

国立天文台

【コクリツテンモンダイ】

核

融合科学

研究所

大学共同利用機関法人 SINCE 2004

自然科学

【シゼンカガク-ケンキュウキコウ】

研究機構

基

礎生物学

研究所

分子科学

【ブンシカガク-ケンキュウジョ】

生理学

【セイリガク-ケンキュウジョ】

研究所

研究所

日本語

English

自然科学研究機構 要覧

2025-2026 GUIDE

NAOJ

National Astronomical Observatory of Japan

NINS

National Institutes of Natural Sciences

Inter-University Research Institute Corporation SINCE 2004

National Institute for Basic Biology

INIFS

National Institute for Fusion Science

INIPS

National Institute for Physiological Sciences



Message

from the President

Maki KAWAI

The National Institutes of Natural Sciences (NINS) consists of the five research institutes of the National Astronomical Observatory of Japan, the National Institute for Fusion Science, the National Institute for Basic Biology, the National Institute for Physiological Sciences, and the Institute for Molecular Science and has provided researchers at universities and research institutes nationwide as inter-university research institutes with the joint use of our state-of-the-art equipment and a place for leading joint research as a core research institute in the field of natural sciences involved in space, energy, materials, life, etc., and with striving to enhance the roles and functions of each research institute by consensus of researcher communities, has pressed ahead with cutting edge research in each specialized field.

Inter-university research institutes were reorganized into four organizations by incorporation in 2004, and their position as institutes that independently and autonomously conduct education and research was strengthened. However, steering both sides to fulfill the social missions of an organic collaboration between research institutes which is originally based on different research communities and an institute as a whole is extremely important. In addition, these institutes have provided the basis for developing original research and have played a role in supporting our researchers to continue to produce high-quality research. Their mission has been to flourish with research communities centered on universities.

The five research institutes that make up NINS each have researcher communities based on different academic fields. On the other hand, the Headquarters for Co-Creation Strategy, located at the NINS Headquarters, serves as a hub for interdisciplinary collaboration and inter-organizational cooperation. It engages in activities that strengthen collaboration among national, public, and private universities across the country, supporting the foundation for enhancing Japan's overall research capabilities. Furthermore, the expansion of academic disciplines and the creation of new interdisciplinary fields require collaboration across the entire inter-university research institute corporation, including joint-use and joint-research centers. Therefore, the Inter-University Research & Education Alliance, established through the collaboration of the four inter-university research institute corporations and SOKENDAI (The Graduate University for Advanced Studies) promotes initiatives to fully utilize the functions of each corporation. Additionally, the Research University Consortium, composed of national, public, and private universities as well as inter-university research institute corporations working to enhance research capabilities, advances efforts such as networking through pioneering initiatives and the dissemination and sharing of challenges.

The 4th medium-term goal period, which began in FY 2022, is an important period for questioning the future direction of inter-university research institutes and their significance. In the latter three years of this period, starting from this fiscal year, efforts will be further refined to build on the achievements of the first three years. As leading institutes in research communities, the focus will be on contributing to solving various social issues, nurturing researchers who will lead the next generation, and creating advanced research and technological seeds that transcend organizational boundaries. Additionally, activities will emphasize the importance of higher education and promote the integration of higher education personnel into society.

We look forward to your continued support and cooperation to NINS.



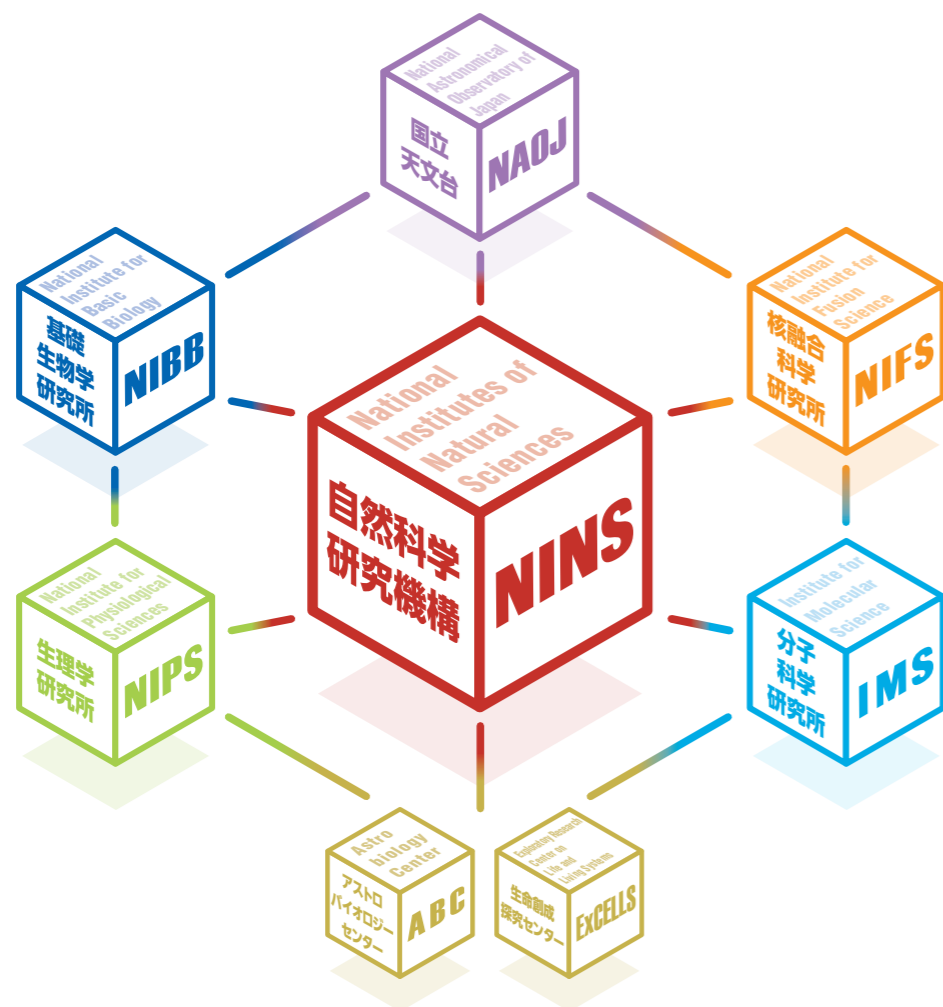
Maki Kawai
President
NINS

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National Institutes of Natural Sciences (NINS)

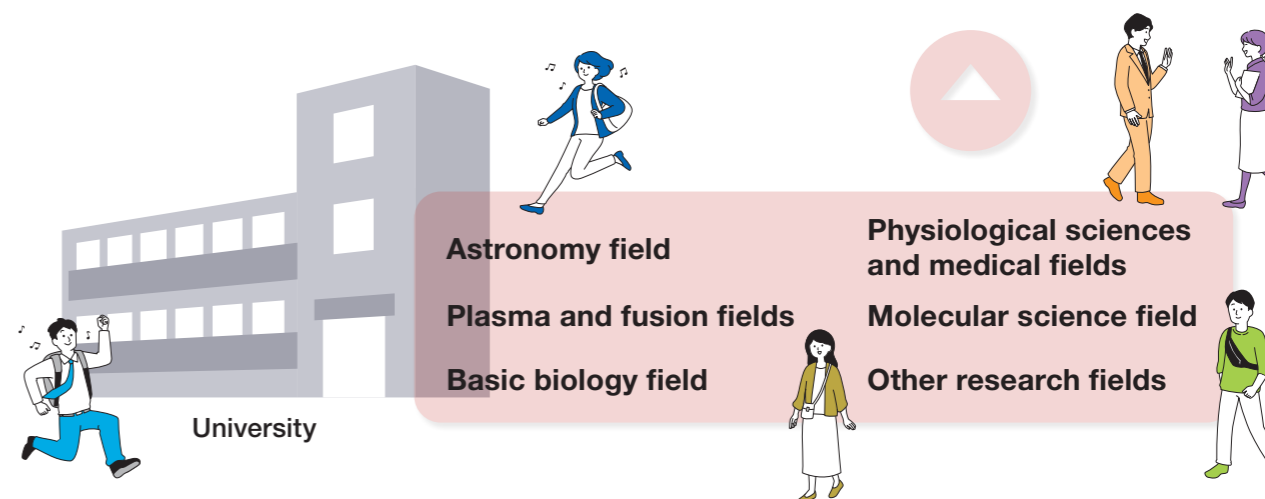
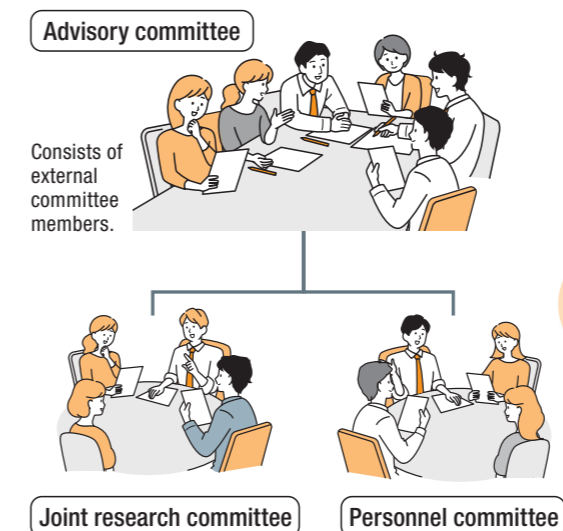


The National Institutes of Natural Sciences (NINS) consists of five inter-university research institutes: the National Astronomical Observatory of Japan (NAOJ), the National Institute for Fusion Science (NIFS), the National Institute for Basic Biology (NIBB), the National Institute for Physiological Sciences (NIPS), and the Institute for Molecular Science (IMS). As a global research center in the field of natural science promoting international and advanced research, we provide joint research and collaborative research for universities and other researchers all over the country. The result of our collaborative research contributes to strengthening Japanese research capabilities.

Management of Institutes by a Community of Researchers

Each Institute constituting NINS conducts the management supported by the community by being a member representing each researcher community in universities, etc. to the advisory committee, joint research committee, faculty personnel committee, and other committees.

Example: National Institute for Fusion Science



In addition, the majority of the members of the President Selection and Inspection Committee are made up of external members, while more than half of the Administrative Council and approximately half of the Education and Research Council are made up of external members.



National Astronomical Observatory of Japan

Astronomy is one of the oldest and yet most active sciences. This means that human beings possess the fundamental desire to seek our origin and the reason for our existence through an understanding of the Universe. NAOJ utilizes our full strength to play a key role in establishing a new paradigm for understanding the Universe, the Earth, and life as a whole. For this purpose, we observe various objects, from the Earth to the most distant objects in the Universe, and we consider the fundamental theoretical laws behind the observed phenomena. We also develop new technology to support these activities.

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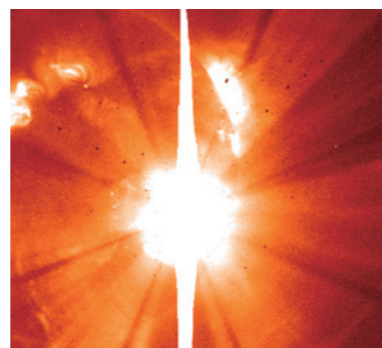
A black hole shadow at the center of Messier 87. NAOJ also joined this observation through ALMA (Atacama Large Millimeter/submillimeter Array). (EHT collaboration)

ALMA Telescope. (Clem & Adri Bacri-Normier (wingsforscience.com) / ESO)

Topics of Research

01 X-ray image of the Sun taken with “Hinode”

The Solar Observing Satellite Hinode has observed solar activity for more than ten years since its launch in 2006. The Sun is a typical star, but as our parent star it dominates the Solar System and facilitates life on the Earth. The Sun influences all of our surroundings and activities. The images and data obtained with Hinode are released as soon as they are acquired and are used by solar and space weather researchers all over the world.



The X5.8 class solar flare that occurred on May 11, 2024 (JST). (Credit: NAOJ/JAXA/MSU)

02 Violent mergers discovered with citizen astronomers

The Subaru Telescope's ultra-wide-field prime focus camera HSC imaged a vast area of the Universe. Citizens participated in classifying the galaxies visible in the images as part of the GALAXY CRUISE citizen astronomy project. From the analysis of the results over the first two and a half years after 2019, numerous galaxies involved in intense merger events were found. These discoveries were made not only by professional astronomers but also through citizen participation. For the second season, which focuses on even fainter galaxies, citizen astronomers from 110 countries and regions around the world are continuing to participate.



A sample of violent mergers. (Credit: NAOJ)

Fusion is the basic mechanism of nucleosynthesis and energy generation in the universe and is the energy source that supports the activities of stars. The sun's fusion energy also sustains our earth's environment. The National Institute for Fusion Science (NIFS) addresses a wide range of research topics, plasma physics, microscopic quantum processes and materials science, and engineering technology for the components of fusion devices necessary to realize fusion energy in a form we can use.

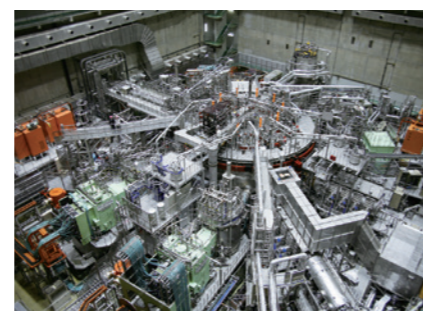
As an Inter-University Research Institute, NIFS is committed to contributing to the development of fusion science and forming a broad science and technology base by making large research facilities and various research equipment available and promoting joint research with domestic and foreign universities and research institutes.

The inside of the LHD plasma vacuum vessel.

Topics of Research

01 The Large Helical Device (LHD)

The Large Helical Device (LHD) is the world's largest superconducting plasma confinement device, which can stably produce high-temperature plasmas. The international joint research, which explores the principles of various complex phenomena common not only to fusion but also to space and astronomical plasmas, is conducted by measuring the internal structure of plasmas using various high-resolution diagnostics.



The LHD as seen from above. The LHD is 13.5m in diameter and 9.1m high. Many plasma heating systems and plasma measurement devices are attached to the LHD.

02 Computer simulation of plasma

A fusion plasma is a typical complex system controlled by multi-physics and multi-time/space nonlinear processes, from macroscopic phenomena, such as plasma transport, to microscopic electron dynamics. In order to understand and systematize physical mechanisms in fusion plasmas, large-scale numerical simulation research has been carried out by utilizing the full capabilities of supercomputers. Based on this research and development, we promote large-scale simulation science, aiming at the ultimate realization of a helical numerical test reactor, which will be based on an integrated predictive model for plasma behavior over the whole machine range.



Simulation of the hydrogen diffusion behavior inside the divertor material receiving heat flux and particles from plasma.



National Institute for Basic Biology

Among the innumerable celestial bodies in our universe, the Earth appears unique in that it is filled with a variety of living organisms. Over the course of 4 billion years of evolution, animals and plants have acquired diverse forms as well as astonishing abilities, and continue to survive on this remarkable planet through the propagation of their offspring. The National Institute for Basic Biology promotes research to find the basic principles common to many creatures, and the mechanisms that enable diversity and allow life to adapt to changing environments.

基礎生物学研究所



Various organisms to be studied at NIBB.

Topics of Research

01 Promotion of Trans-Scale Biology

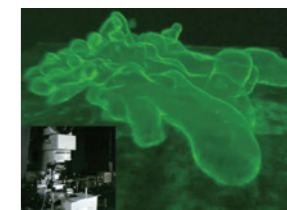
The phenomena exhibited by living organisms appear as the sum of complex networks at every scale, from genes to populations, and therefore, a trans-scale analysis is necessary to understand the essential nature of biological systems. However, conventional analysis, which relies solely on human intelligence to integrate diverse data across multiple levels of spatiotemporal scales has limitations. NIBB established the Trans-Scale Biology Center in April 2022, and to promote "Trans-Scale Biology". We challenge ourselves to expand our understanding of biological systems by integrating vast amounts of data, such as trans-omics and bioimaging, across multiple scales, through the introduction of AI-based data analysis.



Trans-Scale Biology Center.

02 Promotion of integrated bioimaging

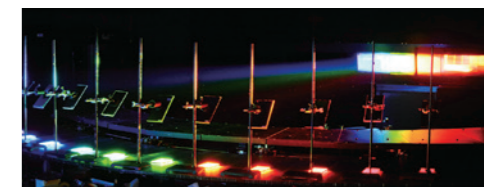
At NIBB, we advance observation technologies and light manipulation technologies via the use of cutting-edge microscopes such as light sheet fluorescence microscopes, multiphoton excitation fluorescence microscopes, and IR-LEGO, as well as develop new technologies for image processing and statistical processing to analyze acquired images. We also conduct activities to support experimental design, image acquisition, and data analysis in an integrated manner for researchers through collaborative research.



Amoeba's movement captured by light sheet fluorescence microscopy.

03 Exploring the relationship between light and living organisms using the Okazaki Large Spectrograph

The Okazaki Large Spectrograph projects a wavelength spectrum ranging from 250 nm (ultraviolet) to 1,000 nm (infrared) onto its 10 m focal curve with an intensity of monochromatic light at each wavelength which is more than twice as much as that of the corresponding monochromatic component of tropical sunlight at noon. The spectrograph is designed for action spectra analyses of various light-controlled biological processes.

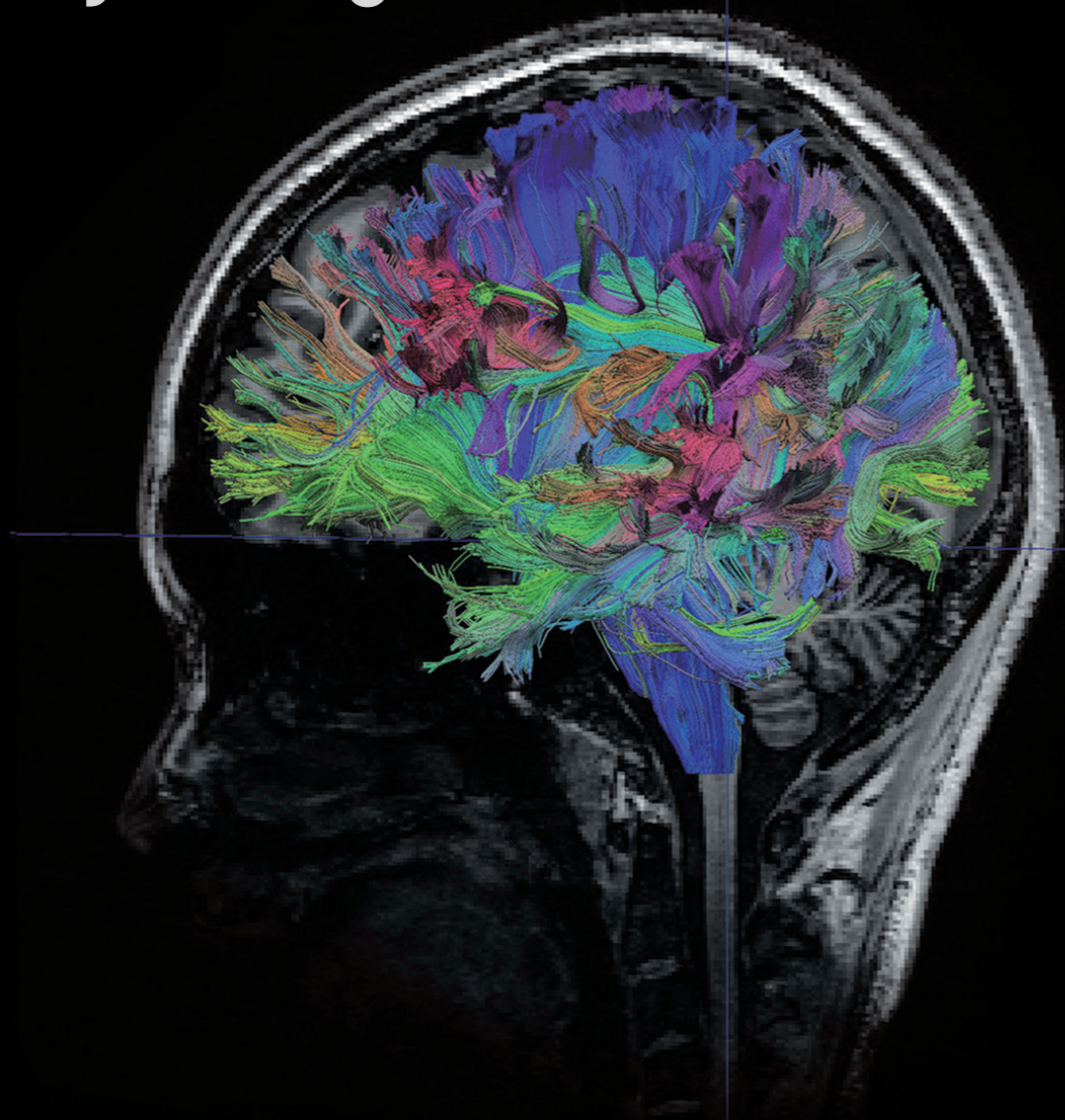


Okazaki Large Spectrograph.



National Institute for Physiological Sciences

生理学研究所



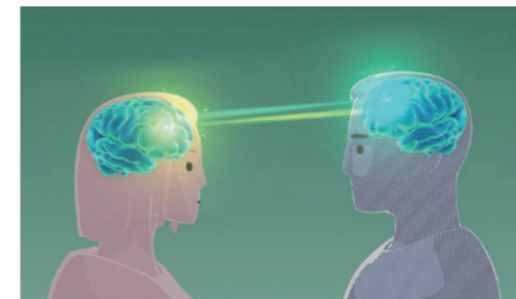
The mission of NIPS is to conduct research at the forefront of physiological science by examining the living body at various levels of organization, leading to a holistic understanding of the functional mechanisms of the human body. Recent progress in life sciences has been truly remarkable, and there have been notably marked developments in molecular biology and genetic engineering. Non-invasive imaging techniques have also become very useful for clarifying the physiological functions of the human body. Recently, NIPS has been focusing on higher brain functions as one of the most important research targets, and it is now considered to be one of the best brain research institutes not only in Japan but also in the world. With the key phrase “Elucidation of the Functioning of the Human Body,” NIPS is performing cutting-edge research in multiple fields, involving not only physiology but also biochemistry, molecular biology, morphology, cognitive science, information science, and medical engineering. NIPS offers its facilities and expert staff to domestic and foreign scientists for collaborative studies.

Bundles of nerve fibers in the human brain.

Topics of Research

01 Toward elucidating the neural basis of social mind

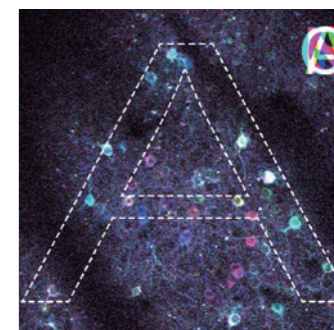
To understand the neural mechanisms of the social mind, we are promoting brain research on humans and monkeys. We use functional MRI in humans and electrophysiological techniques in monkeys to measure the activity of the “social brain” while two individuals interact with each other in real time. By conducting studies using monkeys, we can causally test functional hypotheses about the social brain. We can understand the evolutionary origins of the human social mind by comparing the data between the two primate species.



Brain activity changes dynamically when interacting with others.

02 Two-Photon Holographic Microscopy for Cell Measurement and Manipulation

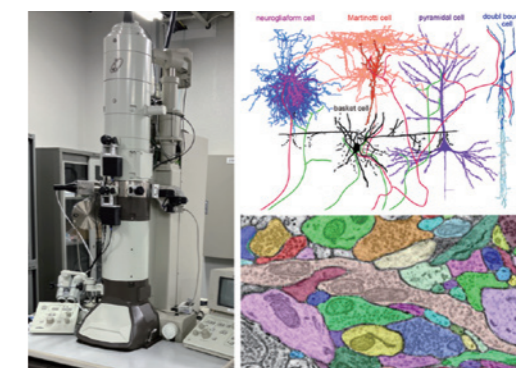
Microscope developed by combining digital holographic technology with two-photon in vivo microscopy. It is possible to irradiate lasers in any shape and form. Combining this with optogenetic methods, cell activity can be measured and manipulated in living animals. This has led to identify the pain cells in inflammatory pain models, the characteristics of neural circuits during chronic pain from pattern stimulation, and changes in the functional connection strength of local neural circuits to produce the artificial pain sensation in mice (Okada et al., Sci. Adv., 2021).



Example of induced cellular activity in the form of letters in living mice. (Quan et al., Opt. Lett., 2018)

03 Three-Dimensional Electron Microscopy-Based Reconstruction of Cortical Neural Circuits

Recent breakthroughs in high-throughput electron microscopy and advanced image processing have enabled detailed reconstruction and analysis of the synaptic architecture within local circuits of the cerebral cortex. We have proactively integrated these cutting-edge methodologies, including AI-driven image analysis pipelines, to facilitate large-scale circuit mapping. These technological innovations are anticipated to substantially advance our understanding of the structural and functional organization of cortical networks.



(Left) High throughput electron microscopy imaging system.

(Upper right) Neuronal circuit of the cerebral cortex. (bottom right) Densely segmented neural elements in the EM.

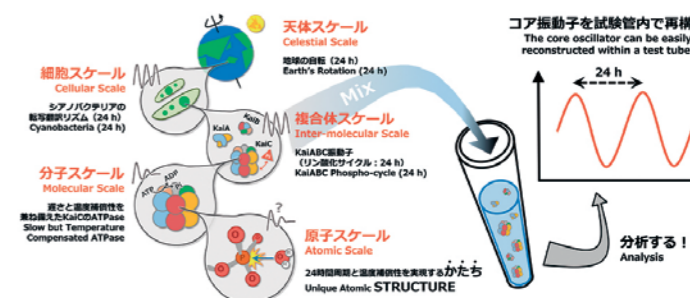
Molecular science is a field of science that aims at elucidating the essentials of intermolecular interactions and chemical reactions in which molecules change their shapes from both theoretical and experimental standpoints. The Institute for Molecular Science continues to provide opportunities of joint researches, in which the most advanced technology and instruments are accessible, for the researchers all over the world. To update our system continuously, we have established the Research Center of Integrative Molecular Systems and the Center for Mesoscopic Sciences, in addition to the four core departments of Theoretical and Computational, Photo, Materials, Life and Coordination-Complex Molecular Sciences. We organize the Inter-University Network for Common Utilization of Research Equipments. In the network, researchers in universities, public research institutes and private enterprises can share the research equipment in participating institutions.

The UVSOR synchrotron facility.

Topics of Research

01 Creating novel molecular systems with analyzing logic which connects “molecules” and “molecular systems”

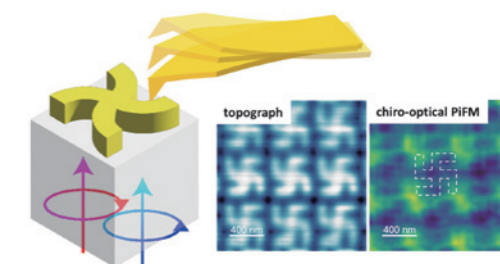
The Research Center of Integrative Molecular Systems (CIMoS) is dedicated to the important and interdisciplinary subject of “how the characteristics of each molecule are integrated into excellent functions of the molecular systems with higher-order structures.” We learn the interlayer logic that links “individuals” and “assemblies” from life systems. We then aim at elucidating the principle of how the molecular systems develop their functions such as energy conversion, material conversion and life activities by exchanging energy or information in a concerted manner. CIMoS has a mission to be a base of common utilization of facilities and joint researches to create “molecular systems having flexible, robust and excellent functions.” With the mission, CIMoS contributes to the society and advancement of science.



Cyanobacterial Circadian Clock System.

02 Capturing the behavior of molecules with light

The unique functions of molecules are realized in such a condition as a variety of molecules, not as single molecules, exist with the manner that molecular characteristics and macroscopic features of assemblies interact with each other. In Center for Mesoscopic Sciences, novel mesoscopic measurement methods have been developed and applied to various systems. This is indispensable in understanding, controlling and developing the functions in the mesoscopic space-time domain in which microscopic and macroscopic natures interact with each other. We work to aim at providing foundations of basic researches on theoretical analysis, development of light sources and novel measurement methods and their applications.

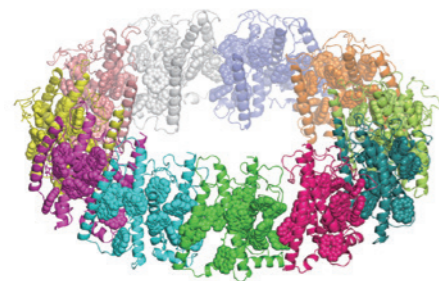


Chiro-optical image of a chiral gold nano-structure by a newly developed photoinduced force microscope (PiFM).



Astrobiology Center (ABC)

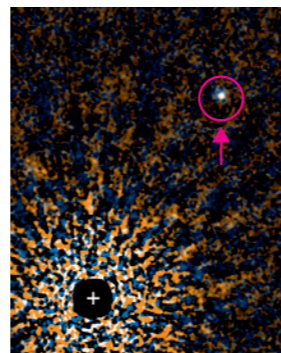
As a result of developments in extrasolar planet observations, astrobiology research to explore “life in the Universe” and uncover its mysteries has become a pressing subject. Astrobiology Center (ABC), established in 2015, advances this field by combining disciplines, promotes research into extrasolar planets and life both outside and within the Solar System, and develops observational instruments for these purposes.



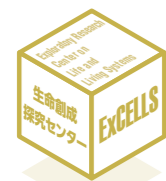
Structure of the protein complex of an Antarctic alga to perform oxygenic photosynthesis using infrared.



Instrument for habitable exoplanet search, Infrared Doppler spectrometer IRD.

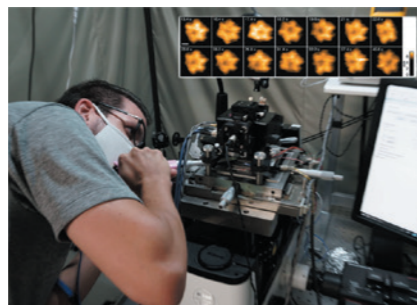


Direct image of a super-Jupiter exoplanet GJ 504 b (right).



Exploratory Research Center on Life and Living Systems (ExCELLS)

What is life? The Exploratory Research Center on Life and Living Systems (ExCELLS) was established in April 2018 to address this fundamental question. ExCELLS aims to achieve an integrative understanding of living systems by observing biological entities (“Observe”), deciphering the hidden information (“Read”), and creating living systems (“Create”) utilizing state-of-the-art equipment and novel constructive approaches. Moreover, ExCELLS promotes collaborative, interdisciplinary research involving investigators who explore organisms living in extreme environments based on “Observe, Read, and Create” approach to explore the design principles of living systems.

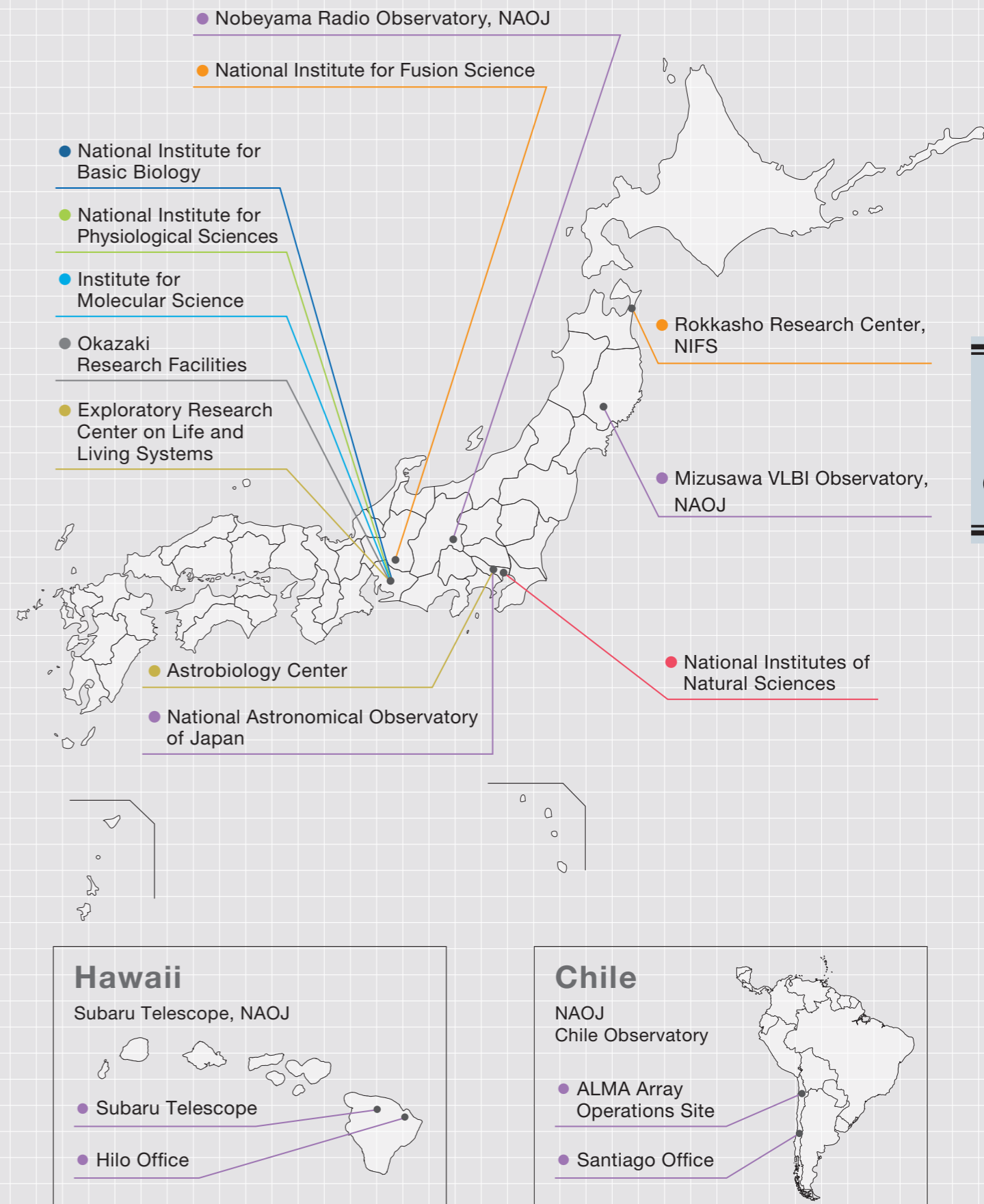


By using high-speed AFM (atomic force microscopy) combined with optical microscopy, we can visualize the dynamics of various biomolecules from proteins to cells. Combination with optical microscopy is also possible.



Tardigrade image with electron microscope.

Location



Collaborative Research

NINS contributes to strengthening the research capabilities of Japanese universities as one of the inter-university research institutes. In order to contribute to strengthening the research capacity of Japanese universities, as an inter-university research institute, NINS is developing three types of collaborative researches while taking advantage of the characteristics of their academic field, as below.

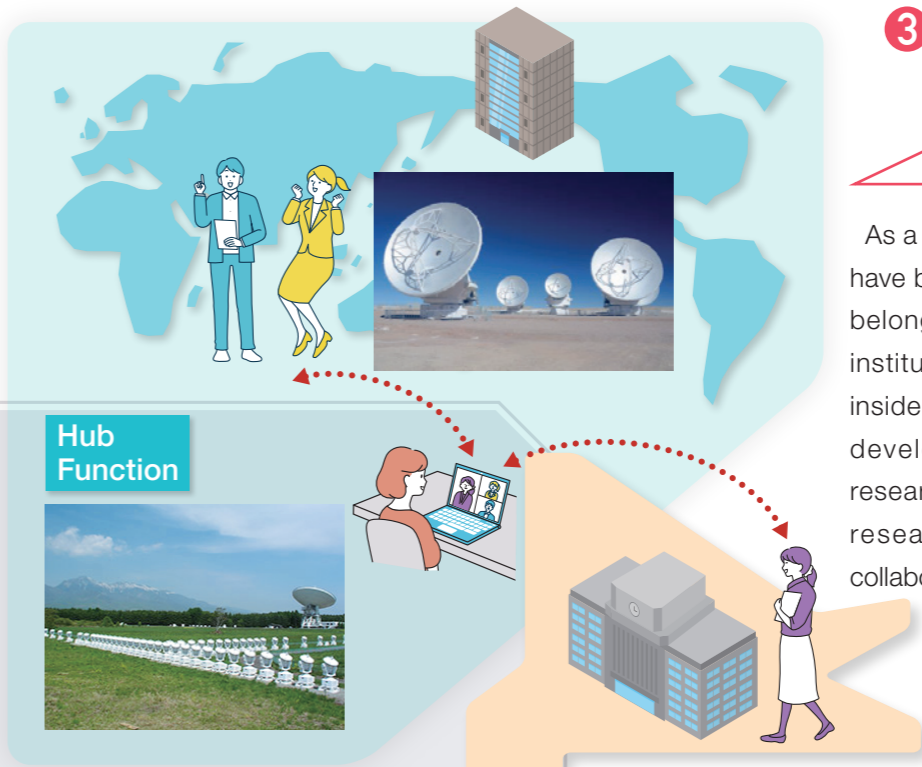
① Joint use and joint research across universities

We are consolidating large-scale, state-of-the-art research facilities that are difficult to set up at each university and gathering research materials that are difficult to collect or store, and leading cutting-edge research. As a result, joint use and joint research are conducted by researchers from other universities and research institutions going beyond the limits of individual universities.



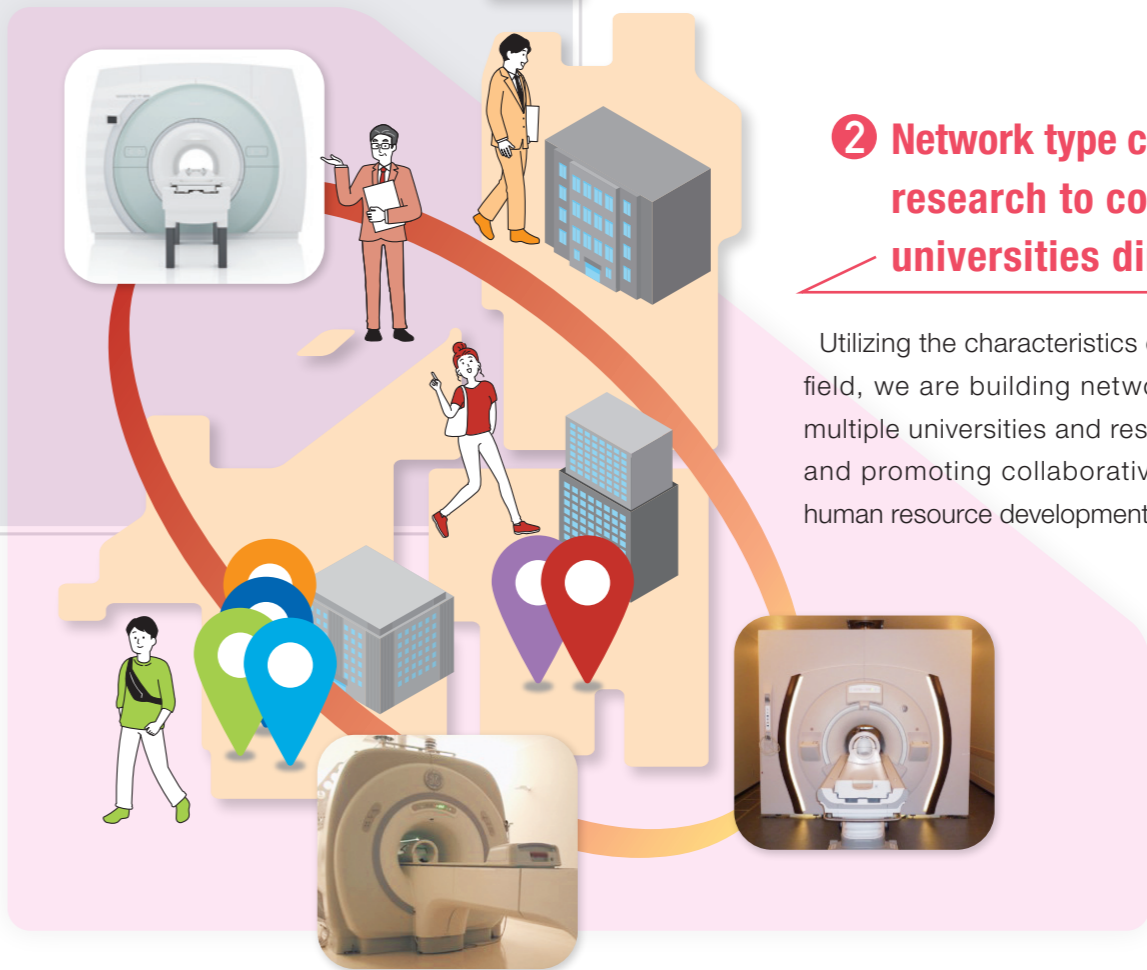
③ International collaborative research

As a base for international research, we have become a hub to connect persons belonging to universities and research institutions, regardless of whether it is inside or outside of Japan. And we are developing active exchange among researchers by promoting international research projects and international collaborative research.



② Network type collaborative research to contribute to universities directly

Utilizing the characteristics of each research field, we are building networks created by multiple universities and research institutes, and promoting collaborative research and human resource development.



What NINS aims for

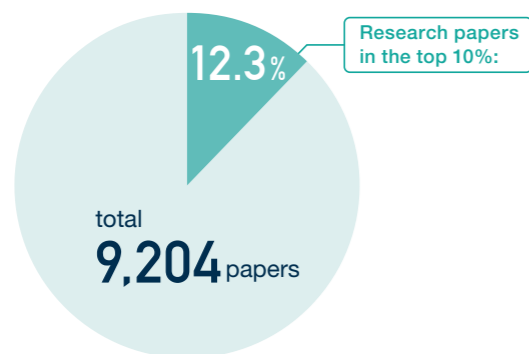
Relationship with Universities through Joint Use and Joint Research

NINS actively accepts researchers from universities nationwide, and is promoting joint research. Moreover, we provide graduate school education as SOKENDAI (The Graduate University for Advanced Studies), and regardless of national, private and public universities, we accept graduate students from other universities as "special inter-university researchers" to instruct research. Supporting research activities of researchers belonging to other universities through these systems will result in strengthening the research capacity of universities in Japan.

Visualize the contribution to universities

In order to visualize the contribution to other universities and research institutions, we are analyzing the number of citations of research papers resulting from joint use and joint research. From the results of the collaborative research of NINS and other universities over the past five years, the proportion of articles, which were cited in articles with high impact falling within the top 10% of all research papers was 12.3%. This ratio is higher than that of all the articles published from Japan (8.1%) adopted in the papers located in the top 10% of the world's papers. It means that we are contributing to a certain extent to the strengthening of the research capacity of universities in Japan.

Joint use and joint research papers between NINS and universities, etc. in Japan:



Target period of investigation at InCites: 2019–2023

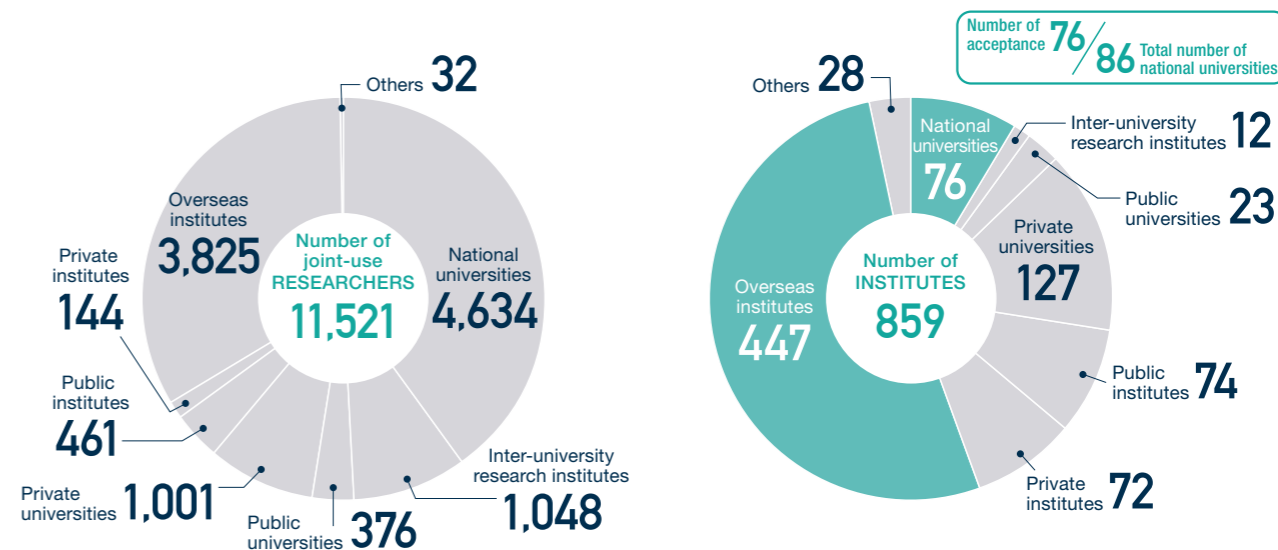
General research papers in Japan

Papers in the top 10%: **8.1%**

Research papers in Japan: **596,295**

Achievements of Collaborative Research (FY 2023)

NINS accepts collaborative researchers from national, public, and private universities and research institutions regardless of national, private, and public universities. In particular, researchers from national universities accounted for approximately 90%, and recently, researchers from public, private and overseas universities and research institutions are increasing.

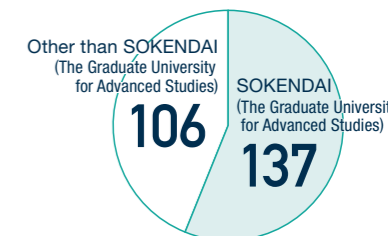


Number of researchers accepted by each research institute (FY 2023)

Name of research institute	Total researchers	Number of international researchers	Number of institutes
National Astronomical Observatory of Japan	5,309	36	497
National Institute for Fusion Science	1,536	253	281
National Institute for Basic Biology	582	14	104
National Institute for Physiological Sciences	842	65	157
Institute for Molecular Science	2,755	204	179
Center, Etc.	497	46	79

Graduate Education

NINS conducts postgraduate education as the foundation of SOKENDAI (The Graduate University for Advanced Studies). In addition, as a special inter-university researcher, we accept graduate students from national, public, and private universities nationwide.



What NINS aims for

Relationship with Universities through Joint Use and Joint Research

NINS accepts a wide range of researchers from public and private universities as well as national universities nationwide and promotes joint use and joint research. As a result of joint use and joint research, a great deal of findings has been published from each university.

- The number of research papers covers the total from 2019 to 2023 and it is counted based on the research papers reported by joint users and joint researchers and research papers from NINS researchers which were searched by InCites, a research analysis tool of Clarivate Analytics.
- *For institutes with no registration on InCites, research papers are searched and counted with Scopus, a database of peer-reviewed literature by Elsevier.

Number of Researchers and Articles

University	Researchers (FY 2023)	Papers (2019–2023)
The University of Tokyo	704	2,202
Nagoya University	438	1,147
Kyoto University	382	1,007
Osaka University	381	643
Tohoku University	350	616
Kyushu University	212	482
Hokkaido University	173	326
Tokyo Institute of Technology	159	373
Hiroshima University	144	390
University of Tsukuba	121	285
The Graduate University for Advanced Studies	87	2,339
Kobe University	82	159
Chiba University	64	128
Yamagata University	61	52
Shizuoka University	61	78
Kagoshima University	58	188
Ehime University	56	187
Okayama University	55	82
Yokohama National University	54	34
Nagoya Institute of Technology	52	41
Gifu University	50	45
Ibaraki University	46	93
University of Toyama	45	223
Niigata University	44	166
Kyoto Institute of Technology	43	30
Tottori University	43	34
Hirosaki University	42	99
Gunma University	40	43
The University of Electro-Communications	34	103
Kanazawa University	32	89
Yamaguchi University	30	57
Aichi University of Education	30	10
Nara Institute of Science and Technology	30	54
Tokushima University	28	61
Kumamoto University	28	72
Saitama University	27	70
Nara Women's University	26	32
University of Fukui	22	43

University	Researchers (FY 2023)	Papers (2019–2023)
Shimane University	22	25
Toyohashi University of Technology	21	13
Shinshu University	18	83
Saga University	17	14
Utsunomiya University	16	30
Nagaoka University of Technology	16	62
Mie University	15	6
Nagasaki University	11	14
Tokyo Medical and Dental University	11	22
Ochanomizu University	11	21
University of Miyazaki	10	16
University of the Ryukyus	9	48
Muroran Institute of Technology	9	3
Kyushu Institute of Technology	9	17
Kitami Institute of Technology	7	51
Kochi University	7	42
Wakayama University	7	1
Oita University	6	31
Tokyo University of Agriculture and Technology	6	64
Iwate University	6	8
Japan Advanced Institute of Science and Technology	6	9
Asahikawa Medical University	5	6
Joetsu University of Education	4	26
Hokkaido University of Education	4	—
University of Yamanashi	4	35
Kagawa University	3	40
Shiga University	3	4
Miyagi University of Education	3	6
Hitotsubashi University	2	13
Fukushima University	2	12
Nara University of Education	2	1
Tokyo University of Marine Science and Technology	2	3
Tsukuba University of Technology	1	—
Naruto University of Education	1	3
Shiga University of Medical Science	1	20
University of Teacher Education Fukuoka	1	—
Hamamatsu University School of Medicine	1	11

Number of Researchers and Articles

University	Researchers (FY 2023)	Papers (2019–2023)
Osaka Metropolitan University	96	257
Nagoya City University	68	146
University of Hyogo	48	100
Yokohama City University	39	23
Tokyo Metropolitan University	28	71
Kyoto Prefectural University	27	8
University of Shizuoka	25	14
Wakayama Medical University	8	5

University	Researchers (FY 2023)	Papers (2019–2023)
Hiroshima Corporation for Higher Education	6	—
Sanyo-Onoda City University	4	1
Kyoto Prefectural University of Medicine	4	22
Nara Medical University	4	9
Fukushima Medical University	4	20
Onomichi City University	3	33*
Hiroshima City University	3	3
Fukui Prefectural University	2	2

University	Researchers (FY 2023)	Papers (2019–2023)
Gifu Pharmaceutical University	2	—
The University of Aizu	1	45
Suwa University of Science	1	7
Akita Prefectural University	1	11
Future University Hakodate	1	1
Gunma Prefectural Women's University	1	—
The University of Kitakyushu	1	2

Number of Researchers and Articles

University	Researchers (FY 2023)	Papers (2019–2023)
Waseda University	104	185
Keio University	71	163
Ritsumeikan University	54	56
Nihon University	40	156
Kwansei Gakuin University	33	71
Chubu University	32	67
Kitasato University	31	30
Tokyo University of Science	27	97
Chiba Institute of Technology	25	73
Chuo University	24	29
Fukuoka University	18	104
Hosei University	17	73
Tokai University	17	37
Tamagawa University	17	13*
Toyota Technological Institute	16	13
Kyoto Sangyo University	15	107
Gakushuin University	15	22
Fujita Health University	13	48
Kindai University	12	78
Nagahama Institute of Bio-Science and Technology	12	8*
Meijo University	11	13
Meiji University	11	31
University of Occupational and Environmental Health	10	23
Japan Women's University	10	15
Doshisha University	10	48
Osaka Institute of Technology	10	52
The Jikei University School of Medicine	9	—
Aoyama Gakuin University	8	59
Toyo University	8	25
Tokyo Denki University	8	11
Sophia University	8	24
Toho University	8	76
The Graduate School for the Creation of New Photonics Industries	7	19
Showa University	7	17*
Okayama University of Science	6	35
Konan University	6	101
Rikkyo University	6	110
Kansai University	6	8
Teikyo University	6	10
Iwate Medical University	6	13
Juntendo University	6	28
Hoshi University	6	3

University	Researchers (FY 2023)	Papers (2019–2023)
Hyogo Medical University	6	13
Health Sciences University of Hokkaido	6	—
Saitama Institute of Technology	6	1
Setsunan University	5	4
Tokyo University of Pharmacy and Life Sciences	5	9
Jichi Medical University	5	72
Hokkaido University of Science	5	3
Kobe Pharmaceutical University	5	3
Kansai Medical University	5	—
Meiji University of Integrative Medicine	5	—
Tokyo University of Agriculture	5	11
The Open University of Japan	4	55*
Josai University	4	1
Toyohashi Sozo University	4	—
Kurume University	3	18
Kogakuin University	3	46
Otsuma Women's University	3	22*
Shibaura Institute of Technology	3	18
Tokyo City University	3	50
Aichi Institute of Technology	3	—
International University of Health and Welfare	3	6
Nippon Institute of Technology	3	—
Okinawa Institute of Science and Technology Graduate University	3	18
Health Science University	3	—
Shonan University of Medical Sciences	3	1*
Nippon Medical School	3	4
Kyoto Women's University	2	3
Komazawa University	2	6*
Osaka Sangyo University	2	32*
Meisei University	2	40
Kanagawa University	2	35
Teikyo University of Science	2	7*
Ashikaga University	2	11
Fukui University of Technology	2	14
Fukuoka Institute of Technology	2	3
Tokyo University of Technology	2	25
Asahi University	2	—
Teikyo Heisei University	2	—
Tohoku Fukushi University	2	—
Aichi Gakuin University	2	2
Tohoku Medical and Pharmaceutical University	2	4
Kinjo Gakuin University	2	—

University	Researchers (FY 2023)	Papers (2019–2023)
Soka University	2	3
Seisa University	1	—
Hokkaido Information University	1	2*
Kanto Gakuin University	1	9
Shikoku Gakuin University	1	—
Seikei University	1	3
Gifu Shotoku Gakuen University	1	—
Kyushu Kyoritsu University	1	9
Chukyo Gakuin University	1	1
Kagawa Nutrition University	1	—
Tokushima Bunri University	1	7
Hokkai-Gakuen University	1	5
Japan Health Care University	1	—
Daido University	1	1*
Gifu University of Medical Science	1	—
Niigata Institute of Technology	1	9*
Yamato University	1	1*
Hiroshima Institute of Technology	1	2
Azabu University	1	2
Aichi Shukutoku University	1	3
Nippon Veterinary and Life Science University	1	3
Musashi University	1	—
Aichi Medical University	1	29
Kyorin University	1	10
Niigata University of Health and Welfare	1	—
Kanagawa Institute of Technology	1	26
University of Human Arts and Sciences	1	—
Kawasaki Medical School	1	3
Chukyo University	1	2
Tokyo Women's Medical University	1	12
Mukogawa Women's University	1	1
Meijiro University	1	—
Ryukoku University	1	67
Kyoto University of Advanced Science	1	—
Saitama Medical University	1	9
Shuujitsu University	1	—
Josai International University	1	—
Nishinippon Institute of Technology	1	—
Hokuriku University	1	—
Nagoya Bunri University	1	—
Dokkyo Medical University	1	8
Aomori University	1	—

What NINS aims for

Relationship with Universities through Joint Use and Joint Research (International Collaborative Research)

NINS is carrying out the following four large international projects in the Promoting Large Scientific Frontier Projects and Scientific Research Infrastructure Projects of the Ministry of Education, Culture, Sports, Science and Technology. Maintaining and managing these state-of-the-art devices not only provides a base for research activities but also leads academic research around the world and functions as an international base.

Large-scale international projects



Subaru Telescope

Large Optical Infrared Telescope. It can observe the universe with super high vision and super high resolution.



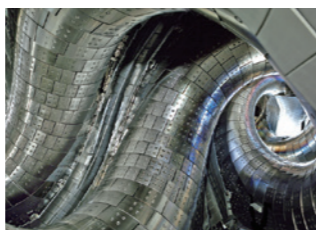
ALMA Telescope

Large Interferometer. It is operated by the National Astronomical Observatory of Japan (NAOJ) as an international project.



TMT Project

Thirty-meter class Optical Infrared Telescope.



Large Helical Device

The National Institute for Fusion Science (NIFS) leads the field of study of ultra-high temperature plasma in the world.

Project related numerical data (FY 2024)

Project	Total Users	Foreign Users	Institutes	Countries
Subaru Telescope	402	80	57	13
ALMA Telescope	3,213	2,693**	377	37
Large Helical Device	390	149	81	17

**Including Japanese researchers who are affiliated with overseas institutes.

Research University Consortium

NINS, which plays a key role in inter-university research institutes, is actively promoting various initiatives to enhance Japan's overall research capabilities. As one of its initiatives, NINS serves as the secretariat for the Research University Consortium (RUC), which is organized by universities and inter-university research institute corporations (hereinafter referred to as universities, etc.) that are actively working to strengthen research capabilities.

RUC currently consists of 40 member institutes. It provides a platform for sharing and discussing the challenges and issues faced by universities and other institutes nationwide. The information and strategies developed in these discussions are disseminated in various forms to ensure they reach the necessary universities and institutes more effectively and swiftly.

Specific activities

1 Advisory Committee and General Meeting

Advisory Committee:

Responsible for the overall planning and drafting of RUC activities

General Meeting:

Share information and exchange opinions on initiatives to strengthen research capabilities conducted by RUC member institutes

Deliberate important matters concerning the management of RUC

2 Task Force (TF)

(1) TF on evidence-based cross-disciplinary research collaboration

To promote interdisciplinary and inter-organizational collaboration, we collect, share, and analyze relevant information and evidence necessary to comprehensively understand the unique research strengths of each university and institute. To concretely promote the enhancement of research capabilities, we identify and organize issues across research fields and institutes and consider the necessary investigations and analyses.

(2) TF to strengthen research infrastructure through inter-university collaboration

By strengthening collaboration between universities and inter-university research institute corporations, we aim to further enhance research capabilities. We are engaging in discussions to develop specific strategies for strengthening research infrastructure.

3 Liaison meeting

We exchange information and discuss specific topics related to the current challenges and issues faced by universities and other institutes.

Five Currently Active Liaison Meetings

Liaison Meeting on the Utilization of Highly Specialized Personnel and Research Environment Support Personnel

Liaison Meeting on Issues Related to Research Capability Analysis

Liaison Meeting on International Information Dissemination

Liaison Meeting on Interdisciplinary Fusion

Liaison Meeting on the State of Academic Information Distribution

4 MIRAI-DX

MIRAI-DX

MIRAI-DX is a DX platform that promotes strengthened collaboration among University Research Administrators (URAs) belonging to RUC member institutes. By centrally aggregating researcher information from various universities and institutes, MIRAI-DX contributes to improving the accuracy of matching researchers. This facilitates interdisciplinary and collaborative research themes, explores the potential for interdisciplinary research directly linked to social issues, and fosters the creation of new research fields.

5 Symposium

We hold an annual symposium that focuses on common issues and themes shared by research universities. At the symposium, university representatives from RUC member institutes and universities across Japan gather to share reports on the achievements of various task forces and liaison meetings, discuss specific initiatives to enhance research capabilities, and address issues related to organizational development faced by universities. They actively engage in discussions, sharing pioneering efforts and best practices.



Members (40 universities and institutes)

Hokkaido University
Tohoku University
University of Tsukuba
Chiba University
The University of Tokyo
Institute of Science Tokyo
Tokyo University of Agriculture and Technology
The University of Electro-Communications
Hitotsubashi University
Yokohama National University
Niigata University
University of Toyama
Kanazawa University
University of Fukui
Shinshu University
Nagoya University
Nagoya Institute of Technology
Toyohashi University of Technology
Kyoto University
Osaka University
Kobe University
Okayama University
Hiroshima University
Yamaguchi University
Tokushima University
Ehime University
Kyushu University
Kyushu Institute of Technology
Nagasaki University
Kumamoto University
Kagoshima University
Japan Advanced Institute of Science and Technology
Nara Institute of Science and Technology
Tokyo Metropolitan University
Waseda University
Keio University
National Institutes for the Humanities
National Institutes of Natural Sciences
High Energy Accelerator Research Organization
Research Organization of Information and Systems



What NINS aims for

Open Mix Lab (OML) Project

Providing a place to open up new academic fields

NINS has started the Open Mix Lab (OML) project in FY 2023.

The OML project has been conceived as a research platform to promote interdisciplinary and multidisciplinary research that span organizations, sectors, and academic disciplines and expected to generate advanced research results through a variety of research projects as well as provide a venue to open up new academic fields.

How the OML project works

The OML project has been broadly divided into open recruitment research programs and facility development. The OML open recruitment research programs have been launched by integrating and reorganizing the open recruitment programs that had been implemented by NINS. There are five types of OML open recruitment research programs, as shown below, and you can choose the type that best suits the progress and scale of your research project.

- ① Research co-creation type
- ② Young researcher support type
- ③ Theme setting type
- ④ Research start-up support type
- ⑤ Technology development type
- ⑥ Industry-academia collaboration researcher support type

*The open recruitment for FY 2025 has ended in all types.

A feature of the OML open recruitment research programs, which was not found in conventional open recruitment programs in NINS, is that it has a “theme setting type,” in which research projects based on a specific theme are openly recruited. We plan to continue to set new themes every year.

Regarding facility development, which is a pillar of the OML project along with the open recruitment research programs, we are currently proceeding with the development of the first OML facility at the National Institutes of Natural Sciences Yamate Campus (Okazaki City). The facility is expected to serve as a hub for researchers both inside and outside NINS to conduct interdisciplinary research and problem-solving research collaboration.



OML open recruitment research program menu

- ① Research co-creation type
- Targeted are researchers affiliated with domestic research institutes, including NINS. This is a project to support innovative research through interorganizational collaboration, carried out in cooperation with employees.
- ② Young researcher support type
- Targeted are young researchers affiliated with NINS. This is a project to support innovative research through interorganizational collaboration, carried out in cooperation with researchers affiliated with domestic research institutes.
- ③ Theme setting type
- Targeted are researchers affiliated with domestic research institutes and private companies, including NINS. This is a project that utilizes cross-appointments and other means to establish a place for practical joint research at NINS and promote exchanges, while collaborating with NINS employees to implement the project. This project supports innovative research related to themes set by NINS.

Themes for FY 2025 – FY 2026

- Theme 1 : Analysis technology development and application using light in all wavelength regions
(Utilization of wavelength regions that have not been used much in the past)
- Theme 2 : Basic research and development that contributes to GX
(storage batteries, hydrogen, bio-manufacturing)
- Theme 3 : Basic and applied research using AI, machine learning, and mathematics

- ④ Research start-up support type
- Targeted are researchers affiliated with domestic research institutes, including NINS. This is a project to support start-up research, workshops, and preliminary studies to launch innovative research through interorganizational collaboration in cooperation with NINS employees.
- ⑤ Technology development type
- Targeted are technical employees affiliated with NINS. This is a project to support the development of technology, which is one of the important elements for promoting innovative research through future interorganizational collaboration, based on basic research conducted at NINS.
- ⑥ Industry-academia collaboration researcher support type
- Targeted are researchers affiliated with NINS. This is a project to support feasibility studies aimed at solving social issues and industrial applications.

For specific support scale and application requirements, please refer to the recruitment guidelines posted on the NINS' website.

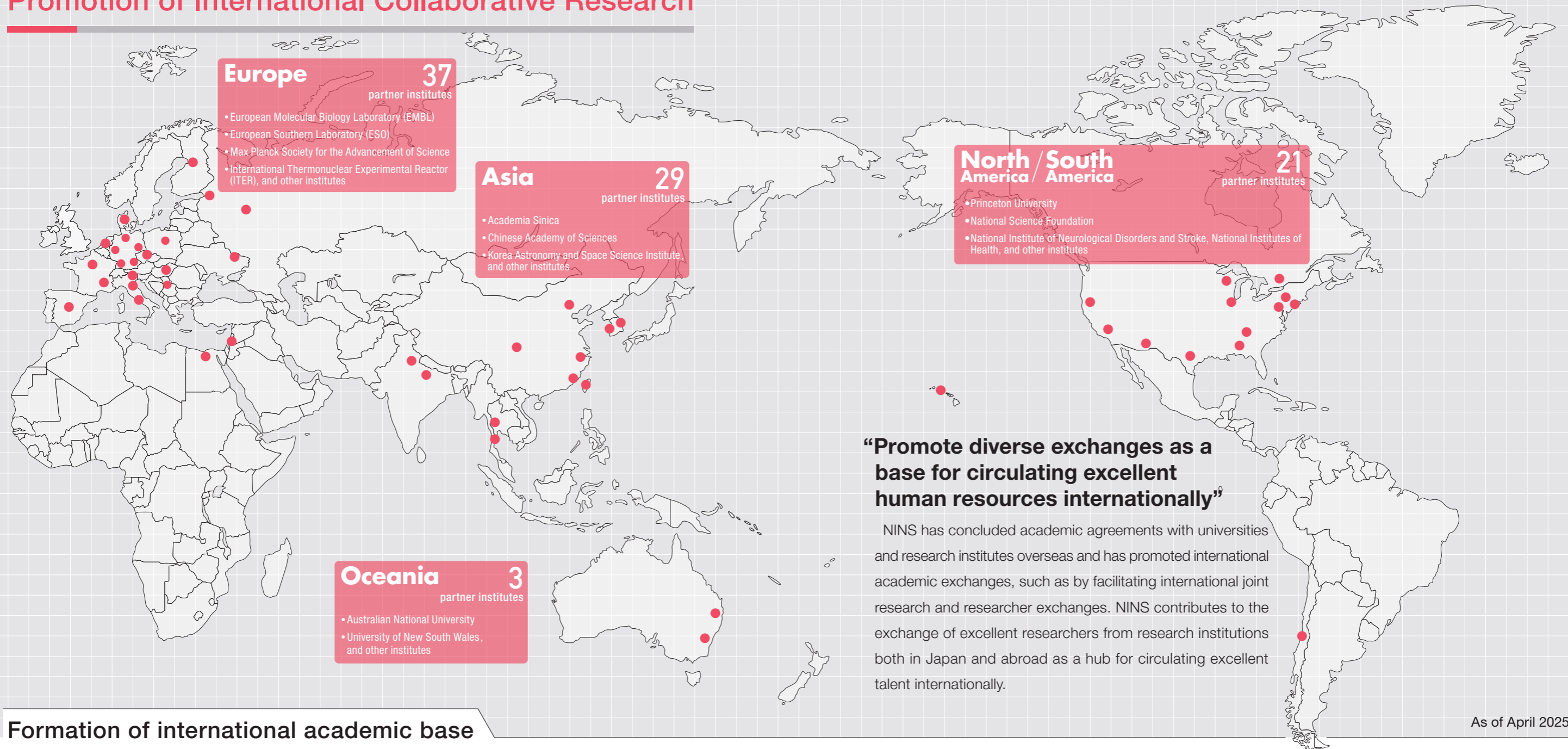
Contact information

Research Support Section, Research Cooperation Division,
Administrative Bureau, NINS
TEL.03-5425-1325 Email.nins-jr@nins.jp <https://www.nins.jp/en/collabo/oml.html>



What NINS aims for

Promotion of International Collaborative Research



Formation of international academic base

Collaboration with Princeton University and research institutes affiliated with the Max Planck Society

NINS and Princeton University (USA) have entered into an academic exchange agreement since 2010, and have engaged in a variety of exchanges, including joint research in the fields of plasma astrophysics and quantitative/imaging biology, support for educational activities, and mutual participation in conferences and symposiums. Furthermore, based on an agreement with NINS, we are promoting research exchanges mainly in the fields of plasma physics and astrophysics with research institutes affiliated with the Max Planck Society (Germany). We are strengthening the framework for promoting international joint projects, such as deploying researchers hired through international recruitment locally with the support of URAs in charge of international collaboration.

International Collaboration with the European Molecular Biology Laboratory (EMBL)

EMBL is a European-led international research institution funded and operated by 19 countries with headquarters in Heidelberg, Germany. Based on the academic agreement concluded in 2005 (re-extended in 2019) between NINS and EMBL, NINS has adopted exchanges on 3 fronts such as academic exchanges, personnel exchanges, and technical exchanges. For NINS, joint research is being promoted mainly by the National Institute for Basic Biology (NIBB) that is in charge of the area of research nearest to EMBL.

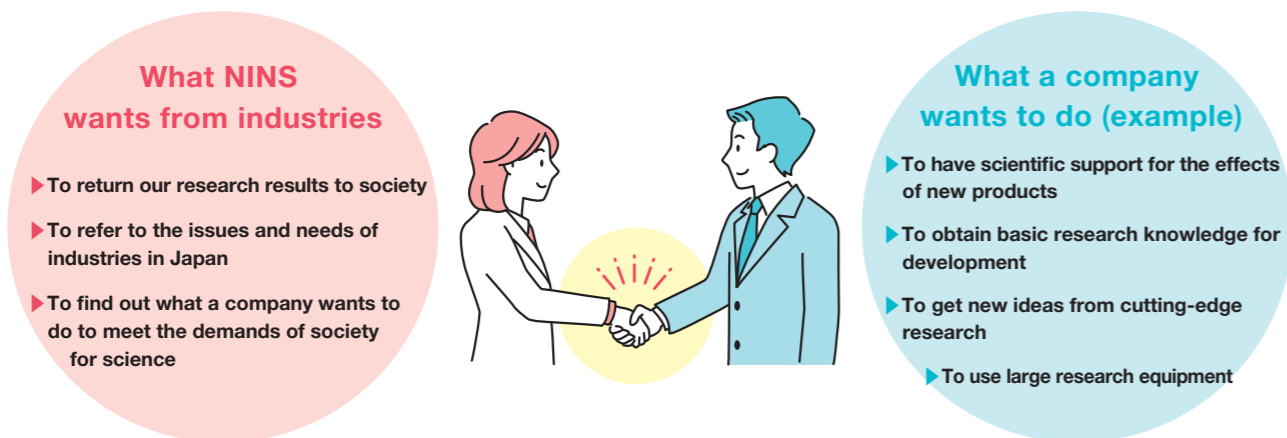
What NINS aims for

NINS Collaborative Innovation

Collaborative Innovation Set Out by NINS

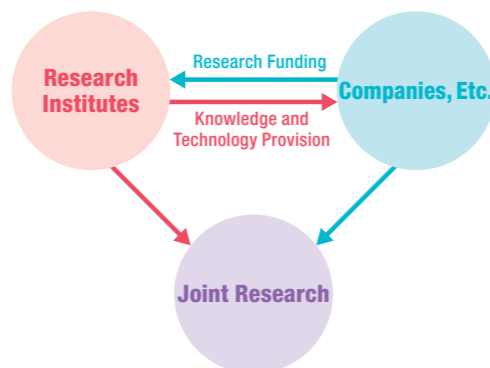
The National Institutes of Natural Sciences (NINS) is one of the inter-university research institute corporations that plays a central role in academic research for researchers belonging to national, public, and private universities and research institutes nationwide. Each university has state-of-the-art research facilities and equipment that are difficult to maintain and manage, intellectual infrastructure such as a huge amount of academic materials, and human resources with the knowledge necessary to use these and we provide researchers nationwide with opportunities for joint research and new field development.

Since its founding, NINS has contributed to the development of academic research in Japan by conducting these leading and effective joint research activities and has fulfilled its mission as an inter-university research institute. NINS now wants to meet the research needs of everyone who is responsible for industries in Japan, with our accumulated history and achievements.



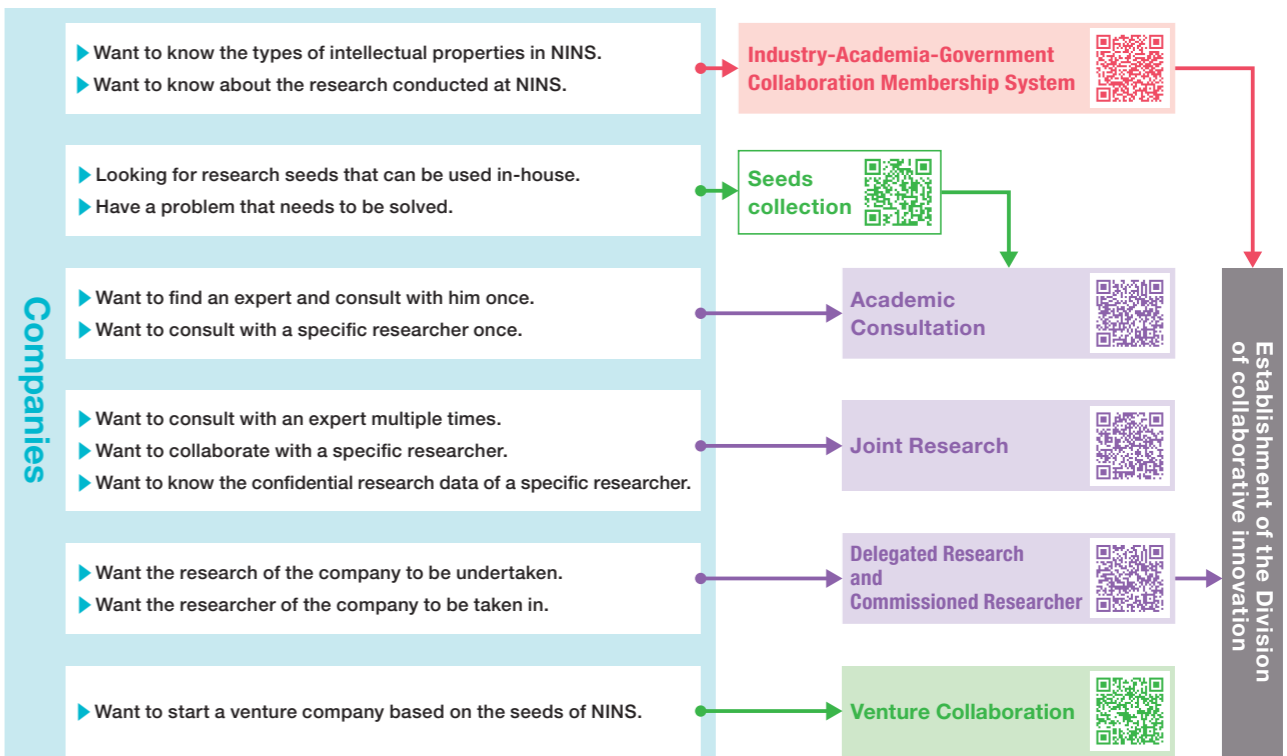
Mechanism of Collaborative Innovation

We will utilize the results of academic research conducted by NINS in the industrial world and carry out research and development to meet the needs of industries. NINS promotes collaborative innovation based on contracts for academic consultation, joint research, delegated research, etc. We also operate the NINS industry-academia-government collaboration membership system for the purpose of fostering networks with industries. Refer to the NINS collaborative innovation system for more information.



NINS Collaborative Innovation System

NINS promotes collaborative innovation based on contracts for academic consultation, joint research, delegated research, etc. We also operate the NINS industry-academia-government collaboration membership system for the purpose of fostering networks with industries.



*Please consult with the Collaborative Innovation Desk regarding use of the license and intellectual property and the use of facilities and joint equipment of the institutes.

Acceptance process of collaborative innovation

If you wish to collaborate with NINS, please contact the researcher in charge or the Collaborative Innovation Desk in advance. Upon request, we will guide you through procedures such as academic consultation, collaborative and delegated research contracts.

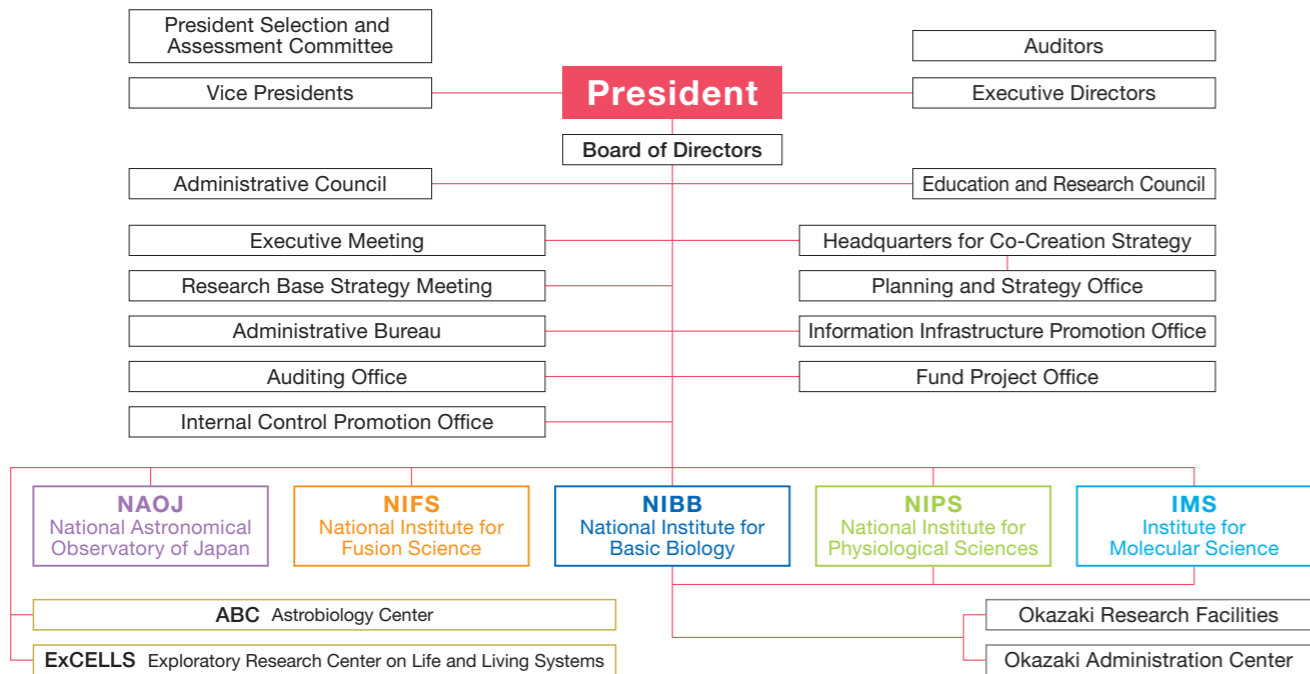


For Inquiries

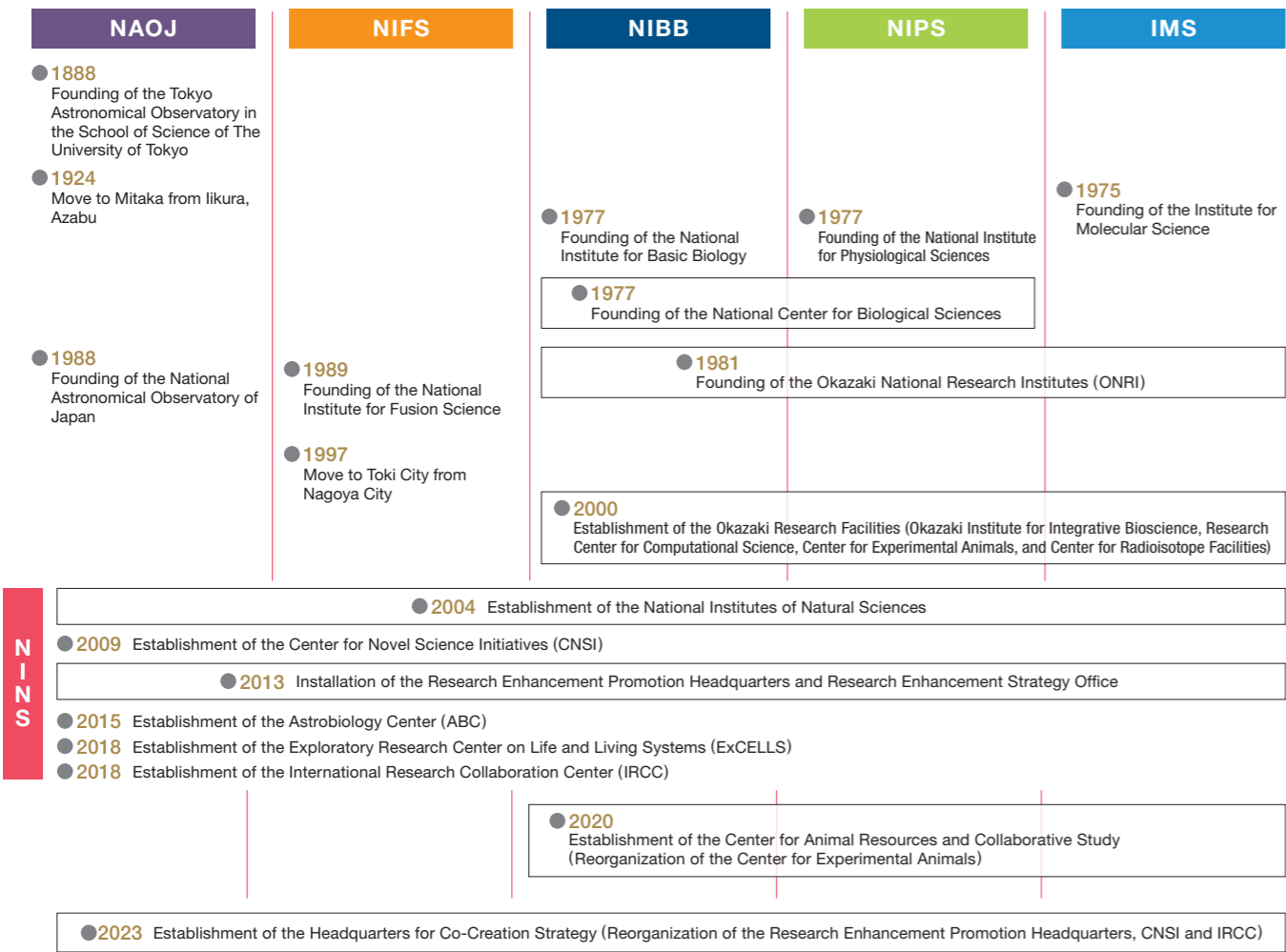
Research Support Section, Research Cooperation Division,
NINS (Collaborative Innovation Administrator)
TEL.03-5425-1325 Email.nins-sangaku@nins.jp <https://innovation.nins.jp/en/>



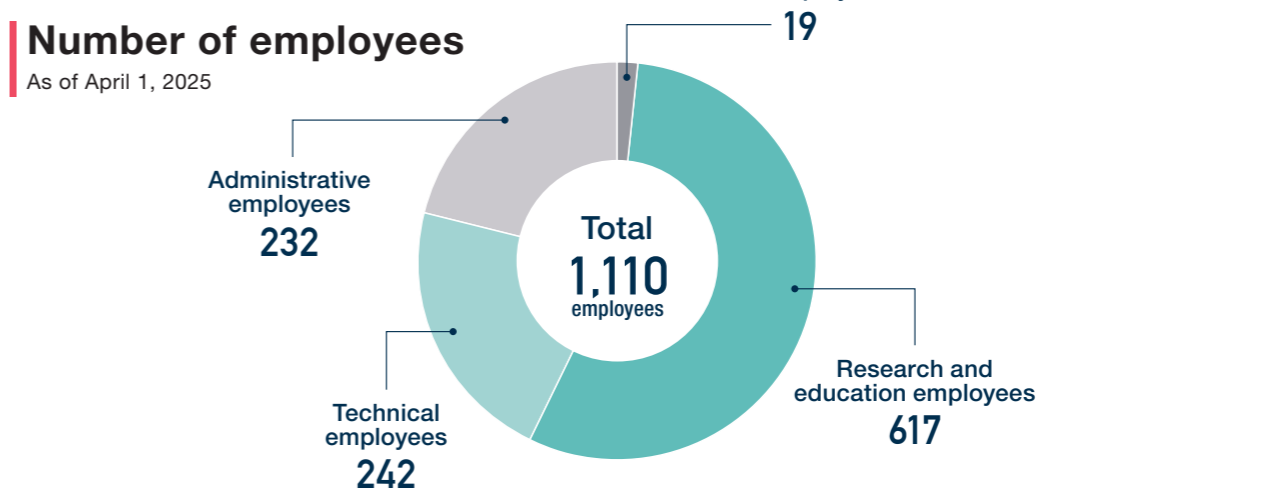
Organization chart



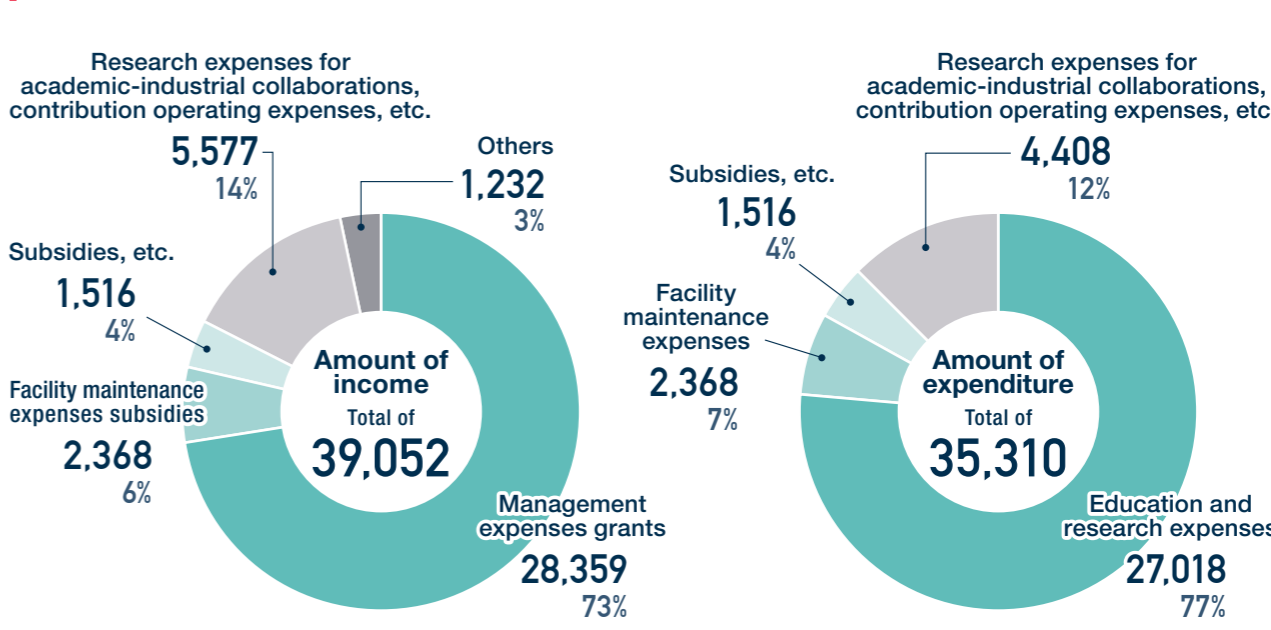
History



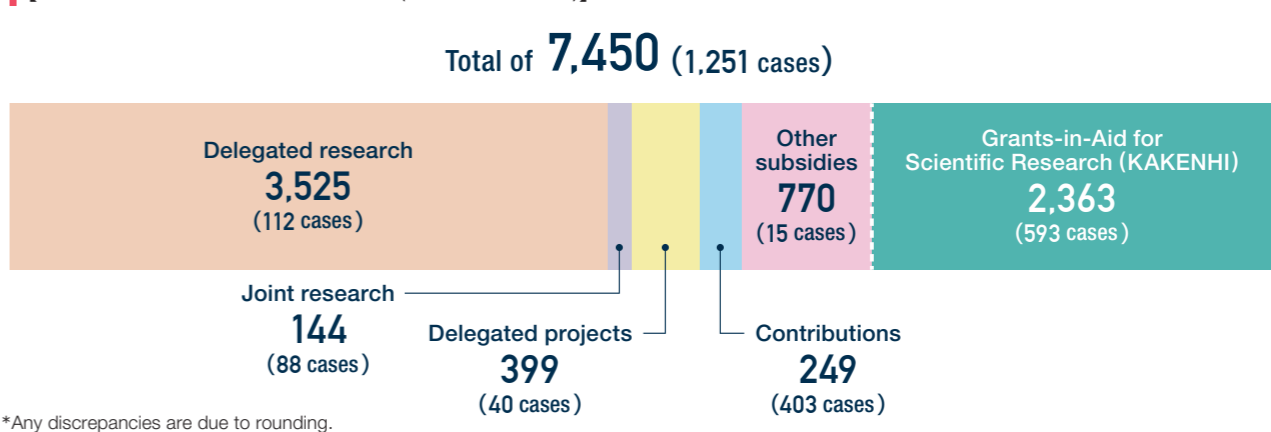
Data



Income and expenditure



Breakdown of external funds



*Any discrepancies are due to rounding.

President

As of June 2025

Name	Job Title
Maki KAWAI	President

Executive Directors / Vice Presidents

Name	Job Title
Naoto UENO	Executive Director and Director of Headquarters for Co-Creation Strategy
Teruo FURUYA	Executive Director
Junichi NABEKURA	Executive Director
Kazuhisa OKAMOTO	Executive Director and Secretary General
Yoshihito WATANABE	Executive Director, Vice President and Director General of IMS
Hideaki TAKAYANAGI	Executive Director
Mamoru DOI	Vice President and Director General of NAOJ
Hiroshi YANADA	Vice President and Director General of NIFS
Masayuki MIURA	Vice President and Director General of NIBB
Tadashi ISA	Vice President and Director General of NIPS

Auditors

Name	Job Title
Yuichi OGAWA	Auditor
Shigeki UEKUSA	Auditor

Nobel Prize and Monument of Professor Emeritus Yoshinori OHSUMI

NINS Professor Emeritus Yoshinori Ohsumi, the Honorary Professor of NINS, won a Nobel Prize in Physiology or Medicine in 2016 for his findings on “autophagy” including research lasting 13 years in the National Institute for Basic Biology (NIBB). As a memorial of his achievement, the monument is installed in NIBB in the motif of "autophagy in yeast cells".



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<https://www.excells.orion.ac.jp/en>



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NINS donations



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