

Approval of Tohoku University's Research System Strengthening Plan as a University for International Research Excellence

December 24, 2024

Tohoku University President

Teiji Tominaga



Table of Contents

- Tohoku University's History & Principles
- Declaration of Determination to Lead Reforms
- Overview of the Research System Strengthening Plan as University for International Research Excellence
- Commitments → Goals → Strategies
- Goals & Priority KPIs

I. Commitment for Impact

- Research Excellence
 - Diversity & Strategy towards Research Impact
 - Establishing a dynamic new research structure
- Impactful Research and Innovation
 - Contributing to the solution of global issues and creating social value
 - Developing all campuses as place for open innovation
 - Management focused on growth and new challenges
 - Accelerating Tohoku University Startups

II. Commitment for Talent

- Campus for Aspiring Minds
 - Enriching Career Pathways and Research Ecosystem
- Gateway to New Ventures
 - Graduate school & faculty reforms as research university

III. Commitment for Change

- Global Readiness
 - Promoting comprehensive internationalization
- Responsive and Responsible Governance
 - Advanced governance structure
 - Strategic resource allocation management
 - Tohoku University's Connected University Strategy

Actions toward Accreditation as University for International Research Excellence

Date

Summary

2022

December 23 (Fri.)

Applications open for the Universities for International Research Excellence Project (Deadline: March 31, 2023)

2023

March 31 (Fri.)

Submission of application documents (1st draft of the Research System Strengthening Plan) for the Universities for International Research Excellence Project

June 2 (Fri.)

Hearing audit by the Advisory Board

July 19 (Wed.)

Site visit by the Advisory Board

September 1 (Fri.)

Release of the audit results by the Advisory Board
Tohoku University selected as candidate for University for International Research Excellence

2024

February 14 (Wed.)

Hearing by the Advisory Board

May 24 (Fri.)

Hearing by the Advisory Board

June 14 (Fri.)

Release of the audit results by the Advisory Board
Tohoku University is meeting the standards required for accreditation as University for International Research Excellence

November 8 (Fri.)

Tohoku University accredited as University for International Research Excellence

December 24 (Tue.)

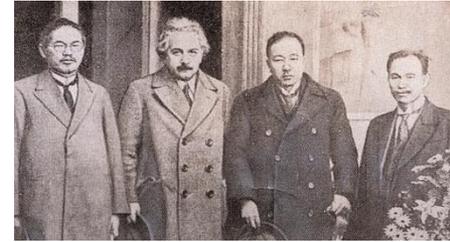
Approval of the Research System Strengthening Plan as University for International Research Excellence

Statutory review process by CSTI and the Council for Science and Technology



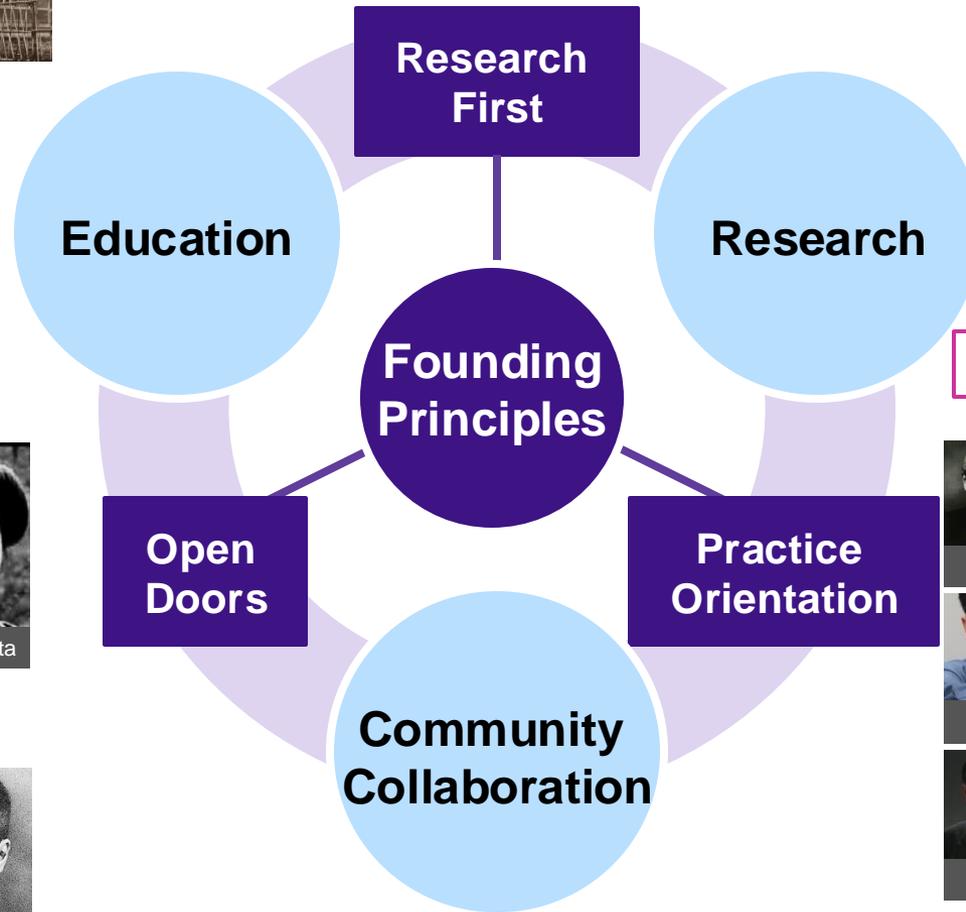
Foundation of Tohoku University
in 1907 as third national university

Synergy of Research & Education



“Sendai is a city most suited for research”

A. Einstein, 1922



Diversity

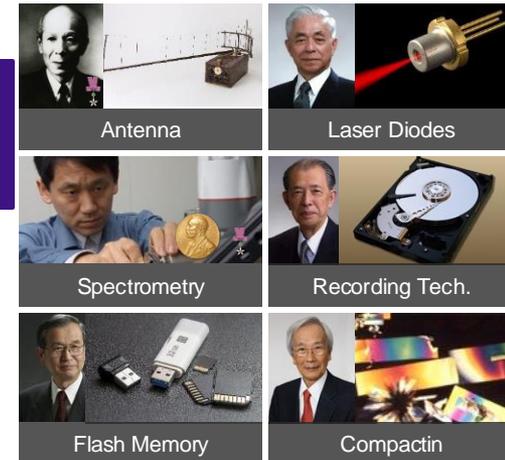


Japan's first female students
1913 (111 years ago)



Open to diverse backgrounds

Creating Social Value



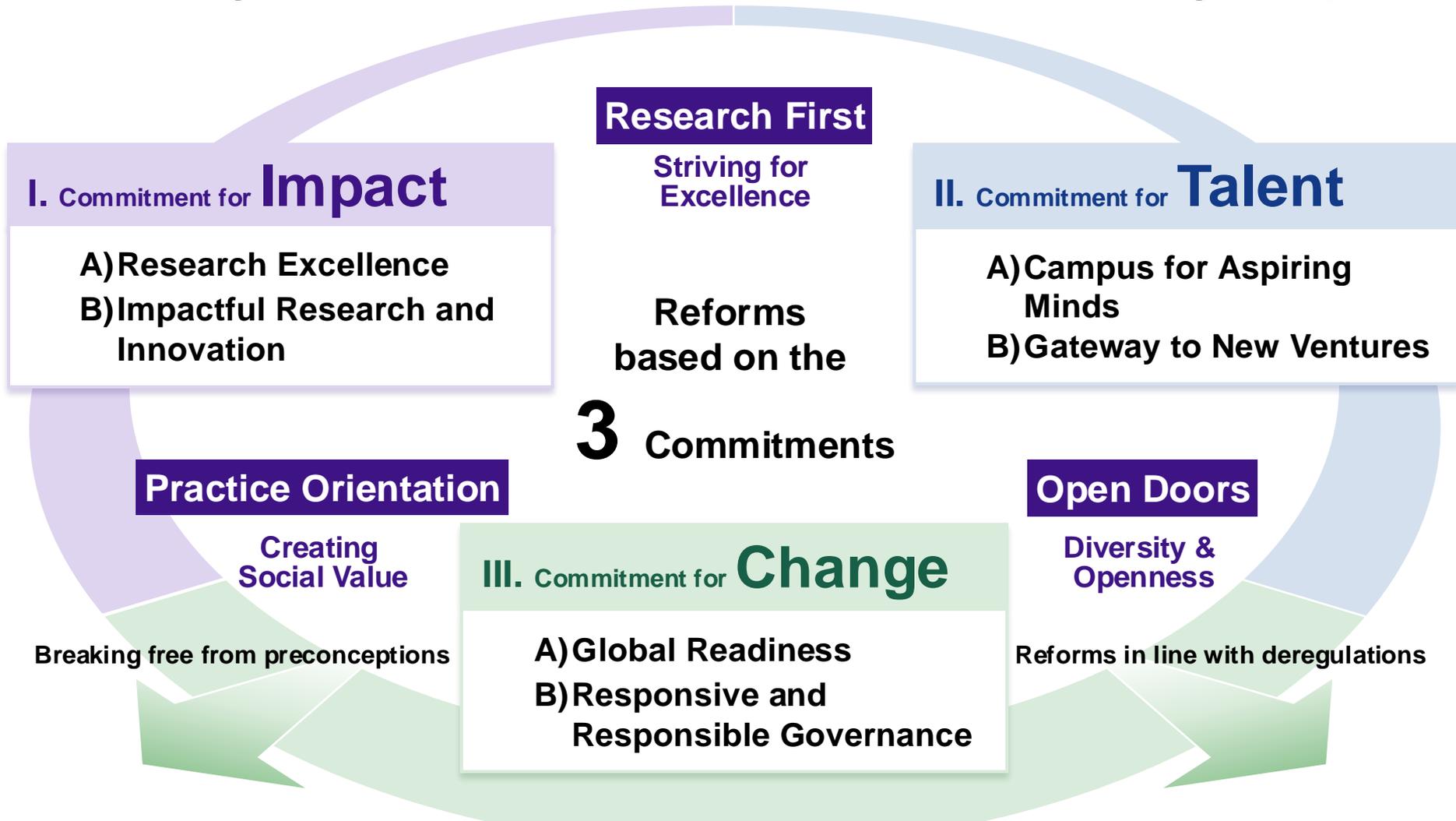
“Industry is Academia’s Dojo”

Kotaro Honda, 6th President
Major contributions by members to disaster recovery after the 2011 Great East Japan Earthquake

Tohoku University was founded with considerable donations from third parties

Overview of the Research System Strengthening Plan as University for International Research Excellence

Contributing to Communities at Home & Abroad
Knowledge, Talent & Social Value Based on the Three Founding Principles



Expanding functionality as new open knowledge action platform

Commitments

I. Commitment for Impact

We live in highly challenging times of rapid change that require global communities to overcome ever-new difficulties. Contributions to communities after the Great East Japan Earthquake crystallized the necessity to help not only local communities but people all over the world with new innovations that improve everyday life. Tohoku University's members are committed to address society's most pressing issues through their excellence in pioneering research.

II. Commitment for Talent

Tohoku University is committed to partner with international communities to foster and educate the next generation of brilliant researchers. Diversity of talent on campus is essential for the individual growth and well-being of each and every member of our university.

III. Commitment for Change

Members of the Tohoku University family are engaged in various outreach programs to provide the latest improvements to people's lives. Tohoku University is committed to continue its governance transformation and strategic regulation reforms to further enable and support its member's desire to help communities all over the world.

Goals & Priority KPIs

A Research Excellence

- Publications
- Top 10% Publications
- Top 10% Publication Ratio
- Top 10% Publications by Early Career Researchers
- Top 10% Publication Ratio by Early Career Researchers

B Impactful Research & Innovation

- Research funds from private companies
- Industry co-creation centers
- Number of university startups
- IP revenue
- Joint publications with industry

A Campus for Aspiring Minds

- Ratio of international researchers
- Ratio of female researchers
- PI research units
- Ratio of PIs and staff members
- Staff with international expertise

B Gateway to New Ventures

- International student ratio
- Ratio of Ph.D. Students with international experience
- Average financial support for Ph.D. students
- Ph.D. student numbers
- Ph.D.s conferred

A Global Readiness

- Ratio of international researchers
- Staff with international expertise
- International student ratio
- Ratio of Ph.D. Students with international experience
- International executives

B Responsive & Responsible Governance

- Self-generated income
- Business scale
- Own fund
- Corporate strategic financing
- International executives

Strategies

I-A-1 Excellence through solid research strategy

I-A-2 Tohoku University's unique "3-layered Research Enhancement Package"

I-A-3 A dynamic new research system

I-B-1 Creating an open knowledge action platform

I-B-2 Attracting investments through science, technology and innovation

I-B-3 Improved functionality for co-creation

II-A-1 Attractive career paths & benefits for researchers

II-A-2 Specialization & enhanced roles of administrative staff

II-A-3 A diverse campus supporting world-class challenges

II-B-1 Career management starting at graduate schools

II-B-2 Graduate school reforms for internationality and openness

II-B-3 Faculty reforms as research university

III-A-1 Promoting comprehensive internationalization

III-A-2 International brain circulation

III-A-3 Creating an international hub for global co-creation

III-B-1 Management focused on growth and new challenges

III-B-2 Advanced governance structure

III-B-3 Management for actions and growth

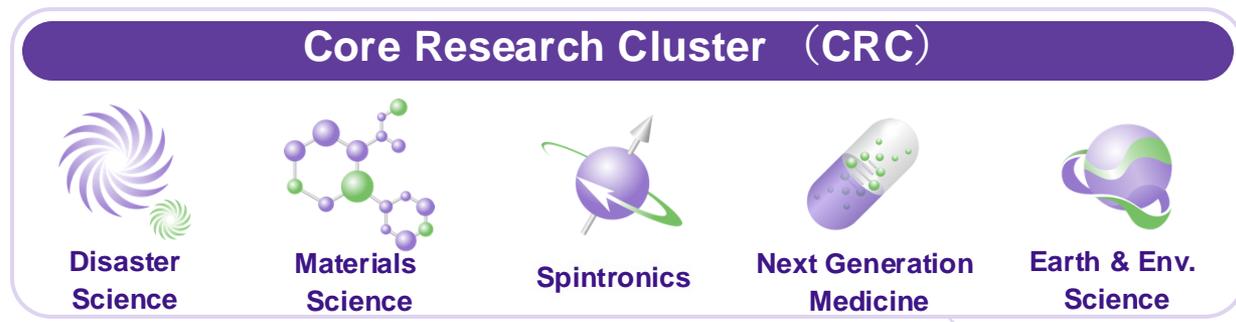
III-B-4 Supporting diverse talent



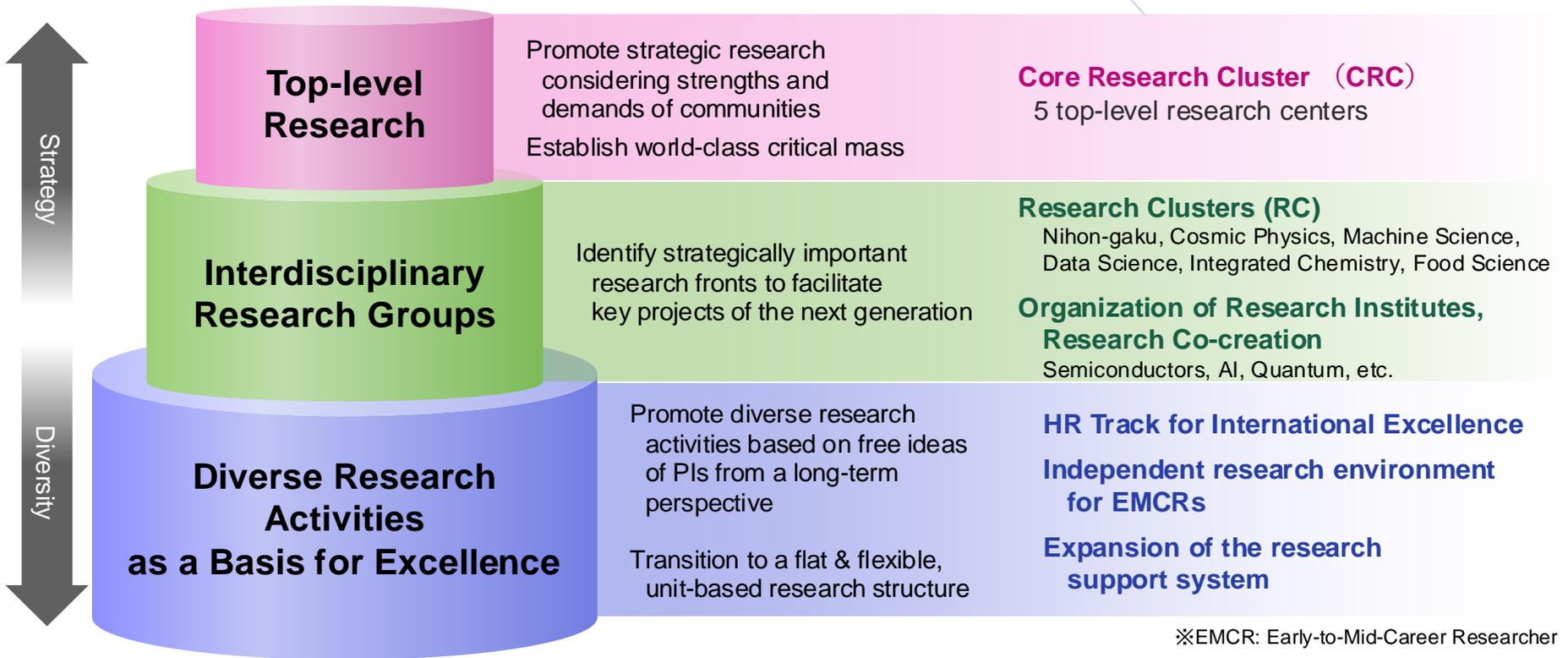
I Commitment for Impact

A Research Excellence

B Impactful Research & Innovation



Three-layered Research Enhancement Package



Research First → Practice Orientation → Creating New Social Value

Strategic Projects Led by Outstanding Research

Materials Science



NanoTerasu (New PPP Business Model)

Cross-sectoral impact on manufacturing, environment, energy, food, agriculture, healthcare, etc.

Spintronics



Semiconductor Technology Co-creation

Strengthening competitiveness of the semiconductor industry
Contributing to a sustainable future

Disaster Science



World Conference on Disaster Risk Reduction
2015 Sendai Japan

Global Agenda **IRIDeS**

Solving global challenges through comprehensive knowledge
Creating a resilient society

Life Sciences



Tohoku Medical Megabank Organization

Data-driven next generation medicine & healthcare

Humanities & Social



29 Universities
Hasekura League

Nihon-gaku **AI Synergy**

Promoting new Nihon-gaku studies
Co-creation of international values

Innovation in Science and Technology

Sustainable Future

Wellbeing in Communities

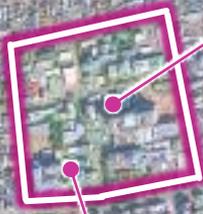
A Value-Creation Platform Open to the World

Developing all campuses as place for open innovation

- Tohoku University Campuses: 3.3M m² at the heart of the City as co-creation space
- Costs for the development of the new campus funded through self-generated resources (ca. 26B JPY), including income from land sales
- New subway line in 2015 in collaboration with Sendai City



500m



Tohoku Medical Megabank Organization
Japan's largest biobank (150,000 participants)

Operation as of 2015
Collaboration with Sendai City

Subway

90min from Tokyo
Sendai Station



Semiconductor Technology Co-creation
Largest semiconductor R&D platform in Japan

Science Park
40,000 m²

3GeV synchrotron radiation facility NanoTerasu
Development through unprecedented coalition partnerships



Research Institutes
International research platform with joint usage research centers

Developing Tohoku University's Unique Science Park

- Creating an innovation ecosystem that generates social value with participation of diverse actors
- Research hubs in important strategic technology areas (semiconductors, AI, biotechnology, quantum technology, materials, etc.)

Strategically developing top-level flagship facilities

- Building super-facility networks through collaboration in digital transformation (utilizing private investments)

Corporate R&D centers on campus

- Rapidly expanding large-scale industry collaborations through co-creation centers



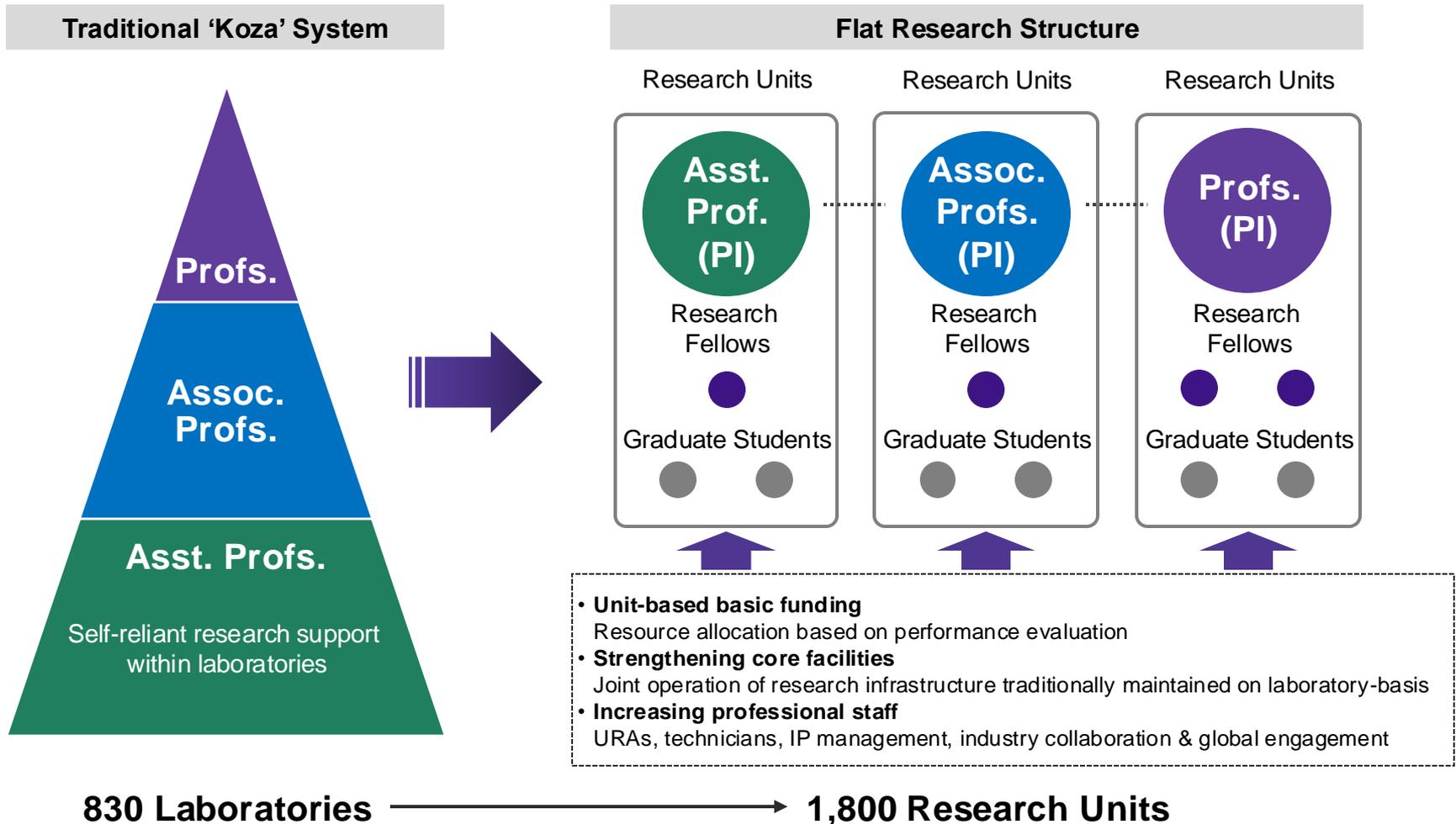


II Commitment for Talent

A Campus for Aspiring Minds

B Gateway to New Ventures

- Creating a 'flat' and flexible research system where (ca. 1,800) talented researchers can act as leaders (PIs) of independent research units
- University-wide development of a tenure-track system, promoting independence of early to mid-career researchers (EMCRs)



Realize competitive employment conditions and tenure criteria through the

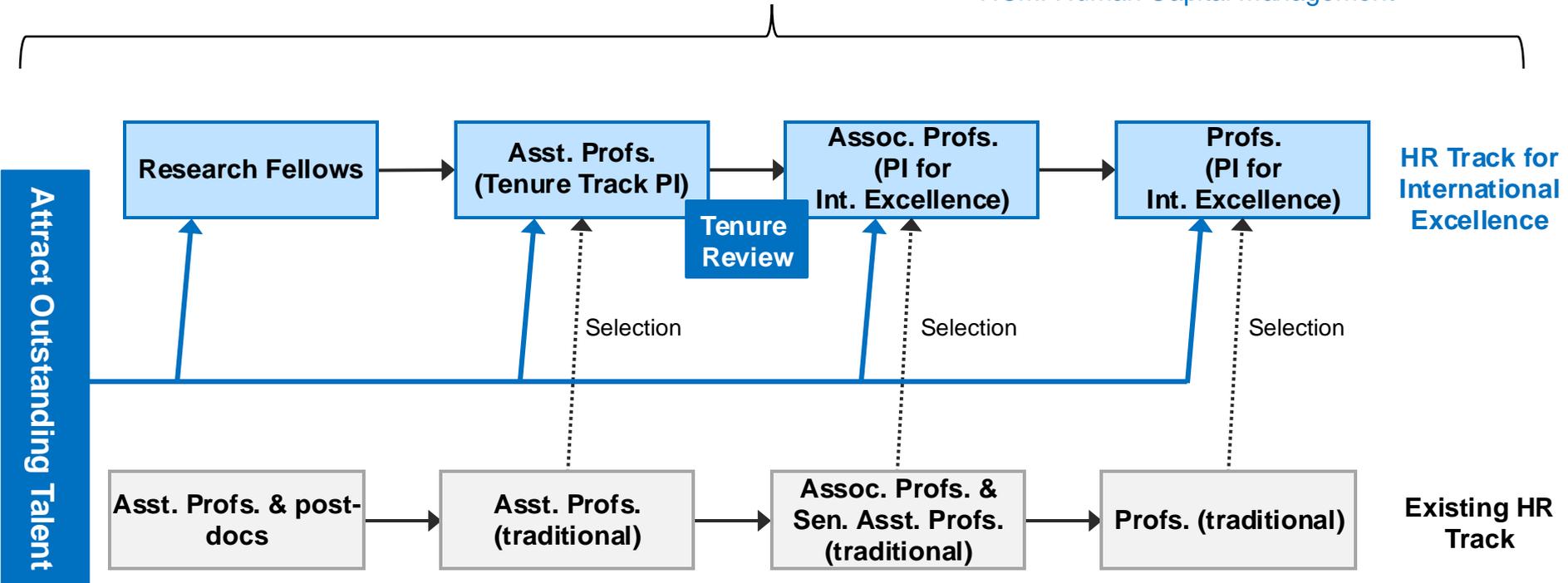
HR Track for International Excellence

Benefits & research funds for PIs (principal investigators) in line with global standards

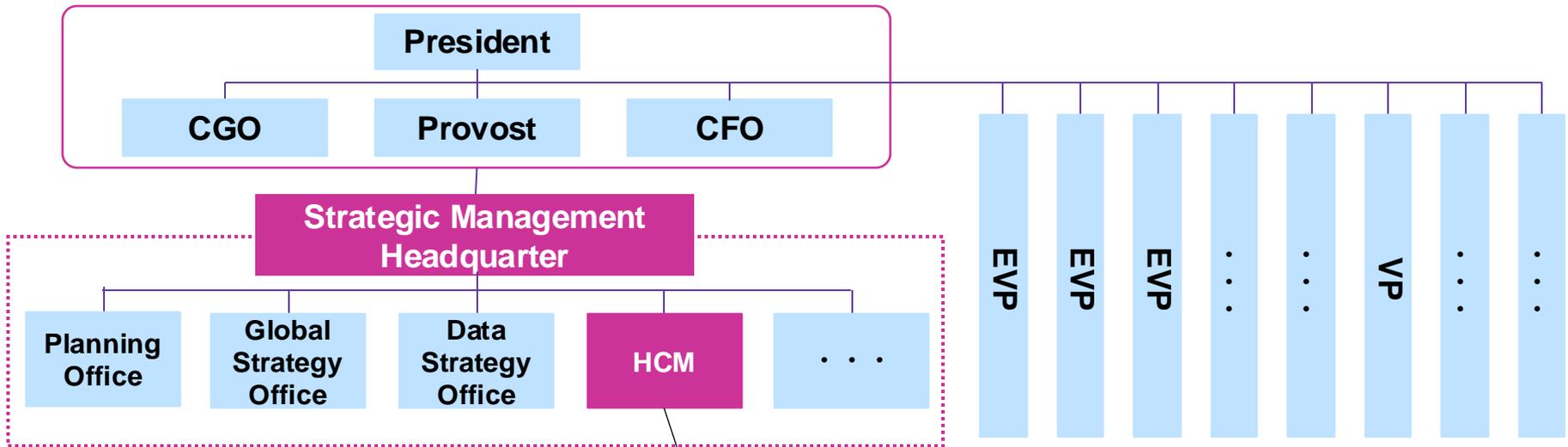
A new Human Capital Management (HCM) Office to oversee strategic HR affairs across all departments (as of October 2024)

- Set up as a specialized division for researcher talent management (previously, no dedicated HR department for researchers)
- Providing flexible career paths and employment, promoting individuality and personal growth
- Evidence-based, transparent HR evaluation & benefits for excellence in HR

HCM: Human Capital Management



Strategic Leadership Team (SLT)



Office for Human Capital Management (HCM)

Director: Provost 7 Assoc. EVPs, 3 administrative staff, 20 concurrent staff, 30 members in total

- Operational as of October 2024, overseeing new HR affairs in research, aimed at strengthening capabilities across the entire university
(Already completed review and approval of HR plans for 4 departments, currently in discussions with 19 departments regarding HR plans)
- Expanding professional staff to secure FTE (Full-Time Equivalent) research time

Division of Research Staff Management
Oversight of new HR strategy to reinforce research capabilities

Division for Administrative Staff Management
Oversight of strategic expansion of professional staff to strengthen research capabilities

Division for Common Strategies
Developing policies to assure diversity, one-stop for international support, etc.

Providing EMCRs with independent research environment

Frontier Research Institute of Interdisciplinary Sciences (FRIS)

World Leading Interdisciplinary Research by **50** EMCRs

- International appointment over all research fields (10x competition)
- Independent research environment (EMCR PIs)
- Tenure track system
- Max. 2.5M JPY support p.a.
- International Brain Circulation, joint facility usage

FWCI
1.51

※ 2017~ 2022

TOP10%
Publication Ratio
13.8%

※ 2017~ 2022



Empowering the next generation of researchers

MEXT's
Minister Award for
Young Researchers

85

(No. 2 in Japan)

※ Awards in 2016-2024

Fellowship
Projects

120

(No. 1 in Japan)

※ Ph.D. students
※ FY 2021 Performance

Creative
Research Support

74

(No. 3 in Japan)

※ 2020~ 2023
Approved projects

JSPS Prize

9

(No. 2 in Japan)

※ Awards in 2021-2023

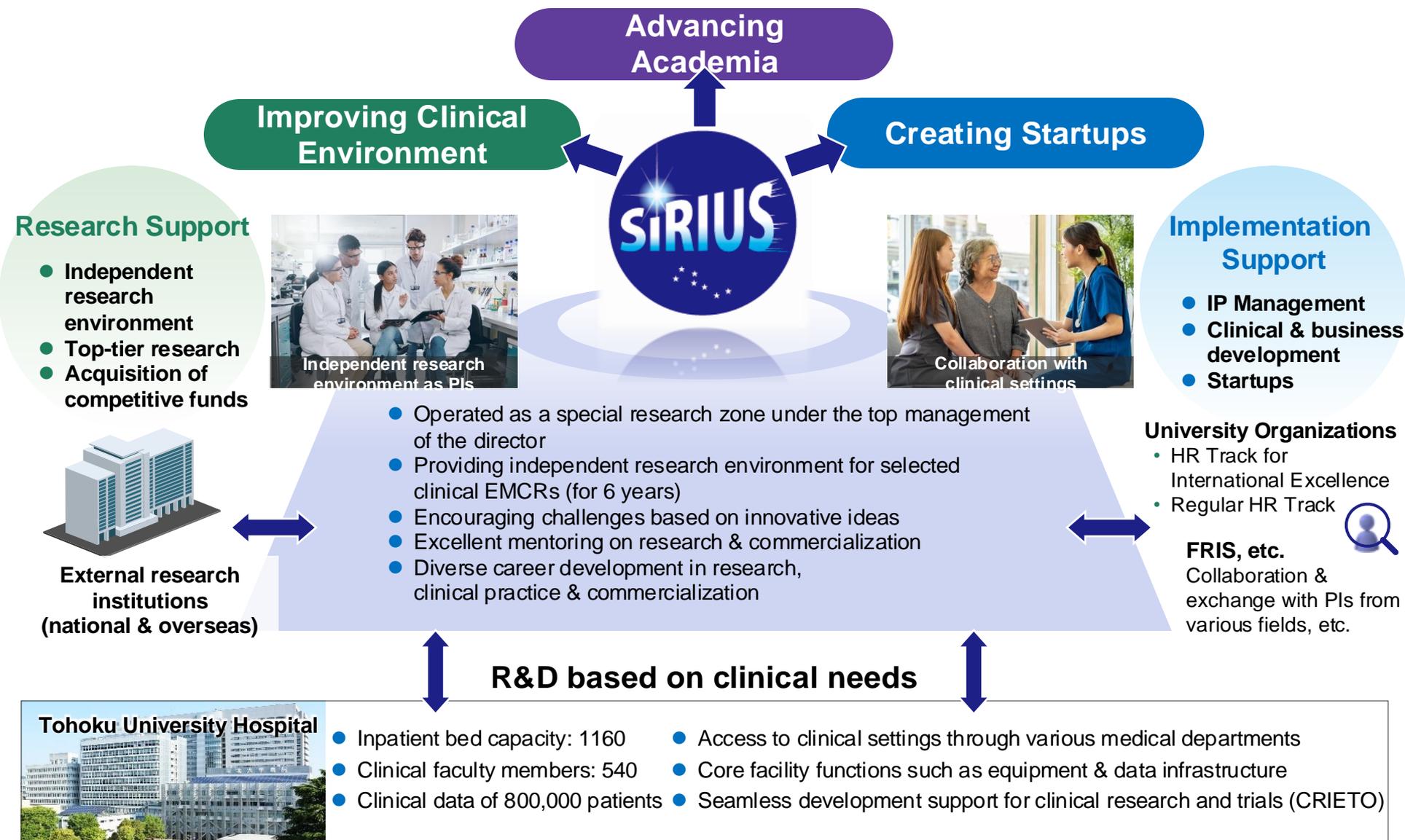
JSPS
Fellowship Awards

5

(No. 2 in Japan)

※ Awards in 2021-2023

The Institute for Producing Top-Tier Physician-Scientists



Tohoku University's Performance



Admission Office

Oversight of all admission selection

Relief from admission exam duty for faculty members

- Gradual transition to comprehensive selection (currently, over 30% AO admissions)
- Strategic international recruiting of talented students

Advanced Graduate School

Ph.D. (Int.)	MC (Int.)	After 25 Years
6,000 (40%)	6,000 (40%)	↑
2,700 (30%)	4,000 (17%)	↑

Graduate school reforms for internationality and openness

- Management of graduate school capacities, student placements and degrees
- Implementation of interdisciplinary degree programs such as International Joint Graduate Programs (currently 10 programs)
- Mandatory international experience, including at overseas universities (8% → 100%)

Expanding the number Ph.D. Students

- Expanding financial support (1.8 → 3M JPY), treatment as researchers
- Integrated program with international perspective starting from master's course (12,000 students)

Gateway College

Undergraduates (Int.)	After 25 Years
10,000 (20%)	↑
(2%)	

Faculty reforms as research university

- Reorganize capacities from existing undergraduate schools (8,000 students)
- Co-learning environment with 2,000 international and 6,000 domestic students
- Mandatory study abroad to top level overseas colleges (1st-2nd year)
- Late specialization with trans-disciplinary education
- Solid professional education with broad perspective } (3rd ~ 4th year)



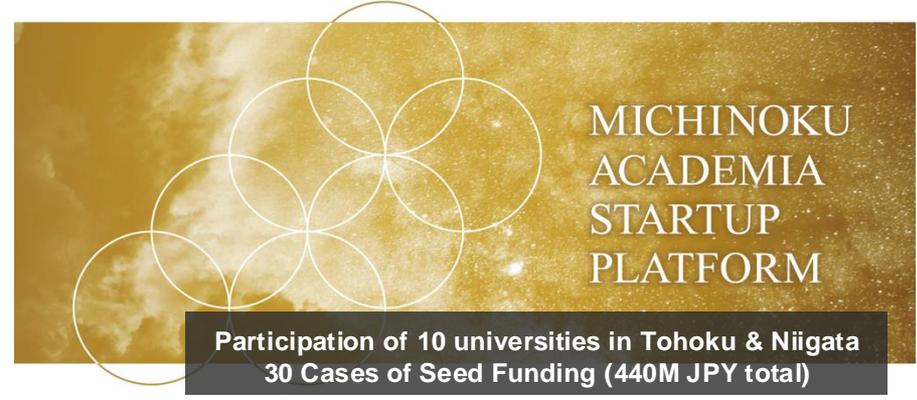
University Start-ups: 199
1 Unicorn



Entrepreneurship Education Programs
Annually 2,328 Participants FY2023



Tohoku University Business Incubation Program
107 Cases of Seed Funding (1B JPY total)



MICHINOKU
ACADEMIA
STARTUP
PLATFORM

Participation of 10 universities in Tohoku & Niigata
30 Cases of Seed Funding (440M JPY total)



Tohoku University Venture Partners Co., Ltd.
Fund No.1 9.68B JPY, 26 companies invested
Fund No.2 7.8B JPY, 19 companies invested



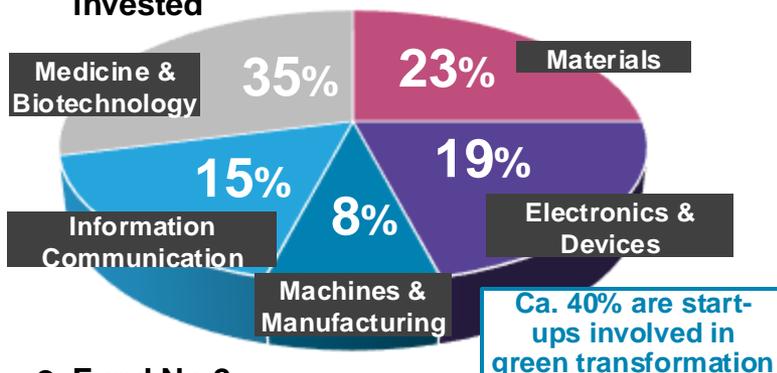
Recent IPOs: 6 cases including ispace
2 M&A projects

Top-class start-up creations in Japan



Tohoku University Venture Partners Co., Ltd.

- **Fund No.1**
Est. Aug. 2015, 9.68B JPY: 26 companies invested



- **Fund No.2**
Est. Oct. 2020, 7.8B JPY: 19 companies invested

Companies registered in the Tohoku region: 17

Unlisted Domestic Start-ups

1 of the top 20 originated from Tohoku University

- ▶ **Clean Planet Inc.**

Research on practical application of new hydrogen energy; expected market capitalization 8th place (Unicom)

Reference: STARTUPDB (as of 2023.1.18)

Recent examples of IPO and M&A results

IPO results 6 projects

- ▶ December 28, 2020 Listed on Tokyo Stock Exchange Mothers “Klingel Pharma Co., Ltd.”
- ▶ September 24, 2021 Listed on Tokyo Stock Exchange Mothers “Renascience Co., Ltd.”
- ▶ December 24, 2021 Listed on Tokyo Stock Exchange Mothers “Sasmed Co., Ltd.”
- ▶ November 22, 2022 Listed on Tokyo Stock Exchange Growth “TMS Co., Ltd.”
- ▶ April 12, 2023 Listed on Tokyo Stock Exchange Growth “ispace Co., Ltd.”
- ▶ August 2023, 2023 Listed on NASDAQ “Pixie Dust Technologies, Inc.”

M&A result examples

- ▶ November 16, 2020 “Photonic Lattice Inc.”
- ▶ January 31, 2023 “Super Nano Design Co., Ltd.”

III Commitment for Change

A Global Readiness

B Responsive and Responsible Governance

Promoting comprehensive internationalization ~ Introducing the CGO

22

**Promote comprehensive internationalization
with the Chief Global Officer (CGO)
Maximize international responsiveness & transform into
an even more globally-oriented organization**

Mission 1: Strategic Global Linkage

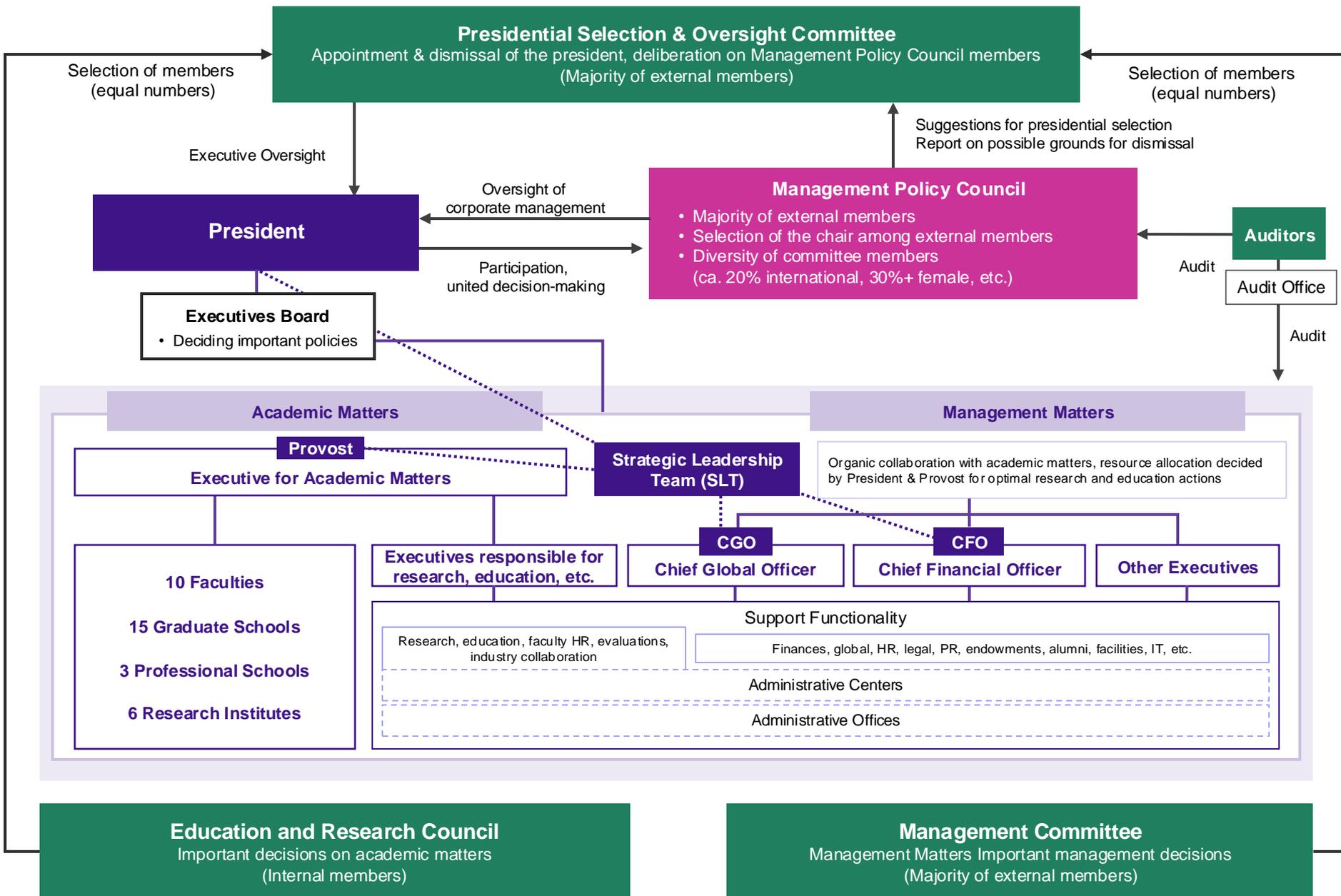


- Strategic relationships with leading overseas universities, research institutions, governments, key stakeholders, and alumni communities

Mission 2: Transformation of the University



- Internationalization of overall operations
- Expanding staff with international expertise
- Promote employment of international staff
- Skill development, including overseas training
- Collaborate with government agencies regarding acquisition of foreign talent





Tetsuro HIGASHI
Chairman, Rapidus Corporation;
President, Leading-edge
Semicon. Technology Center

David PRICE
Former UCL Vice-Provost
(Research, Innovation, and
Global Engagement)

Kuniko OZAKI
Former Judge of the ICC;
Specially Appointed Prof., Chuo
University

Kumiko OBINO
CEO, Interact Japan Co., Ltd.

Masaki SAKAIDA
TMI Associates

Prospective CGO



Marie Pierre FAVRE
Senior Advisor / Vice-President
delegate for International
Development of INSA Group

Internal Members:



Teiji TOMINAGA
Tohoku University President



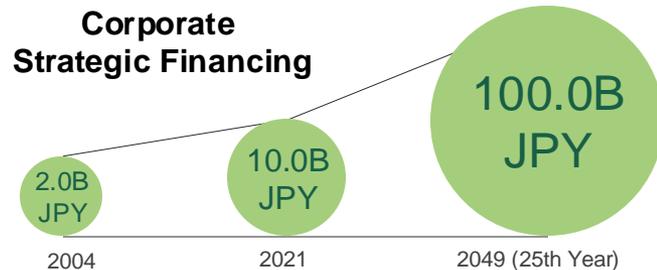
Takafumi AOKI
Tohoku Univ. EVP (Strategy),
Provost, CDO



Yasuhiro MIYATA
Tohoku Univ. EVP (Business &
Financial Strategy) · CFO · CIO

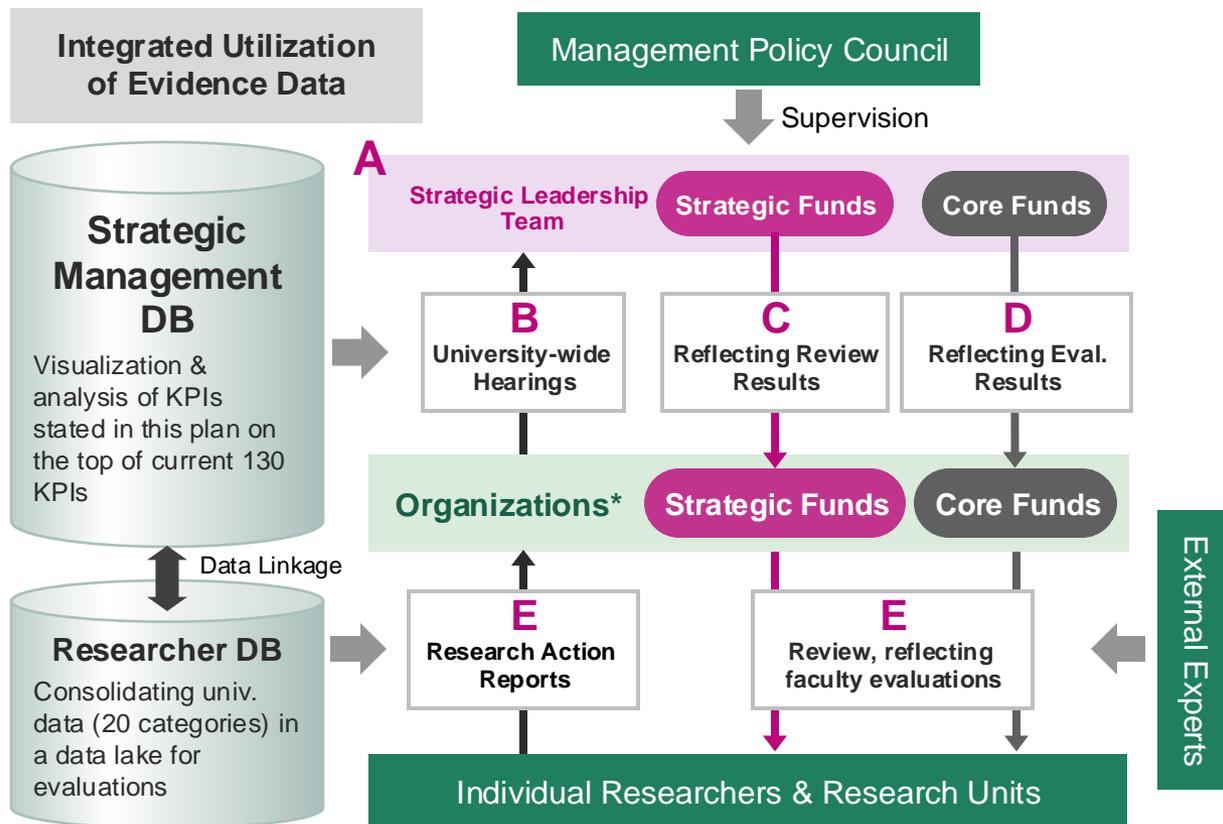
Tohoku University's Achievements

- One of Japan's largest corporate strategic funds as national university (ca. 10B JPY, 10% of total operations). Anticipated to be increased to 100B JPY.
- Driving organizational renewal, assessing viability through a stage-gate process for heightened vitality.



Strategic Resource Allocation

- A** Budgetary decisions by the Strategic Leadership Team (SLT) consisting of the President, Provost, CGO & CFO
- B** University-wide review of action proposals (incorporating insights from international advisors)
- C** SLT decides allocation of strategic funds
- D** Based on organizational evaluations using evidence data, including reorganizations, core funds is allocated
- E** Funds are allocated in alignment with the division director's strategy through faculty evaluations based on evidence data and external expert peer reviews



* Faculties, Graduate Schools, Departments, Research Institutes, Centers, etc.

Comprehensive promotion of digital transformation by the Chief Digital Officer (CDO)

Connecting with the world beyond barriers such as distance, time, country, organization, culture, and values

Transforming the business model, enhancing research productivity, increasing well-being

Inclusive education environment

- Online degrees
- Microcredentials
- Analytics
- International co-learning

Promoting data-driven research & open science

- Research data strategy
- Reforms for research productivity
- AI Scientists
- Dual online usage

Co-creation utilizing digital space

- AI synergy
- Business reforms
- Reskilling
- Co-creation of international values

Digital transformation of administrative duties

- Strategic management DB
- EBPM
- Work style reforms
- Digital transformation of university collaborations



Tohoku University's concept focuses not on the promotion of individual research, but on **systemic reforms** to enable the University to grow as part of the world's leading institutions

We are determined to lead these university reforms, which can be considered Japan's last chance, and become a **node of transformation**

I. Commitment for Impact

Based on the founding principles of “Research First” and “Practice Oriented Research & Education,” and drawing on the experience of the Great East Japan Earthquake, we will uncompromisingly pursue research excellence and create social value.

II. Commitment for Talent

Following the spirit of “Open Doors,” accepting the first female students in Japan and breaking conventions, we will attract diverse talent from around the world, nurture their potential, and contribute to a better future for everybody.

III. Commitment for Change

We aim to enhance the management and governance structure with a determination to boldly face challenges without fear of change, continuously reviewing and reforming our organization adapting to future requirements.

Tohoku's depths, where discoveries are born.

Give free rein to your curiosity,
Journey beyond established boundaries,
Venture to new and exciting frontiers,
Witness new horizons unfolding before you,
Immerse yourself in new encounters and discoveries,
Be present for the birth of the next era,



TOHOKU
UNIVERSITY