

Towards a University Driving Social Change with Integrative Knowledge



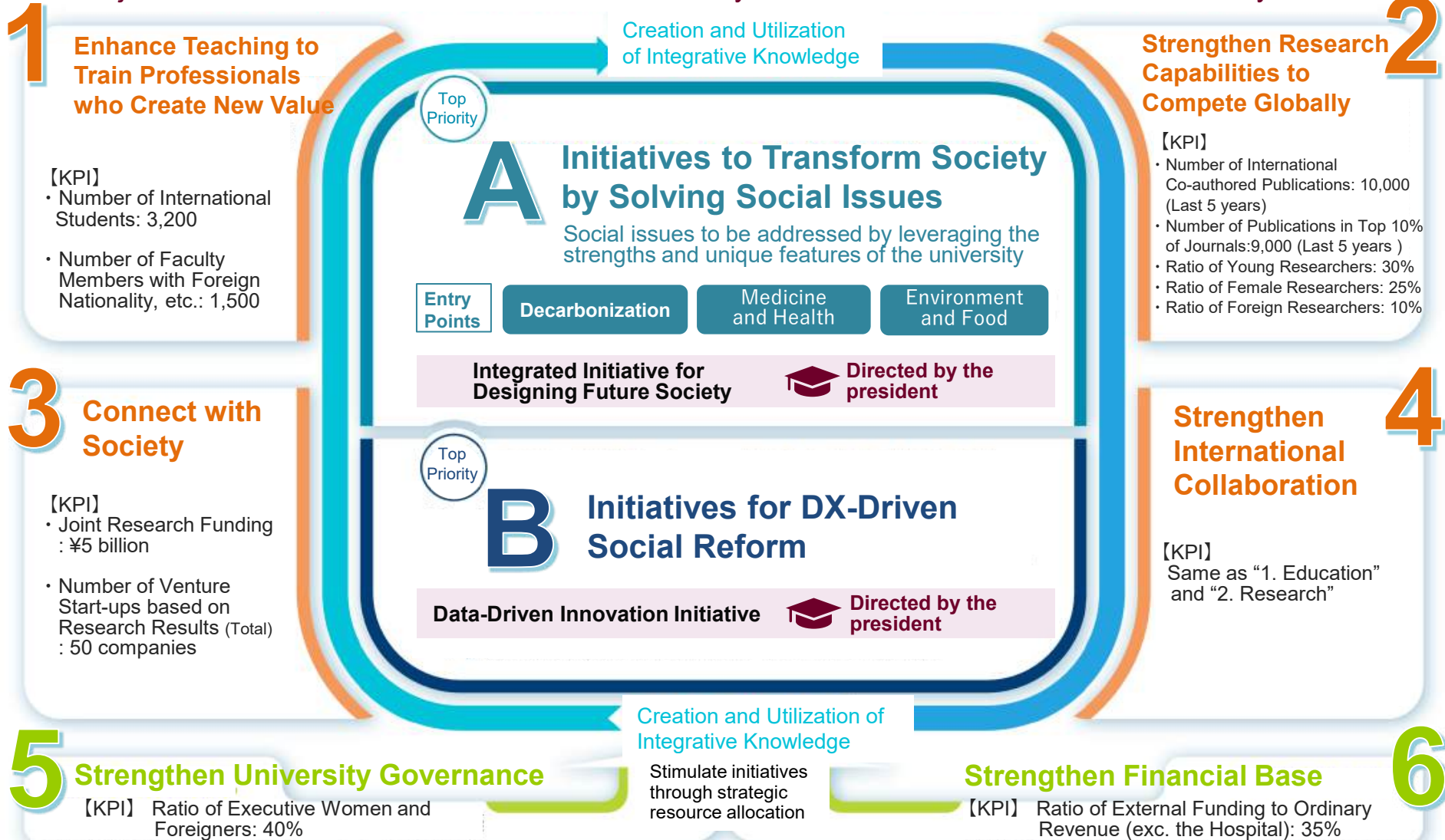
九州大学
KYUSHU UNIVERSITY



Towards a University Driving Social Change with Integrative Knowledge

Objective I: Become a knowledge platform for developing world-class research and education

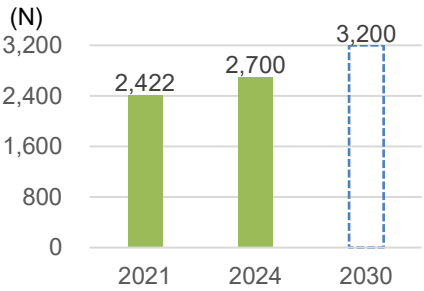
Objective II: Become the core of an innovation ecosystem that creates new socio-economic systems





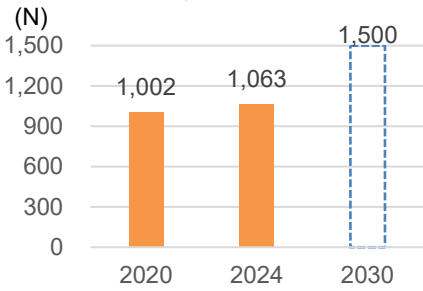
Number of International Students

See P.7



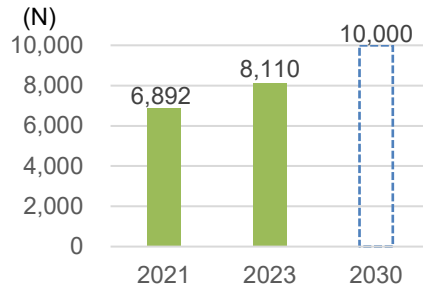
Number of Faculty Members with Foreign Nationality, etc.

See P.7



Number of International Co-Authored Publications (Last 5 years)

See P.10



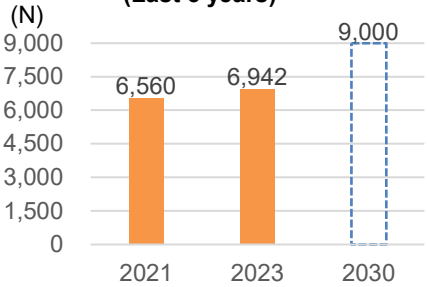
Impact !

Achieved the Ratio of Foreign Researchers and the Ratio of External Funding to Ordinary Revenue ahead of the target!

Chart Color ■ ... Progressed well ■ ... Need improvement

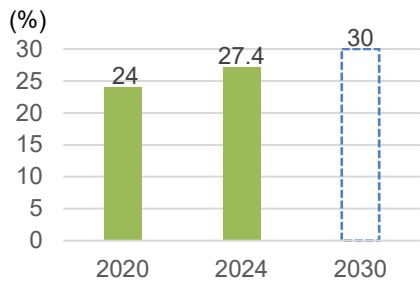
Number of Publications in Top 10% of Journals (Last 5 years)

See P.10



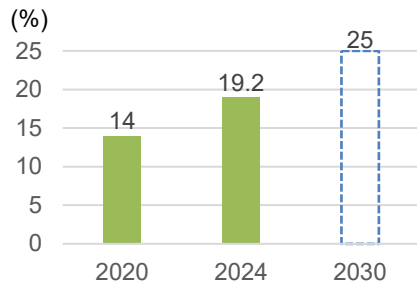
Ratio of Young Researchers

See P.11



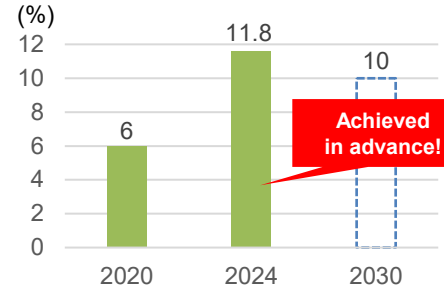
Ratio of Female Researchers

See P.11



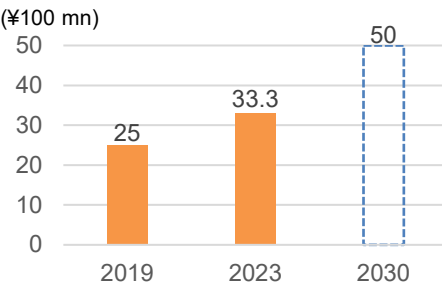
Ratio of Foreign Researchers

See P.11



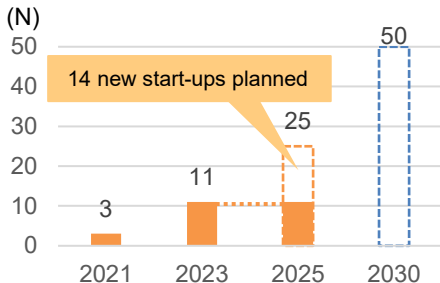
Joint Research Funding

See P.14



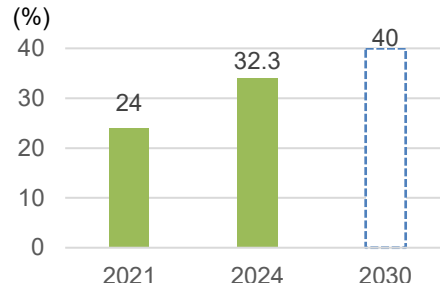
Number of Venture Start-ups based on Research Results (Total)

See P.14



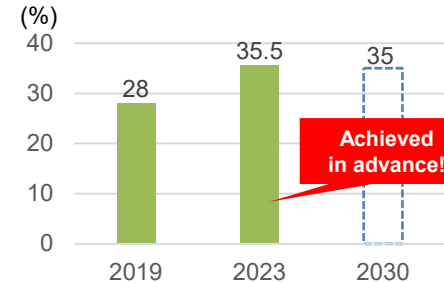
Ratio of Executive Women and Foreigners

See P.17



Ratio of External Funding to Ordinary Revenue (exc. the Hospital)

See P.18



QS Top 100 World University Rankings by Field (March 2023) : 2 Fields (Chemistry, Engineering - Mineral & Mining)

[Goal by 2030: 10 Fields]



Research Strategy

Foundation for Social Change and Open Innovation

- Developing the university's research strategy
- Identifying new strengths

Comprehensive Research Strategy Council

See PP.4-6

Integrated Initiative for Designing Future Society



- Collaboration with diverse stakeholders
- Promoting initiatives to solve social issues through the utilization of Integrative Knowledge

Stakeholder Engagement

Kyushu University Regional Collaboration Platform

- Strengthening collaboration with OPACK and various consortia

Society

Data-Driven Innovation Initiative

- Expanding data-driven education, research, and medicine
- Proposing models for a DX-based society

See PP.4,6

Kyushu University Open Innovation Platform Co., Ltd.

See P.14

- Establishing the Open Innovation Platform as an external corporation to further accelerate social implementation and resolution of social issues through industry-academia-government collaboration

Science

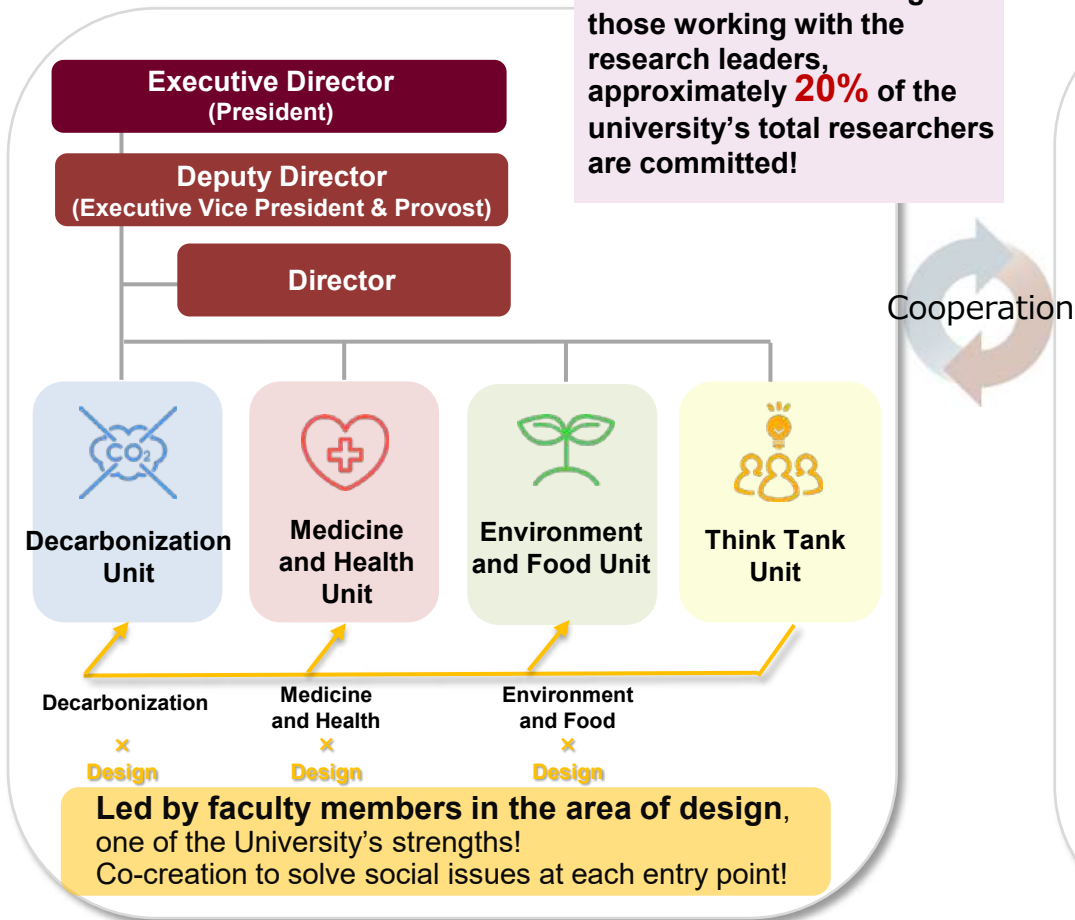
Technology (POC)

Industry (Commercialization)



Impact !

The project involves **106** research leaders across various fields! Including those working with the research leaders, approximately **20%** of the university's total researchers are committed!



Internal Organization



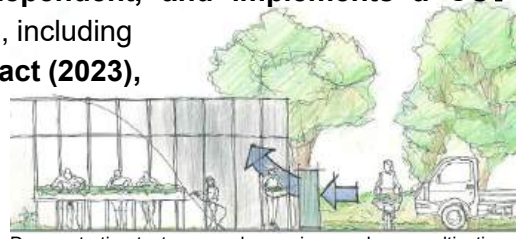
Energy / Medicine and Health / Environment and Food / Nature Sciences / Humanities and Social Sciences / Design



Decarbonization

Ultra Thin Separation Membrane for Direct CO₂ Capture from the Air

Developed the world's first innovative membrane separation technology that captures and concentrates CO₂ simply by filtering air through a membrane. The world's first locally produced and consumed DAC-U system, which is compact, location-independent, and implements a CO₂ conversion unit, has been realized. It can be widely implemented, including in urban areas with high CO₂ emissions. Established Carbon Xtract (2023), the first start-up directly funded by Kyushu University.



Demonstration tests are underway in greenhouse cultivation

Developed “amine-containing hydrogel particle membranes” that selectively and rapidly permeates CO₂ from combustion exhaust gas and air. Succeeded in designing a membrane separation device for CO₂ separation and removal in the manned pressurized lunar rover being developed by JAXA for the Artemis Project. Established JCCL (in 2020), a start-up from Kyushu University.

Impact !

CO₂ permeability over 20 times higher than conventional systems

Succeeded in designing a membrane separation device for CO₂ separation and removal in the manned pressurized lunar rover



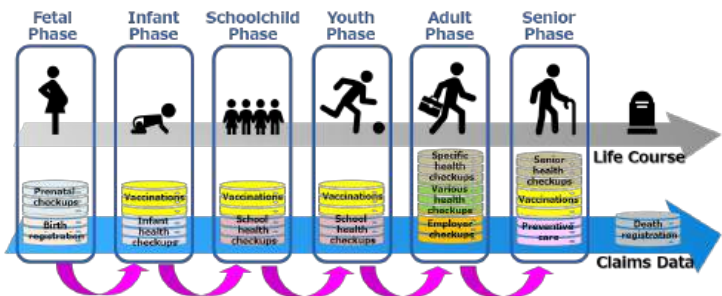
Medicine and Health

Municipal Infrastructure Database to Support Society 5.0

Developed Japan's largest database platform by integrating medical, nursing, health, and administrative data across the life course for more than 3 million people in 30 municipalities, thereby supporting regional health promotion. The use of this database successfully generated evidence for the effectiveness and safety of COVID-19 vaccines. This also marks Japan's first participation in the Global Vaccine Data Network.

Accelerating collaborative research to realize open science

- Collaborative Research Institutes with Signed Contracts
- The University of Tokyo
 - Osaka University
 - Tohoku University
 - Nagoya University
 - Hokkaido University
 - Keio University
 - National Center for Global Health and Medicine etc.



Impact !

25 research institutes are using this platform, and 30 papers are scheduled to be published by 2024

Awarded the 2024 Commendation for Science and Technology by the Minister of MEXT, Japan, in the development category

A Initiatives to Transform Society by Solving Social Issues – Environment and Food –

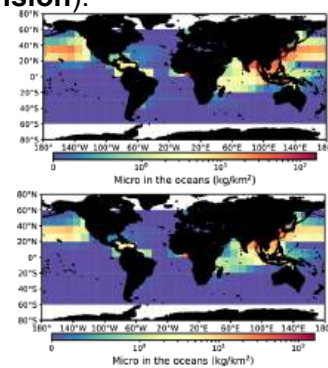
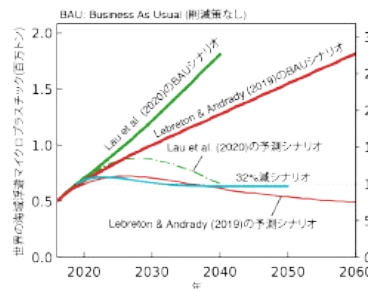


Environment and Food

Proposal for Numerical Targets for Reducing Plastic Waste Emissions into the Ocean

Developed the world's first model to predict the amount of plastic litter and microplastics floating/drifting in the global ocean. Based on this model, a numerical target (**32% reduction of runoff**) was proposed to achieve zero additional ocean plastic pollution by 2050 (**G20 Osaka Blue Ocean Vision**).

Also, provided a rationale for the Japanese government to present at the Intergovernmental International Negotiating Committee (INC) to discuss plastic reduction.



Impact !

Predicting the future of marine plastic pollution and promoting social change to achieve reductions

Top 10% publication rate : 46%

Top 1% publication rate : 21%



B Initiatives to Transform Society by Promoting DX



Digital Society Research

Development and Implementation of New Technologies for Data-Driven Agriculture

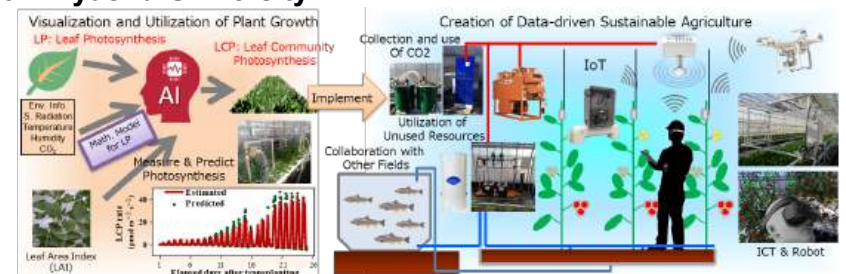
Researched and developed a new practical technology for environmental control such as efficient application of carbon dioxide according to the growth conditions of individual plants and their communities using AI based on environmental information (temperature, humidity, solar radiation) in horticultural facilities and image data of plant growth characteristics (flower and fruit counts, leaf area, etc.).

Demonstration tests are underway, including CO₂ capture and utilization.

Established YS Lab(2023) , a start-up from Kyushu University.

Joint Research Institutes

AGRIS, Fulta Electric Machinery, JCCL, Kobashi Industries, Kochi University IoT Collaborative Creation Center, Kounouen, National Institute of Technology, Kumamoto College, NARO, YS Lab, welzo, and others



Impact !

Reduced fossil fuel usage by 27% with the environmental control device, a result of joint research, while maintaining yields!

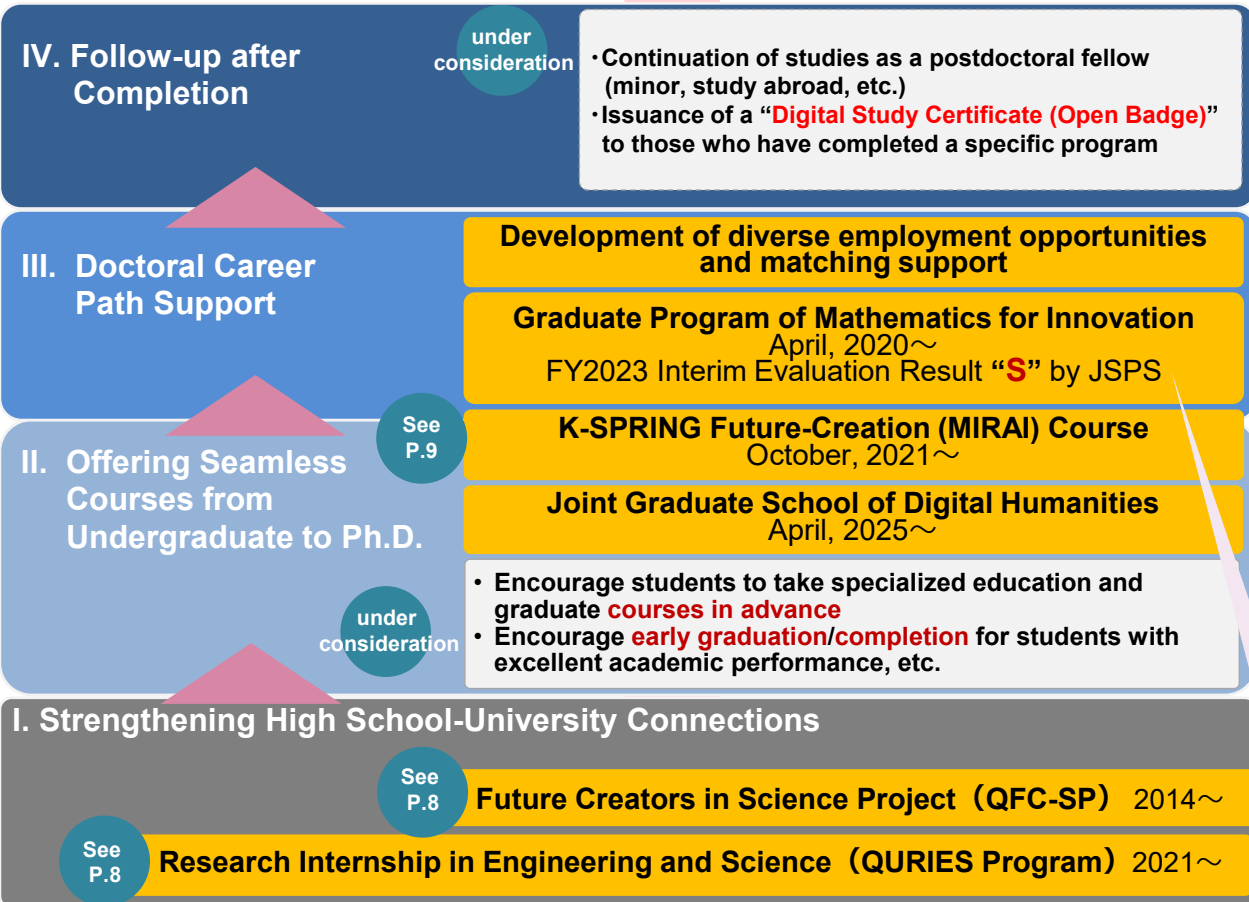


Promoting Organization For Future Creators (April, 2023)

Promote integrated reform of education from **high school-university connection** to **bachelor's, master's, and doctoral programs** in order to nurture **value-creating human resources** who can be active globally

Development and cultivation of excellent doctoral human resources!

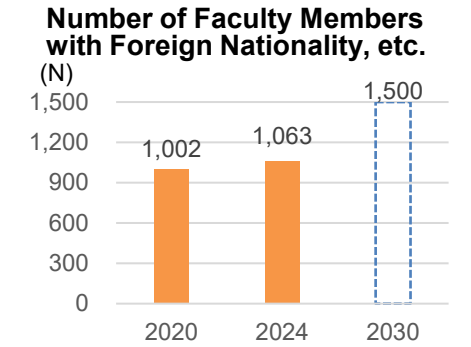
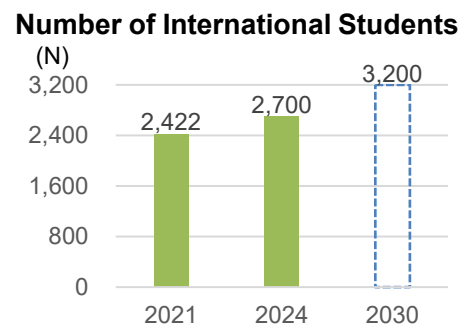
V. Support for the Finding and Development of Female Researchers



Identifying and nurturing high school students with a strong research mindset!

Globalization of Education

International Course	75
Double Degree	21
Joint Degree	2



[Initiative] Transition of positions from Researcher to Faculty
 [Measure] Expand Opportunities for Faculty to Send Abroad, etc.

Impact !

- **First** program to utilize the Collaborative Graduate School Program (the 3 liberal arts and sciences schools)!
- Establishment and implementation of **Japan's first** "WISE Doctoral System for Mature Students"



Distinctive High School - University Connection Program

Future Creators in Science Project (QFC-SP)	QURIES Program
<ul style="list-style-type: none"> ➤ Popular High School-University Collaboration Project ➤ High school students with outstanding motivation and ability, mainly from Kyushu and Yamaguchi prefectures ➤ Over approximately 15 months, students receive advanced and practical education through lectures on cutting-edge science, experiments, and hands-on training in university laboratories ⇒ Based on their motivation, scientific knowledge, skills, and critical thinking, they will develop their abilities to identify and solve problems 	<ul style="list-style-type: none"> ➤ Science and engineering research internship program for female high school students ➤ Providing opportunities to experience a cutting-edge research environment and stimulating research activities under the mentorship of faculty members in the science and engineering fields ⇒ Supporting the development and promotion of excellent young female researchers and engineers who will shape the future of academic research

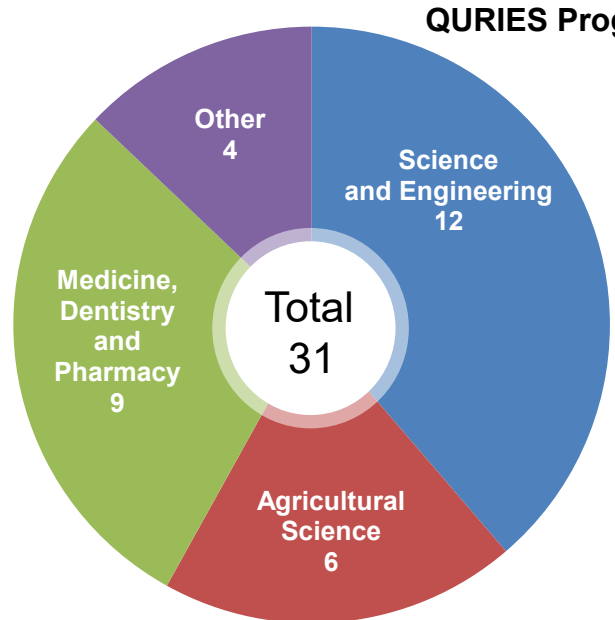
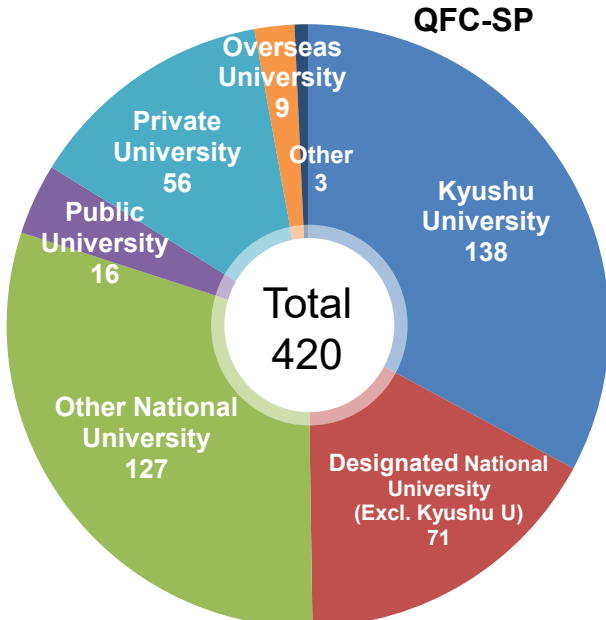
Impact !

- The graduate school admission rate for regular students is approx. 50%
Approximately 62% for QFC-SP students*
*Students who enrolled at the Kyushu university after completing the QFC-SP course
- **Some students go beyond Japan, continuing on to MIT (USA) and other universities abroad!**
- **Approximately 87% of students in the QURIES program enter science fields**

【University enrollment results of recent students】

(excluding unknown outcomes)

- Examples of Overseas University Admissions
- MIT (USA)
 - University of Cambridge (UK)
 - University of Washington (USA)
 - University of Toronto (CN)
- etc.



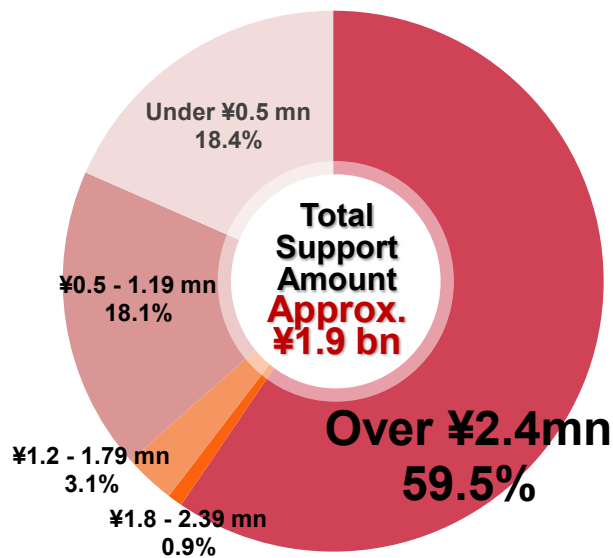


Status of Benefit-type Financial Aid

※As of May 2023

Amount	Number of Students
Over ¥2.4 million/year	601
¥1.8-2.39 million/year	9
¥1.2-1.79 million/year	31
¥0.5-1.19 million/year	183
Less than ¥0.5 million/year	186
Total	1,010

(Doctoral course students to be supported: Total 2,037)



Impact !

- Approx. 80% of students supported by the program are effectively **free of tuition fees!** About 60% of students also receive effectively **full coverage for their living expenses throughout the year!**
- While securing its **own financial resources (over ¥130 million)**, the program will further expand support by leveraging the doctoral support initiative!
- The total support in FY2023 is **more than double** that of FY2021!

Further expansion of support starting in FY2024 with the launch of the following programs

K²-SPRING

(Program to Cultivate Innovative PhDs for a Better Future)

Support Amount
Up to ¥3.25mn/y
+
Half tuition waiver

Developing innovative talent capable of creatively solving important challenges and shaping a better future

- Cultivating individuals with exceptional research skills, broad perspectives, interdisciplinary knowledge, international expertise, and advanced transferable skills
- Fostering outstanding individuals capable of advancing Japan's science and technology while driving innovations

Successor program to "K-SPRING", implemented in 2021

K-BOOST

(Synergetic Supporting Program for AI-Related Doctoral Students)

Support Amount
¥3.9mn/y
+
Half tuition waiver

Developing human resources with the ability to pioneer and lead the next-generation AI field

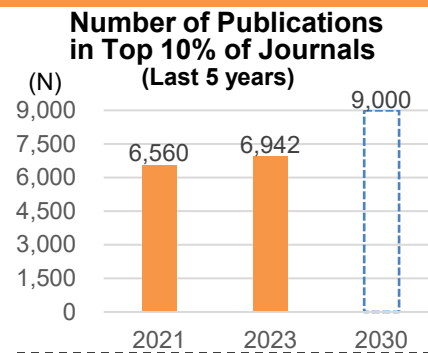
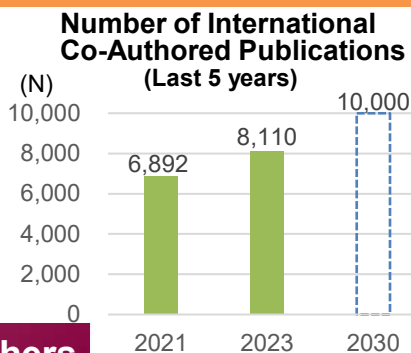
- Fostering skills as an AI engineer and data scientist, beyond simply using AI
- Nurturing professionals capable of keeping up with rapidly evolving AI technologies and integrating the most appropriate AI solutions into their research



Impact !

Encouraging continuous research with support tailored to diverse needs

Support exceeding ¥1.3 billion in FY2023
(Approx. 40% of President's Discretionary Expenses)



[Measure] Promoting Effective Research Support through IR Analysis

Top Level Researchers

Creation of Interdisciplinary and New Fields

Interdisciplinary Program of the Humanities and Social Sciences

Support for research funding for groups led by humanities and social sciences researchers to promote interdisciplinary research

Research Support

Internationalization of Research

Matching Fund Program

Joint Research Program with domestic and international research institutions aimed at promoting the development of young researchers through matching funds

- ① Domestic Research Institutes
RKEN OIST
- ② International Research Institutes
NTU SNJ

Recruitment and development of excellent young, female, and international researchers through the tenure-track system

University Reform and Revitalization System

Revitalize universities and faculties through a sustainable cycle of human resource management and a balanced, diverse age structure

Inamori Frontier Program

A scheme for recruiting and nurturing exceptional young researchers who aim to pursue creative and innovative research

Training of top-level researchers

Diversity and Super Global Training Program

Strategic training program for promising female and young researchers

World-leading Researchers Training Program

Strategic Training Program for World-Class Researchers

Human Resources Development

Research Start Program

Support the acquisition of KAKENHI by providing research funds to young researchers who have never been selected for KAKENHI (Aim to acquire within 3years)

World-leading Researchers Training Basics Program

Workshops for acquiring basic research skills

Basic Research Funds Support

- Support for Dispatch to International Academic Conferences
- Support for Proofreading Expenses for Foreign Language Papers
- Support for Article Processing Charge of International Academic Papers

Research Environment and Equipment

Equipment Sharing System (ShareAid), University-wide Rental Space, Free Quota System, Research Environment Improvement Project, Brain Bank, Spousal Employment System, Long-term Leave Support System

Support for Research Funding Acquisition

Campus Orientation/Seminar, Handbook for Applying for and Obtaining Grants-in-Aid for Scientific Research, Application Form Review and Mock Interviews

Promote Exchange and Collaboration among Researchers

Research Support Portal Site (KUCAN), Interdisciplinary Salon, ENCORE

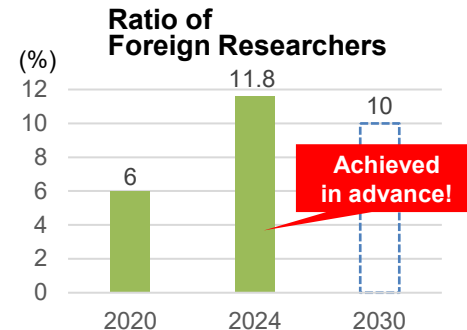
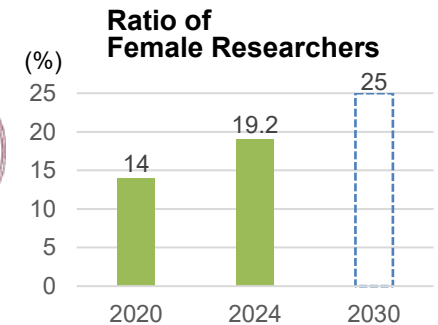
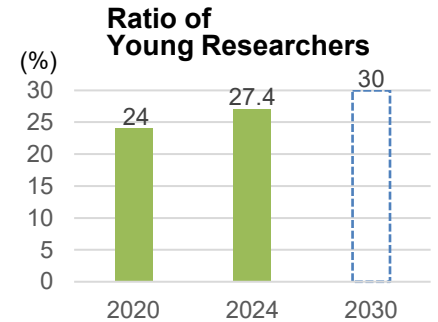
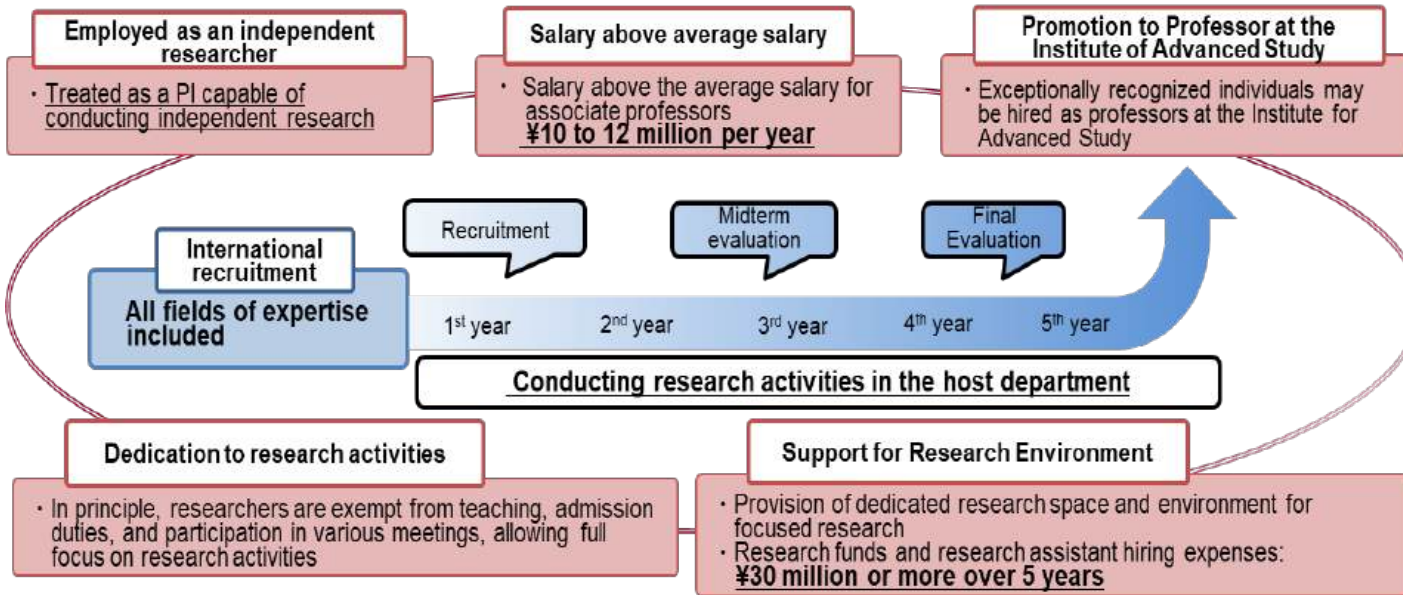


Inamori Frontier Program

- Recruiting excellent **young researchers** committed to advancing creative and innovative research
- Developing excellent talent to lead the future
- **Providing various incentives**

Impact !

For the first open call (in FY2023), **362 applicants** applied (with a competition ratio of over **70:1**), of which more than **50%** were from overseas





University Reform And Revitalization System

- In FY2019, the system was shifted from focusing on organizational proposals to a system aimed at recruiting and developing **young, female, and foreign researchers**
- Revitalization of the university and departments through a sustainable personnel cycle and optimization and diversification of age structure
- **Provide up to ¥8.9 million/year in support** for newly recruited researchers (faculty K)

Impact !

- **A total of 223 positions** reallocated between FY2012, when this program was established, and FY2024
- Faculty K's “number of cited publications per paper” and “ratio of Top 10% highly cited papers” are approximately **twice** those of faculty hired in the same field and position during the same period!

Diversity and Super Global Training Program

- Development of promising **female and young** researchers
- After completing a two-year training program, which includes an **8 week overseas training period in principle** and the **writing of an internationally coauthored paper**, trainees will acquire world-class research and teaching skills through practical experience and step up to higher positions

Impact !

- As of FY2023, a total of 51 trainees in the first five terms have taken the course **All 31 trainees** in the first three terms certified for completion to date have been promoted to higher positions
- In the Faculty of Agricultural Sciences, which has the largest number of participants, the ratio of **female professors** has increased from **3.4%** to **11.9%**

Schedule





Brain Bank System

To utilize the skills and experience of faculty members who have reached retirement age or retired early to promote education and research while also securing research time for current faculty members

Free Quarter for Research (FQR)

Faculty members are exempted from teaching and administrative duties for a set period (one quarter) to allow them to focus on research. Initially implemented at 5 research institutes and 2 centers

Initiatives to Promote Diversity

- Childbirth and Childcare Return Support: Financial support to restart research activities and ensure a smooth return to the research field after a break due to childbirth or childcare
- Research Assistants Support: Financial support for hiring research assistants to ensure that life events such as childbirth, childcare, and nursing care do not cause delays or interruptions in researchers' work
- Spousal Employment: Hiring of excellent researcher couples wishing to live together, either simultaneously or consecutively
- Long-term Leave Support: When a faculty member (lecturer, assistant professor) takes long-term leave of absence due to childbirth, childcare, nursing care, etc., a new faculty member is hired 3 months prior to the leave

etc.

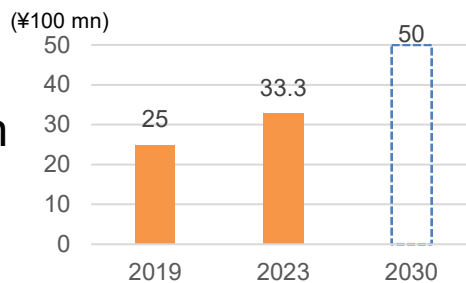
Impact !

In the Brain Bank, a total of 3,016 research hours were secured through 64 work matches in FY2023 alone!

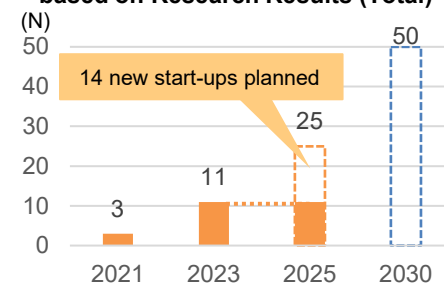


The Open Innovation Platform (OIP), established in 2022, was incorporated externally in 2024, leading to the creation of **Kyushu University OIP Co., Ltd.**

Joint Research Funding

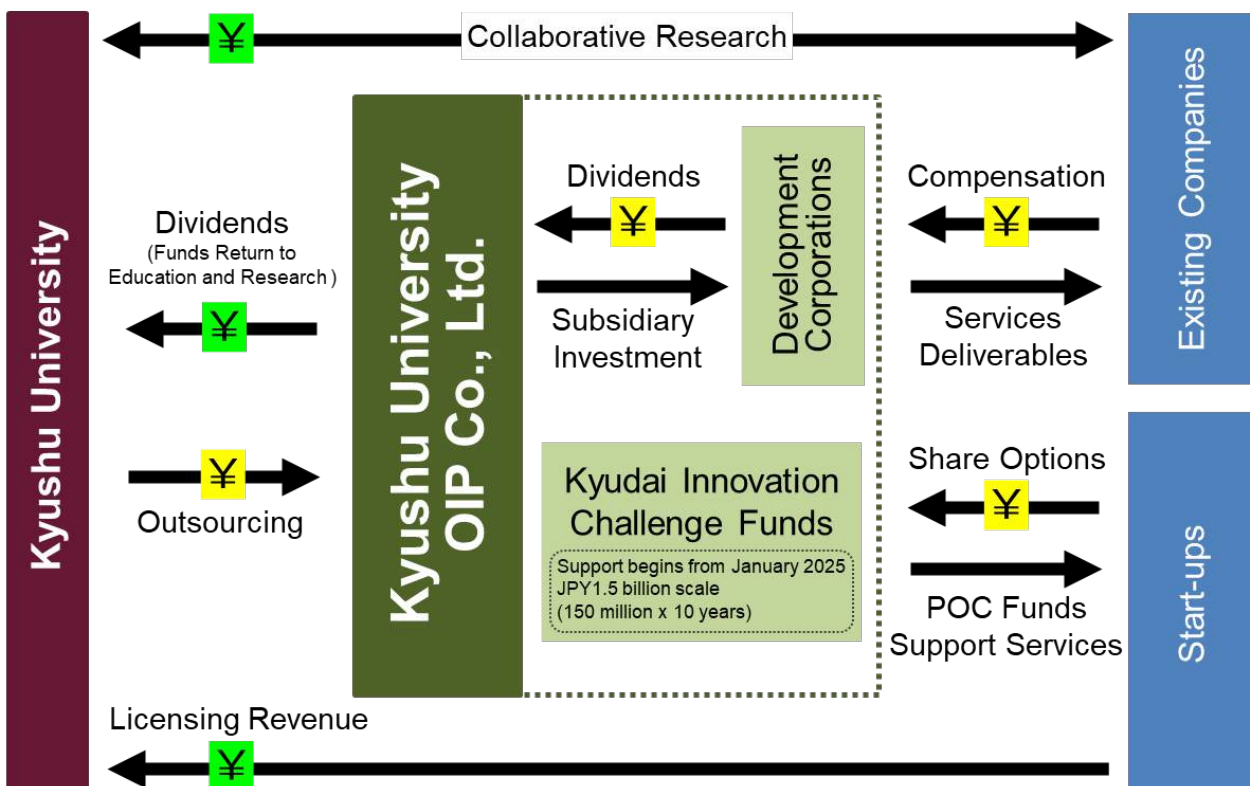


Number of Venture Start-ups based on Research Results (Total)



[Initiative] Establishment of Kyushu University OIP Co., Ltd.
 [Measure] Kyushu University Innovation Challenge Fund
 PARKS Start-up Creation Program, etc.

¥ University Revenues
 ¥ OIP Revenues



Impact !

- The objective is **to maximize the return of funds to university education and research**, not to pursue profits for Kyushu University OIP!
- **Japan's first external corporation of an entire industry-academia-government collaboration organization**
 ⇒ Speedy decision-making by a resourceful organization
- **The first Development Corporation was established in July 2024!**
 ⇒ EEUV Photon Corporation (the only company in Japan providing EUV light irradiation and analytical evaluation, essential for developing advanced semiconductors)
 ⇒ 10 additional projects are under consideration. Plans to establish one or two companies per year

Entrepreneurship Education

Developing **Japan's first comprehensive entrepreneurship education program that is systematically structured in stages, from basics to application and practice**, training venture entrepreneurs, social entrepreneurs, and new business implementers in large companies

GAP & STEP FUNDS



Grants for commercialization verification funds for business proposals based on faculty research outcomes. A total of 57 projects were supported from FY 2017-2023.

GAP FUNDS NEXT PROGRAM

Expansion of University Venture Creation

GAP CASE

Research Seeds of Consortium Participating Universities

Assign

CXO DATA BASE

Strong partnerships with local governments



CXO Bank Business

Creating a database of CXO growth talent and matching it with business operators

Venture support utilizing the corporate version of hometown tax payments

Providing total support of ¥60 million for 14 seeds in 2024

Cooperation

PARKS Start-up Creation Program



Providing total support of **¥6.2 billion** over the next 6 years

Impact !

First initiative in Japan to assign a pre-CXO to provide accompaniment and support. It was introduced to the LDP Diet Members Caucus for Start-up Promotion

The MEXT expects Kyushu University to **play a central role in expanding this initiative nationwide**



Listed on the Growth Market of the Tokyo Stock Exchange (Dec.2022) Received **the METI Minister's Commendation in the Intellectual Property Merit Awards 2024**



Raises **¥4.27 billion** in Series C funding round



Received **the JSPS President's Award** at the University Venture Award 2022

*Examples of Kyushu University-launched start-ups

Social Implementation as a Start-up



Collaboration with Overseas Universities



- 2001** Student Exchange Agreement
- 2016** Double Degree Program (Law)
- 2022** Double Degree Program (Engineering)
- 2023** Strategic Partnership Agreement

- 2010** WPI Overseas Satellite Agreement (I2CNER)
- 2019** Strategic Partnership Agreement
- 2022** Research Exchange with Matching Funds (5 projects)



2024.2.19 Establishment of the **Trilateral University Center**

- Developing activities to promote exchanges in education and research
- Reinforcement of partnerships

Impact !

WPI's first foreign director (Professor at the University of Illinois) led to the development of collaboration up to the establishment of the trilateral university center!

*Achievements of WPI (I2CNER) promoting international collaboration

- Percentage of International Scholars: 52%
- International Co-Authored Publications: 51%

Semiconductor-related initiatives

- **Establishment of Education Center for Semiconductors and Value Creation** (June 2023)
- **Comprehensive collaboration with TSMC for research and human resource development** (April 2024)
- **Collaboration with the University Academic Alliance in Taiwan for education, research, and human resource development** (April 2024)
- **MOU concluded with National Yang Ming Chiao Tung University to establish a joint laboratory** (June 2024)

International Telemedicine Development

- **Promotion of international telemedicine, and active development of international tele-second opinions using the experience and contacts gained**
- Expansion of the international telemedicine network to 1,578 facilities in 83 countries by FY2023
- 536 telemedicine education programs with medical facilities in 63 countries and 13 international tele-second opinions with China, Korea, Austria, etc. in FY2021-2023



Strengthen Governance

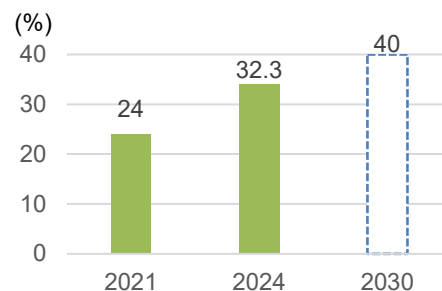
- Assignment of Provost
- Assignment of Executive Director for Financial Strategy
- Establishment of the Executive Office of the President
- Evidence-based Policy Planning through Institutional Research (IR)
- Promote Diversity in the Executive

【Executive Structure】

Women: 6/29 (20.7%) → 8/31 (25.8%)

Foreigners: 1/29 (3.4%) → 4/31 (12.9%)

Ratio of Executive Women and Foreigners



Promote Initiatives under the President’s Leadership

Integrated Initiative for Designing Future Society

Promote initiatives to solve social issues by utilizing Integrative Knowledge

Data-Driven Innovation Initiative

Expand data-driven education, research, and medicine

Kyushu Okinawa Open University

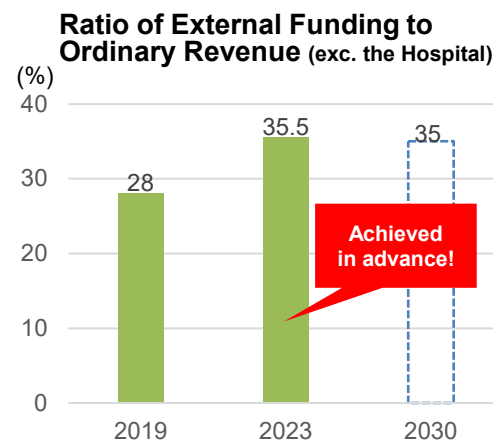
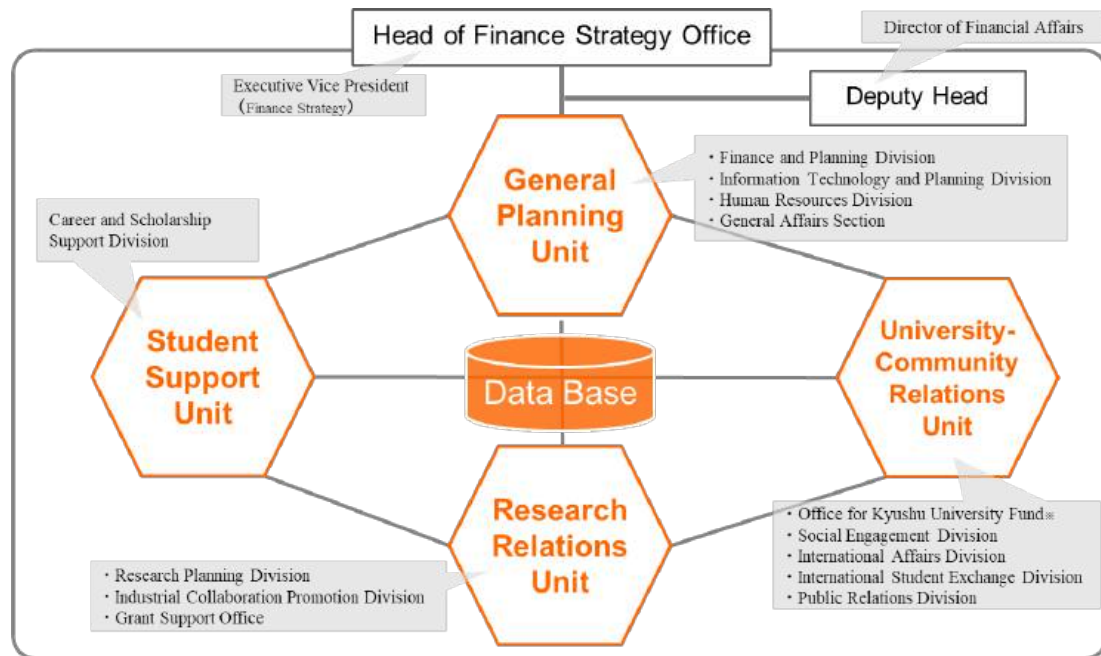
Collaboration with all 11 national universities in the Kyushu-Okinawa region to improve research capabilities and optimize research and educational resources

Kyushu University Regional Collaboration Platform

Strengthen stakeholder engagement



Appointed an **external expert** (from a megabank and the Financial Services Agency) as **Executive Director for Financial Strategy** to begin implementing measures to strengthen the financial base



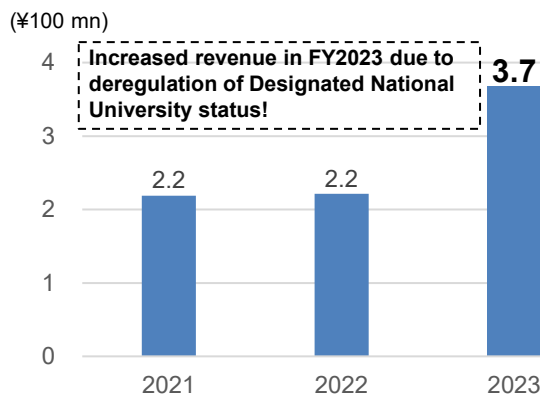
Impact !

¥160 million will be allocated in the FY2024 budget based on the FY2023 **fund management profits** as **strategic expenses** to realize the Designated National University Vision
 → **The funds will also be used for the Inamori Frontier Program**, and other initiatives

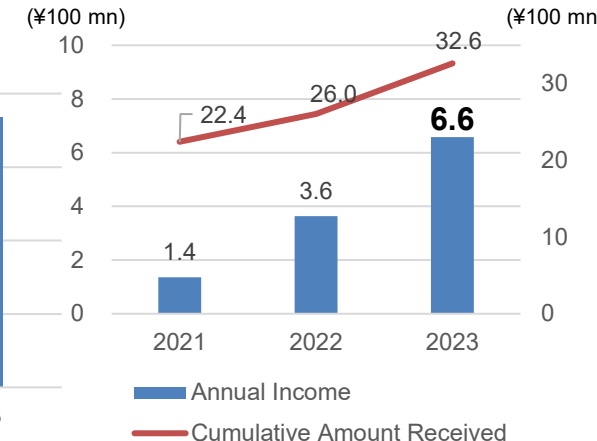
(Structure & Operations)

- Established an organizational structure for information sharing and collaboration among various related departments to respond to diverse stakeholders, with the **Executive Director for Financial Strategy** serving as the head of the office
- Comprehensive external relations planning, sharing of strategies and know-how, and enhancing outreach to returning alumni by utilizing overseas offices
- Develop fundraising talent and create career pathways through collaboration

Fund Management Performance (Investment Gains)

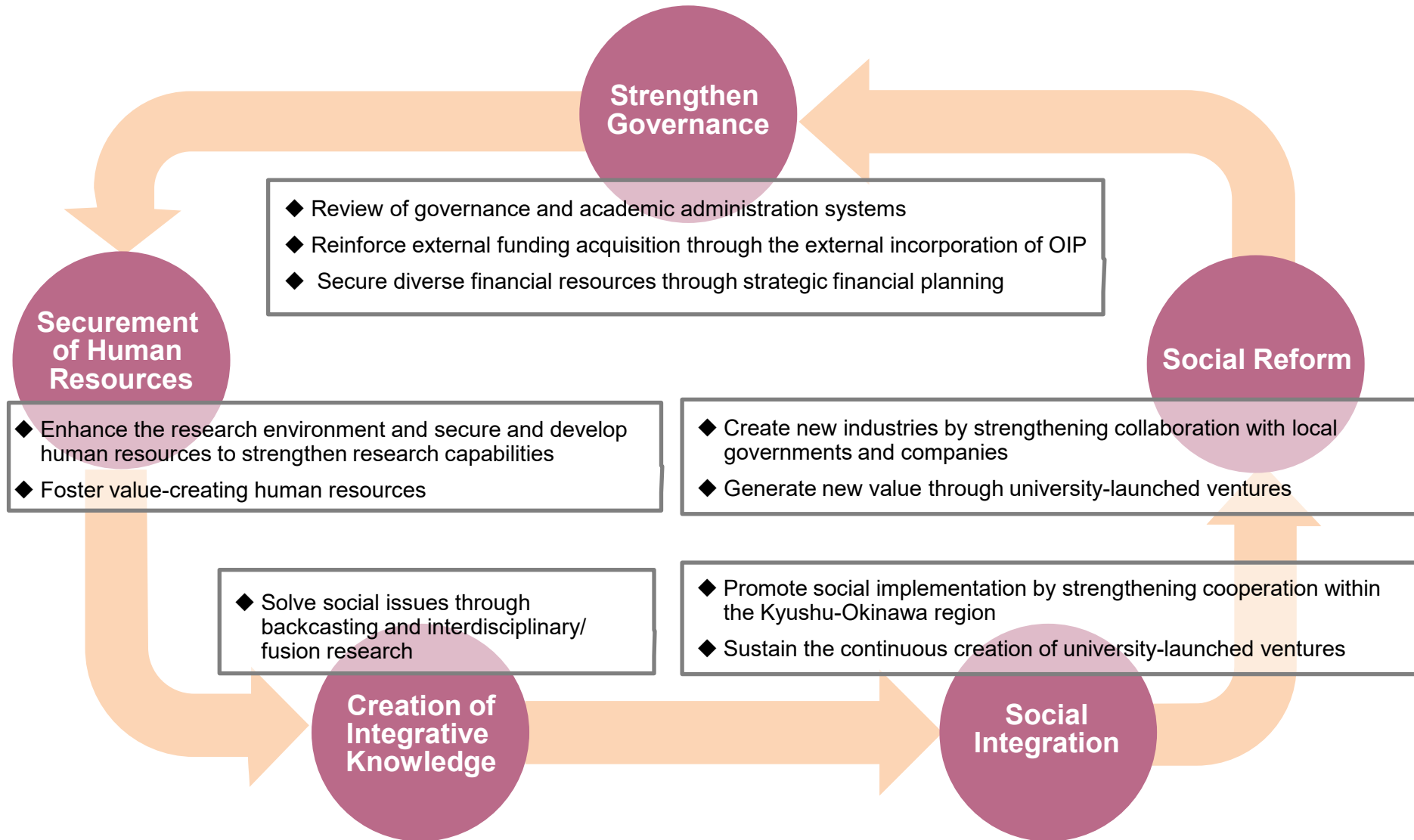



Donations (Kyushu University Fund) Received





Establishment of a sustained cycle from the creation of Integrative Knowledge to social change, toward the realization of a "University Driving Social Change with Integrative Knowledge"





**Realizing an ideal future
society by becoming a
university that drives social
change with integrative
knowledge**