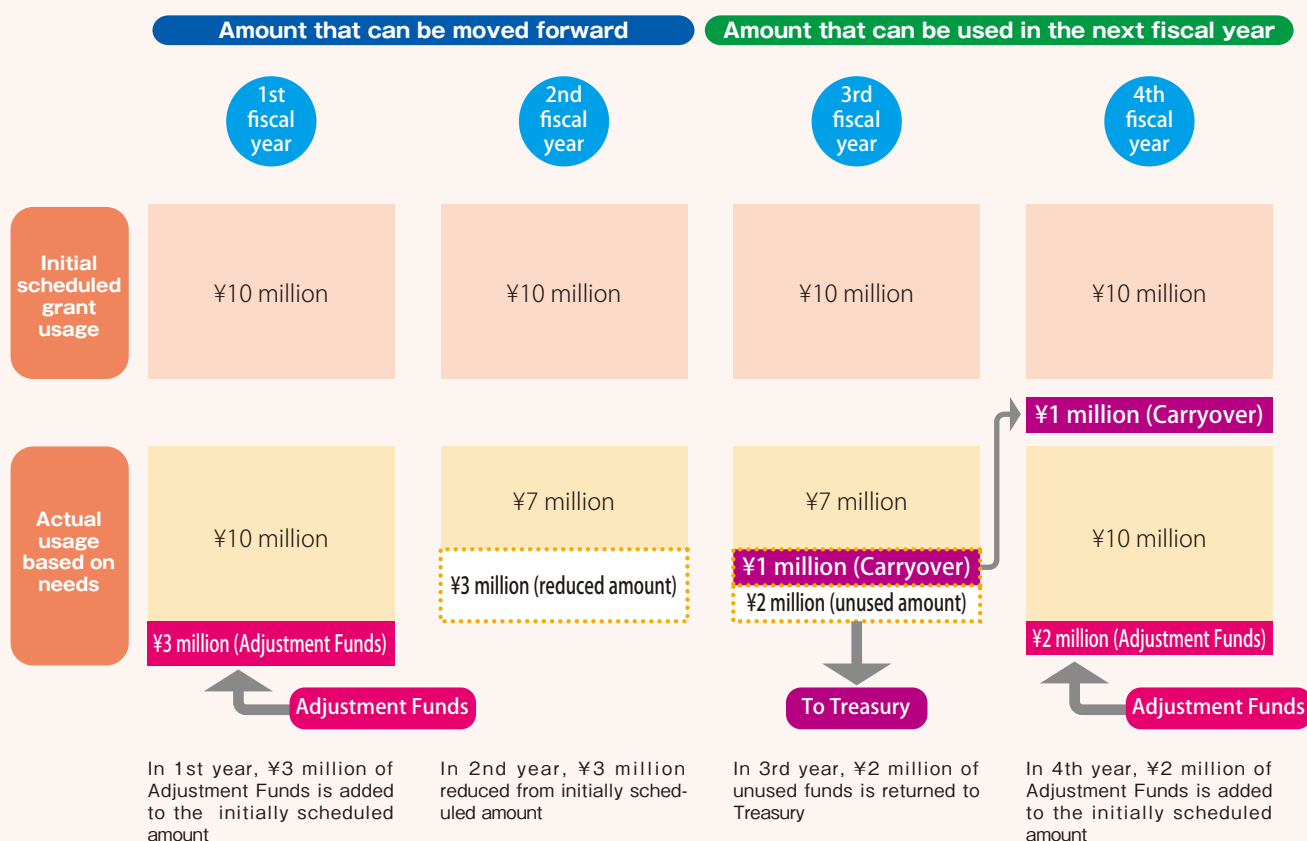
■ "Carryover" system for the Grants-in-Aid for Research

In the event that a research project is not, as opposed to its original schedule, expected to be completed by the end of the fiscal year due to factors that could not be foreseen at the beginning, the funded period may be extended and the grant may be carried over to the following fiscal year through the prescribed procedures.

In addition, if the requirements of the carryover system are not met, an application for use in the next fiscal year may be made through the "Adjustment Funds" system.

■ Adjustment Funds system of KAKENHI (Series of Single-year Grants)

We have introduced the Adjustment Funds system to enable funds in projects under research categories outside the scope of the Multi-year Fund to be brought forward for use or carried over for use in the next fiscal year, thus realizing flexible use of research grants.



■ Extension of research periods in line with interruptions such as maternity/childcare leave and long-term overseas stay

Research can be suspended temporarily when taking leave for maternity, childcare and the like and research periods extended in accordance with their request. And, a system was introduced to enable research to be suspended temporarily during periods of residence outside Japan for research purposes and research periods extended accordingly.

■Purchase of joint-use facilities using funds combined from multiple grants

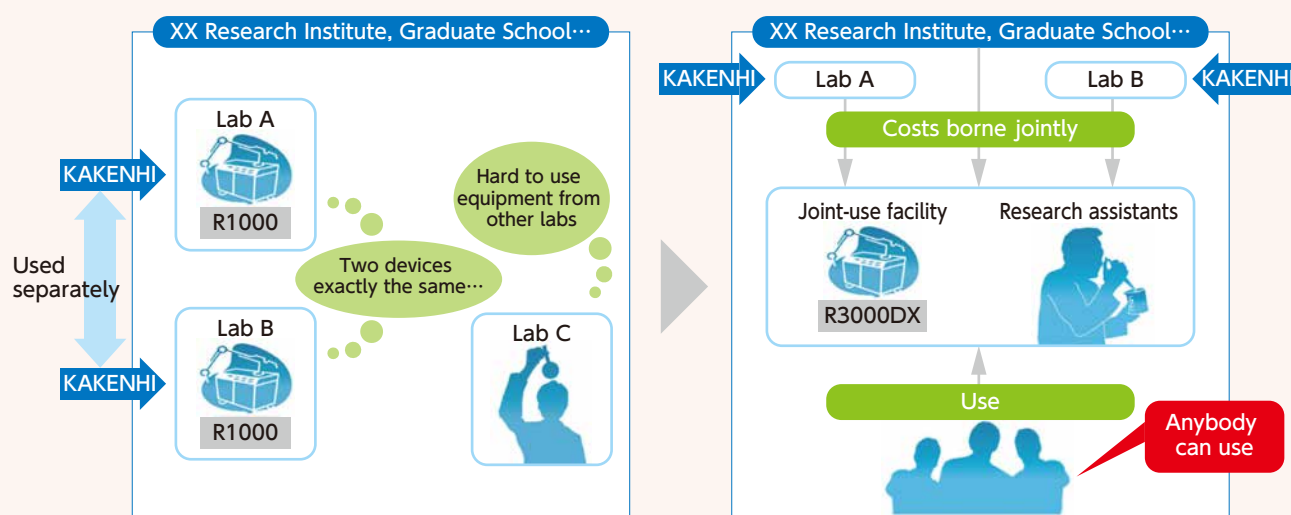
To promote efficient use of KAKENHI grants and joint use of facilities, it has been possible to purchase facilities that are used jointly (joint-use facility) by combining funds from multiple grants. In addition to combining funds across multiple KAKENHI grants, it is also possible to purchase joint-use facilities using KAKENHI funds in combination with funds from other competitive research funds schemes.

For details of schemes that are eligible for combination, please refer to the MEXT website.

Concerning the purchase of joint-use facilities with funds from different research funds (a combined use) (Japanese version only)
https://www.mext.go.jp/content/20200910-mxt_sinkou02-100001873.pdf



Image of combining KAKENHI funds (in the case of joint-use facility)



■Joint use of research facilities and equipment

Researchers are obliged to make efforts to promote joint use with those inside and outside of their research institutions of research facilities and equipment that have been purchased with direct expenses and donated to research institutions and that meet all of the following conditions.

- I. The purchase price is 10 million yen or more;
- II. There are general-purpose properties that can be utilized for other research projects; and
- III. Joint use of the research facility or equipment in question has no risk of interfering with the implementation of the funded project.

■Online application procedures

Applications for KAKENHI grants are accepted online through the electronic application system, rather than on paper, in order to secure research time for researchers and reduce the administrative burden on research institutions.

Initiatives for Ensuring Appropriate Use of KAKENHI Funds and Fair Research Activities

- To prevent any improper grant spending and research misconduct, related to KAKENHI, every effort has been made to increase awareness of the rules, including distribution of handbooks and holding of explanatory meetings. At the same time, each research institution, rather than the individual researcher, is asked to perform the management of KAKENHI grants and various procedures, under an effective management structure in accordance with the “Guidelines on the Management and Audit of Public Research Funds at Research Institutions (Implementation Standards)”.

Through this policy we are working to reduce the burden on researchers while helping to prevent inadvertent rule violations.

KAKENHI Handbook
<https://www.jsps.go.jp/english/e-grants/handbook>



- We have introduced a mechanism in the electronic application system, which requires that before a formal application for grant delivery can be filed, the applicant must not only pledge to use the KAKENHI grant fairly and efficiently and not to commit any research misconduct, but must also complete a checklist of the minimum items necessary regarding the conduct of KAKENHI-funded research.

■Development of Structures and Mechanisms based on the Guidelines on the Management and Audit of Public Research Funds at Research Institutions and Guidelines for Responding to Misconduct in Research

Research institutions are required to comply with the “Guidelines on the Management and Audit of Public Research Funds at Research Institutions” (Decision of the Minister of Education, Culture, Sports, Science and Technology, revised February 1, 2021) and the “Guidelines for Responding to Misconduct in Research” (Decision of the Minister of Education, Culture, Sports, Science and Technology, August 26, 2014). Such institutions are now expected to set up structures and mechanisms in line with these guidelines.

Outline of Initiatives

- Initiatives for preventing misconduct in advance
- Making clear the management responsibilities in the organization
- Supervision and support by the national government

■Measures Taken against Researchers Who Commit Misconduct

Researchers who commit misconduct in KAKENHI projects may be required to return the research funds, as well as being barred from receiving KAKENHI grants for a set time period. Moreover, the nature of such researchers’ misconduct will be made public.

Also researchers who commit misconduct in a project supported by competitive research funds other than KAKENHI (including those administered by other ministries) and are barred from receiving grants under that program for a set time period will also be barred from receiving KAKENHI grants for the same period.

■ Period of KAKENHI suspension “Improper Grant Spending and Fraudulent Grant Acquisition of KAKENHI”

Subject of Measures	Extent of the improper grant spending and Period of KAKENHI suspension
Researchers who committed improper grant spending of KAKENHI and researchers who conspired in such fraudulent acts	Misappropriation of KAKENHI for personal gain ; 10 years
	Other than misappropriation of KAKENHI for personal gain { <ul style="list-style-type: none"> (1) Cases of major seriousness and maliciousness ; 5 years (2) Cases other than (1) and (3) ; 2 to 4 years (3) Cases of minor seriousness and maliciousness ; 1 year
Researchers who acquired KAKENHI by deception or other fraudulent means and researchers who conspired in such acts	5 years
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.

*A “Sharp Reprimand” shall be issued to researchers instead of KAKENHI suspension in the event that the influence on society and the maliciousness of the conduct are judged to be insignificant and the amount of money involved is small.

■ “Research Misconduct”

Subject of Measures			Negative Impacts on Science and on Public at Large Degree of Maliciousness and 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 of other authors bearing equivalent responsibilities)	(determined in accordance with the impact on the progress of the science in the field in question and the social impact, and on the level of maliciousness involved in the acts) ; 3 to 7 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		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		(determined in accordance with the impact on the progress of the science in the field in question and the social impact, and on the level of maliciousness involved in the acts) ; 1 to 3 years

Public Release of Research Results

The achievements of research supported with KAKENHI are made widely available to the public through the Grants-in-Aid for Scientific Research Database (KAKEN) in an effort to promote their application in society as well as to deepen the public's understanding of the KAKENHI program.

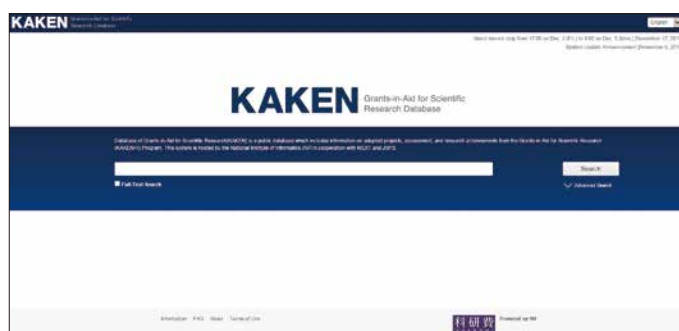
From fiscal 2019 we have been pursuing further enhancements of the information made available on KAKEN, as follows.

- To enable users to see what kind of research is being conducted using KAKENHI from the start of projects (after official grant decisions have been made), outline of the research has been added to information already published in the database such as project title and budget amount.
- In the Report on the Research Achievements published after project completion, we have newly added content explaining the academic and social significance of the research results in simple terms, in addition to the pre-existing specialist explanation of the results. This move both raises researchers' awareness of their accountability, and enables people to know what kinds of research results are generated through the KAKENHI system.

Research using KAKENHI funds should be carried out based on researchers' own self-awareness and responsibility. Therefore the publication on the implementation of the research or research achievements, etc. should not come from the government request and the views and responsibilities on the research achievements should be attributed to the researchers themselves.

About the Grants-in-Aid for Scientific Research Database (KAKEN)

- This database registers and publishes information on projects adopted for KAKENHI (including principal investigators' affiliations, positions, and names; research project titles; allocated amounts; research periods; and summaries of research projects) (from fiscal 1965) and summaries of the Report on the Research Results (from fiscal 1985). (Over 1 million cases as of August 1, 2025)
- Information in the database can be searched by research category, researcher name, discipline, and a variety of other items. The latest research results can therefore be accessed by wide-ranging keyword searches.
- Moreover, DOIs (digital object identifiers) of research papers in journals are published along with other information on research results, making it possible to access published papers directly from KAKEN.



KAKEN (National Institute of Informatics)
<https://kaken.nii.ac.jp/en/index/>



■GRANTS (Integrated Research Project Search)

GRANTS (Integrated Research Project Search) is a service that enables users to perform integrated searches for research projects conducted as part of national government programs for the promotion of research and development and the like, beyond the boundaries of any single program or implementing institution. The service came into operation in the 2021 fiscal year. Its search functions currently cover data held in both the Grants-in-Aid for Scientific Research Database (KAKEN) and the JST Project Database.

GRANTS (Integrated Research Project Search)
<https://grants.jst.go.jp/>
(Japanese version only)



■Acknowledgements and Financial Support for Publishing Research Achievements

Researchers are asked to acknowledge the KAKENHI program when reporting their research achievements in papers, conferences, and other forms.

The program also allows researchers to use direct expense to cover the cost for publicizing their research results widely to the public.

■Open Science Initiatives in KAKENHI

Open science initiatives, including open access (OA) of research papers and data, which promote the sharing and publication of research results and encourage the acceleration of research and the creation of new knowledge, have gained momentum worldwide.

In line with government policies, starting from new KAKENHI calls for proposals in April 2025 and beyond, JSPS requires the publication of academic papers and supporting data on institutional repositories and other information infrastructure immediately after they are published in academic journals. JSPS also promotes proper management and use of research data, and the research data reported as the achievements of KAKENHI-funded projects have been published on KAKEN since fiscal 2025.

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



Management and Utilization of Research Data in KAKENHI
https://www.jsps.go.jp/j-grantsinaid/01_seido/10_datamanagement/index.html
(Japanese version only)



Information Dissemination and Public Relations Activities

Please view the following webpages and web contents for various information on the KAKENHI program

■KAKENHI Websites

1. MEXT provides information like the following, mainly on the research categories for which MEXT performs review and assessment, on its KAKENHI website
 - Application Procedures, Research Proposal Document form
 - Regulations on assessment in funding of scientific research
 - List of reviewers
 - Profiles of research in “Scientific Research on Innovative Areas (Research in a proposed research area)” and “Transformative Research Areas (A/B)”
 - Overview of review for “Scientific Research on Innovative Areas (Research in a proposed research area)”, “Transformative Research Areas (A/B)” and validation results
 - KAKENHI funding results
 - Reports by the Subdivision on Grants-in-Aid for Research, and Research Grant Screening Section of the Academic Deliberation in the Subdivision on Science, Council for Science and Technology

Grants-in-Aid for Scientific Research (KAKENHI) (MEXT)
https://www.mext.go.jp/a_menu/shinkou/hojyo/main5_a5.htm
 (Japanese version only)



2. JSPS provides information like the following, mainly concerned with the research categories for which JSPS performs review and assessment, on its KAKENHI website
 - Application Procedures, Research Proposal Document form
 - Rules Concerning the Review and Assessment for Grants-in-Aid for Scientific Research
 - JSPS rules on the use of funds (for research institutions and for researchers)
 - KAKENHI Handbooks (for research institutions and for researchers)
 - List of reviewers
 - Summary of KAKENHI review
 - Information on electronic application
 - FAQ

Grants-in-Aid for Scientific Research (KAKENHI) (JSPS)
<https://www.jsps.go.jp/english/e-grants/>

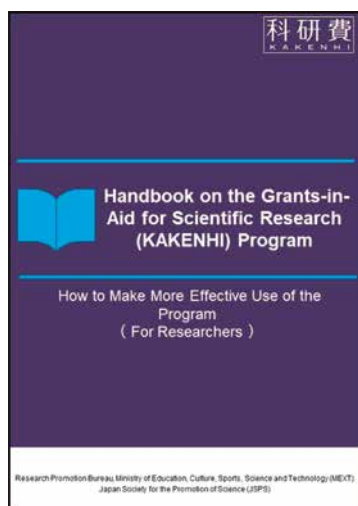


Public relations contents

MEXT and JSPS publish the following contents, which can be downloaded from their websites.

1. “KAKENHI Handbook” (for researchers)

This Handbook, prepared primarily for researchers, provides an easy-to-understand description of the basic contents of the KAKENHI program.



KAKENHI Handbook
<https://www.jsps.go.jp/english/e-grants/handbook>



2. Research Results Topics

This page presents outstanding research results generated through KAKENHI grants in an easy-to-understand way, with content created and provided by researchers and research institutions themselves. We plan to increase the number of articles, allowing even more researchers and research institutions to share the results of their research with greater outreach.



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科研費
KAKENHI



最終氷期のシベリアにおける現生人類の拡散と植生変遷

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歴史学、考古学、博物館学および
その関連分野

主な採択課題:

- ▶ 基盤研究(C) 『日本海地域における完新世のスギ拡大に及ぼした地すべり地の影響』(2024-2026)
- ▶ 基盤研究(B) 『レオフォレストリーに基づく日本海地域のスギの成立および変遷要因の解明』(2017-2019)

分野: 歴史学、第四紀学

キーワード: 最終氷期、バイカル地域、現生人類、後期旧石器時代、遺跡、花粉分析

課題

●なぜこの研究をおこなったのか? (研究の背景・目的)

現生人類は最終氷期の約5万年前にアジアの北ルートと南ルートに分かれて拡散し、北ルートは西アジアからアルタイ山脈を通り、シベリアのバイカル地域に至ったと考えられている(図1)。バイカル地域の遺跡から出土した石器などの特徴から、4万年前頃には人類が定住していたことが推定されているが、現在よりも寒冷な時代に人類が拡散・定住した要因は明らかにされていない。

●研究するにあたっての苦労や工夫 (研究の手法)

現生人類が拡散および定住した時期を詳細に明らかにするため、バイカル地域の遺跡から出土した骨や歯などの遺物を対象に、放射性炭素年代測定法を用いて遺物の年代分布を調べた。また、拡散・定住した時期の植生や環境を明らかにするため、バイカル湖の湖底から採取した堆積物に含まれる花粉化石の種類と量を調べた。数万年間にわたる膨大な量の遺物および堆積物の分析が必要であり、かなりの根気と時間を要した。



図1 氷期のアジアにおける現生人類の拡散ルート

Research Results Topics
https://www.jsps.go.jp/j-grantsinaid/37_topics/
(Japanese version only)



3. Abstracts of Large-scale Research Projects

Includes the titles of newly adopted projects under such categories as “Specially Promoted Research”, “Scientific Research (S)”, “International Leading Research”, and “Transformative Research Areas (A/B)”, along with the names of their principal investigators and summaries of their research content.

[Grant-in-Aid for Specially Promoted Research]

New Frontiers in Neutron Star Research Opened by a Sky-scanning Small X-ray Satellite

Principal Investigator	RIKEN/The Institute of Physical and Chemical Research, Pioneering Research Institute, Chief Scientist	
	TAMAGAWA Toru	
Project Information	Project Number: 26400006	Project Period (FY): 2024-2030
	Keywords: Neutron Stars, Time-domain Astronomy, Transients, Scientific CubeSat	

Purpose and Background of the Research

●Outline of the Research
A neutron star has about one to two times the mass of the Sun, but its radius is only about 10 km. It is the densest matter in the universe, even denser than a nucleus. Although it is a simple object supported by the quantum pressure of neutrons, its inner structure and the origin of its magnetic field are still not fully understood. In this research, we will develop NinjaSat-2, an X-ray CubeSat with our original idea: a built-in sky survey function. Using this satellite, we will discover, alert, and observe transient events related to neutron stars along the plane of our galaxy. By collecting a large amount of data covering neutron stars from their birth and active stages to their end, we aim to better understand their structure and magnetic fields (Figure 1).

Figure 1: Conceptual diagram of the entire research project.

●Key features of this research
This project aims to efficiently detect transient events from neutron stars along the plane of our galaxy. Working with other observatories will advance neutron star research and support the growth of time-domain astronomy. The main features of this research are: (1) Based on NinjaSat, an X-ray CubeSat successfully operated in 2023-2025, we will develop NinjaSat-2 by adding a crosshair collimator and giving it an X-ray survey function (Figures 2 and 3).

(2) By using technology already proven with NinjaSat, we can reduce development risk and improve the chance of success. (3) By using a small satellite to detect transient events, we can quickly trigger follow-up observations with larger observatories, making it possible to achieve results more efficiently.

●Significance of this research
This project helps fill a gap in the observation of transient events in high-energy time-domain astronomy. Around 2026, NinjaSat-2 is expected to be the only planned mission able to continuously survey the plane of our galaxy, giving it an important role in the global observation network. It is also innovative because it opens a new approach to survey observations using CubeSats. In the future, this could develop into a system of many CubeSats for continuous all-sky monitoring. In addition, a three- to five-year project is well-suited for training early-career.

Figure 2: Concept of sky-scan CubeSat.

Figure 3: Simulation of detecting a new object.

Expected Research Achievements

●Research goals
With the X-ray CubeSat NinjaSat-2, developed as part of this project, we aim to achieve the following three science goals over five years.

[Goal 1] Monitoring X-ray sources and discovering transient objects
We will survey the Galactic plane with NinjaSat-2 to discover and observe transient X-ray sources, especially those related to neutron stars, and make the results public. NinjaSat-2 will complement MAXI and help fill the expected global observational gap after 2026. The data will be compiled into a catalog for multi-wavelength studies.

Figure 4: X-ray sources in the Galactic plane and the main survey area of NinjaSat-2.

[Goal 2] Studying neutron star interiors and magnetic fields
By following up transient events discovered by NinjaSat-2 or other missions, we will study the internal structure and magnetic fields of neutron stars. We will focus on rare objects such as “Glowed bursters” and magnetars, and combine our observations with follow-up studies by other satellite missions such as IXPE and XRISM.

[Goal 3] Targeted monitoring of supernovae and neutron star mergers
We will search for X-ray signals from neutron star birth and death events using neutrino alerts from supernovae and gravitational-wave detections with NinjaSat-2. This will support multi-messenger astronomy in the neutrino and gravitational-wave era.

Websters: <https://cosmic.riken.jp/en/ninjasat-2/>
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Abstracts of Large-scale Research Projects
<https://www.jps.go.jp/english/e-grants/lsrcp/>





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