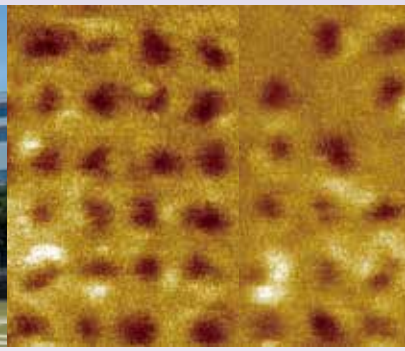
TOHOKU UNIVERSITY

New Industry Creation Hatchery Center







NICHe

Greeting from the Director of NICHe

We propose models of industry-academia collaborations that promote the practical application of research findings.

The New Industry Creation Hatchery Center (NICHe) was established in April 1998 with the aim of contributing to the revitalization of domestic and regional industries and the creation of new industries by conducting advanced and original research in collaboration with the intellectual resources of Tohoku University and industry. In other words, its important mission was to utilize the seeds of the most advanced university for proposing to society the practical application of new technologies/products and the creation of new industries to meet the demands of society. To achieve this goal, we have launched a series of cutting-edge research projects selected from the entire Tohoku University, and we are implementing technological developments and their social implementation through industry-academia cooperation, with support from the staffs of the Planning Office for Development strongly promoting the projects in cooperation with researchers.

Industry-academia collaboration is now very common in most universities and departments, but the structure of NICHe, which can be described as an aggregation of industry-academia collaborative projects by faculty members devoting themselves completely to research and development, is probably a rare example. And the management is characterized by a flexible personnel system based on external funding, in addition to securing dedicated research space and environment with an emphasis on security, such as access control and high-performance information network systems. We also have a support system that includes practical application-oriented research/development planning, such as securing external funding and entrepreneurship, research integrity management, such as conflict of interest and security, and appropriate fund management.

As for research projects in NICHe, they were redefined in FY2022 and have been promoted under a new system since FY2023. There are five types of projects: research and development projects that in principle last five years (full-fledged type); projects in the preparatory stage (preliminary type); human resource development for the purpose of re-educating and re-skilling working people (educational type); academic activities that contribute to improving the research status of Tohoku University (academic type); and challenges that are expected to "make it big" thereafter (dawn type). As a result, a total of 22 projects, both old and new, are underway in FY2024, including those that have progressed from the preliminary type to the full-fledged type.

Tohoku University is the only candidate for accreditation as a "University for International Research Excellence" and has been developing and strengthening the systems in a wide range of areas in preparation for accreditation. In April 2024, the long-prepared Coalition Beamline at the 3 GeV Synchrotron Radiation Facility (Nano Terasu) started full operation. In these times, there is no doubt that society will increasingly demand that Tohoku University strengthen its international competitiveness in a wide range of research fields and the social implementation of research results. The targets for business achievement goals required for NICHe, which specializes in industry-academia collaboration, are extremely high, but we will return to our mission and develop cutting-edge research with even greater effectiveness and social impact.

NICHe is located in the Aobayama Campus of the University and close to the entrance/exit of Aobayama Station for the Sendai City Subway, of which access tune is only two hours from Tokyo Station. We hope that you will take advantage of NICHe for its convenient accessibility and wide range of research fields. We look forward to your continued understanding and support.

July 2024

Director Prof. **Hiroo Yugami**

Tohoku University, New Industry Creation Hatchery Center

NICHe's Missions

NICHe is one of the inter-Department institutes for education and research in Tohoku University.
Our Mission is to respond to the needs of society by creating new technologies and productds as well as exploring new uses and industries for these creations. Original and cutting-edge research is carried out in collaboration with industry.
NICHe is a research center providing solutions for the problems of industry and society by cooperative research projects based on our university's potential.

NICHe Guideline for Project

1. World Leading Research 2. Goals and Timeframes 3. Large Scale Research Endeavours 4. External Funding

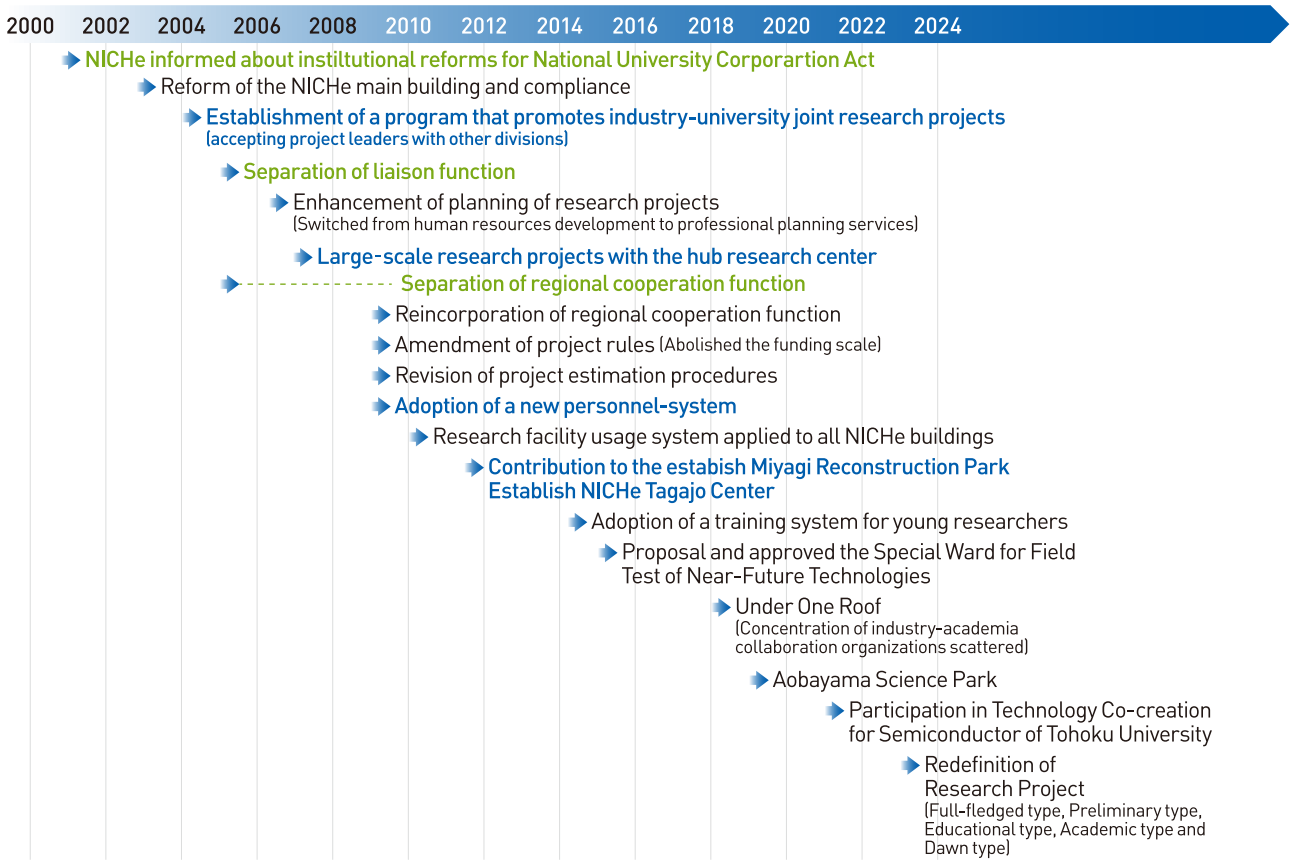
- Research Spaces with Ensured Confidentiality*
- Planning of Collaborative Research (fund procurement, support for start-ups, clerical work)
- Concentrated Research Environment (free from teaching and administrative duties)

Management of Collaborative Research

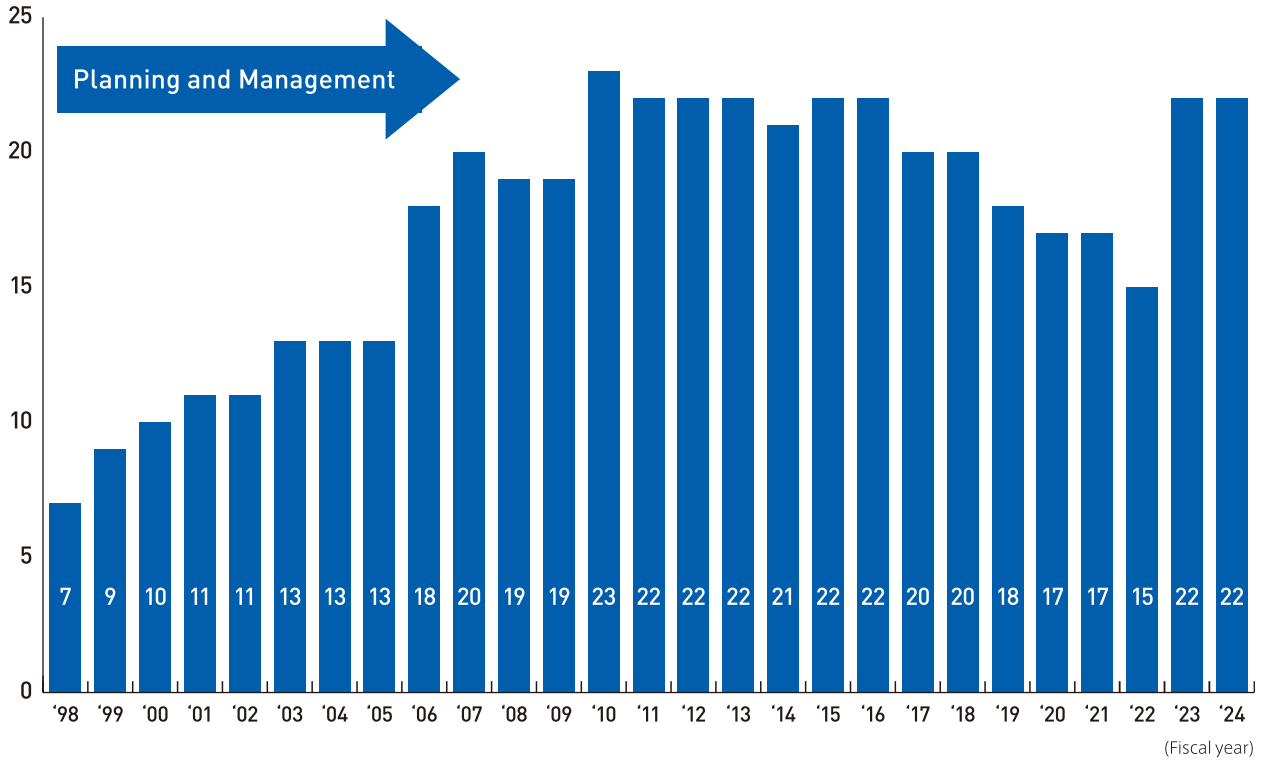
*Confidential Information Management

NICHe's buildings and areas are under strict entry and exit control to protect research and business confidentiality.

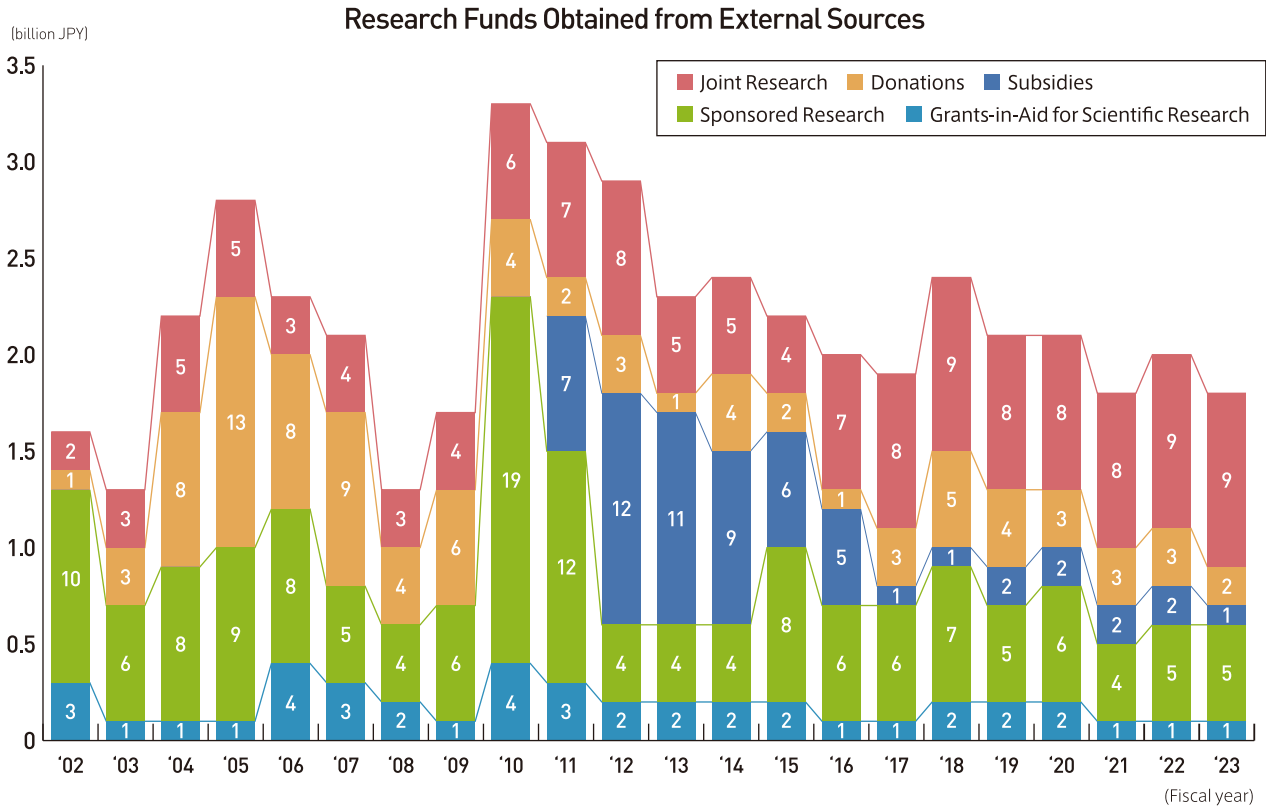
History of NICHe



Number of Project



Research Funds



Facilities

NICHe has four research buildings on the Aobayama Campus of Tohoku University.

New Industry Creation Hatchery Center

Main Building

[OUTLINE]

The main building, built for industy-university joint research, has six stories with a total inside space of 4,600 m^2. The first floor is allocated to the Planning and Development Division and administration. The third to sixth floors are allocated to research projects. Entry to and exit from each floor are monitored 24 hours to secure research confidentiality.

[FEATURES]

The second floor houses Head Office of Enterprise Partnerships, and Tohoku Techno Arch Corporation (TLO), while the Tohoku University Collaboration Business Incubator (T-Biz) is located next door, making this a centralized facility for industry-academia collaboration functions. In addition, card gates are installed at the entrance and exit of each room on the laboratory floor to control entry and exit, ensuring strict confidentiality.

Fluctuation Free Facility

for New Information Industry

[OUTLINE]

This facillity was created in order to bring about a leap forward in technological advances for Japan's semiconductor / flat panel display field. The creation of this facility was supported by those in the industrial world who agreed with the "New Semiconductor / Display Industry Project" developed by Tohoku University. The facility contains six stories and 6400 m^2 of indoor space.

[FEATURES]

In order to realize ultra fine processing and high precision measurements at a nano-meter level, this facility offers control to variants such as the detection of contamination, monitoring power-supply voltage fluctuations and other fluctuations such as power supply voltage and minute vibrations while maintaining thorough energy conservation measures. This facility is availabe for use from planning, designing and manufacturing for the conducting of tests in a consistent manner. From lower level one to the fourth floor there are two clean rooms with clean spaces (605 m^2 and 692 m^2), Professor's rooms and conference rooms on the fifth floor and the sixth floor contains CAD equipment, a measurement and evaluation room as well as a free space for researchers.

New Industry Creation Hatchery Center

Annex

[OUTLINE]

This facility was constructed by a grant from the Ministy of Economy, Trade and Industry under the title of the "2008 Grant for Public Facilities for Promoting the Attraction of Enterprises to Regions". To put the outcomes of research to practical use quickly, researchers from the university are engaged in research activities in collaboration with parties from large companies and small and medium-sized enterprises [SMEs], especially from domestic SMEs aiming to be global niche players.

[FEATURES]

To conduct large-scale research activities, each floor (446 m^2 for research spaces) has no partitions. Partitions can be erected when required. Entry and exit management are thoroughly maintained by keeping record to ensure confidentiality and to avoid unauthorized entry or contamination of research information. (Five-storied building with total area of approx. 3,500 m^2)

Hatchery Square

[OUTLINE]

The Hatchery Square was opened in September 2002 as a facility to foster research projects that specialize in the development of ventures with research resuts of the University as their basis. Creating university-originated ventures is the main objective of the facility.

[FEATURES]

This steel-framed building consists of two-stories with an area of approximately 1,000m^2, accommodating R&D offices, meeting rooms and a common space. The meeting rooms and common space are available for use around the clock as common rooms for tenants. Since the facility is open 24 hours, ID cards are required for both entry to and exit from the doorway and each office room for security reasons.

NICHe

TOHOKU UNIVERSITY
New Industry Creation Hatchery Center

6-6-10, Aramaki Aza Aoba, Aoba-ku, Sendai,
Miyagi 980-8579, Japan

[Planning Office for Development]
TEL. +81-22-795-4004　FAX. +81-22-795-7985

[General Affairs Section]
TEL. +81-22-795-7527　FAX. +81-22-795-7985

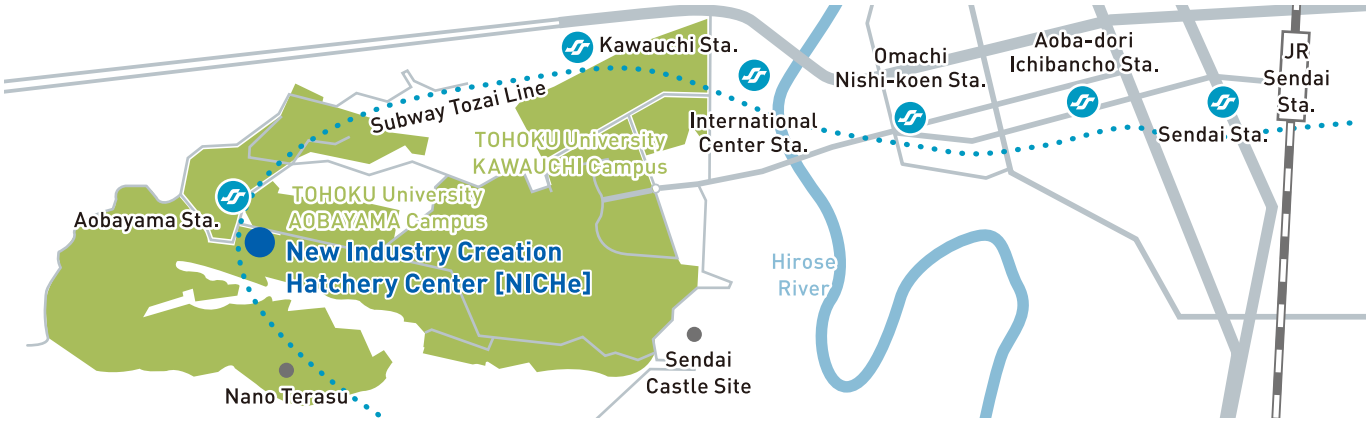
https://www.niche.tohoku.ac.jp/

[Subway Tozai Line]

Time / 9 minites, Fare / 250 yen
From "Sendai" station, take the Subway bound for "Yagiyama Zoological Park" ,
Get off at "Aobayama" station.

[Taxi]

Time / 20 minites,　Fare / 1,700 yen approx.
Taxi's available to NICHe from Sendai Station.



non VOC ink eco UV

The CO_2 Emission from Printing
Bookbinding of this pamphlet is given carbon offset through J-Credit scheme.

Date of Publication : July 2024

ORGANIZATION

This page was last modified:July.1,2024

Director
Professor Hiroo Yugami

Vice Director
Professor Takaaki Akaike
Professor Kiyotaka Nakagawa
Specially Appointed Professor Hiroshi Inomata
Specially Appointed Professor Keiichi Iwase

Advisor
Specially Appointed Professor Yasushi Uematsu

Steering Subcommittee

Project Leader's Meeting

Advisory Board

External Evaluation Committee

Research Project Selection Committee

Research Project Evaluation Committee

Director
Professor Hiroo Yugami

Planning Office for Development

Professor
Hiroo Yugami

Specially Appointed Professor
Hiroshi Inomata

Specially Appointed Professor
Keiichi Iwase

Specially Appointed Professor
Yasushi Uematsu

Professor
Yasuyuki Shirai

Specially Appointed Professor
Kazuo Sato

Associate Professor
Takeshi Kimura

Associate Professor
Kazumi Chiba

Specially Appointed Associate Professor
Youichi Hiratsuka

Specially Appointed Lecturer
Tsutomu Aida

Research Associate
Yuko Kobayashi

Techhnical Staff
Keiji Maeda

Techhnical Staff
Masaki Ageishi

Research Fellow
Keiji Sakuma

Clerical Assistant
Akiko Kadowaki

Senior Research Fellow
Masuo Okada

Industry Creation Section

Full-fledged Type

Life Science

Applied Oxygen Physiology Project
Professor Norio Suzuki

Advanced Food Biotechnology Research Project
Professor Teruo Miyazawa

Environment

Research and Development of Tough Robotics and AI Technologies for Real World Applications
Professor Kazunori Ohno

Establishment of R&D hub for environmental sentinel technologies enabling mass disease monitoring
Professor Daisuke Sano

Development of Environmentally Sustainable Devices with Combined Mechanical and Electrical Properties
Specially Appointed Professor Toshiyuki Hashida

Nanotechnology and Materials

Supercritical Technology for Nanomaterials
Professor Tadafumi Adschiri

Super-Large-Scale Computational Science Simulations for Industrial Development
Professor Momoji Kubo

Molecular Interface Engineering
Professor Kazue Kurihara

Joint Research Project on Interconnect Advanced Technology
Specially Appointed Professor Junichi Koike

Development of New Materials Based on New Metal Additive Manufacturing Technology
Specially Appointed Professor Akihiko Chiba

Development of Advanced Metallurgical Processes for Next Generation
Professor Tetsuya Nagasaka

Research and Development of Micro Systems for Safety and Security
Specially Appointed Professor Kazuhiro Hane

Development of Crystals and Application Devices Contributing to Sustainable Society
Professor Akira Yoshikawa

Innovative Technology Development for Diverse Risk Management -Towards Safe and Sustainable Society-
Professor Yutaka Watanabe

Information and Communication

Research on Crystal Growth, and Optical and Electrical Devices of Nitride Semiconductors
Specially Appointed Professor Tetsuya Suemitsu

Comprehensive Development of Advanced Technologies of Semiconductor Infra-Structures, Processes, Devices and Sensors
Professor Shigetoshi Sugawa

Development of Evaluation Technology Contributing to the Creation of Materials and Devices for Next-Generation Innovative Power Electronics Using Scanning Nonlinear Dielectric Microscopy
Specially Appointed Professor Yasuo Cho

Center for Holistically Integrated and Packaged System(TOHOKU CHIPS)
Associate Professor Takafumi Fukushima

Educational・Academic Type

Fundamental Improvement in Theoretical Materials Science and its Applications, and Enlightenment to Companies and Societies
Senior Research Fellow Yoshiyuki Kawazoe

Academic Type

Understanding and Treating Sarcopenia
Specially Appointed Professor Hideo Higuchi

Dawn Type

Development of Novel Materials for Photo-Spin Electronics
Research Fellow Rikizo Hatakeyama

NICHe Planning Project
Planning Office for Development

THE LIST of NICHe PROJECTS

Life Science　Environment　Nanotechnology and Materials　Information and Communication　Special Project