Frontier Research Institute for Interdisciplinary Sciences | 東北大学 学際科学フロンティア研究所

2020

Information and Systems

Devices and Technology

Life and Environmental Science

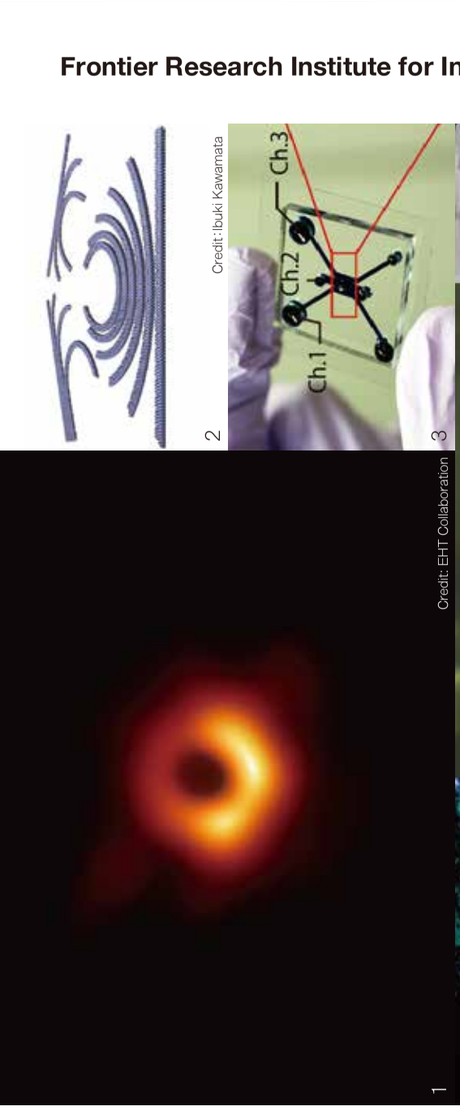
Humanities and Society

Materials and Energy

Advanced Basic Science

Frontier Research Institute For Interdisciplinary Sciences

Frontier Research Institute for Interdisciplinary Sciences, Tohoku University



Images of FRIS achievements

1) Kenji Toma
The shadow of a black hole at the center of the galaxy M87, captured by Event Horizon Telescope

2) Yuki Suzuki
Schematic drawing of a DNA origami nanoactuator. The nanoactuator is capable of undergoing deformation in response to ionic conditions.

3) Yuji Nashimoto
Microfluidic device for reconstructing a vascularized tumor model. The microchannels in the device were visualized by blue ink.

4) Toshiharu Ichinose
Neurons encoding a memory are labeled in the Drosophila brain.

5) Nobuyuki Matsumoto
Development of a mg-scale pendulum with the lowest dissipation up to date, consisting of a laser-welded ultra-thin and long silica fiber and mirror.

6) Hiroya Abe
Inspired by Hemoglobin, which carries oxygen into the whole body, we found highly active molecular catalysts for fuel cells.

7) Yuichiro Nakajima
A medusa of Cladonema pacificum, characterized by its small body size (~1cm) and branched tentacles.

fris.tohoku.ac.jp

2020.12

Outline

The Frontier Research Institute for Interdisciplinary Sciences (FRIS) was established in April 2013. It consists of the Managing and Planning Division, the Advanced Interdisciplinary Research Division, and the Creative Interdisciplinary Research Division. The Managing and Planning Division and the Advanced Interdisciplinary Research Division are staffed with 4 professors, 3 associate professors, and a specially appointed associate professor (the University Research Administrator), while the Creative Interdisciplinary Research Division is staffed with young researchers holding tenure-track positions (51 assistant professors as of April 1, 2020). The faculty members belong to one of the following 6 fields, from the viewpoint of interdisciplinary research: “Materials and Energy,” “Life and Environments,” “Information and Systems,” “Devices and Technology,” “Humans and Society,” and “Advanced Basic Science.”

What We Do

Our objective is to contribute to the enrichment of human society by fostering the work of young researchers through collaboration with each graduate school and research institute, as well as the Division for Interdisciplinary Advanced Research and Education in Tohoku University. We aim to pioneer and promote interdisciplinary research by collaboration among different fields.

How We Do It

While working primarily in their core disciplines, researchers promote interdisciplinary research through exchange and collaboration with researchers from different fields. To support these efforts, FRIS has established the Managing and Planning Division to facilitate cooperation among the six research areas. Additionally, the Managing and Planning Division provides support for collaboration with schools within Tohoku University, as well as other universities.

Activity of FRIS

221	4.57	6	20
Publications in 2019	Publications per researcher in 2019	Number of young researchers dispatched abroad for more than one month in 2019	Research events led by young researchers in 2019

Message

Established in 2013 through the integration of the Center for Interdisciplinary Research (CIR) and the Institute for Synergistic Interdisciplinary Research, FRIS aims to pioneer and promote interdisciplinary study in various academic fields through partnerships with university faculty and research institutions, including the Division for Interdisciplinary Advanced Research and Education (in the Institute for Promoting Graduate Degree Programs). By working towards the advancement of knowledge and the creation of new value through support for young researchers, FRIS is committed to its vision for enriching human society.

FRIS is committed to the following three missions: promoting advanced interdisciplinary research, discovering novel interdisciplinary research within the university, and fostering young researchers. To further these goals, FRIS conducts programs like the Promoted Program for Interdisciplinary Research, the Support Program for Interdisciplinary Research, the Shoshi Program (a mentorship program for young researchers), the Support Program for International Core for Interdisciplinary Research, and Support for International Collaboration and Presentation in International Conferences. Assistant professors in the Creative Interdisciplinary Research Division conduct independent research while also receiving various support from a mentor whom they select from the Tohoku University faculty. Young researchers are able to build strong relationships with graduate and doctoral students in the Division for Interdisciplinary Advanced Research and Education (in the Institute for Promoting Graduate Degree Programs) through academic courses and research.

As we continue our work to promote frontier research in interdisciplinary science, we truly appreciate your encouragement and support.

Researchers pioneering
new interdisciplinary science
will open the gates to
the future of advanced research.

Professor **Toshiyuki Hayase**

Director,
Frontier Research Institute for Interdisciplinary Sciences,
Tohoku University

Professor Hayase has been the director of FRIS since 2018. He is also a member of the Institute of Fluid Science at Tohoku University, where he conducts research on flow stability, flow control, flow in living organisms (e.g., blood), its application to medical engineering, and the integration of flow simulation and measurement methods.

Leading the world with out-of-the-box plasma research

● Please describe the research you are currently working on.

Using my knowledge of plasma, I research the microscopic physics of astrophysical phenomena.

Most of the visible matter in the universe is in a plasma state. Plasma is a gas composed of ions and electrons and is the fourth state of matter after solid, liquid, and gas. In the universe, plasma includes things such as the wind blowing from the sun, the magnetosphere surrounding planets, and the gas that fills the accretion disks orbiting black holes and galaxy clusters. On the other hand, plasma is also used in microprocesses that we encounter in our daily lives. In addition, fusion power generation, which can be achieved by artificially confining high-temperature plasma, is expected to be a future energy source. Active use of plasmas will change our lives. Plasma physics is the discipline that explores the nature of such ubiquitous plasma throughout the universe. Incredibly, the governing equations of plasma physics can universally describe a vast scale of plasma phenomena, from those that occur in our nearby surroundings to those that occur in the wider galaxy. In this sense, plasma physics is essentially an interdisciplinary field. Plasma physics is a very old discipline, and Japan has been a world leader in this field for many years. The Institute of Plasma Physics at Nagoya University has long been a major presence in Japan, and the National Institute for Fusion Science in Toki, Gifu is also a world-leading research institution.

My recent research interest is in the theory and simulation of small-scale plasma turbulence in accretion disks. Small-scale plasma turbulence has been studied actively in fusion research and in the heliosphere. It is possible to measure turbulence directly in laboratory plasmas, solar wind, and the magnetosphere, even on very small scales, and theories have been developed to explain the measured results. On the other hand, it is difficult to directly measure small-scale turbulence in distant objects such as accretion disks. So, my goal is to theoretically predict the physics of small-scale accretion disks using the knowledge obtained from laboratory plasmas and solar wind.

● What qualities do you think make FRIS unique?

An institution committed to improvement, where you can focus completely on your research.

The most attractive thing about FRIS is the environment, where you can focus completely on your research. In addition, the support system for independent researchers is well established. There are generous research grants, and we are invited to apply for competitive grants. Another advantage of FRIS is the opportunity to receive inspiration from young researchers working in a variety of fields. There are many opportunities to interact with researchers in different fields. The FRIS Retreat was a particularly stimulating opportunity to exchange knowledge with one another about our fields of expertise. When researchers from other fields asked me detailed questions about things that I had considered obvious, I sometimes found myself at a loss for an answer, which provided me with chances for deeper investigation.

I think the most significant characteristic of FRIS is that it is committed to improvement. Director Hayase and FRIS' s faculty members are always trying to improve FRIS by incorporating the opinions of young people. I heard a story about how an opinion expressed by a researcher was then implemented in the following year' s program. There are also many researchers from overseas research institutes at FRIS, and many of them have an international way of thinking and a strong will to improve the Japanese academic world. I think there is no other organization like this. I once submitted a request for a subsidy of several hundred thousand yen for publication fees for an open-access journal. This subsidy was then discussed at a meeting and soon became institutionalized. I am grateful to be in a place where young people' s opinions are readily accepted.

● What kinds of people do you think would flourish at FRIS?

People who can think critically, are not bound by existing ways of thinking, and are willing to change the status quo.

I think that people who can think critically and are not bound by existing ways of thinking can play an active role at FRIS. The institution has its own systemic challenges, but I believe that people who are willing to change the status quo can flourish here. In fact, I think there are many such people at FRIS.

If you feel a sense of academic isolation because your research does not fit into an existing field of study, or if there are no other groups doing similar work, or if you want to explore a new field of study, I recommend coming here. FRIS will give you an unbiased, interdisciplinary assessment of your work and encourage you to pursue challenging research.

Yohei Kawazura
Assistant Professor
Advanced Basic Science

Originally from Tokyo, Yohei Kawazura entered the University of Tokyo in 2003, spending a total of 13 years there, including graduate school, a JSPS postdoctoral fellowship, and a period as a research associate. He then worked at the University of Oxford before becoming an assistant professor at FRIS in April 2019. He specializes in plasma physics and is currently studying plasma turbulence in astrophysical phenomena such as in solar wind and accretion disks.

FRIS Triangle

FRIS has 3 missions at the heart of its activities.

1 Promoting Advanced Interdisciplinary Research

Promoting advanced interdisciplinary research led by full-time faculty members from the Advanced Interdisciplinary Research Division.

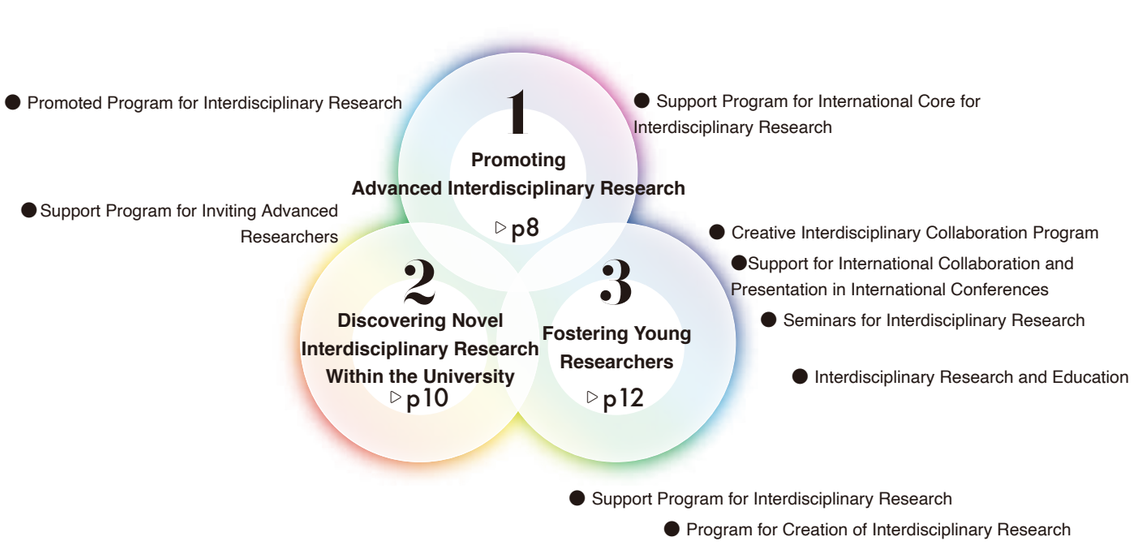
2 Discovering Novel Interdisciplinary Research Within the University

Supporting the innovative and unique interdisciplinary research of faculty members from other departments at Tohoku University.

3 Fostering Young Researchers

Fostening young researchers in the Creative Interdisciplinary Research Division expected to become excellent leaders in the next generation of new research fields, through planning and developing new international interdisciplinary research.

The 3 missions of FRIS—promoting research regardless of field, supporting interdisciplinary research, and fostering young researchers—are also the identity of FRIS.

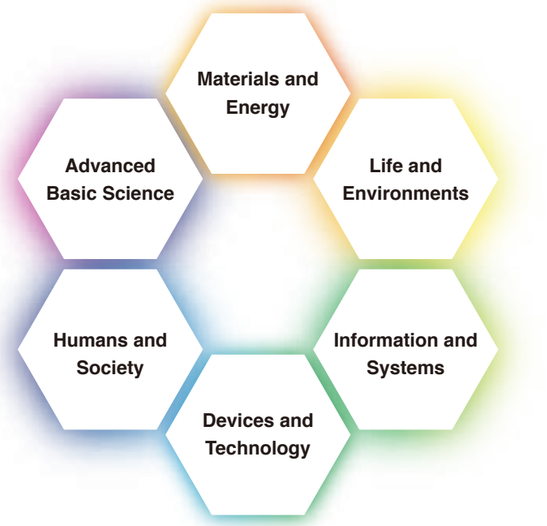


Six Research Areas

FRIS has established 6 research areas covering almost all academic disciplines.

- **Materials and Energy**
- **Life and Environments**
- **Information and Systems**
- **Devices and Technology**
- **Humans and Society**
- **Advanced Basic Science**

FRIS researchers focus on their own research fields, but they also aim to go beyond their core research fields to pursue cross-disciplinary fusion and actively engage in exchange and collaboration with researchers in other fields.



Divisions

Two Research Divisions and the Managing and Planning Division

FRIS consists of the Advanced Interdisciplinary Research Division, in which full-time faculty members are assigned to each field of study; the Creative Interdisciplinary Research Division, in which young researchers conduct advanced research across disciplines; and the Managing and Planning Division, which supports the research divisions' activities.

Mission 1

Promoting Advanced Interdisciplinary Research

Full-time faculty members in the Advanced Interdisciplinary Research Division have their own perspectives to promote high-level interdisciplinary research in 6 research areas. FRIS further supports the advancement of cross-sectional research by offering open-space environments to exchange ideas and information among different fields.

Activity of FRIS
[Senior Researchers]

48	6.86	2.08	15.0%
Publications in 2019	Publications per researcher in 2019	Field-weighted citation impact (FWCI) in 2013 - 2018:	Percent of papers in the top 10% of FWCI in 2013 - 2018:

When metals and ceramics are composited at nanoscale, they exhibit unprecedented functional properties. We have discovered new multi-functional properties such as the Tunneling Magneto-Dielectric (TMD) effect and the Tunneling Magneto-Optical (TMO) effect. Through interdisciplinary research in magnetic physics, medical engineering, and materials science, we are pioneering a new field of nano-composite thin films with new functions.

Hiroshi Masumoto
Professor
Materials and Energy

RESEARCH TOPICS
■ Tunneling Magneto-Dielectric (TMD) and Tunneling Magneto-Optical (TMO) effect materials by metals-ceramics nano composite structures
■ Development of osteoconductive implant materials by plasma oxidation of metallic titanium

Analyzing the interfaces between the electrolyte solutions and the electrodes for lithium secondary batteries, fuel cells, next generation batteries and molecular electronic devices is important for developing electrochemical energy conversion devices. Our present study investigates the behavior of molecules at the interface with In situ Raman spectroscopy and focuses on the dynamical changes in the Raman spectra at different battery conditions.

Takashi Itoh
Associate professor
Materials and Energy

RESEARCH TOPICS
■ In situ Raman spectroscopy for battery active materials
■ Development of Zinc-air batteries, Lithium secondary batteries and fuel cells

I am a member of the theory team in the Event Horizon Telescope consortium, which captured the first-ever image of a black hole. Every day at FRIS, I am stimulated by chats with colleagues in other research fields. I also have published omnibus books with young researchers from FRIS and DIARE.

Kenji Toma
Associate Professor
Advanced Basic Science

RESEARCH TOPICS
■ Astrophysics: theory, simulations & observations

Crystal lattice rearrangement occurs immediately at room temperature when two metal film surfaces are in contact in a vacuum. We proposed the atomic diffusion bonding (ADB) technique, which is a room temperature bonding of wafers using this phenomenon and have been studying this technique. ADB is a key technology for creating new devices.

Takehito Shimatsu
Professor
Information and Systems

RESEARCH TOPICS
■ Atomic diffusion bonding technique for electric/optical devices.
■ High density MAMR/HAMR recording media.

Novel material properties induced by nanoscale local crystal structures are attracting attention. It is difficult to analyze such local structures with the use of conventional structure analysis methods. We have been developing a three-dimensional local structure analysis method by combining electron diffraction techniques with information science such as machine learning.

Kenji Tsuda
Professor
Advanced Basic Science

RESEARCH TOPICS
■ Development of a method to analyze 3D nanoscale local crystal structure and electrostatic potential using convergent-beam electron diffraction (CBED)
■ Application of machine learning to simulations of multiple scattering of electron diffraction

We are interested in the relationship between nanomechanics in the cell and cellular morphogenesis. We are analyzing how and why disruption of the cellular nanomachines in our body, such as molecular motor proteins and cytoskeletal proteins, leads to human diseases such as neurodegeneration, infertility, and blindness.

Shinsuke Niwa
Associate professor
Life and Environments

RESEARCH TOPICS
■ Molecular motors
■ Axonal transport

Random atomic structured materials such as amorphous or metallic glass have significantly different properties with those of conventional crystalline alloys and are anticipated to have industrial uses in the next generation. We address an important challenge by controlling the relaxation behavior of glasses to improve their mechanical properties and to contribute to their applications.

Junji Saida
Professor (concurrent post)
Advanced Basic Science

RESEARCH TOPICS
■ Control of relaxation state in metallic glass
■ Development of mechanical properties of metallic glass

Mission 2

Discovering Novel Interdisciplinary Research Within the University

One of the most important missions at FRIS is to identify and develop interdisciplinary research seeds that exist within FRIS and throughout Tohoku University. FRIS offers three research programs which aim to provide not only funding, resources, and space, but also opportunities to actively engage with researchers from other fields: the Support Program for Interdisciplinary Research, the Promoted Program for Interdisciplinary Research, and the Program for Creation of Interdisciplinary Research. To develop world-leading research, international collaboration is essential, therefore, FRIS also offers the Support Program for International Core for Interdisciplinary Research.

Although some of the titles and details of the programs have changed, a review of the achievements of these programs over the past 20 years shows that FRIS has been a pioneer in the development of current major academic research fields. The results of supported programs are often awarded prizes or featured in the press due to their advanced nature and newsworthiness, highlighting their importance for discovering and supporting interdisciplinary research.

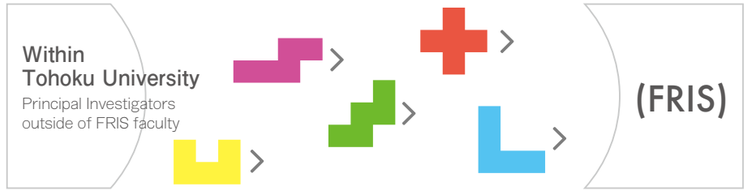
Process

〔Diverse research seeds〕

Programs

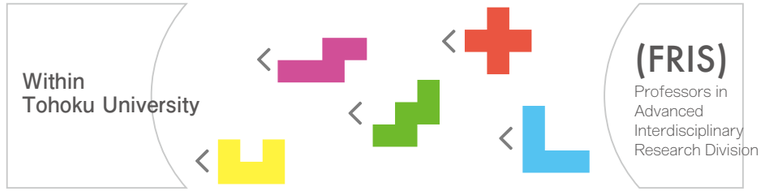
Support Program for Interdisciplinary Research

A three-year grant for supporting interdisciplinary research by researchers from several departments in Tohoku University. This program focuses on promoting a novel interdisciplinary research topic through active exchange, discussion, and cooperation among various fields.



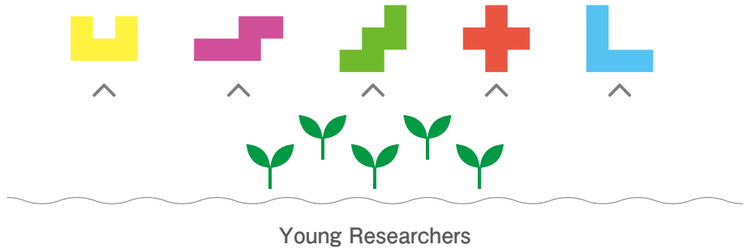
Promoted Program for Interdisciplinary Research

A three-year grant open to research groups led by faculty members of the Advanced Interdisciplinary Research Division, which supports research projects aimed at pioneering a novel interdisciplinary field with growth potential.



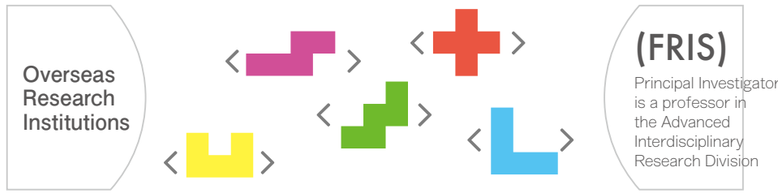
Program for Creation of Interdisciplinary Research

A two-year grant to support early-stage pioneering interdisciplinary research. It is open to young researchers in Tohoku University.



Support Program for Intenational Core for Interdisciplinary Research

This program supports interdisciplinary research conducted with overseas partners that opens new frontiers of science.



Mission 3

Fostering Young Researchers

Through international recruitment, FRIS selects and supports young researchers approaching emerging interdisciplinary research from new perspectives. They join FRIS as assistant professors in the Creative Interdisciplinary Research Division, and work in collaboration with researchers in the university's graduate schools, research institutes, and the Division for Interdisciplinary Advanced Research and Education (DIARE). By supporting outstanding young researchers, FRIS aims to create new academic fields and foster top-level researchers who will be active internationally. Additionally, Tohoku University aims to utilize FRIS to build the "Tohoku University Tenure-track System" to provide stable and independent research environments for especially talented researchers.

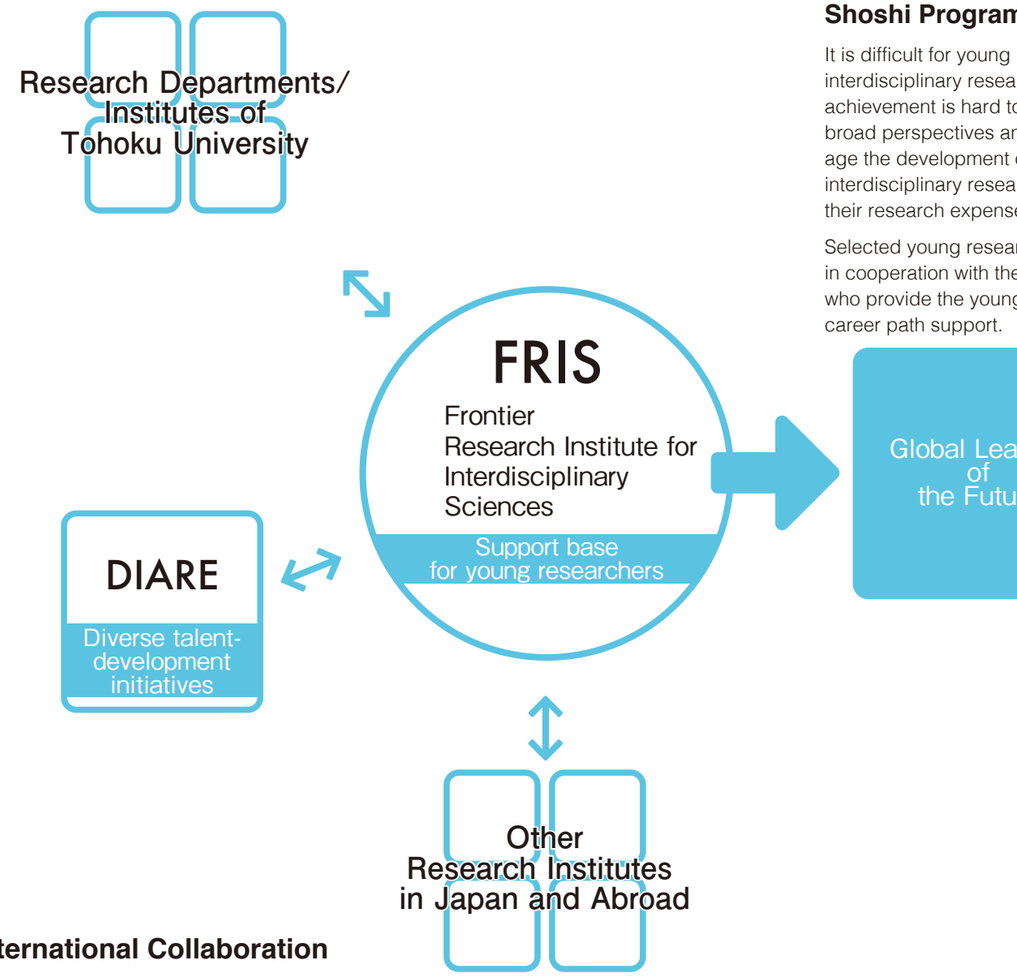
Diagram

● Cooperation with Departments and Laboratories (Tohoku University Tenure-track System)

Young researchers at FRIS are trained in close cooperation and collaboration with other departments and institutes in the university. Young researchers in the Creative Interdisciplinary Research Division appoint professors or associate professors from Tohoku University as mentors who support them by providing support such as access to experimental space and facilities. Each young researcher is, however, guaranteed an independent research environment. The director of the relevant department, as well as the mentor and his/her department head share information regarding the research activities of young researchers and help them obtain stable research positions.

● Division for Interdisciplinary Advanced Research and Education (DIARE)

Assistant professors at FRIS collaborate with graduate students selected by DIARE in a variety of seminars, and for planning and executing symposiums. They maintain close cooperation through research and education.



Activity of FRIS
[Young Researchers]

176	4.19	1.42	16.3%
Publications in 2019	Publications per researcher in 2019	Field-weighted citation impact (FWCI) in 2013 - 2018	Percent of papers in the top 10% of FWCI in 2013 - 2018

Shoshi Program

It is difficult for young researchers to develop their skills and careers in fields of interdisciplinary research where competitive funding is scarce and the potential for achievement is hard to forecast. Since society needs talented people possessing broad perspectives and multifaceted thinking, MEXT funds programs that encourage the development of such talent. FRIS recruits young researchers interested in interdisciplinary research from all over the world (for five-year terms) and covers their research expenses (up to 2.5 million yen).

Selected young researchers appointed as assistant professors carry out research in cooperation with their mentors. Mentors are professors or associate professors who provide the young researchers with research environments, guidance, and career path support.

Support for International Collaboration and Presentation in International Conferences

The purpose of this program is to foster internationally active young researchers and form networks for international interdisciplinary research. We provide for the living expenses of young Tohoku University researchers engaged in collaborative research at overseas research institutes for two to four weeks, and the travel expenses of young researchers and graduate students giving presentations at academic conferences outside Japan.

Creative Interdisciplinary Collaboration Program

This program aims to support interdisciplinary research by young researchers at FRIS.

For selected applicants, funds are allocated for equipment, consumable supplies, travel (including for international collaboration), publication, rewards, and/or staffing expenses for the promotion of advanced interdisciplinary science.

Mission 3

Fostering Young Researchers

FRIS regularly organizes seminars and workshops to promote interdisciplinary research and plans, and it implements a wide range of in-depth discussions with members from all fields. We also support outreach activities and the dissemination of FRIS research results.

Seminars, Workshops, Omnibus Lectures

■ Hub Meeting

Once a month, all FRIS members get together for a research presentation seminar. Researchers and students from the university's faculties and research institutes participate in the seminar, and breakthroughs are shared through cross-disciplinary discussions.

■ FRIS Retreat

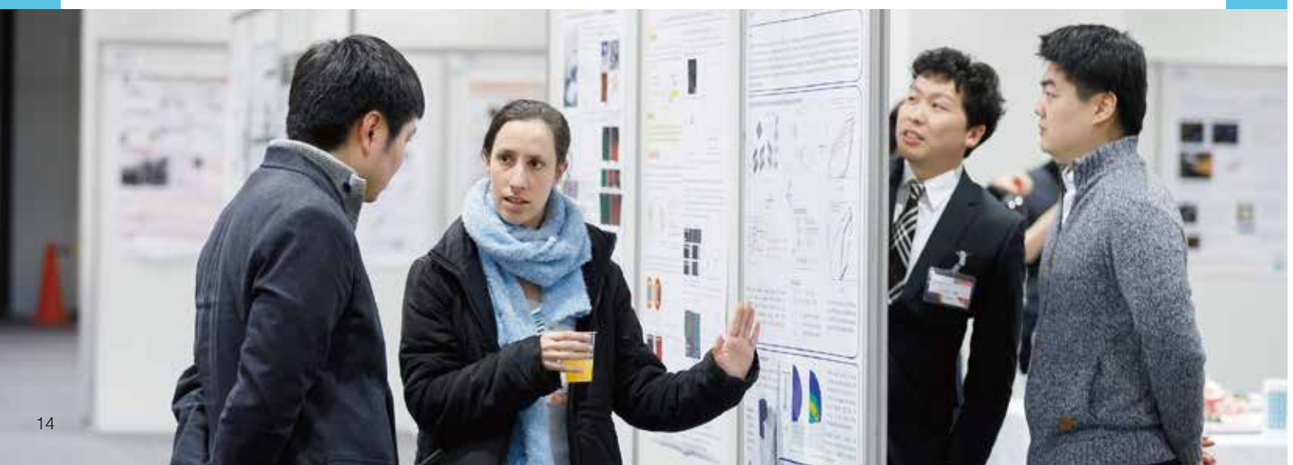
Once a year, all FRIS members meet off-campus to exchange ideas from different fields. The free discussions in a place apart from the usual university environment create opportunities for new discoveries.

■ Joint Interdisciplinary Research Seminar

About once a month, FRIS, in collaboration with the Division for Interdisciplinary Advanced Research and Education (for more about DIARE, see pp. 12–13), holds a joint interdisciplinary research seminar with doctoral and master's students selected by DIARE. In summer, about 150 people join a big poster session as the FRIS/DIARE Joint Workshop.

■ Other Open Opportunities

FRIS supports young researchers with independently planning seminars and workshops. FRIS also offers lectures by young researchers in an omnibus format, as part of Tohoku University's educational programs.



Others

FRIS Annual Meeting

Katahira Matsuri Festival

Hyakkaryoran

Outreach Activities, etc.

■ FRIS Annual Meeting

At the FRIS Annual Meeting, faculty members and the principal investigators of research programs present their research results at the end of each academic year.

■ Katahira Matsuri Festival

The Katahira Matsuri Festival is a public event planned by the Alliance of Research Institutes and Centers at Tohoku University that is held every other year. FRIS members participate to present their research activities and share the wonders of science.

■ Lectures, etc.

FRIS faculty members individually organize many events related to their research for the public.

■ Book Publication

The second volume of an omnibus book on the significance and appeal of interdisciplinary exchange was published by young researchers from FRIS and DIARE doctoral research education students (*Hyakkaryoran: Young Researchers' Interdisciplinary Frontiers*, vol. 2, Tohoku University Press).

Planning Division

Support and Dissemination of Interdisciplinary Research Activities

FRIS conducts the following activities to inspire researchers who are involved in interdisciplinary research and to encourage them to broaden the scope of their work.

■Collecting results, preparing evaluation materials, managing websites, and producing PR materials.

■Managing and administering research admissions and faculty recruitment for the Creative Interdisciplinary Research Division.
■Providing support for planning and organizing seminars, workshops, symposia, and the annual meeting.

For inquiries

Email: kikaku@fris.tohoku.ac.jp / Phone: 022-795-4353 (Specially Appointed Associate Professor Kazuyuki Suzuki)

Profiles
of young researchers

Materials and Energy

Hanae Aoki
Research Fields High frequency soft magnetic thin film, Multifunctional material

Hiroshi Ueno
Research Fields Physical organic chemistry, Nanomaterials science

Jiuhui Han
Research Fields Electrochemistry, Porous Materials, Transmission Electron Microscopy

Yasukazu Daigaku
Research Fields DNA replication, Mutagenesis

Yuichiro Nakajima
Research Fields Epithelial cell biology, Tissue homeostasis, Environmental responses

Yuji Nashimoto
Research Fields Biomedical engineering, Electrochemistry, Microengineering

Yuta Kudo
Research Fields Natural product chemistry, Organic chemistry, Biochemistry

Kohei Shimokawa
Research Fields Energy materials, Electrochemistry

Rui Yamada
Research Fields Nonequilibrium materials, Materials processing, Powder metallurgy

Takuya Mabuchi
Research Fields Quantum engineering, Molecular fluid engineering, Material science and engineering

Tuan Hung Nguyen
Research Fields Fundamental theory and simulation of materials intelligence for energy applications

Profiles
of young researchers

Information and Systems

Sae Kaneko
Research Fields Visual Perception, Experimental Psychology

Fumihiro Kaneda
Research Fields Quantum optics, Quantum measurements, Quantum information technology

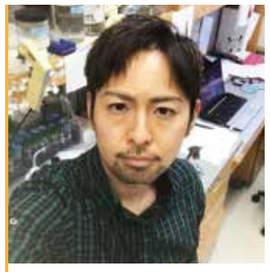
Kotaro Yasui
Research Fields Bioinspired robotics

Yang Cao
Research Fields Nano magnetism, Materials processing engineering

Profiles
of young researchers

Life and Environments

Hiroki Ida
Research Fields Electrochemistry, Probe microscopy, Live cell imaging



Joji Kusuyama
Research Fields Endocrinological Metabology, Exercise Physiology, Oral Biology

Nobuyuki Matsumoto
Research Fields Optomechanics

Sai Sun
Research Fields Cognitive and Social Neuroscience, Psychephysics, Neuroeconomics

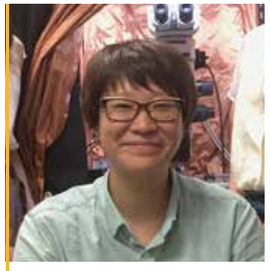
Profiles
of young researchers

Devices and Technology

Yuki Suzuki
Research Fields Nanobiotechnology

Kozue Shiomi
Research Fields Behaviour, Movement Ecology, Cognitive Ecology

Shinichi Sato
Research Fields Synthetic Organic Chemistry, Chemical Biology



Tomomi Tsunematsu
Research Fields Sleep research using mice, Electrophysiology

Toshiharu Ichinose
Research Fields Behavioral genetics, Memory consolidation, Dopamine modulation

Chrystelle Bernard
Research Fields Dynamics behavior of polymers, cold-spray

Hiroya Abe
Research Fields Biosensor, Energy catalysts, Polymer chemistry, Biomaterials, Bioinspired materials

Hisashi Kino
Research Fields Semiconductor Engineering

Takuro Ishii
Research Fields Medical ultrasound imaging, Biofluid dynamics, Computer-aided diagnostics, Urology

Yuanyuan Guo
Research Fields Bioelectronics, Multifunctional fibers and sensors, Neural engineering

Yusuke Sato
Research Fields Molecular Robotics, Biophysics, DNA nanotechnolgoy

Yuta Yamane
Research Fields Condensed Matter Physics and Spintronics

Chaoliang Zhang
Research Fields Spintronics, Magnetism, Magnetic materials

Masaki Yamada
Research Fields Particle physics, Cosmology

Naoya Kitajima
Research Fields Physics of the early universe, Particle physics beyond the standard model

Satoshi Iihama
Research Fields Magnetism, Spintronics, Photo-spintronics

Seiji Kamada
Research Fields High pressure and temperature experiments, High pressure mineral physics

Profiles
of young researchers

Humans and Society

Alimu Tuoheti
Research Fields History of thought, Religious studies, Theory of comparative culture, Area studies

Kaoru Kakinuma
Research Fields Sustainability, Socio-ecological system, Climate change and migration

Kexin Xiong
Research Fields Psycholinguistics, Neurolinguistics, Second Language Acquisition

Shimpei Endo
Research Fields Quantum physics, Few- and many-body problem

Shuhei Obara
Research Fields Astro-particle physics

Tomoki Kimura
Research Fields Planetary physics: dynamics and evolution of planetary interior, surface, atmosphere, and space

Yasunori Okamoto
Research Fields Bioinorganic chemistry, Protein engineering, Systems catalysis

Kohei Tamura
Research Fields Anthropology, Cultural evolution, Archaeological informatics

Tomokatsu Onaga
Research Fields Network science, Mathematical modelling

Yueh Hsuan Weng
Research Fields AI and Law, Legal informatics, Social robotics, Robot ethics

Yuta Nakayasu
Research Fields Materials processing engineering, Eco-friendly lifestyle creation

Yohei Kawazura
Research Fields Plasma physics, Turbulence, Hamiltonian mechanics

Profiles
of young researchers

Advanced Basic Science

Daniel Pastor-Galan
Research Fields Geology

Kohei Ichikawa
Research Fields Observational astronomy, Astrophysics

Masaki Okumura
Research Fields Structural biology, Protein Science, Biochemistry

Frontier Research Institute for Interdisciplinary Sciences, Tohoku University

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Phone: 022-795-5755
Fax: 022-795-5756
Website: https://www.fris.tohoku.ac.jp/en/

Access

Rail / Take the Sendai Subway Tozai Line to Aobayama Station (15 minutes from Sendai Station), take the North 1 Exit, and walk 4 minutes to FRIS. 250 yen.

Taxi / 15 minutes from Sendai Station. About 2,000 yen.