

## INTEGRATED REPORT

# 2021

Creating a new university model that generates a virtuous cycle

# MAKE NEW

With the goal of becoming a **core regional university** that contributes to structural reforms in the regional community while addressing global issues



of development for universities, industries, and communities

# STANDARDS.

Simultaneously improving international competitiveness and contributing to regional revitalization

With the goal of becoming one of the **world's leading research universities** backed by outstanding studies



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### Editorial Policy

Tokai National Higher Education and Research System (THERS) has published this Integrated Report in accordance with the framework developed by the International Integrated Reporting Council (IIRC). THERS was created in April 2020 as the first national university corporation to operate system of one corporation and multiple universities, and is working to construct a new university model under in line with its startup vision. We at THERS hope that all stakeholders involved will understand and agree with the university vision we aim to achieve and our method of increasing the value creation of universities, which are unlike corporations.

[Scope, etc., of Reporting]  
 Period covered by this report: April 1, 2020 - March 31, 2021 (including some activities conducted after April 2021)  
 Organizations covered: Tokai National Higher Education and Research System, Gifu University, and Nagoya University  
 For inquiries regarding this Integrated Report, please contact the Management Planning Department of Tokai National Higher Education and Research System.  
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# Research + People & Education + Regional Revitalization For a World-Class Tokai Region

By leveraging the strengths of both universities, and sharing and integrating their advantages, Tokai National Higher Education and Research System will continue to take on challenges that could not be accomplished alone. In terms of research, THERS is enhancing collaboration with four research hubs focused on the fields of glycoscience research, aerospace research, healthcare information technology, and agricultural sciences, and has established Academic Central, a framework to aid in education. Furthermore, as the center for new regional and industrial development, THERS aims to play a core role in forming a model that generates a virtuous cycle of development for universities, industries, and regional revitalization in the Tokai area and in promoting regional structural reforms.

**Gifu University** Since 1949

**Fostering Highly Skilled Professionals and Developing “Glocally”**

Gifu University was established by transitioning and integrating Gifu Prefectural Normal School, the Gifu Agricultural and Forestry College, and other educational institutions into a single organization, and the university originally consisted of undergraduate faculties for Arts and Sciences and Agriculture. Undergraduate faculties for Engineering and Medicine were established by transferring and merging the Prefectural University Faculty of Engineering and the Prefectural Medical College in 1952 and 1964, respectively. Gifu University became a national university corporation in 2004.

**Strengths**

**Nagoya University** Since 1939

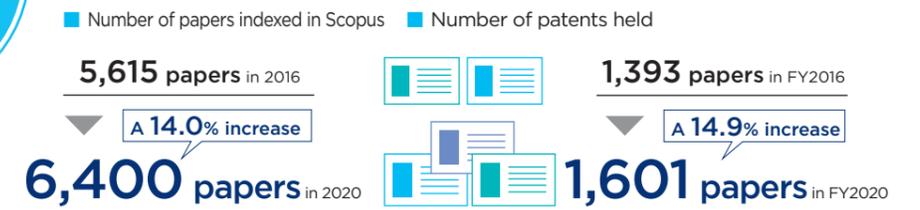
**Producing world-class intellectual achievements in a free and open-minded academic culture**

Nagoya University, which originated as a hospital and temporary medical school run by the Nagoya Domain, was the last of the so-called “imperial universities” established under the former Empire of Japan. In 1949, the university was reorganized under the new post-WWII education system with six undergraduate faculties. In 2018, Nagoya University was labeled a Designated National University Corporation for showing promise in developing world’s highest level of educational and research activities.

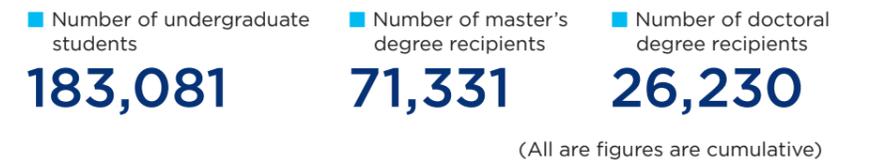
## Cultivated Strengths



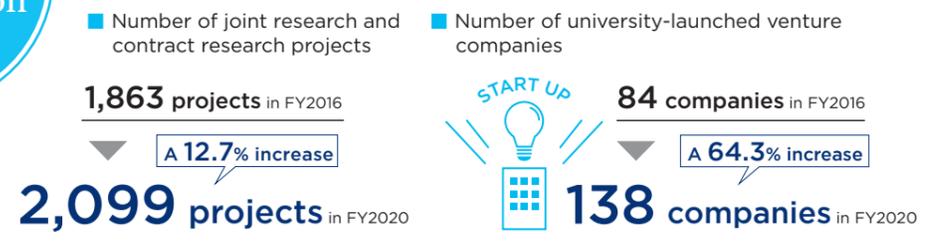
Researchers, who serve as sources of knowledge through their research findings at both universities, have been achieving world-class research results through their open-minded, free thinking. As a “central site for knowledge” both regionally and in the world, THERS aims to provide the region with the world’s highest level of knowledge. THERS works to both qualitatively and quantitatively expand distinctive and cutting-edge hubs of education and research, and to further expand the world’s most advanced educational and research fields through synergistic effects between the two universities in order to become a center for the creation of intellectual achievements.



In terms of people & education, by providing internationally-compatible, high-quality education, we work to foster human resources capable of leading the next generation and operating in the Tokai region and beyond. As digital transformation (DX) and globalization continue to progress, conventional education focused on acquiring knowledge and experience has decreased in relative value, and the ability to create new value is in demand. Against this backdrop, THERS provides the world and regional communities with human resources capable of addressing social issues through the creation of new value under the shared educational philosophy of “creating the future together with courage.”



In addition to contributing to further developing a diverse range of industrial sectors in which the Tokai region excels, including manufacturing, agriculture, and forestry, as well as to solving the issues faced by these sectors, THERS also aims to solve social issues in the region and achieve the targets set forth as Sustainable Development Goals (SDGs), which cover medical care, welfare, education, mobility, energy, disaster mitigation, and other issues. In the course of obtaining certification as a Global Hub City for the development of startup ventures, which are essential in the creation of new industries, THERS systematically works in collaboration with regional financial and industrial world, Nagoya City, and Aichi Prefecture.



# At the Forefront of Global Advancement Through “Outstanding Research Achievements” + “Collected Wisdom”

Tokai National Higher Education and Research System has produced Nobel Prize laureates and other outstanding researchers in a range of fields. Six of the sixteen Japanese Nobel Prize laureates since the start of the 21st century have been researchers at Nagoya University, which is a testament to the university's world-class research capabilities.

Through educational practices that emphasize creative research activities and initiative, our free and open-minded academic culture – unfettered by existing authorities – fosters flexible thinking that leads the way in global advancement.



**2001** | Awarded the Nobel Prize in Chemistry “for their work on chiral catalysed hydrogenation reactions”



Nagoya University

**Ryoji NOYORI**

Born in 1938. Completed a master's degree program in the Graduate School of Engineering at Kyoto University. Became a professor in the School of Science, Nagoya University, in 1972. Awarded the Nobel Prize in Chemistry “for their work on chiral catalysed hydrogenation reactions.”

**2008** | Awarded the 2008 Nobel Prize in Chemistry “for the discovery and development of the green fluorescent protein, GFP”



Nagoya University

**Osamu SHIMOMURA**

Born in 1928. Graduated from Nagasaki Pharmacy College, an affiliate of Nagasaki Medical College. Became an assistant professor at the Water Research Laboratory, School of Science, Nagoya University, in 1963. Awarded the Nobel Prize in Chemistry “for the discovery and development of the green fluorescent protein, GFP.”

**2008** | Awarded the Nobel Prize in Physics “for the discovery of the origin of the broken symmetry which predicts the existence of at least three families of quarks in nature”



Nagoya University

**Toshihide MASKAWA**

Born in 1940. Completed a doctoral degree program in the Graduate School of Science at Nagoya University. Awarded the Nobel Prize in Physics “for the discovery of the origin of the broken symmetry which predicts the existence of at least three families of quarks in nature.” Served as director of the Kobayashi-Maskawa Institute for the Origin of Particles and the Universe at Nagoya University from 2010.

**2014** | Awarded the Nobel Prize in Physics “for the invention of efficient blue light-emitting diodes which has enabled bright and energy-saving white light sources”



Nagoya University

**Isamu AKASAKI**

Born in 1929. Graduated from the Faculty of Science, Kyoto University. Became a professor in the School of Engineering, Nagoya University, in 1981. Awarded the Nobel Prize in Physics for “for the invention of efficient blue light-emitting diodes which has enabled bright and energy-saving white light sources.”



Nagoya University

**Makoto KOBAYASHI**

Born in 1944. Completed a doctoral degree program in the Graduate School of Science at Nagoya University. Awarded the Nobel Prize in Physics “for the discovery of the origin of the broken symmetry which predicts the existence of at least three families of quarks in nature.” Director Emeritus of the Kobayashi-Maskawa Institute for the Origin of Particles and the Universe at Nagoya University from April 2020.



Nagoya University

**Hiroshi AMANO**

Born in 1960. Obtained credits in a doctoral degree program in the Graduate School of Engineering at Nagoya University. Awarded the Nobel Prize in Physics together with Distinguished Professor Isamu Akasaki. Professor and Director of the Center for Integrated Research of Future Electronics in the Institute of Materials and Systems for Sustainability at Nagoya University.

2021 Nobel Prize in Physics, Syukuro Manabe, “for the physical modeling of Earth’s climate, quantifying variability and reliably predicting global warming”

\*Distinguished Invited Professor in the Graduate School of Environmental Studies at Nagoya University from December 2007 to March 2014

### Recipients of prominent academic awards other than the Nobel Prize

- |  |   |
|--|---|
| <p><b>Nagoya University</b> 2016 Hisashi Yamamoto</p> <p>2018 Masaki Kashiwara</p> <p>2019 Yoshio Okamoto</p> <p>2020 Masatoshi Takeichi</p> | <p>The Roger Adams Award: For contributing to the construction of the new field of “molecular acid catalysts” in synthetic organic chemistry</p> <p>Kyoto Prize, Chern Medal Award: For contributing to the construction of algebraic analysis by establishing the theory of D-modules</p> <p>Japan Prize: Leading contributions to precision synthesis of helical polymers and development of practical chiral materials for separating chiral drugs</p> <p>Canada Gairdner International Award: For contributing to basic medicine beyond the framework of biology through the discovery cadherins and the elucidation of their functions</p> |
| <p><b>Gifu University</b> 2020 Kazuma Nakazawa</p>   | <p>Nishina Memorial Prize: Study of double strangeness nuclei using nuclear emulsion plate</p>  |

Aichi + Nagoya + Hamamatsu + Gifu

# Toward the Formation of a Tokai Startup Ecosystem

As we enter a period of change, including structural changes in the automotive industry and rapid progress in the digital revolution, we in the Chubu region - home to numerous global manufacturing companies - are promoting the construction of a new ecosystem for innovation while dramatically improving the productivity of existing companies, and working to realize "growth that drives the Japanese economy" and a new form of society, dubbed "Next Society," in which startups and new industries continuously develop.

## Four Key Concepts Driving Ecosystem Formation

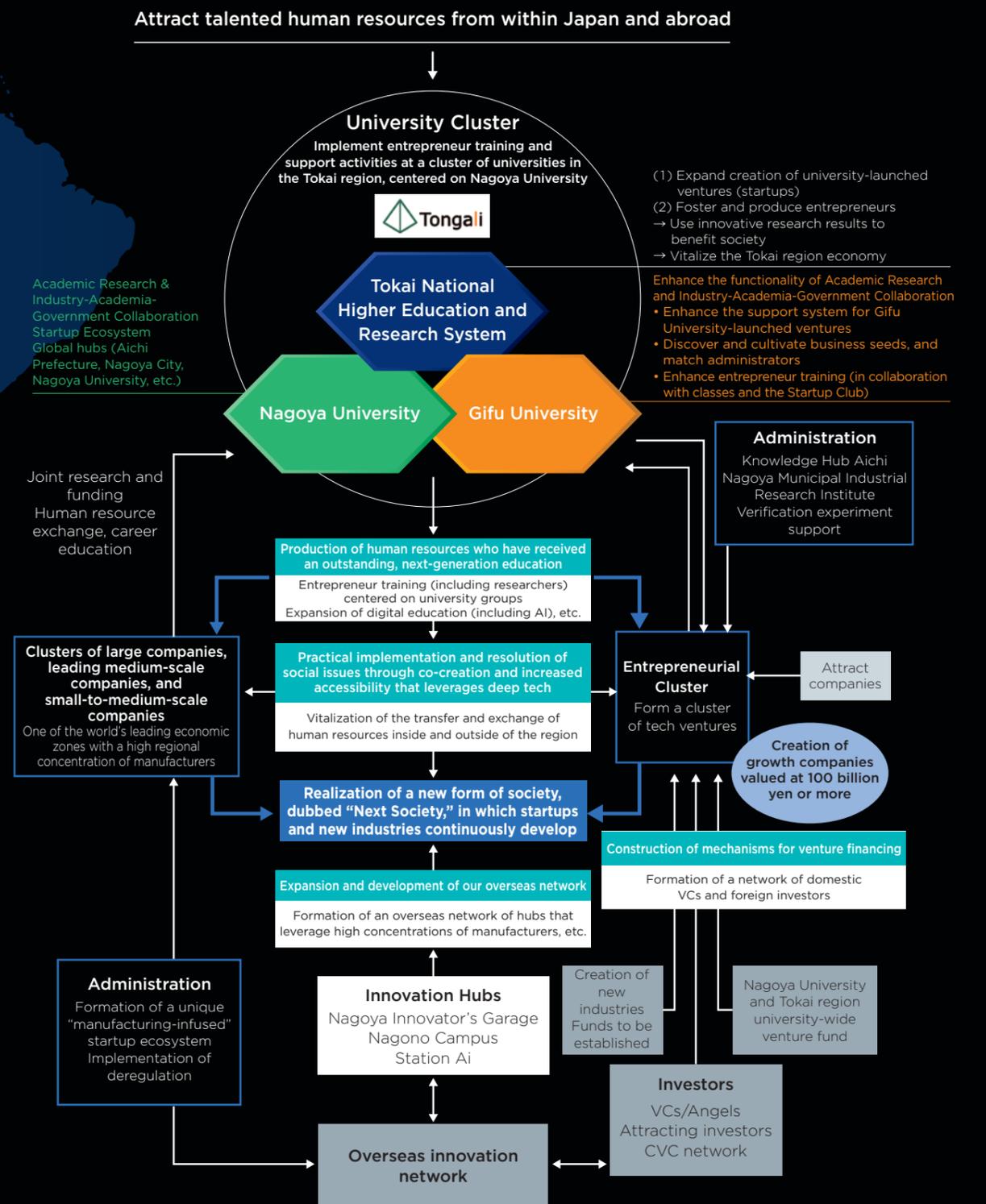
<p><b>Production of human resources who have received an outstanding, next-generation education</b></p> <p>Entrepreneur training (including researchers) centered on university groups Expansion of digital education (including AI), etc.</p>	<p><b>Expansion and development of our overseas network</b></p> <p>Formation of an overseas network of hubs that leverage high concentrations of manufacturers, etc.</p>
<p><b>Practical implementation and resolution of social issues through co-creation and increased accessibility that leverages deep tech</b></p> <p>Vitalization of the transfer and exchange of human resources inside and outside of the region</p>	<p><b>Construction of mechanisms for venture financing</b></p> <p>Formation of a network of domestic VCs and foreign investors</p>

## Six KPIs for Ecosystem Formation

<p>Production of human resources who aspire to launch businesses and innovate</p> <p><b>10,000</b> people per year or more (target to achieve in 5 years)</p>	<p>Amount of Funding</p> <p><b>100</b> billion yen or more / 5 year cumulative total</p>
<p>Number of new businesses co-developed between startups and regional companies</p> <p><b>1,000</b> businesses or more / 5 year cumulative total</p>	<p>Number of startups launched</p> <p><b>300</b> startups or more in the Chubu area / 5 year cumulative total</p>
<p>Number of business matchings between overseas startups and regional companies</p> <p><b>400</b> matchings or more / 5 year cumulative total</p>	<p>Creation of startups with sales of 10 billion yen or more</p> <p><b>10</b> companies or more / 5 year cumulative total</p>
	<p>Creation of companies valued at 100 billion yen or more</p> <p><b>5</b> companies or more / 10 year cumulative total</p>

# TOKAI STARTUP ECOSYSTEM

## Startup Ecosystem in the Chubu Region that Leverages Deep Tech



## We are building a new model of national university suitable for the Tokai region, which is making great advancements into the international community.

**We aim to create a new type of national university corporation that simultaneously develops its ability to contribute to the regional community along with its international competitiveness**

Society and universities are undergoing a period of drastic change. The digital revolution as well as scientific and technological innovations are transforming the structure of society, and we are entering a time for all industries to reexamine their roots. In addition, the proportion of elderly people in Japan is on the rise while the birthrate continues to decline, and this decline in the number of births and in the ensuing population of 18-year-old will present serious challenges in the future. Under these circumstances, in order for education and research conducted at universities to contribute to the sustainable development of society and industry, universities must boldly take up the challenge of enacting major changes on their own.

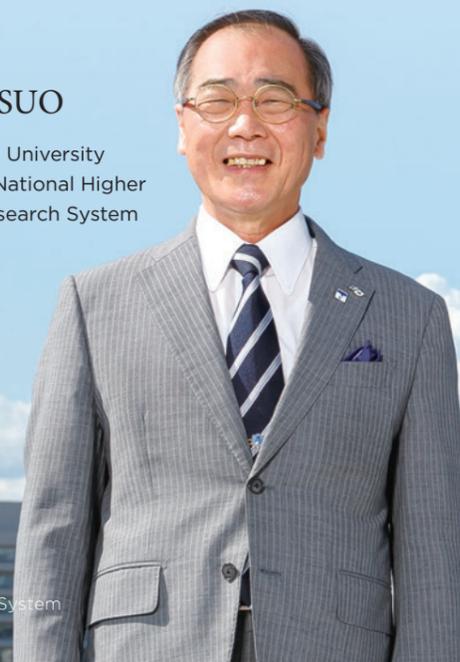
Tokai National Higher Education and Research System (hereinafter "THERS") was established in April 2020 through the corporate merger (integration of administration) between Gifu University and Nagoya University. The aim of this merger, based on early realization that times are changing, is to become a model for university reform as a new type of national university corporation - namely Type IV - which simultaneously develops its ability to contribute to the regional community along with its international competitiveness under the concept of "regions and the international community in close contact."

**We work to fulfill our mission as a university under the fundamental concept that "regions influence the world, and the world influences regions"**

In the process of corporate integration, THERS has formulated TOKAI-PRACTISS (Plan to Renovate Area-Chubu into Tech Innovation Smart Society) to fulfill our mission as a national university in broad collaboration with society. Our vision is to transform the industrial structure of the Chubu region, one of the world's leading industrial clusters, to be more future-oriented and to make it one of the world's leading Tech Innovation Smart Societies. The goal of this association of universities is to transform the Chubu region into a human-centered Society 5.0 through broad collaboration with industrial world, municipal governments, and the national government. Within this context, Gifu University and Nagoya University are joining forces to promote university management through THERS based on the common understanding that academia forms the core of the region as a source of knowledge

### Seiichi MATSUO

President, Nagoya University  
Chancellor, Tokai National Higher Education and Research System



and its key mission is to drive the development of future society.

Society is undergoing significant changes, and in order for Japan to achieve a sustainable, resilient society, it is necessary for us to shift from a unipolar centralized society to one that is regionally decentralized. Traditionally, the phrase "the region" has referred to the area surrounding a university, but I believe that, moving forward, universities should use the phrase in a broader sense, transcending prefectural borders to encompass larger territories that share political, economic, cultural, and topographical characteristics.

In addition, within these regions, the concept of regional co-creation - in which the national government, global companies, and a variety of other stakeholders work together and autonomously - is critical. Moreover, given that the rapid progress of IoT and other areas of digitalization have provided local regions and the rest of the world with direct interconnections, THERS holds "regions influence the world, and the world influences regions" as its fundamental concept. In the future, national universities will be required to serve as key elements in regional co-creation. In addition, depending on the characteristics of the regions in which they exist, national universities will also need to diversify their missions, visions, and the measures they take to realize them.

**Seeking to ensure that the THERS establishes forms of higher education congruent with our "new normal" and continues to pursue international compatibility**

In line with the aforementioned perspective, throughout the process of corporate integration, THERS has worked to accelerate university reforms by deepening discussions among those involved at the executive level and a broad range of other levels within both universities. We continue to work together in order to turn the COVID-19 pandemic into an opportunity to promote a sense of unity between the two universities. The pandemic has significantly altered the world, and there is no longer a way back to the world we once knew. In acceptance of this, THERS will instead focus its sights on identifying and pursuing the *raison d'être* of the universities in this new era.

Now, struggles for hegemony among major powers, the rise of protectionism, as well as the diametrically opposed SDGs and ESG investment initiatives aimed at solving global problems are extremely important issues that must be taken into account when considering the future of national universities. At the same time, however, the pandemic is also guaranteed to drastically alter international student trends throughout the world. Within this context, it is imperative that we establish forms of higher education congruent with our "new normal" and continue to pursue international compatibility. Although we face many challenges that must be overcome for us to realize our vision, we at THERS intend to tackle these challenges with a sense of urgency. Therefore, I would like to express our sincere gratitude for the generous support that has been provided by all of our stakeholders. We look forward to your continued support. Thank you very much.

### Hisataka MORIWAKI

President, Gifu University  
Executive Trustee / Vice Chancellor,  
Tokai National Higher Education and Research System





**Seiichi MATSUO**

President, Nagoya University  
Chancellor, Tokai National Higher Education and Research System

Message from the Chancellor

## Tokai National Higher Education and Research System contributes to solving social issues, and takes on the challenge of creating new value at the forefront of the times.

### Aiming to be the core of academia in the Tokai region

I serve as president of Nagoya University and the first chancellor of Tokai National Higher Education and Research System (THERS). Prior to assuming the position of president, I was in charge of industry-academia collaboration, so I am well aware of the importance of cooperation between universities and regional communities. For several years, I have been working with Dr. Hisataka Moriwaki, president of Gifu University, in establishing THERS to contribute to solving social issues.

In the face of major changes in society, the *raison d'être* of national universities is also entering an era of change. THERS was established through a merger with Gifu University amidst a sense of crisis that our universities might not achieve significant development in the future if we remained traditional universities. By joining forces, we hope that our two universities, which are closely related due to our location in the Tokai region, will be able to generate the power to continue developing together on into the future.

Within this context, the mission of THERS is to become the core of academia in the region and to promote the transformation and development of the regional community.

In addition, in an era when universities must strive to achieve an ideal globally-oriented state, there are limits to what each university can do on its own. In this respect, I believe that launching THERS will serve as a stimulus and as an opportunity to make a great leap toward becoming an internationally acknowledged university institution. Although the path toward this goal will not be smooth, I am confident that both universities will be capable of making further improvements through participation in THERS.

I believe that by enhancing cooperation between the two universities, increasing our cohesion as an organization, and generating various synergies as we move forward, we will be able to enhance the reputations of both universities on the world stage and create an environment that attracts human resources from across the globe.

### THERS works to gain international acknowledgment through the results of education and research

When establishing THERS, we decided on the format of a system of one corporation and multiple universities. This corporate merger is designed so that THERS bears responsibility for common operations, with an emphasis on originality while still promoting collaboration in education and research.

THERS will continue to pursue the creation of value in the form of solutions to social issues through university education. Our priority is on producing outstanding human resources capable of filling leadership roles in a variety of fields by fostering talented individuals through the provision of higher education. Another of the universities' critical missions is to ensure that researchers, who serve as sources of knowledge, achieve world-class research results through open-minded, free-thinking. Through our research activities, we aim to become a national university corporation capable of making intellectual achievements that we then use to benefit society on a large scale. We are being tested to see how far we can transform society

through the results of such education and research.

Furthermore, we need to maintain a broad outlook and high goals by interacting widely with various sectors in the world and outside of the university. As such, building networks with the international community and exchanging human resources are important themes for us in achieving our goal of solving social issues.

I believe that, in the future, the value of a university will be determined by the sum total of four outcomes: human resource development, production of intellectual achievements, social innovation, and networking with the international community. Globally speaking, as universities are expected to contribute to the SDGs, the creation of social value – as opposed to merely economic value – is of even greater importance, and this is what will lead to international recognition. Through the establishment of THERS, both universities will be able to enhance their value as universities through friendly competition with each other.

### Fostering human resources with the spirit to tackle social issues

In regard to the development of human resources in particular, efforts are needed that go beyond the boundaries of conventional thought as society's stances on issues undergo dramatic changes. Traditionally, the main mission of national universities, which were established in prefectures, etc., throughout Japan, was to address the social issues faced by their respective and limited regions. However, social issues are no longer limited in scope to just regional communities and must now be viewed from a broader, more globally-oriented perspective. As an example, the phrase "environmental issues" used to refer to the problem of pollution in each region. However, now, we need to focus our efforts toward global decarbonization. In addition, issues such as overcoming poverty and ensuring diversity must be addressed from a global rather than a regional perspective.

At THERS, we aim to foster human resources with the spirit to tackle these social issues. I believe it is important, as a concrete way to achieve this goal, to revise the cur-

riculum by incorporating languages, liberal arts, and even data science. Ultimately, we aim to foster human resources who will contemplate why they want to study at university and seek an answer.

Our challenges have just begun, and there are many issues to be addressed. However, amidst this new format of a system of one corporation and multiple universities, it is important for us to have the spirit and conviction to invent a new paradigm by boldly tackling our numerous challenges in education and research as well as in financial management and establishment of governance. We would like to synergistically enhance our value as an organization so that the combination of Nagoya University and Gifu University totals a collective power not simply two but rather three or even four.

Moving forward, we will promote initiatives that contribute to solving social issues through THERS, and do our utmost to make THERS an organization that other universities would love to join.

### Toward our 4th medium-term objectives and medium-term plan period, starting from FY2022

Our university, our region, and our country as a whole are at a major turning point. One could even claim that the entirety of human society stands at a major crossroads. Will Japan be able to move in a direction that will enable it to build a sustainable and resilient society? Are we able to become a country or region capable of contributing to the realization of a society where no one is left behind and everyone can live happily? Also, under these circumstances, will universities be able to transform themselves and

create value through education and research that contributes to such a transformation? In the modern age, universities are burdened with high expectations and missions from society. THERS has taken the first steps toward this new challenge, ahead of any other national university. We will continue to work together with our members while maintaining high aspirations and enthusiasm so that these efforts will come to fruition in our 4th medium-term objectives and medium-term plan period.



**Hisataka MORIWAKI**

President, Gifu University  
Executive Trustee / Vice Chancellor,  
Tokai National Higher Education  
and Research System

Message from the Vice Chancellor

**As the first of its kind in Japan, THERS strives to formulate a new paradigm for education and research institutions, while at the same time looking ahead to the future.**

**It is time for regionally-oriented national universities to reexamine their mission**

Gifu University (hereafter “the university”), where I serve as university president, has endeavored to function as a central site for education and research aimed at regional revitalization, primarily within Gifu Prefecture. The university also pursues the goal of becoming a world-class university by demonstrating its areas of expertise. Specifically, in cooperation with relevant regional agencies, we are currently working to develop and improve hubs in four fields: glycoscience, aerospace production technology, healthcare information technology, and agricultural science.

Today, the environment surrounding national universities is undergoing drastic changes. For us, although the population of Gifu Prefecture currently stands at around 2 million, it is expected to drop to 1.5 million

over the next 20 years. Moreover, there are 24 universities in the prefecture while the number of students is projected to decrease from approx. 4,600 down to 3,500 students over the same period. In the future, it will become difficult for any single university to sustainably secure talented students.

Additionally, even though the university’s mission is to revitalize the region, we are entering an era in which we must reformulate our concept of “region,” since the “region” targeted by our graduates and regional companies alike is the entire world. Therefore, we felt that it was essential to establish a new entity that could break through current constraints in order to convey the future of the university more clearly to our various stakeholders.

**Promoting co-creation of THERS’s value by expanding the scope of its educational and research activities**

In light of the current situation, we established Tokai National Higher Education and Research System (THERS) by leveraging the strengths of each field while obtaining support from Nagoya University in neighboring Aichi Prefecture, as well as from the national government, municipal governments, and various companies. Moving forward, the university intends to enhance the sophistication of its education backed by research activities under THERS. At the same time, we intend to provide education not only to conventional students but also to actively invite working adults and international students from overseas. In particular, the university is focusing on inviting international students, primarily from within Asia. I believe that further strengthening this aspect and expanding the scope of

our educational and research activities will lead to the co-creation of value for THERS as a whole.

One pressing issue is the lack of balance among international students. The ratio of incoming international students to students leaving Japan to study abroad is approximately 3:1. Moreover, the number of Japanese students is decreasing year by year. This is not a desirable situation. In recent years, the Joint Degree Program System has been used to accelerate efforts to equalize the number of incoming and outgoing international students through agreements with overseas universities, and one of the strengths of THERS lies in our pioneering efforts in utilizing this system. We would like to leverage this to vitalize the exchange of human resources over the next five to ten years.

**Taking on challenges unprecedented for a university**

It is also important to enhance THERS’s reputation. Specifically, one of our goals is to enhance our assessment in the QS World University Rankings, the world’s most trusted university ranking system. My dream is to make a leap forward to become a university that is highly regarded internationally by accelerating new initiatives while at the same time leveraging THERS’s strengths.

In Japan, THERS’s challenges have only just begun. Legislatively, we are still under development, and there are many issues to address. As an example, students must enroll in one university or the other, and are unable to join THERS itself. However, the Ministry of Education, Culture, Sports, Science and Technology (MEXT) and other central government agencies are aware of these issues, and we are looking forward to the reforms they will make. Initially, research institutions were not allowed into THERS, but at the present time,

they are permitted to join, so progress is being made.

In addition, we intend to link the education-related organizations of both universities through a new organization called Academic Central (AC), and to create and promote education based on this philosophy. This will help students develop creativity through cooperation and openness to different fields, and promote a liberal arts education for tackling the problems facing modern society. Although AC was not part of the original plan for THERS, it could be considered an important development that will promote educational reform in a co-creative manner. In the future, we would like to make AC an educational platform open to the community and further advance its educational system by building a network linking it to other platforms across the country or around the world through Sinet5, an academic information network.

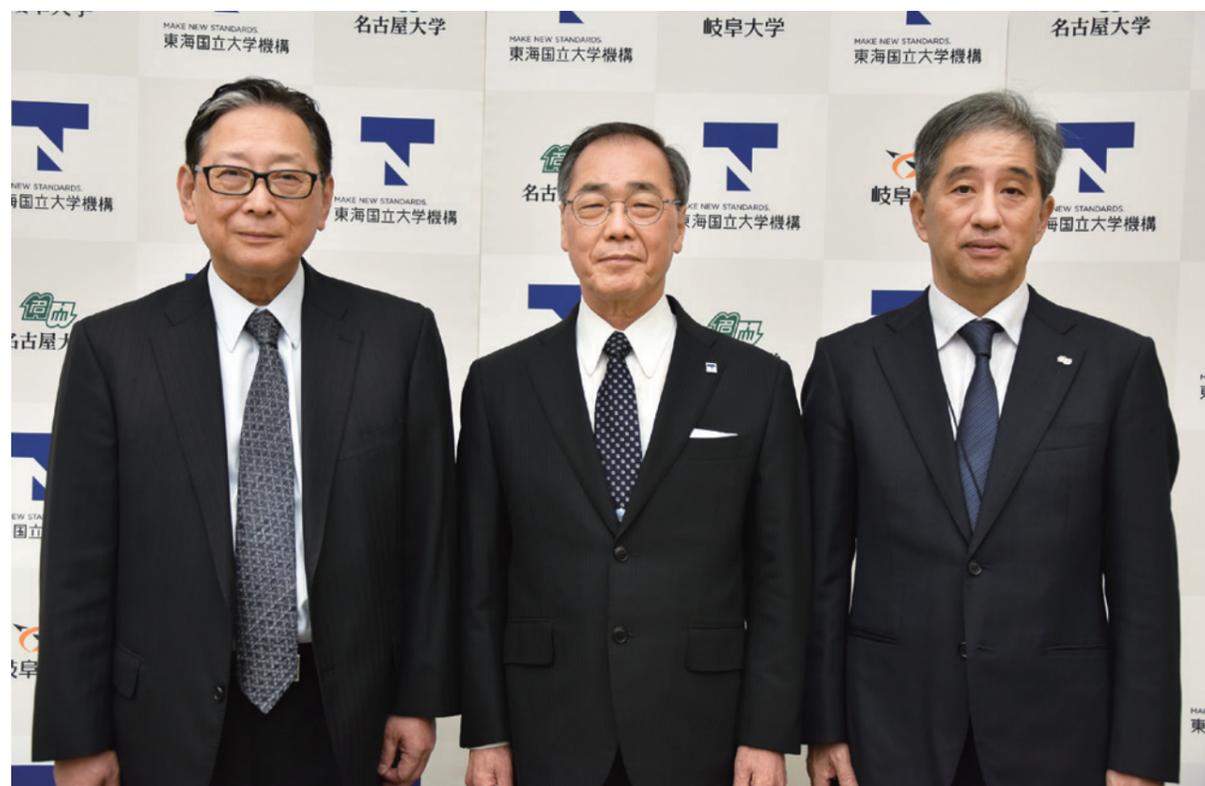
**Tackling the challenge of solving global-scale social issues through the capabilities of the Tokai region**

At THERS, we believe that one of our important missions is to lead the way in creating a model case that will serve as an example for other national university organizations, while looking forward to the future. In addition, proposing THERS as an ideal model in this new era will likely lead to further breakthroughs.

The world is now focused on carbon neutrality and other contributions toward achieving the SDGs, and this is one of the most important themes for universities as well. While it would be difficult for a university

to achieve these goals on their own, we believe it is possible to make a significant contribution toward achieving the SDGs through collaboration – led by THERS – between national, public, and private universities in the region, as well as through cooperation with national and regional institutions and private companies. Moving forward, we hope to consolidate the power of the Tokai region, and aim to ensure that THERS contributes to the sustainable development of society.

## Introducing the Incoming Executive Team



From left: Kazuhiro Yoshida, candidate for incoming executive trustee and president of Gifu University; Seiichi Matsuo, candidate for incoming chancellor of THERS; Naoshi Sugiyama, candidate for incoming executive trustee and president of Nagoya University; Photograph taken at a press conference on September 28, 2021.

### Aiming to be the best core regional university in Japan

My name is Kazuhiro Yoshida, director of Gifu University Hospital (and vice trustee of THERS), and I have been appointed as an incoming executive trustee and a candidate for president of Gifu University. From FY2022, in close collaboration with THERS Chancellor Seiichi Matsuo and Nagoya University President Naoshi Sugiyama, I hope to contribute to the realization of the mission and vision of Tokai National Higher Education and Research System to “lead the world and drive regional transformation” by combining the wisdom of Gifu University and Nagoya University. Through “learning, studying, and contributing,” Gifu University aims to be not only a place where people develop, but also the best regional core university (tentative name) in Japan by addressing global issues and contributing to structural reforms primarily in the regional community as a hub of knowledge and human resources. Furthermore, by leading and contributing to TOKAI-PRACTISS, a plan to transform the Tokai region into a future-oriented society through education, research, social cooperation, and internationalization, we hope to become a university capable of contributing to the creation of a society where young people and the elderly can live vibrantly and prosperously in our increasingly aging society.

**Kazuhiro YOSHIDA**

Candidate for incoming executive trustee and president of Gifu University

### Accumulating knowledge to change the world

My name is Naoshi Sugiyama, trustee of THERS and vice president of Nagoya University (Provost, Supervision, and Research), and I have been appointed as a candidate for incoming executive trustee and president of Nagoya University. From FY2022, under the leadership of Chancellor Seiichi Matsuo and together with Gifu University President Kazuhiro Yoshida, I hope to establish the newly-created THERS as the new standard for national university corporations. To this end, I intend to take Nagoya University, as a president who will be responsible for education and research, to new heights so that it develops into a world-class research university. Nagoya University’s mission is to realize innovations that will change the world through the accumulation of knowledge and by continuously producing research results backed by profound research capabilities in both the humanities and the sciences. I hope to further enhance our efforts in diversity and development in Asia, for which we have a proven track record, refine our Academic Central concept, establish internationally compatible education, further accelerate our growing industry-academia collaboration, and make Nagoya University a place where all of the members can be proud and find joy in their work.

**Naoshi SUGIYAMA**

Candidate for incoming executive trustee and president of Nagoya University

# Value Creation through Tokai National Higher Education and Research System

## Value Creation

Universities that form world-class research centers and provide high-quality education with international compatibility  
 Universities that contribute to the international community and regional revitalization through solutions to regional and industrial issues  
 Universities that value dialogue and respect the diversity of people and societies

Through these, we present the value creation story of THERS as a public enterprise rather than as a corporation.

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# Tokai National Higher Education and Research System Start up Vision

## START UP VISION

Upon its establishment, THERS formulated a “startup-vision” through discussions at both universities on what it should aim to become in order to contribute to regional revitalization and promote international competitiveness as a completely new integrated corporation. This vision stipulates the fundamental goals and policies to be achieved over the next three to five years. We aim to become one of the world’s leading research universities while at the same time integrating the research results developed by both universities and utilizing them to promote industrial development in the Tokai region.

Development based on the dual goals of  
while simultaneously contributing to

improving international competitiveness  
regional revitalization

TOKAI

Basic  
Philosophy  
Behind the  
Establishment  
of THERS

1

In modern society, regions influence the world, and the world influences regions.

2

In light of the current situation in which supply chains and living areas extend over prefectural borders, it is important for national universities to strategically and organically conduct their activities over a larger and broader region.

3

In order to contribute to regional revitalization, it is necessary to be internationally competitive, and improving international competitiveness is difficult without simultaneously collaborating with the regional community.

4

The two universities possess different characteristics within their respective histories, and we will actively work to maximize the benefits of corporate integration while respecting the other’s characteristics.

# Tokai National Higher Education and Research System Start up Vision

## Tokai National Higher Education and Research System

aims to build a new model for Japan that creates a virtuous cycle of development for universities, industries, and communities, and to simultaneously improve international competitiveness and contribute to regional revitalization.

We aim to become a "central site for knowledge" through the development of world-class research in fields in which both universities excel, and to provide high-quality education with international compatibility.

By "new model" we mean a center for the future where Gifu University, with deep roots in the community, and Nagoya University, which aims to become a world-class research university, can leverage their strengths to complement each other. THERS aims to be a unique site for knowledge befitting the Tokai region, one of the world's leading economic zones, through collaboration between universities, industries, and communities. Centered on the concepts of "research," "education," and "social contribution," THERS strives to develop based on the dual goals of improving international competitiveness while simultaneously contributing to regional revitalization by becoming a center for cutting-edge research that further boosts the strengths of the two universities, and fostering and producing human resources who operate internationally in line with the Academic Central approach.



### Research

Become a site for knowledge through the development of **world-class research**

- As a "central site for knowledge," we aim to contribute to regional revitalization by providing the region with the world's highest level of knowledge.
- As a "central site for knowledge," we aim to become a source of value-creating knowledge that provides society and people with direction in life.




### Education

Provide high-quality education with **international compatibility**

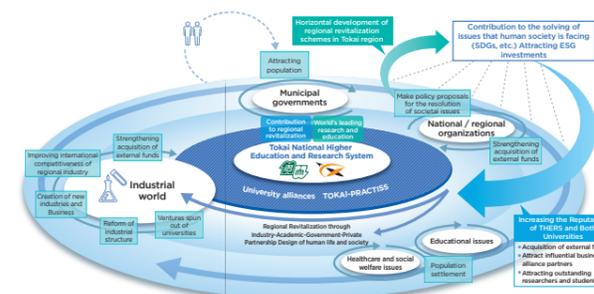
- In the "central site for knowledge," we provide internationally-compatible, high-quality education, and foster the next generation of leaders who will operate in the Tokai region, elsewhere in Japan, and overseas.
- To this end, we established Academic Central as a command tower for planning educational reforms at both universities under THERS' philosophy.




### Social Contribution

Contribute to the **international community and regional revitalization** through solutions to regional and industrial issues

- THERS works to establish TOKAI-PRACTISS (Tokai Project to Renovate Area Chubu into Tech Innovation Smart Society), a virtuous cycle of development for universities, the industrial world, and communities.
- THERS aims to contribute to the international community and regional revitalization by using intellectual achievements to benefit society and through resolving social and industrial issues.



### Other

- **Strengthen the foundation for existence as a university cluster**  
We aim to strengthen our financial base through a virtuous cycle of funds based on collaboration with society and industry, and to develop into a university cluster that can attract excellent researchers, international students, and students, including working adults.
- **Respect for diversity**  
Based on a deep recognition of the importance of ensuring diversity with regard to the university's members, we aim to create an attractive campus where young people, women, and foreign nationals can work comfortably.
- **Respond to the globalization of education and research**  
By strategically developing a wide range of partnerships with Japanese and overseas universities and research institutions, we aim to develop educational and research activities that flexibly respond to changes in the international scientific, technological, and academic environment as well as trends in higher education as a university cluster.

# Specific Strategies to Realize the Vision | 1 |



## Become a Site for Knowledge Through the Development of World-Class Research

- By developing a system that enables all faculty members from both universities to flexibly utilize the research environments and support systems of both universities, we will make the research activities of individual faculty members more active and accelerate the research activities of the university cluster as a whole.
- By bringing together faculty members – regardless of their affiliated university – in fields where both universities excel regarding basic, applied, and developmental research, we will develop into a hub where world-class research can be conducted.
- In order to enhance functionality, we will continue to manage faculty personnel in accordance with medium-to-long-term strategies. To this end, the institute works to establish mechanisms for dialogue and coordination between universities within THERS to ensure that faculty personnel affairs are appropriately determined by each university.

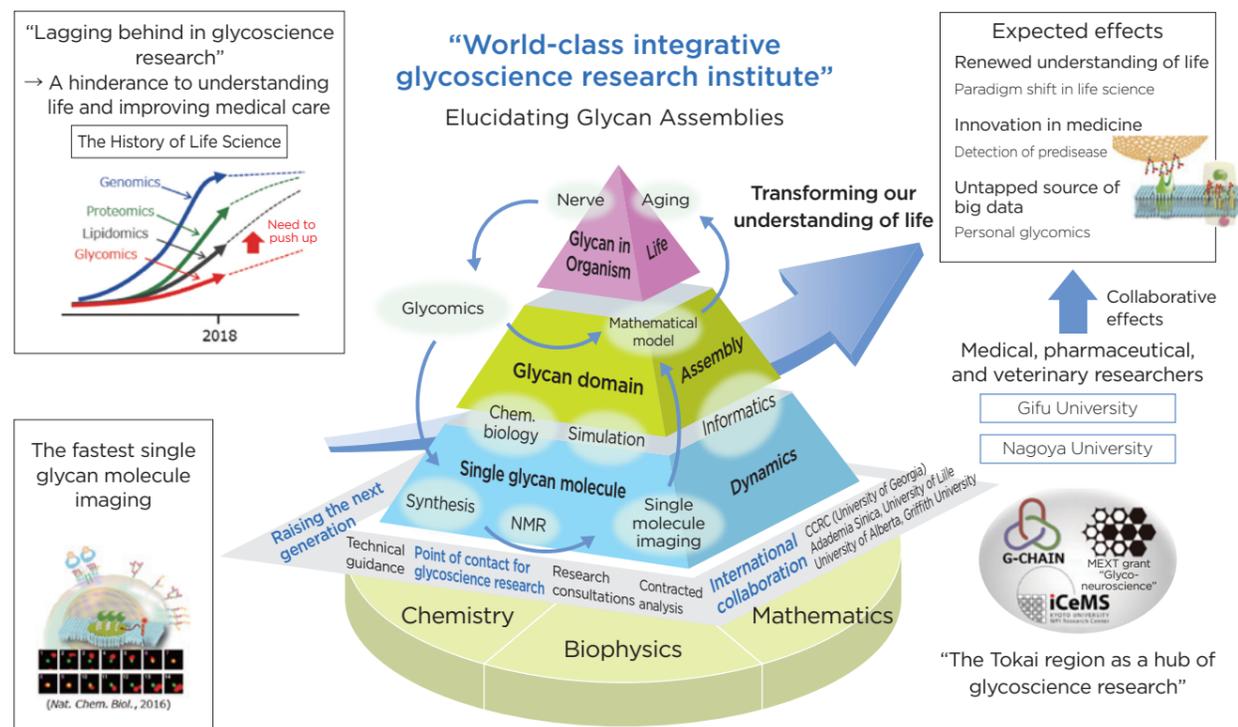
### Hub focused on development and improvement (1)

#### Institute for Glyco-core Research (iGCORE)

By bringing together world-class researchers in the fields of glycochemistry and imaging (Gifu University), as well as glycobiology and medicine (Nagoya University), and by further enhancing the fields of glyco-analysis, glycan-related big data, and glycan-related mathematical models, iGCORE constitutes the world's most unique integrated glycoscience research center. For the first time in the world, this enables the elucidation and application of the principles of complex life made possible by glycan assemblies, to an extent beyond of even that achieved by nucleic acid and protein research.

iGCORE provides advanced education and fosters world-leading researchers through interdisciplinary research and exchange-oriented operations in a mixed-lab format. As the core institute for glycoscience, iGCORE provides consultation on glycoscience research, educational training, and – in the long term – contracted analysis and synthesis of glycans, with the aim of making glycoscience research synonymous with the Tokai region.

#### Conceptual Illustration of Tokai National Higher Education and Research System's "Institute for Glyco-core Research (iGCORE)"



### Hub focused on development and improvement (2)

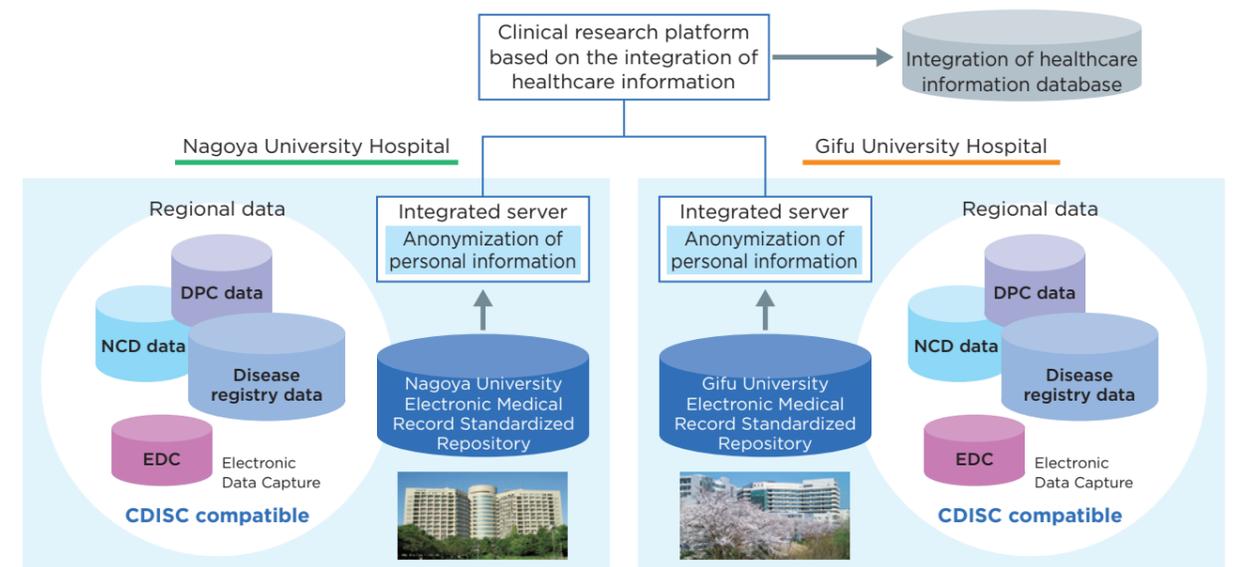
#### Center for Healthcare Information Technology (C-HiT)

To enhance our research capabilities through the development of a new research hub, THERS has constructed a standardized repository system to serve as the basis for a platform capable of collecting medical information from both universities.

Since multiple vendors are used in operating the electronic medical record system, each university employs different specifications and data structures. Therefore, THERS institutes standardization by incorporating a server for integrated use of the electronic medical record data possessed by both universities, and works to further expand the system into an environment capable of promoting international data-driven clinical research. Along with this, we are also expanding departments to include professors from many other fields such as mathematical modeling and bioethics.

Establishing a clinical research platform composed of multiple medical institutions promises to improve the level of medical care by rendering the state of regional medical care more visible and enabling the creation of a regional medical coordination system. Utilization of these data sets is expected to provide benefits in a variety of clinical research applications, including state-of-the-art AI analysis.

#### Building the foundation of Tokai National Higher Education and Research System's clinical research platform based on integration of healthcare information



From a hospital data utilization model toward integration of regional data and the establishment of a platform for international joint research

# Specific Strategies to Realize the Vision | 1 |

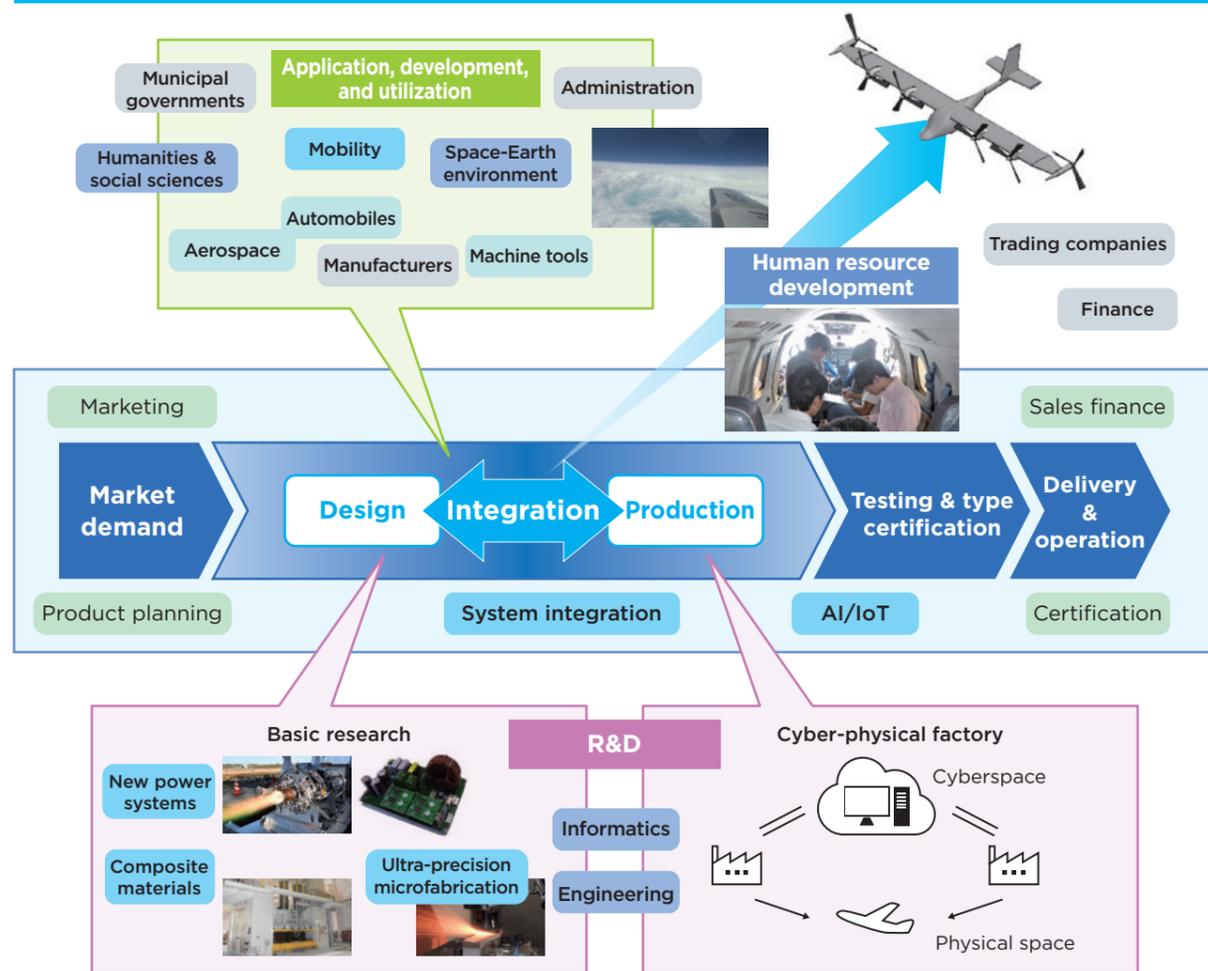
## Hub focused on development and improvement (3)

### Aerospace Research and Education Hub (AREH)

Approximately 50% of Japan's aerospace production is concentrated in the Tokai region. Integrating aerospace aircraft design and production, integrating interdisciplinary fields such as engineering, informatics, humanities, social sciences, and environmental studies, and incorporating technologies and systems from other industries such as automobiles and machine tools will transform this region into a world-leading aerospace production cluster, which will in turn contribute to the development of technology and practical implementation of flying mobility, as well as the ability to employ these in solving social issues.

To this end, utilizing the strengths of both universities (i.e., Gifu University's production technology and Nagoya University's design technology), we have established the Aerospace Design and Production Integrated Human Resource Development Program to achieve systematic human resource development in aircraft design, manufacturing, and assessment technologies at levels unprecedented both domestically and globally, and work to foster 'production technology-oriented human resources who comprehend the design mindset' as well as 'design technology-oriented human resources who comprehend the production mindset' as highly accessible assets. In addition, we have established the Intelligent Production Technology Research & Development Center for Aerospace in order to first achieve innovations in production technology through R&D in four research fields (information and communication technology, autonomous transport, processing and assembly robotics, and advanced processing technology) toward the realization of cyber-physical factories, and to also expand into industries beyond aerospace production.

Aerospace Research and Education Hub (AREH) (Illustration)



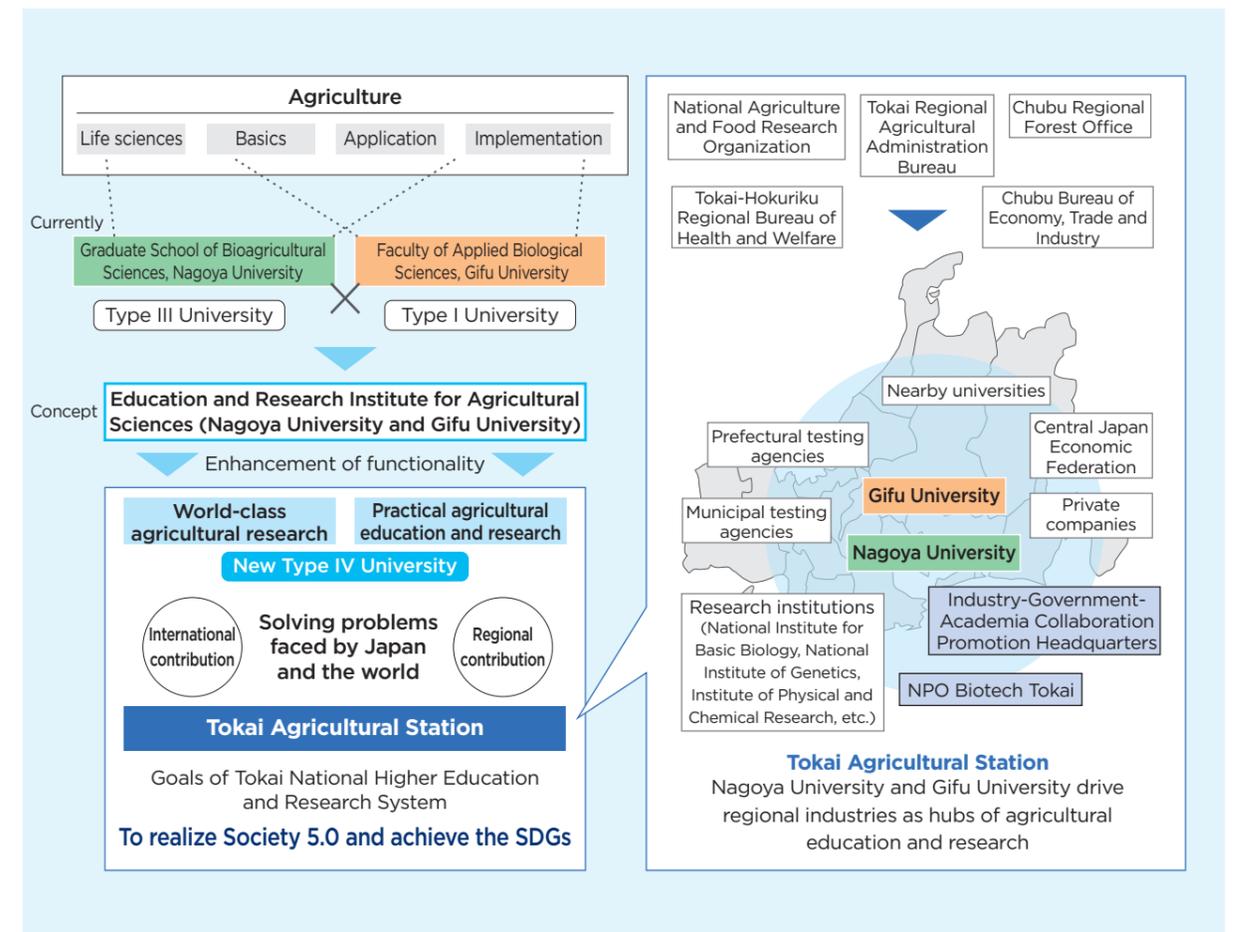
## Hub focused on development and improvement (4)

### Education and Research Institute for Agricultural Sciences

Based on the education and research conducted at both universities, we are constructing a global hub for agricultural education and research that supports the development of research both in the Tokai region and around the world by training researchers and advanced specialists capable of playing active role in Japan and overseas. In particular, with an eye to solving issues in agriculture and environment-related fields, such as improving productivity through smart agriculture and achieving low-carbon agriculture, we will continue to play a central role by forming a platform (Tokai Agricultural Station) to support new developments through industry-academia-government collaboration and other means, with the aim of generating innovations beyond the conventional framework and creating a future-oriented society in rural areas.

At the Education and Research Institute for Agricultural Sciences, which contributes to achieving SDGs related to food, environmental issues, etc., while achieving regional revitalization, we aim to simultaneously contribute to the realization of Society 5.0 through solving various issues in Japan and around the world by ensuring that international collaborative research develops to the point of practical implementation.

Structure of the Education and Research Institute for Agricultural Sciences (Illustration)



# Specific Strategies to Realize the Vision | 2 |



Education

## Provide High-Quality Education With International Compatibility

THERS works tirelessly to improve its curriculum with the aim of providing student-oriented, high-quality education that is also systematically designed to be internationally relevant. For the time being (over the next 3-5 years), we are focusing on the following initiatives.

- Further enhancing our liberal arts curriculum and incorporating a style of next-generation education that utilizes new technologies.
- Developing Academic Central, which formulates plans for joint infrastructure to more effectively provide education in mathematics, data science, language study, etc.
- Examining measures to implement as a university cluster to address current challenges with the aim of supplementing and supporting each other's efforts, while working to provide education suited to the strengths and characteristics of both universities through a joint infrastructure.

### Educational vision for the next 3-5 years - Toward creating educational value unique to THERS (1)

At THERS, by integrating the advanced education provided at Gifu University, which serves as central site for regional revitalization and internationalization in the Tokai region, and Nagoya University, which preserves a tradition of Nobel Prize-winning research, we have developed a system of education unique to THERS that is truly student-oriented and leads to genuine academic achievements.

In order to foster human resources capable of playing an active role in the world, we work to enhance our liberal arts curriculum to ensure that students gain not only specialized knowledge and computer skills but also the ability to think and communicate. We emphasize liberal arts because it serves as the fundamental basis of human education and is an essential component in becoming an appealing person sought after by society. We also focus on promoting the so-called common basics, such as mathematics, data science, language study, etc., which will be necessary in creating society as we move forward.

We are constructing a multi-campus model by making good use of ICT/AI. This multi-campus model enhances our ability to support active learning and independent learning, and creates a community where faculty members, staff members, and students learn together and support each other. In this way, both universities are able to share their resources and achievements, which expands the potential for learning.

Furthermore, we are developing a co-creation education system that leverages our networks throughout regional industries and around the world. While promoting practical learning along the theme of industrial and regional issues by incorporating into the curriculum the co-creation system that we operate in cooperation with industrial world, etc., we also promote the development of globally-minded human resources through study abroad programs and interaction with international students.

### Developing a system of higher education unique to THERS that is

### truly student-oriented and leads to genuine academic achievements

**Education that emphasizes satisfaction**

**TOKAI - where you can acquire and continuously refine a foundation for life**

- Education that provides the foundation for enjoying a long life
- Advanced education from genuine Nobel Prize-winning professors
- Advanced education that involves cutting-edge technologies and addresses real issues through collaboration with the industrial world and individual companies, as well as with municipal governments that are facing regional issues.
- Education that can be acquired any number of times at any age
- Education that continues to improve based on objective assessments and the needs of stakeholders, including domestic students, international students, the industrial world, the regional community, etc.

**Individually optimized education model**

**TOKAI - where you can learn to discover and solve issues as an individual while expressing yourself as a team**

- Practical programs beginning from the basics via co-creation
- Educational programs that can be individually designed by the students themselves
- Individualized meticulous attention provided via flipped classrooms, etc.



**World-class educational environment**

**The level and content provided by TOKAI are world-class**

- Universities with a healthy degree of difficulty in graduation
- International exchange and inter-connections with foreign universities
- English-language lectures and supplementary courses in English for Japanese-language lectures
- Universities that provide accountability and assurance of academic quality
- Assurance of proper living environments for international students
- Realization of campus life that is both physically and mentally healthy for all students

**Education where the "venue" is also of value**

**TOKAI - "education towns" formed around universities and research institutions**

**TOKAI - fostering 'knowledge' that comes to life through interactions between differing value systems**

- Interaction between students from a broad range of generations and demographics
- Well-developed international and interdisciplinary networks

**TOKAI - in the heart of Japan**

- The field of regional revitalization studies, in which students can learn to solve problems from the perspectives of both metropolitan and rural areas
- The sharing of educational resources unique to each region

**Educational infrastructure with high academic efficiency**

**TOKAI - driving educational reforms in Japan through the use of cutting-edge digital infrastructure**

- Education incorporating the latest information technologies
- Education that provides access to a diverse range of programs through the use of remote systems

# Specific Strategies to Realize the Vision | 2 |

## Educational vision for the next 3-5 years - Toward creating educational value unique to THERS (2)

Now that the digital revolution and globalization are proceeding rapidly, and society is undergoing such drastic changes, the world faces environmental problems, population problems, and a variety of other social issues. The structure of the industry is also expected to change both rapidly and on a large scale, and the Tokai region will need to keep pace with these changes.

Under our mission to solve these issues, the conventional style of education focused on 'acquiring knowledge' has become relatively less valuable, and at the same time, demand is on the rise for human resources capable of contributing to regional communities and the world through the creation of new value.

THERS aims to provide the world and regional communities with human resources capable of addressing these sorts of social issues through the creation of new value, and we hold "courageously building the future together" as our shared philosophy toward education. In addition, we have determined the abilities 'to deeply contemplate an issue,' 'to make headway on projects,' and 'to communicate effectively' to be the core value-creation skills that students should acquire, and we continue to promote initiatives aimed at fostering these skills.

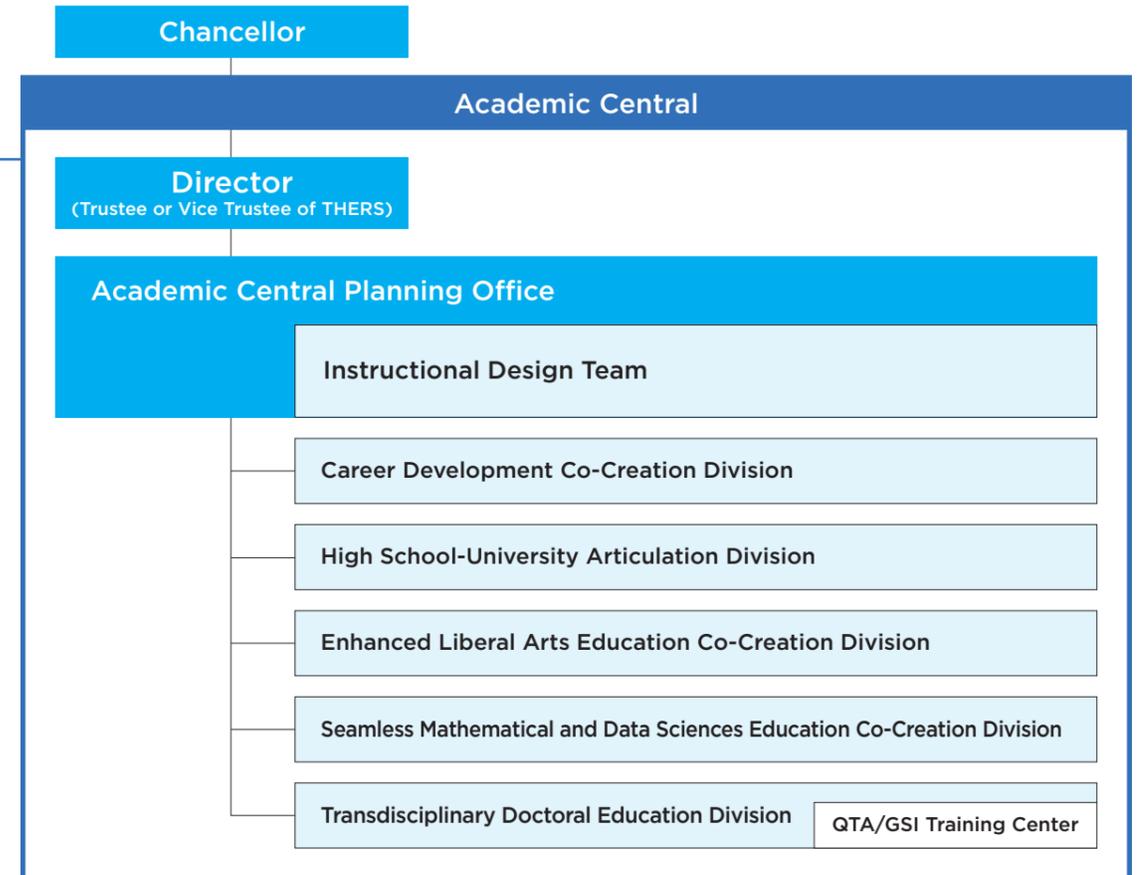
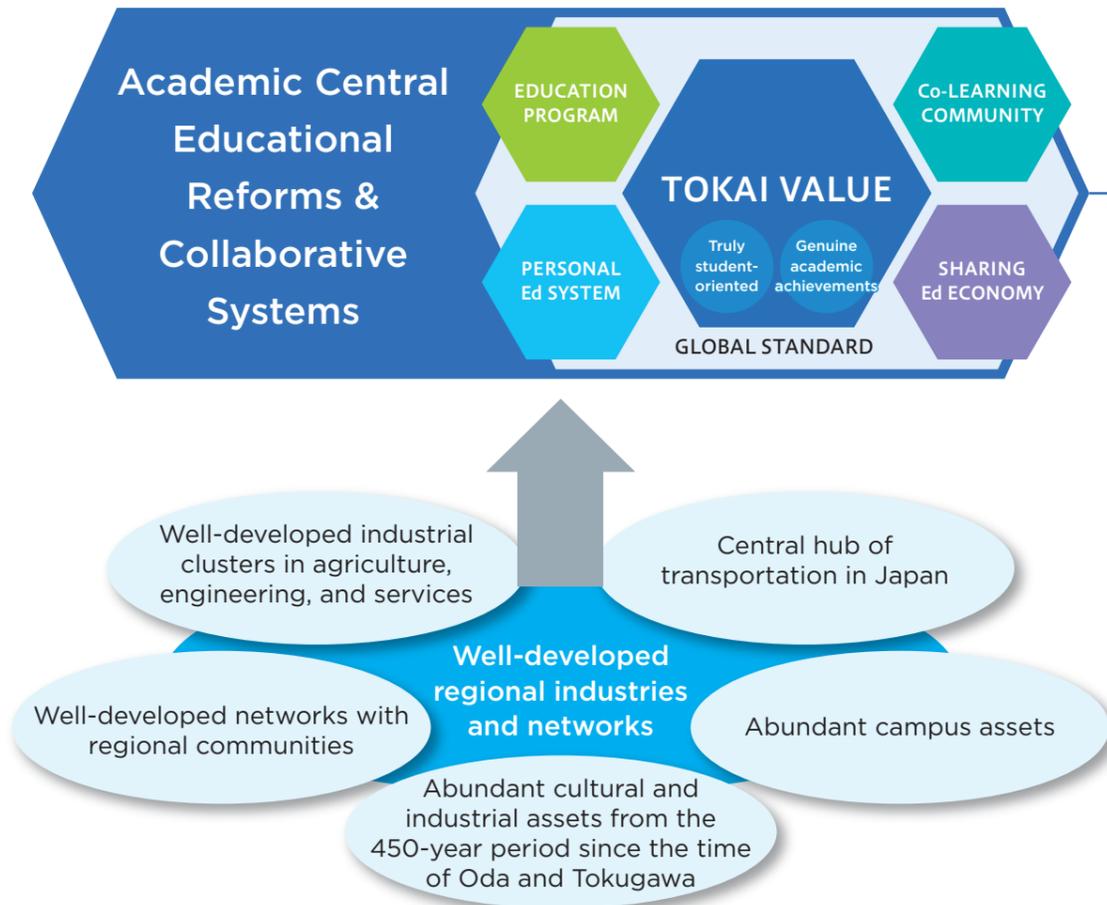
Through the phrase "building the future together," we aim to convey the message that, in addition to the conventional style of education in which faculty members teach students, we also offer a place where of a range of people from a broad cross-section of society - regardless of academic field, nationality or generation - are able gather, think, and grow together.

THERS has established Academic Central to create and promote education based on this shared philosophy by linking together the education-related organizations of the two universities. Academic Central serves a foundation for designing education at THERS, for consolidating knowledge by bringing together a diverse range of people, and for supporting their ascent onto the world stage.

We intend to take the lead in promoting educational reforms while making optimal use of our networks and the region's highly developed industrial base by establishing five departments under the Academic Central Planning Office, including the High School-University Articulation Division and the Seamless Mathematical and Data Sciences Education Co-Creation Division.



Illustration of Tokai National Higher Education and Research System platform (scheduled for launch in 2024) (Proposal by Tetsuo Kobori Architects)  
To serve as the venue for Academic Central activities, we are creating an advanced model of a sustainable, recycling-oriented campus that integrates people, architecture, and the landscape.



# Specific Strategies to Realize the Vision | 3 |



## Contribute to the International Community and Regional Revitalization Through Solutions to Regional and Industrial Issues

- The Tokai region has numerous strengths in a variety of industrial fields, including manufacturing, agriculture, and forestry. We contribute to solving the issues facing society and industry by further developing these strengths and advantages.
- At the same time, we will continue to contribute to achieving Sustainable Development Goals (SDGs) relating to medical care, welfare, education, mobility, energy, disaster mitigation, etc., as well as to solving regional social issues.
- Through various initiatives aimed at solving these issues, we are contributing to regional revitalization by fostering human resources who possess an entrepreneurial spirit, creating university-launched ventures that leverage world-class knowledge, and providing new value for the next-generation.

The Tokai region offers a new university model, while maintaining sustainability and initiative TOKAI-PRACTISS (a model for a virtuous cycle of development for universities, industries,

and communities in the Tokai region)

In pursuit of a new national university model, THERS holds social contribution as one of the three pillars of its mission. Another important mission of the universities is to contribute to the creation of a planet where no one is left behind and people can live happily by using the results achieved through internationalization and collaboration with society to in turn further benefit society.

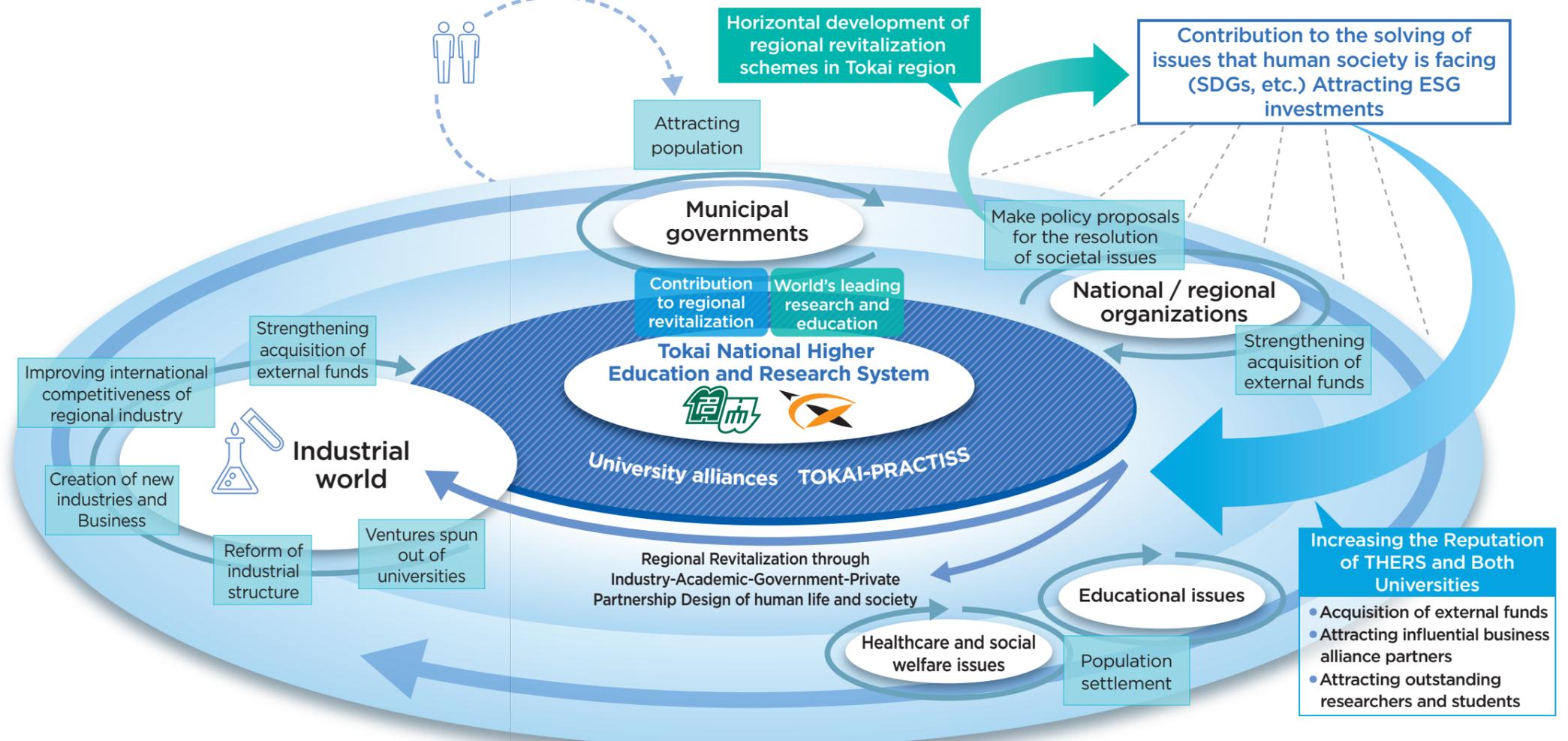
THERS is currently cooperating and partnering with a variety of sectors in achieving the SDGs put forth by the United Nations, with the aim of developing universities capable of contributing to human society. Collaboration between industry, academia, and the government is a key element in achieving these goals.

Therefore, as a "central site for regional revitalization in the Tokai region," THERS formulated Tokai Project to Renovate Area Chubu into Tech Innovation Smart Society (TOKAI-PRACTISS), a model for a virtuous cycle of development for universities, industries, and communities, with the aim of stimulating structural changes in the region while making use of world-class knowledge and close cooperative support relationships with regional sectors.

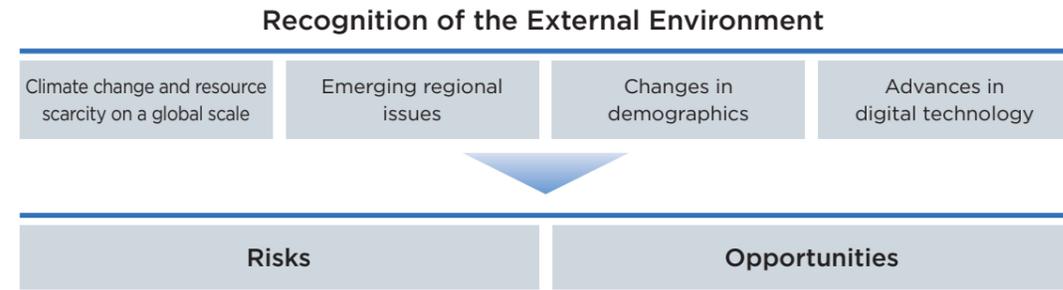
As a university alliance, TOKAI-PRACTISS will contribute to regional revitalization and the international community by combining wisdom from industry, academia, the government, and the private sector to take on the challenge of initiatives addressing carbon neutrality and other environmental issues and of solving the problems faced by the human society, including regional medical care.

THERS will continue to promote the creation of a future society in the hope that our model for a virtuous cycle in the Tokai region will serve as a catalyst for regional structural reform that will attract worldwide attention as a model for the future.

As a "central site for regional revitalization in the Tokai region," THERS and the University Alliance will stimulate structural changes in the region while making use of world-class knowledge and close cooperative support relationships with regional sectors.



# Value Creation Process



### Realization of our vision

Tokai National Higher Education and Research System, established as Japan's first system of one corporation and multiple universities, aims to achieve a new type of university that simultaneously contributes to regional revitalization and improves international competitiveness, while leveraging the characteristics of both universities to open up the future of the universities and the society.



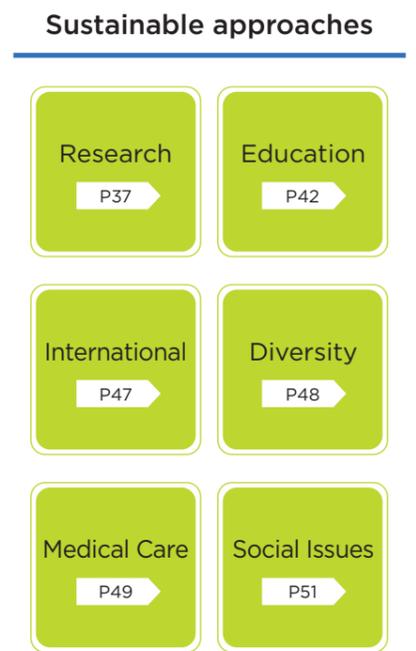
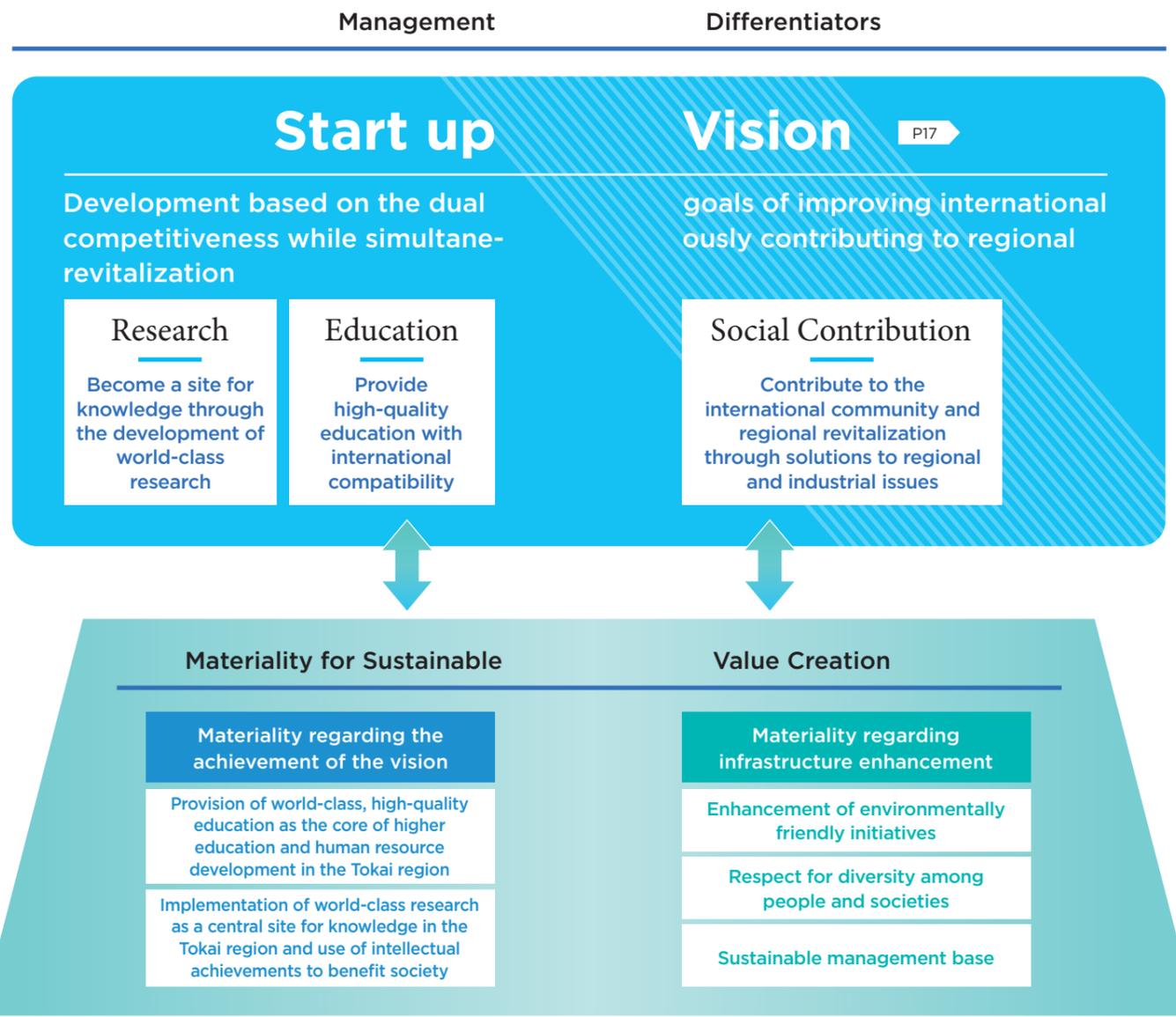
### Value of the University

As a "central site for knowledge," we have fostered the next generation of highly skilled human resources who will lead the world, Japan, and the region through world-class research.



### Management Base

<b>Human Capital</b>	Number of faculty members: 3,314 Number of staff members: 3,869 (including 2,557 medical staff members) Undergraduate students: 15,205; Graduate students: 7,802 Ratio of international students in regular program: 8.7%
<b>Financial Capital</b>	Total assets: 349.9 billion yen; Ordinary revenue: 155.0 billion yen Land area: 9,548,404 m <sup>2</sup> Building area: 1,132,784 m <sup>2</sup> Number of overseas hubs: 17; Number of sickbeds: 1,693
<b>Intellectual Capital</b>	Library collection: 4,288,383 volumes Number of papers indexed in Scopus (cumulative: 2016-2020): 30,633 papers Number of patents held: 1,601
<b>Social Capital</b>	Number of doctoral degree recipients (cumulative): 26,230 Number of academic exchange agreements: 589 institutions Number of joint research and contract research projects: 2099 Number of Industry-Academia Collaborative Research Lectures, etc.: 54 lectures (Note 1) Number of Endowed Lectures, etc.: 29 lectures (Note 2)
<b>Natural Capital</b>	Energy usage: 1,891,488 GJ Water usage: 1,413,000 m <sup>3</sup> Paper usage: 302 t



\*The listed representative forms of capital were extracted from information as of FY2020 and as of either April 1, 2021, or May 1, 2021.  
\*The above figures represent the sums of THRS, Gifu University, and Nagoya University in the relevant area.  
(Note 1) The sum of the number of Industry-Academia Collaborative Research Lectures and Industry-Academia Collaborative Research Divisions established at Nagoya University and the number of Joint Research Lectures established at Gifu University  
(Note 2) The sum of the number of Endowed Lectures and Endowed Research Divisions established

Messages from Leaders  
Value Creation Stories  
Value Creation Activities  
Value Creation Base  
Financial Strategy & Financial Statements

# Risks and Opportunities & Materiality

## Risks and Opportunities

Against the backdrop of digital innovations and environmental changes, society and universities are surrounded by dramatically changing circumstances. Under these circumstances, in order for university education and research at THERS to contribute to the sustainable development of society and industry, we must understand the social issues relevant to the organization. We categorize the social issues surrounding THERS, and analyze each issue from the two perspectives of risk and opportunity, develop strategies, and identify materiality.

### Social issues to recognize

### Risks and Opportunities

	Risks	Opportunities
 <p>Climate change and resource scarcity on a global scale</p>	<ul style="list-style-type: none"> <li>The need for a shift in business activities in line with the transition to a de-carbonized, recycling-oriented society</li> <li>The risk of losing a base of activities due to Nankai megathrust earthquakes and other frequent natural disasters</li> </ul>	<ul style="list-style-type: none"> <li>Expansion of the scope of research into decarbonization and resource recycling technologies</li> <li>Promotion of community development centered on universities to solve environmental problems</li> </ul>
 <p>Emerging regional issues</p>	<ul style="list-style-type: none"> <li>The decline in GDP in the Tokai region due to accelerating concentration of the population in urban centers</li> <li>The risk of municipal collapse in depopulating areas, including mountainous portions of Gifu Prefecture and the Okumikawa region in Aichi Prefecture</li> <li>Acceleration of the selection and concentration of government budgets for national university corporations in response to growing demand for research on solutions to social issues</li> </ul>	<ul style="list-style-type: none"> <li>Acceleration of open innovation with international companies in the Tokai region</li> <li>Construction of a sustainable municipal model in depopulating areas through industry-academia-government collaboration</li> <li>Expansion of sources of funding through increasing ESG/SDG investments</li> </ul>
 <p>Changes in demographics</p>	<ul style="list-style-type: none"> <li>Intensification of competition in acquiring students due to the accelerated decline in the birthrate in Japan</li> <li>The global decline in the working-age population and rising university enrollment rates in developing countries increasing the difficulty of attracting outstanding international students</li> </ul>	<ul style="list-style-type: none"> <li>Expansion of the scope of recurrent education in a super-aged society</li> <li>Increased awareness of health promotion and preventive medicine in response to a super-aging society</li> </ul>
 <p>Advances in digital technology</p>	<ul style="list-style-type: none"> <li>Increased competition in acquiring students worldwide due to the proliferation of online classes and open classes at prestigious universities</li> <li>The decreased need for university commuting due to easier access to specialized information causing an increase in the importance of universities distinguishing themselves “phygitally”</li> </ul>	<ul style="list-style-type: none"> <li>Enhancement of online-based educational programs</li> <li>Expansion of the scope of research activities through the development of new technologies such as AI and big data</li> <li>Acceleration of the speed of research through the advancement of globalization triggered by digitalization</li> <li>Construction of new medical systems, such as online medical diagnoses</li> </ul>

## Materiality (A Key Issue)

In preparing the first integrated report on THERS, we identified our materiality. Our initiatives addressing these examples of materiality are designed to also contribute to achieving the SDGs, and through these initiatives, we will continue to contribute to enhancing our social and economic value.

Materiality related to solving social issues through initiatives	<b>Provision of world-class, high-quality education as the core of higher education and human resource development in the Tokai region</b>	As a central site for fostering of the next generation of highly skilled human resources the world, Japan, and regions, including the Tokai region, we will produce human resources who contribute to the realization of solutions to social issues through the pursuit of knowledge. We will also continue to promote the universal human joy of learning through recurrent education and other programs.
	<b>Implementation of world-class research as central site for knowledge in the Tokai region and use of intellectual achievements to benefit society</b>	Through collaboration and mutual complementation in a manner that leverages the strengths of both Gifu University and Nagoya University, we aim to become a world-class site for knowledge. In addition, we aim to transform the industrial structure of the Tokai region, one of the world’s leading industrial zones, to be more future-oriented, and contribute to solving social issues in cooperation with industrial world and the administration as a regional hub of academic research.
Materiality regarding infrastructure enhancement	<b>Enhancement of environmentally friendly initiatives</b>	We promote the reduction of environmental burdens and efficient energy usage, and contribute to the realization of an environmentally friendly and sustainable society and a harmonious coexistence with regional communities.
	<b>Respect for diversity among people and societies</b>	In order to promote high quality education and research, it is essential for us to ensure diversity among our members. We promote diversity and work style reforms with the goal of creating an organization in which diverse human resources can shine.
	<b>Sustainable management base</b>	In order to build a resilient organizational structure, we work to enhance our financial base through collaboration with society and industry, improve our management structure through cost visualization, enhance our governance system for research ethics, and promote DX.

# Tokai National Higher Education and Research System Value Creation Activities

## Activities

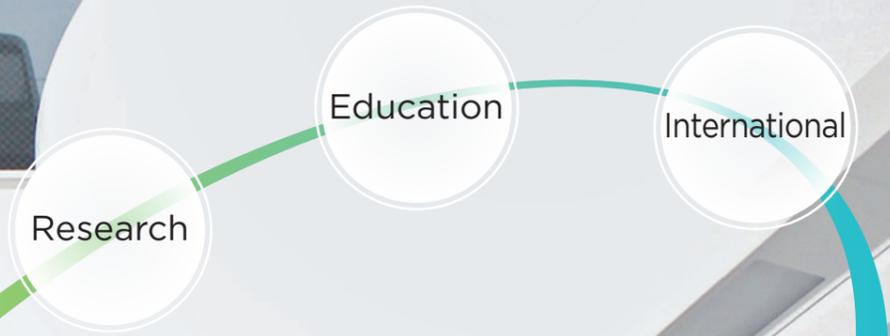
As a system of one corporation and multiple universities, Tokai National Higher Education and Research System is engaged in a wide range of activities and efforts to create value by enabling our universities to share their abundant resources and collaborate with each other. This section highlights some of the challenges we are addressing to build new models to create a virtuous cycle of development for our universities, industries, and communities. These efforts are made within six approaches: Research, Education, International, Diversity, Medical Care, and Social Issues.

Activities of

Tokai National Higher Education and Research System

+ Nagoya University +

Gifu University



# Research



## Basic Stance on Initiatives

Tokai National Higher Education and Research System's world-class research is shaping it into a central site for knowledge. Nagoya University aims to become a world's highest-level research university, and its strengths include interdisciplinary chemistry and biology research and research into future electronics, while Gifu University, with its mission of contributing to the regional communities, is strong in glycoscience research, aerospace and medical education development. Our universities are working together to become new centers for advanced research. For example, they use each other's characteristics to form a source of value-creating knowledge and bring together the world's wisdom to conduct interdisciplinary research that reaches beyond their own domains.

To begin, we are developing research hubs in four key areas: glycoscience, aerospace production technologies, health-care information technology, and agriculture. We are doing this by forming inter-university teams of faculty members and collaborating with relevant organizations in our regions.

## Tokai National Higher Education and Research System

### Institute for Glyco-core Research (iGCORE) and its team of world-class researchers

#### Purpose of the Institute for Glyco-core Research

Glycans are molecules that cover the surface of every cell in the human body. They establish the individuality of each cell, control communication between the cell and external entities (other cells, pathogens, etc.) and are intimately connected with many life phenomena and diseases. However, not enough research has been done on glycans yet worldwide.

To better understand life and use this knowledge in medical care, it is necessary to further glycoscience research and develop a deeper understanding of the essence of life. The Institute for Glyco-core Research (iGCORE) is a top integrated glycoscience research center, bringing together researchers from a variety of fields, including chemistry, biochemistry, medicine, and imaging.

### Bringing together Gifu University's glycochemistry and imaging expertise with Nagoya University's knowledge of glycobiology and medicine

As a world leader in glycoscience research, Japan has many outstanding researchers in the fields of glycan synthesis, analysis, and biology. In particular, Gifu University has a strong tradition and track record in glycan synthesis and imaging research, while Nagoya University has the same in glycobiology and medicine research.

The Institute for Glyco-core Research brings together excellent glycoscience researchers from both universities and highly skilled researchers in peripheral fields at the two. Furthermore, the institute aims to be an integrated and interdisciplinary glycoscience research center by strengthening connections with the fields of glycan analysis, big data, mathematical modeling, and others.



## iGCORE's three research divisions

### 1 Division of Glycan in Organism

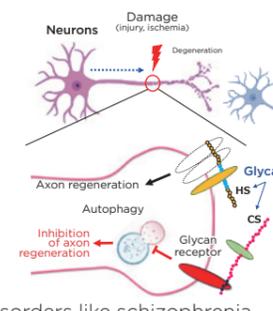
The objective of the Division of Glycan in Organism is to elucidate the principles of the functions that glycan assemblies play in living organisms, focusing on specific phenomena and diseases. It is particularly focused on nerve function, physiological phenomena like development, regeneration, and aging, and diseases including cancer, infectious disease, and psychiatric disorders.

#### Examples

##### Glycans control regeneration of nerve axons

Recently, research has looked at the role that glycans play in the nervous system, vascular endothelial cells, and elsewhere. For example, large glycans such as polysialic acid and proteoglycans play crucial roles in the nerves. Recent research has

shown that proteoglycans control regeneration of damaged nerve axons (Sakamoto et al., Nat. Chem. Biol., 2019, 15, 699-709) and that changes in the expression levels of polysialic acid sugar chains are associated with psychiatric disorders like schizophrenia.



##### Loss of glycans causes vascular defects

Among other findings, research shows that a glycan known as extracellular O-GlcNAc controls the functions of NOTCH protein, an important factor for tissue development and organogenesis, and that dysfunction of extracellular O-GlcNAc compromises the barrier function of blood vessels (Sawaguchi et al., eLife, 2017, e24419).

### 2 Division of Glycan Domain

The objective of the Division of Glycan Domain is to elucidate the assembled and localized states of glycans at the cellular level, the mechanism that governs those states, and the principles of how glycans are colocalized and interact with other biomolecules. The domain also seeks to develop compounds and methods for regulating these.

#### Examples

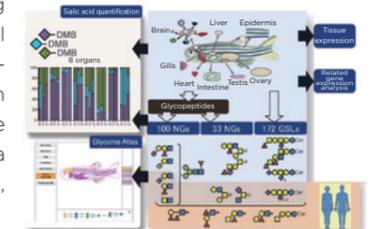
##### Controlling glycan function with enzyme structures and compounds

iGCORE is working to elucidate the reaction control mechanism of glycosyltransferases and glycometabolism enzymes concerned with the biosynthesis of glycan molecule groups in cells and to develop inhibitors and a glycan molecule group probe. So far, iGCORE research has solved the 3D structure of the enzyme involved in N-glycan branching and developed

methods of altering and visualizing glycan synthesis with chemical biology (Nagae et al., Nat. Commun., 2018, 9, 3380).

### Elucidation of the all-tissue glycome of the zebrafish

In addition, in order to provide a full picture of glycan assemblies, a report was given on findings of research that included information on the entire glycan structure (glycome) of each internal organ and information on the expression of related genes, using zebrafish as the model (international collaborative research with the University of Lille in France) (Yamakawa et al., Nat. Commun., 2018, 9, 4647).



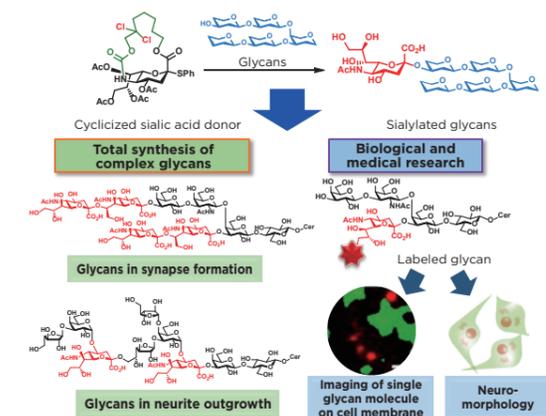
### 3 Division of Single Glycan Molecule

The objective of the Division of Single Glycan Molecule is to elucidate the principles of the behavior of individual glycans in cells. To this end, it is necessary to achieve the total synthesis of each glycan molecule, develop glycan probes, and use the developed probes to image single glycan and perform NMR analysis. Employing these methods will help to explain the behavior of individual glycans on cell membranes and inside cells.

#### Examples

##### Synthesis method of innovative glycochemistry

We recently developed a novel method for the chemical synthesis of glycans containing sialic acid (Komura et al., Science, 2019, 364, 677-680). This method allows for the total synthesis of complex glycan molecules which has been difficult under existing methods and for the application of single pure glycan molecules to biological and medical research.



##### The fastest single glycan molecule imaging

Our high-resolution imaging technique successfully visualizes how single synthesized glycolipid molecules assemble on a cell membrane (Komura et al., Nat. Chem. Biol., 2016, 12, 402-410).



## Gifu University

1

### Regional Adaptation Research Center responds to climate change adaptation needs from society

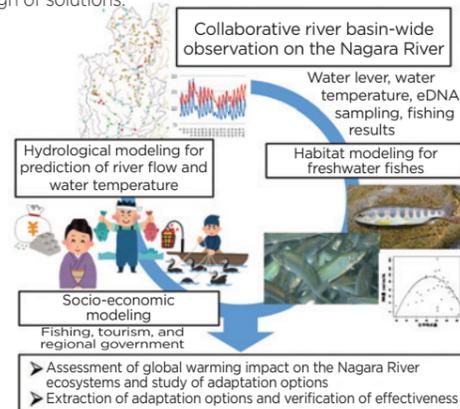
Promoting practical joint research and practical implementation of adaptation measures through collaboration between environmental science and applied research fields and regional stakeholders

The mission of the Regional Adaptation Research Center (RARC) of Gifu University is to collaborate widely with the experts in environmental science and applied research fields to advance R&D on how to respond to various needs, including the impact of climate change as it is emerging regionally and changes in the social environment, including population declines.

Members come from a wide range of specialties, including climate and meteorology, forest science, hydrology, water environment engineering, river engineering, agriculture, ecology, and social systems. They join forces with regional government officials, industry, and citizens as well as related research communities throughout Japan to accomplish the center's mission. In April 2020, RARC and the Gifu Prefecture government established the Gifu Prefecture Center for Climate Change Adaptation, which they continue to operate together.

Working with stakeholders to evaluate and forecast climate change impacts and enhance regional communities' and industry's ability to adaptation

Collaboration with administration and regional stakeholders sets the basis for all RARC activities. The center has a number of projects proceeding, including evaluation of the compounding impacts of climate change and population decline in the region and co-design of solutions.



Overview of project to impact assessment of warming on Nagara River socio-ecosystem and co-design of adaptation measures

One project focuses on the ayu (sweetfish) of the Nagara River, a designated Globally Important Agricultural Heritage Systems (GIAHS). A monitoring study covering the entire Nagara River basin is revealing a picture of how ayu move dynamically through the basin and the impact that flooding and water temperature increases have on the lifecycle of the ayu. This effort is helping to build a common understanding of the impacts of climate change and jointly create adaptation measures that each stakeholder can implement.

2

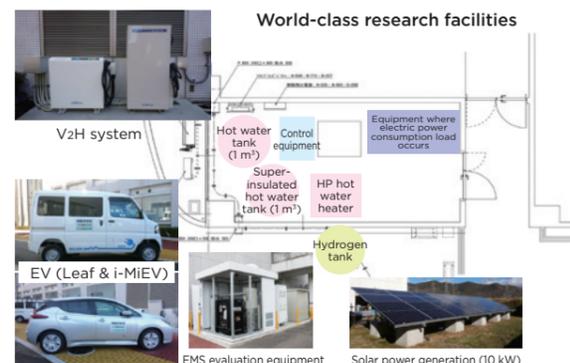
### Gifu Renewable Energy System Research Center (G-RESRC) Aiming for Zero Carbon in Gifu Region and Gifu University Campus

Energy management systems (EMS) for mountainous areas

For matching the supply and demand of renewable energy, it is necessary to optimize the EMS according to the regional characteristics. Therefore, G-RESRC has proposed a network-type microgrid energy system that allows mutual power interchange between small-sized and/or medium-sized local communities, and has formulated a master plan in Yaotsu-cho as a model case for the mountainous region of Gifu Prefecture. G-RESRC introduced a lab-scale EMS test facility consisting of solar cells (PV), storage batteries, electrolyzed hydrogen generator, pure hydrogen type fuel cell, and mutual control systems, and are acquiring their continuous data. G-RESRC is also building an industry-government-academia joint research system in collaboration with Gifu Pref. Next-Generation Energy Consortium for Creation of New Industries. While utilizing such facilities and systems, G-RESRC is aiming for research toward the realization of zero carbon and carbon recycling in the multiple areas of Gifu prefecture.

Carbon-neutral campus concept

G-RESRC has proposed a virtual grid energy transportation / self-sustaining system that uses electric vehicles (EVs) at the scale between houses and business office. EVs are charged with PV while parking, transport power by their self-moving without commercial power transmission lines, and supply power at demand locations. By applying this proposed system to the university and electrifying all scheduled buses serving the university and commuter vehicles used by all staff and students and integrating all energy in the campus, G-RESRC has obtained analysis results showing about 70% reduction effect of total CO<sub>2</sub> emissions including transportation for commuting to the university of all staff and students.



# Education

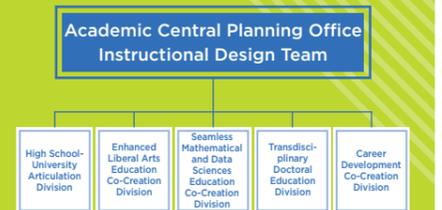


### Basic Stance on Initiatives

As the digital revolution and globalization rapidly proceed, society is undergoing drastic changes today. Therefore, the world faces environmental, population, and other social issues, and even the structure of the industry is changing on a massive scale. To solve problems like these, the world needs people who can create new value and contribute to society.

At Tokai National Higher Education and Research System, our shared philosophy is "Courageously building the future." As such, we established "Academic Central" to play a lead role in planning educational reform at the two universities.

By using each other's resources, the two schools provide high-quality education that is internationally useful as a central site for knowledge, and foster the next generation of leaders who will operate in the Tokai region, elsewhere in Japan, and overseas.



## Tokai National Higher Education and Research System

1

### Distance learning with ICT Educating during the COVID-19 pandemic

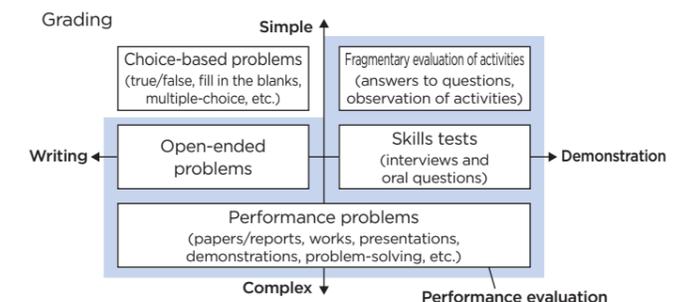
Pandemic education policies and status

In the 2020 school year, schools stopped holding matriculation ceremonies and classes went online to protect people from infection with COVID-19. When students stopped coming to campus, they suffered immeasurable damage. The two universities worked out policies for delivering education to deal with the COVID-19 pandemic.

During spring term, Nagoya University used distance learning with ICT under the management of the Learning Management System (LMS). Instructors were recommended to use PowerPoint files with audio as instructional resources for lectures and seminars. Platforms like Zoom were used as necessary to deliver lectures with the ability to support simultaneous interactive question-and-answer sessions. Videos could also be streamed on demand. Lab

experiments and training were done face to face if there was no other option. In that case, we chose our approach based on the alert category in effect at the time.

Faculty members assigned problems using LMS's "short test" function and could determine students' level of participation based on their answers.



Even distance lectures (common subjects school-wide) delivered with ICT took various forms. Instructors needed to grade comprehensively, using diverse methods of evaluation.

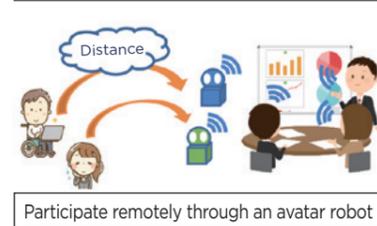
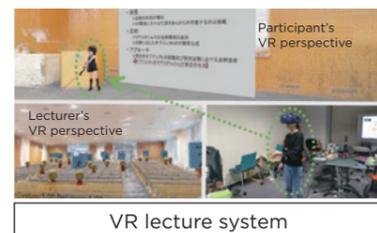
Gifu University similarly practiced distance learning with ICT during the last semester. Instructors were recommended to use PowerPoint files with audio as instructional resources for lectures and seminars. Platforms like Teams were used as necessary to hold simultaneous interactive lecture question-and-answer sessions. Starting in June, we partially resumed in-person learning with measures in place to prevent infection. For example, we had no more than 50% of the students on campus at one time or keep classrooms at less than 60% capacity.

Looking ahead to education in the post-pandemic era, we designated the 2020 school year to be a “digitally-based education trial period.” Our aim was to achieve “cyber-physical learning,” starting with the assumption that we will not be going back to the days when all learning was in-person. Going forward, we will seek out the best mix of distance and in-person learning and step up our systems to support that mix.

**DX initiatives at Tokai National Higher Education and Research System**

At Tokai National Higher Education and Research System, DX means not only using ICT to boost efficiency but to expand the functions of the university in cyberspace. To this end, we established the Digital University Plan, which would allow even stakeholders from outside the universities to use university platforms. In the area of education, we are promoting cyber-physical (CP) learning to ensure that learning has a certain level of physicality, uses repetition of experiences, and is adapted to the individual.

**Example of “learning with physicality”**



“Avatar distance lecture” that uses not only textbooks, graphs, and voice but also line of sight and gestures to enhance mutual understanding with a sense of physicality

**2 Using inter-university collaboration to foster practical data scientists with mathematical and data science education**

The Tokai National Higher Education and Research System formed Academic Central to promote mathematical and data science education and language training. This is one initiative to provide education that is internationally useful. Mathematical and data science education is an absolute necessity to try to identify and solve problems we face today

or are predicted to face in future.

In December 2019, we established the Mathematical and Data Science Center at Nagoya University. Its purpose is to develop and provide educational content in this field, advance scholarship by fostering people of a variety of levels, and contribute to solutions to social issues.

The center’s Practical Data Scientist Development Program cooperates with Gifu University to analyze big data generated by consumers, industrial activity, and the like to develop persons who can spot new information and value. Mie University and Hiroshima University also participate, and North Carolina State University in the US is also a partner.

The program using data provided by companies and other sources, we will conduct Real-World Data Exercises (Practicum) to resolve real-world issues through group work. The center also holds lecture courses to help persons develop the skills needed for the initiatives of the Real-World Data Practicum.

There is also the Advanced Data Science Course Program for graduate students and the Industrial Data Science Course Program for working professionals. Participants in these programs do groupwork on problems associated with data provided by businesses and come up with solutions. Then each group provides a consultation in which they propose their solutions to businesses.

About five problem themes are suggested. Leaders listen to the participants’ own desires and then break the participants into groups, taking account of their areas of expertise and the like and striving to balance university students with working professionals. Roles are divided among the groups, a project plan is adopted, and the project proceeds. Each group is assigned a Qualified Teaching Assistant (QTA) to provide mentoring on each theme, so participants can get advice and answers to their questions. Groups give progress reports to program instructors about once a month, sum up their results, and get a final check by the program instructors. After all this, they visit enterprises to brief them on their results.



Summer	Autumn	Winter
<p>Using data provided by companies and other sources, we will conduct Real-World Data Exercises (Practicum) to resolve real-world issues through group work.</p> <p>The program will offer courses that cultivate the skills required to be a data scientist. Many courses can be taken using video materials.</p> <p><b>Prerequisite</b> Fundamentals of mathematical science Students learn basic statistics and classic data analysis within the scope of plain mathematics, through lectures and seminars.</p> <p><b>Basic data tools</b> The understanding class uses demonstrations and hands-on experience to give students an overview of elementary data analysis tools and examples of their use.</p> <p><b>Classes</b> <b>Machine learning</b> Through lectures and seminars, students learn about machine learning from theory to application. <b>Real-world data processing</b> An omnibus course led by university and outside lecturers, students learn up-to-date examples of data processing. <b>Data tools</b> Students learn how to use various programming languages and software necessary for data processing. <b>Pattern recognition</b> Students learn pattern processing techniques including identification, classification, and classification. <b>Domain mathematical knowledge</b> The purpose is to learn how to mathematically understand the background knowledge of the data being analyzed. <b>Fundamentals of project management</b> Students learn basics and skills for solving problems as a group.</p>	<p><b>Practicum</b> Briefing Task explanations Plan development Division of roles Mentoring</p> <p>Groupwork Communication tools</p>	<p>Visualization Leadership Teamwork Logic Reports Presentations</p>

**Gifu University**

**1 School of Social System Management: Developing human resources that contribute to regional revitalization**

Established with the aim of developing human resources that contribute to regional vitalization

In April 2021, Gifu University established the “School of Social System Management.” This is an educational organization equivalent to a faculty where students learn about business, area management, and tourism with a focus on management and administration. Students and faculty members learn and grow together in cooperation with other schools, universities, and society in an inter-faculty framework.

As a university based in the prefecture, Gifu University plays a major role in contributing to regional revitalization and vitalization. In order to fully fulfill this role, we felt that education in the field of business management was necessary, and that by adding a managerial perspective to the research results accumulated by the Faculty of Engineering and the Faculty of Applied Biological Sciences, we would be able to further enhance our ability to contribute to the process of vitalization.

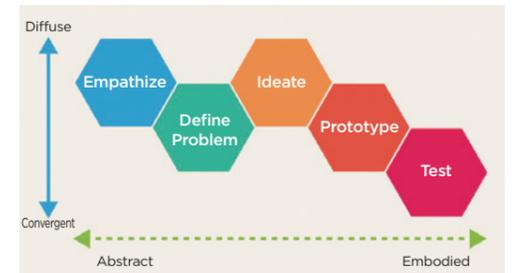
The push for education in the field of business management came from the earnest opinions of regional stakeholders. In addition to strong demand for personnel in the field of business management from economic organizations such as the Gifu Employers’ Association, the Chamber of Commerce and Industry Association, and the Association of Corporate Executives, the Gifu Association of Upper Secondary School Principals and high schools voiced a need for a venue to develop human resources who contribute to regional vitalization.

**Learning about the management of business, area management, and tourism through design thinking**

Many of the issues facing Gifu Prefecture fall into one of the three categories of business, area management, and tourism. The School of Social System Management offers management-based education centered on these three areas. In addition, since many small- and medium-sized enterprises (SMEs) support regional lifestyles, we would like students to focus on SMEs and learn business administration in order to contribute to the vitalization of Gifu Prefecture, which will lead to regional revitalization.

- **Business Design Program**  
Students aim to acquire management skills by learning methodologies to efficiently utilize resources to achieve results and further the business goals of a company.
- **Area Management Design Program**  
Students deepen their expertise in the structure of rural and urban areas and environment, and aim to acquire the ability to form sustainable regional management through cooperative systems.
- **Tourism Design Program**  
Students learn about tourism businesses and the value that tourism creates, and methods of building regional brands, and aim to acquire the ability to create ways to utilize regional resources.

Design thinking to develop problem finding and solving skills



The Stanford University d.school Five Steps of Design Thinking (partially modified). Tackling challenges with this five-step process can generate ideas through a designer’s thought process.

**Long-term practical training to cultivate a sense of the field while still a student**

The mission of the School of Social System Management is to produce human resources who can provide concrete solutions to problems. The curriculum includes two 18-month long practical training sessions (totaling three years) to enable students to enter the field while they are still at university.

To this end, the school offers Project Based Learning (PBL) style practical training, also known as problem-solving learning. Here, students visit companies and municipal governments, hold discussions to elicit issues, and then put solutions into action. We also engage in ‘return-of-results’ training, in which the results no matter how small, are always returned to the stakeholder, such as the development of a label for a product or finding a way to improve business operations.

Another feature of the curriculum is the establishment of a regional council to facilitate practical training. Businesses, municipal governments, and various organizations are invited to participate and advise on the organization, operation, planning, implementation, and results of the practical training.

In the future, with an eye on successors to family businesses, entrepreneurs, and those who will be active in Destination Management/Marketing Organizations (DMOs), we will work to develop human resources who can bring innovation to management and contribute to the realization of a vibrant social system.



Long-term practical training is conducted to put into practice the knowledge acquired through lectures, in society

## 2 Medical Education Development Center (MEDC), Gifu University

### Overview

The Medical Education Development Center (MEDC), Gifu University, comprises two departments, the Virtual Department and the Tutorial Department, and is the only center in Japan accredited by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) as a joint usage center for medical education. It is a leading center for health professions education with a mission to develop, research, and disseminate excellent health professions education for the benefit of Japan's citizens and patients, the medical students, and newcomers we train, and their instructors. MEDC's motto is to create new trends in health professions education. Based on knowledge from Japan and the rest of the world, our vision is to predict the next generation of health professions education and design a system that can develop excellent leaders who will be active in medical universities and healthcare institutions nationwide. We hold multidisciplinary and collaboration as important values, and are always seeking improvement and reformation through our activities.

### A mecca of development for faculty and staff who train medical personnel

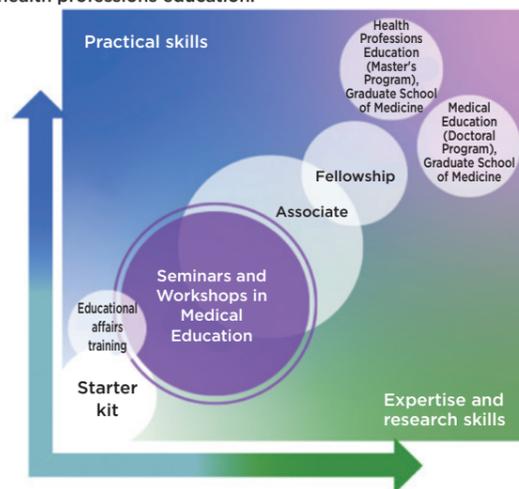
The MEDC has programs designed to improve the leadership skills of medical personnel and instructors working in medical universities and training hospitals. Looking back, the Center was initially approved by MEXT as a national Joint Usage/Research Center in 2001. Since 2001, the Center has been holding "Seminars and Workshops in Medical Education" 3-4 times a year to activate the health professions education throughout the country. More than 13,000 people have attended these over the past 20 years, making them a must-attend event on the calendars of persons involved in health professions education across the country. In 2010, in accordance with the Education-Related Joint Usage Center accreditation system, the Center received the only accreditation in the field of medical education and developed into a Joint Usage Center. In the first phase (2010), the Center modeled Interprofessional Education in health professions education and disseminated it nationwide. In the second phase (2015), the "Health Professions Education Fellowship Program and Associate Membership Program" were established as a gateway to health professions education. These have developed as a model for the systematic study of health professions education. In the third phase (2020), an e-learning system was developed as "Health Professions Education Starter Kit" aimed at new university faculty members and others who will be involved in health professions education in the future. In this way, we are developing programs to expand the scope of health professions education throughout the country.

### Japan's first Master's Program in Health Professions Education

In 2020, Gifu University Graduate School of Medicine established Japan's first Master's Course of Health Professions Education. The mission of the School is to develop leaders of opinion who can collaborate with people in various professions and be active around the world, in order

to develop and lead health professions education that contributes to improving the quality of medical care from a global perspective. This master's degree program combines on-demand online learning with scheduled face-to-face classes to provide flexibility for busy faculty members and leaders of healthcare institutions. The teaching team is international, with experts from Gifu University and all over Japan, as well as lecturers from our overseas partner universities in North America and Europe.

### MEDC learning forum is tailored to the skills of providers of health professions education.



### Aiming to develop future-oriented health professions education

MEDC is also engaging in international exchange and online education. For example, MEDC, together with the Gifu Consortium for Training and Recruiting of Physicians, is working hard to improve the level of health professions education for regional medical personnel by sending Gifu Prefectural medical supervisors to McGill University in Canada. The MEDC and McGill University Institute of Health Sciences Education, one of the leading institutions of its kind, have jointly operated a short-term training program since 2014 and are continuing to develop programs to embody the 'glocalization' of health professions education. MEDC has also been working to blend face-to-face and online learning since the pre-COVID-19 pandemic, and has developed expertise based on years of experience. The education of future-oriented health professions education will have a novel need for education that is unconstrained by space and time, leveraging the advantages of online distribution. In a borderless curriculum, reciprocal learning together with various universities and regions even in different countries, will become the standard. While expectations for flexible curricula to remove various restrictions are rising, students are required to have high self-regulated learning skills. Simulation education, increasingly standardized VR/AR education, and AI are accelerating the times. Meanwhile, corresponding digital literacy, communication skills, and true cognitive skills are needed. MEDC will continue to develop future-oriented health professions education, by which new content outside the realm of traditional health professions education can be provided through new educational approaches.

## Nagoya University

### 1 The Doctoral Education Consortium: Developing globally active leaders

#### Making advanced educational programs broadly available to graduate students

Doctoral students are human resources who can lead the way in solving social issues on a global scale. As such, their education is increasingly attracting attention. In 2011, Nagoya University launched the Program for Leading Graduate Schools to bolster the development of global leaders who have the capacity to take a broad perspective and the power of creativity, and are active in industry, academia, and government. Then, in 2017, we established the Doctoral Education Consortium in order to broadly disseminate the various educational programs and teaching methods practiced in the Leading Programs to general graduate students.

#### Offering programs to develop PhD skills

In addition to specialized knowledge and skills, the wide range of skills that graduate students should acquire in order to be active in various fields in the future is referred to as PhD skills at Nagoya University. In order to cultivate PhD skills, the Doctoral Education Consortium, in cooperation with other organizations on campus, provides venues for learning that differ from specialized courses, such as professional literacy lectures, 5min Research Communication Lunches, and Top Leader Talks.



#### The PhD skills framework

The Doctoral Education Consortium compiles PhD Skills as above. The various training provided by the Consortium is associated with each skill, such as analyzing and leadership.

#### Support for both research and daily life on the doctoral program

We aim to enable doctoral students to play an active role in diverse positions in society after obtaining their degrees. To this end, at the end of March 2021, we established the Interdisciplinary Frontier Fellowship, a support system for excellent and ambitious students to provide financial support during the standard term of study and enable them to acquire various skills. As of the end of May 2021, the Fellowship has supported 77 individuals.

### 2 WISE Program for joint research with overseas research teams and the industrial world

#### Make graduate students intellectual professionals

The WISE Program (Doctoral Program for World-leading Innovative & Smart Education) is an integrated five-year program introduced by the Ministry of Education, Culture, Sports, Science and Technology in 2018. Nagoya University offers four WISE programs supported by the Doctoral Education Consortium.

The program allows postgraduate students to become involved in interdisciplinary research in fields such as chemistry and life sciences, electronics and mechanical engineering, or medicine and information science, through joint research with overseas research teams and the industrial world. Students who complete the program can expect to become highly-skilled intellectual professionals capable of playing leading roles in a wide range of sectors.

#### The four WISE programs offered by Nagoya University

##### (1) DII (Deployer-Innovator-Investigator) Collaborative Graduate Program for Accelerating Innovation in Future Electronics

Training doctoral graduates with an understanding of business, able to achieve in 10 years what would take 30 years of innovation

##### (2) Graduate Program of Transformative Chem-Bio Research

Fostering researchers who can pioneer interdisciplinary frontiers and create future knowledge

##### (3) Convolution of Informatics and Biomedical Sciences on Glocal Alliances WISE Program

From individualized treatment to individualized preventive medicine. Aiming to build new medicine offering high quality social lives for large numbers of people

##### (4) Graduate Program for Lifestyle Revolution based on Transdisciplinary Mobility Innovation

Development of human resources that contribute to realizing lifestyle innovation through mobility innovation



# International

## Basic Stance on Initiatives

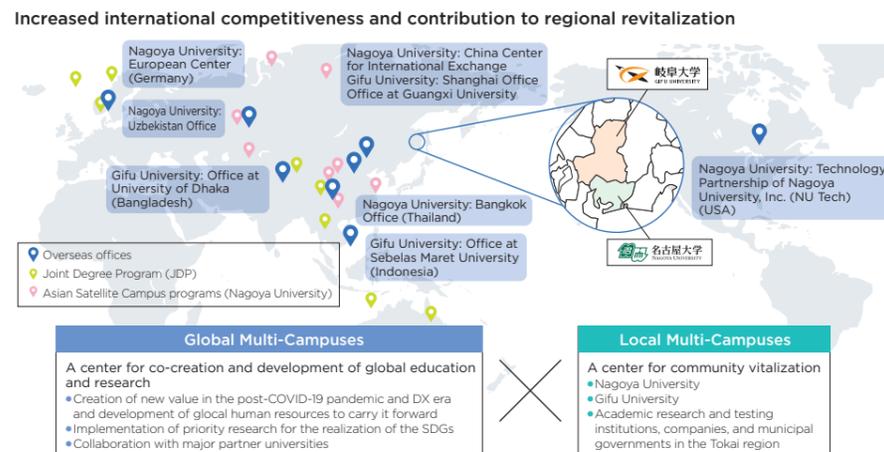
By strategically developing a wide range of partnerships with Japanese and overseas universities and research institutions, we cooperate in developing education and research that flexibly responds to changes in the international scientific, technological, and academic environment as well as trends in higher education. We achieve glocalization through a joint degree program (JDP) and other educational and research activities conducted by sharing results and know-how with partner universities, and with internationalization rooted in the regional community in mind.

## Tokai National Higher Education and Research System

### Developing glocal leaders through glocal strategies and joint degrees

#### Glocal Education

Tokai National Higher Education and Research System (THERS) has both global and local multi-campuses, which act as a center for co-creation and development of global education and research, and a center for vitalizing the regional community, respectively. Collaboration between the two improves international competitiveness and contributes to regional revitalization.



#### Promotion of joint degree programs

A joint degree program (JDP) is a system of jointly awarding a single degree with an overseas university.

Universities can combine their resources to offer advanced programs that may not be offered by a single university. These transnational initiatives are ideally suited to the highly globalized environment in which modern universities operate, working together across national borders to jointly award degrees.

The JDP was first implemented in 2015 by Nagoya University's Graduate School of Medicine and the University of Adelaide in Australia. Currently, 10 majors, approximately 40% of the 25 majors and 1 department established throughout Japan are offered by THERS (4 majors at Gifu University and 6 majors at Nagoya University).

THERS will continue to deliver quality and value-added study opportunities to students beyond prefectural and national borders, and provide the region, country, and the world, with highly motivated and talented human resources.

Status of joint degree programs (as of April 2021)

	Partner country	Partner university	Graduate school	Field	Course	Start date
Gifu University	India	Indian Institute of Technology Guwahati	Graduate School of Natural Science and Technology	Applied Biological Sciences	Master's	4/2019
			United Graduate School of Agricultural Science	Agriculture	Doctorate	
			Graduate School of Engineering	Engineering	Doctorate	
Gifu University	Malaysia	National University of Malaysia	Graduate School of Engineering	Engineering	Doctorate	4/2019
Nagoya University	Australia	University of Adelaide	Graduate School of Medicine	Medicine	Doctorate	10/2015
	UK	University of Edinburgh	Graduate School of Science	Science	Doctorate	10/2016
	Sweden	Lund University	Graduate School of Medicine	Medicine	Doctorate	4/2017
	Thailand	Kasetsart University	Graduate School of Bioagricultural Sciences	Agriculture	Doctorate	4/2018
	Germany	University of Freiburg	Graduate School of Medicine	Medicine	Doctorate	10/2018
	Australia	University of Western Australia	Graduate School of Bioagricultural Sciences	Agriculture	Doctorate	4/2019
	Thailand	Chulalongkorn University	Graduate School of Engineering	Engineering	Doctorate	4/2022 (scheduled)

## Basic Stance on Initiatives

Regarding the constituent members of the university, Tokai National Higher Education and Research System (THERS) creates the foundation for sustainable value creation and development as a hub of knowledge by increasing diversity, including young, female, and non-Japanese researchers. In terms of gender equality, we are improving environmental considerations and work-life balance, increasing the ratio of female students, and raising awareness in the faculties who are in charge of decision-making in the university.

## Tokai National Higher Education and Research System

### Further expanding the gender equality promotion system with the gender equality organizations

#### Aiming to realize a 21st-century gender-equal society

Nagoya University established the Center for Gender Equality in 2017 by reorganizing the Office for Gender Equality, which was created in 2003 ahead of other national universities in Japan. Since then, we have been promoting various initiatives to further expand the gender equality promotion system within the university and strengthen our activities as a center for the promotion of gender equality in Japan and overseas.

Gifu University established the Gender Equality Promotion Office in 2010, and is working to promote gender and other forms of equality on a regional basis through projects and the like in collaboration with municipal governments and elementary and junior high schools in the prefecture.

#### Initiatives, achievements, results, and evaluation

THERS implements various programs and support projects, such as Positive Action (positive improvement measures to increase the ratio of female researchers), skill improvement support and mentoring programs for female researchers, development of support systems to promote work-life balance, the establishment of daycare centers on-campus, and support for female students. Nagoya University is also tasked with the correction of gender disparity, promotion of understanding of LGBT and other issues, the establishment of childcare centers, efforts to promote gender equality through industry-academia-government collaboration, planning and support for basic research/policy research projects into gender combining the humanities and sciences, and other matters related to the promotion of gender equality.

In recognition of these gender equality efforts, the achievements of the university, and strong commitment of the President, in May 2015, Nagoya University was the only university in Japan to be selected by the UN Women's HeForShe project IMPACT 10x10x10 (10 Heads of State, 10 global CEOs and 10 University Presidents) as one of the world's 10 leading universities in the



Proud to support HeForShe

promotion of gender equality. In 2017, the university was adopted by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) Initiative for Realizing Diversity in the Research Environment (Distinctive Features Type). In addition to increasing the visibility of excellent female researchers through the Female Researcher Top Leader Award and improving the research capabilities of female researchers through the Female Researcher Leadership Program, the university has implemented measures to increase the ratio of female faculty members and has achieved significant results in promoting women's activities.

In 2015, Gifu University was selected for the MEXT Initiative for Realizing Diversity in the Research Environment (Collaboration Type). The university has developed initiatives to improve the research capabilities of female researchers in collaboration with other universities and private companies in Gifu City, and produced numerous results that contribute to regional revitalization.

In FY2020, the inaugural year of THERS, Nagoya University, Gifu University, and the National Women's Education Center began collaboration on a project entitled International Comparison of Efforts to Eliminate the Female Researcher 'Leaky Pipeline', which was selected for the MEXT Initiative for Realizing Diversity in the Research Environment (Survey Analysis). THERS will continue to develop gender research in a diverse and interdisciplinary manner and contribute to the vitalization of the university and society as a frontrunner in the promotion of gender equality.



An exchange meeting put on by acaingo, a community of female science students at Nagoya University

Gifu University female students giving a workshop for junior-high and high school students

# Medical Care



## Basic Stance on Initiatives

Leading the world in medical science and medical research and utilizing the latest findings to provide safe and stable high-quality medical care, we contribute to building a sustainable regional medical system and train personnel who can lead and play a central role in the arena of medical care.

Through the integration of healthcare information from the University Hospital within THERS, we advance clinical research in collaboration with the two universities to create seeds in drug discovery and medical devices, and further develop pre-clinical research by promoting collaboration with pharmaceutical, veterinary, and engineering departments within THERS and with domestic and overseas research institutions to establish a regionally integrated clinical research system aimed at formulating standard treatment.

We promote cutting-edge medical care by combining the resources of both Nagoya University Hospital, which has international standards of medical quality and patient safety and advanced functions backed by Joint Commission International (JCI) certification, and Gifu University Hospital, which boasts an excellent track record in regional medical cooperation.

## Tokai National Higher Education and Research System

### 1 Okumikawa Medical Valley Project for a 'Happy 100-year Life Era'

In August 2018, Nagoya University Graduate School of Medicine and Shinshiro City, Aichi Prefecture, signed a comprehensive partnership agreement to promote various studies aimed at maximizing healthy and working life expectancy, and launched the Okumikawa Medical Valley Project. The project aims to uncover the 'future already occurring' in the Okumikawa region of Aichi Prefecture, where a deficiency of medical personnel and the aging of society are rapidly progressing, and to create a future medical and health industry through close collaboration among industry, academia, government, and the private sector to address these issues.

Specifically, in order to promote research aimed at creating a 'happy 100-year life era', we are collecting big data and quality data using administrative systems, collecting data derived from the daily activities of the elderly and other local residents, developing devices for this data collection,

and building a social system for aging and depopulated areas in the 5G era, which combines disease prevention and health management. In this way, we are actively promoting the development of health and medical devices originating from a clarification of needs, utilizing technology for the creation of new administrative services for a super-aging society, and the application of business seeds to the health and medicine field.

We also envision a Tokai Bio Innovation Belt to foster the development of a bio- and medical-related industrial base in the Tokai region, centered on the Okumikawa Medical Valley Project and linking the Nagoya Future Life Workshop and the Mino Bio-Agri Initiative.



From Okumikawa Medical Valley to the Bio Innovation Belt

### 2

### Academia-Industry Collaboration Platform for cultivating Medical AI Leaders (AI-MAILs)

In the summer of 2020, the Ministry of Education, Culture, Sports, Science and Technology (MEXT) called for applications for the Industry-Academic Collaborative Project for Human Resource Development to Accelerate AI R&D in the Health and Medical Fields, as part of Strategic Funds for the Promotion of University Education Revitalization. Together with Gifu University, Nagoya Institute of Technology, Meijo University, and the National Institute of Advanced Industrial Science and Technology, Nagoya University Graduate School of Medicine proposed the Academia-Industry Collaboration Platform for Cultivating Medical AI Leaders (AI-MAILs) program, which was adopted.

The use of AI in healthcare is becoming a reality in recent years. The significance of medical AI lies in its actual use in clinical practice and its contribution to improving the quality and productivity of medical care as assistive technology. For

this reason, medical personnel who are familiar with healthcare must have sufficient knowledge and skills to be involved in AI development. At the same time, information technology engineers involved in medical AI development are required to be familiar with the actual conditions of healthcare and to have healthcare-oriented design thinking.

Through the AI-MAILs program, we aim to develop human resources who can lead the way, from medical AI development to practical implementation and exit strategies.



## Nagoya University Hospital

### The first JCI-accredited national university hospital and its initiatives

Nagoya University Hospital was accredited by the Joint Commission International (JCI), an international healthcare accreditation organization, on February 23, 2019. JCI is a non-profit organization established as the international arm of the US Joint Commission, and is known as one of the strictest accreditation bodies in the world. Currently, the organization accredits 928 facilities worldwide. Nagoya University Hospital is the fourth university hospital and the

first national university hospital to be accredited in Japan.

This verifies that the quality of medical care and patient safety at Nagoya University Hospital are of a world-class level. After accreditation, we continue to pursue the provision of medical care with a fundamental awareness of patient safety by implementing the Plan-Do-Check-Act cycle.

This routine practice of medical treatment in line with JCI standards is also being applied in the fight against the COVID-19.



Organization Accredited by Joint Commission International  
JCI Gold Seal of Approval

## Gifu University Hospital

We established the Gifu Medical Regional Consortium in 2019, in which four acute care hospitals together as a unit of approximately 2,500 hospital beds in the Gifu area (i.e., Gifu University Hospital, Gifu Prefectural General Medical Center, Gifu Municipal Hospital, and Matsunami General Hospital) are promoting advanced medical care, clinical trials and clinical research, thereby creating new standards of care. Furthermore, in collaboration with Nagoya University Hospital, we established the Center for healthcare information technology (C-HIT), which facilitates medical research to develop innovative diagnostics and therapeutics through healthcare data analysis. Through such collaborations, Gifu University Hospital reported the

development of novel adjuvant chemotherapy for stage 3 gastric cancer and updated the guidelines for gastric cancer treatment in 2020.





Value Creation Activities

# Social Issues

## Basic Stance on Initiatives

Tokai National Higher Education and Research System (THERS) will combine the wisdom of the two universities to drive productivity improvement, job creation, and cultural development in agriculture, forestry, fisheries, manufacturing, service and other industries in Tokai and neighboring regions, and lead municipal governments and industries in solving regional issues through the establishment of TOKAI-PRACTISS.

To achieve this, we will collaborate with municipal governments and industries to develop human resources capable of creating regional innovation and also to sustain and develop the human resource development ecosystem.

Taking advantage of our location in the Tokai region, one of the leading manufacturing clusters in the world, we will lead the municipal governments and industries in practical implementation research to solve regional mobility, environment, energy, medical care, education, and other community issues.

## Tokai National Higher Education and Research System

### TOKAI PRACTISS and efforts to achieve carbon neutrality

#### The THERS vision for achieving carbon neutrality

Tokai National Higher Education and Research System (THERS) has set forth the following vision for achieving carbon neutrality.

- Stimulate structural changes in the region while making use of world-class knowledge and close cooperative support relationships with regional sectors as a central site for regional revitalization in the Tokai region.

- Create a virtuous circle model of universities, industries, and regional revitalization in the Tokai region to achieve carbon neutrality by actively contributing to the development of environmental human resources, zero emissions at universities, support for decarbonization of municipal governments, practical implementation through industry-academia collaboration, and dissemination and international deployment of these activities.

Tokai region virtuous cycle model (TOKAI-PRACTISS) and carbon neutrality  
Tokai Project to Renovate Area Chubu into Tech Innovation Smart Society



This particular virtuous circle model is called Tokai Project to Renovate Area Chubu into Tech Innovation Smart Society (TOKAI-PRACTISS), and we are implementing it making full use of various modes of cooperation. We are also participating in the Coalition of Universities and Other Institutes as Contributors to Achievement of Carbon Neutrality, which was inaugurated on July 29, 2021.

<b>Support for decarbonization of municipal governments</b>
Gifu Climate Change Adaptation Center
Gifu Prefecture Global Warming Prevention Action Plan Roundtable Meeting
Covenant of mayors for Climate and Energy (Japan)
Aichi Zero Carbon Organization
<b>Practical implementation through industry-academia collaboration</b>
Self-sustaining micro/nanogrids
Carbon recycling elemental technology
Consortium for the Creation of Next-Generation Energy Industries
Next-Generation Semiconductor GaN Consortium
Direct atmospheric CO <sub>2</sub> capture technology: Moonshot
Ammonia and hydrogen production technology
<b>Development of environmental human resources</b>
Regional environmental learning
Gifu University Rearing Program for Basin Water Environment Leaders
Next Generations Community Leaders Training Program
Nagoya University Education for Sustainable Development Program
Integrated Environmental Studies Course
Global Environmental Leaders Program
<b>Zero emissions at the University</b>
29th Grand Prize for the Global Environment Award, MEXT (2020, Geo-Energy Center)
6th Sustainable Campus Award (2020, Gifu University Campus)
5th Sustainable Campus Award (2019, Nagoya University Campus)
Only platinum-certified Japanese university in the Assessment System for Sustainable Campus (2019)

■ Gifu University ■ Nagoya University

#### Collaboration and efforts toward zero carbon with regional and municipal governments

Tokai National Higher Education and Research System (THERS) aims to tackle the climate crisis through cutting-edge science and technology and regional collaboration, and to create a path to zero carbon together with the regional community.

The Covenant of mayors for Climate and Energy is an international mechanism under which the leaders of municipal governments working to contribute to achieving the goals of the Paris Agreement make a pledge to this effect, formulate an action plan, and then actively implement concrete initiatives.

The Covenant of mayors for Climate and Energy (Japan) was launched as a regional offshoot under this umbrella, and Nagoya University has served as its administration services since 2017. The administration services provide multifaceted support to municipal governments that are considering pledging or have already done so, with the help of coordinators and supporters (29 municipal governments nationwide have pledged as of December 2020).

Gifu Prefecture and a group of Gifu University researchers are jointly participating as a model municipality in the Ministry of Education, Culture, Sports, Science and Technology (MEXT) Social Implementation Program on Climate Change Adaptation Technology (SI-CAT) (2015-2019). Building on the partnership

formed with the prefecture through SI-CAT, the Gifu Climate Change Adaptation Center was established jointly with Gifu Prefecture in April 2020. Established in February 2020, the Gifu Prefecture Regional Adaptation Research Center serves as the counterpart on the Gifu University side.

Aichi Prefecture and the Chubu region are home to a concentration of manufacturing industries and have both the potential and responsibility to lead the way in efforts to achieve zero carbon emissions. The Aichi Zero Carbon Organization was established in April 2021 with the aim of realizing a zero-carbon society by stimulating industry-academia-government collaboration and innovation. As one of the originators of the organization, Nagoya University has endorsed the promotion of zero carbon in academia.

Initiators (from left): Koichi Ina, Chairman of the Central Japan Industries Association; Seichi Matsuo, President of Nagoya University; Hideaki Omura, Governor of Aichi Prefecture; and Yasuyuki Goto, President of Aichi Institute of Technology



#### Challenge to Zero-Carbon and Beyond CO<sub>2</sub> Zero

Tokai National Higher Education and Research System aims to create new value for the next generation and a bright future society by mobilizing the knowledge of Gifu and Nagoya Universities to address the global crisis, and solving problems through the highest level of cutting-edge research and a trans-disciplinary fusion of humanities and sciences.

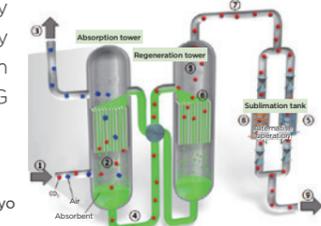
#### Research Topics

- Extreme weather event forecasting
- CO<sub>2</sub> concentration
- Carbon fixation observation
- Storage batteries based on new principles
- Solar cells based on new principles
- GaN next-generation semiconductor technology
- Direct capture of atmospheric CO<sub>2</sub>
- Small-scale plasma hydrogen production
- Ultra-smart society system construction
- Zero waste + energy creation activities
- Urban wood utilization
- Campus 100% renewable energy scenario proposal
- Environmental human resource development

#### Research case study

##### Research and Development of Direct Atmospheric Carbon Dioxide Capture Using Cold Energy (New Energy and Industrial Technology Development Organization [NEDO] Moonshot Research & Development Project)

A new technology to radically increase the atmospheric CO<sub>2</sub> direct capture efficiency by employing unused cold energy from liquefied natural gas (LNG) and other sources is under development. The goal is to establish a series of processes to recover CO<sub>2</sub> as dry ice from the CO<sub>2</sub>-captured absorbent solution by means of the cold energy that takes the heat from the surroundings as LNG vaporizes.



Joint research by Nagoya University, Toho Gas, and Tokyo University of Science

## Gifu University

### Coordinating with various administrative agencies as a research institute within Gifu Prefecture to promote learning and regional contribution

#### Coordination with Gifu Prefectural Research Institute for Food Sciences

In April 2019, the Gifu Prefectural Research Institute for Food Sciences was established on campus. Gifu Prefecture has positioned the food sector as a growth industry and is promoting industrial development in the food and brewing industries. As a prefectural agency playing a central role, the Institute serves as a hub not only for industrial support, but also for research and development utilizing regional food ingredients and for the development of professional human resources through practical education and personnel exchanges.

The Institute is the first public testing and research laboratory in Japan to be established on the premises of a national university corporation, and is expected to contribute to the development of the food industry by establishing a system to provide technical consultations, joint research, and advanced analysis to food-related companies in the prefecture through collaboration between Gifu University and prefectural testing and research laboratory.

#### Specific activity example: Long-term quality retention and freshness assurance technology

Fuyu persimmons and ayu (sweetfish), popular specialty products of Gifu Prefecture, deteriorate quickly in quality, making the development of long-term storage and export technologies a challenge. The United Graduate School of Agricultural Science, Gifu University, has succeeded in storing Fuyu persimmons for four months while maintaining their quality by optimizing the Modified Atmosphere Packaging (MAP) technology that preserves the quality of fresh foods. This research has made it possible to export Fuyu persimmons harvested in early December to China during the Chinese New Year (late January to early February). In addition, research on ayu produced in Gifu Prefecture has made it possible to estimate changes in freshness of frozen ayu for export after thawing.

These are collaborative research with the Gifu Prefectural Agricultural Technology Center and the Gifu Prefectural Research Institute for Fisheries and Aquatic Environments, and form the basis for the research and development of smart food chain under the Cross-ministerial Strategic Innovation Promotion Program of the Cabinet Office.



Fuyu persimmon sales point in a department store in Hong Kong

#### Collaboration with Gifu Prefectural Agricultural Technology Center

In April 2021, the Graduate School of Natural Science and Technology concluded an agreement with the Gifu Prefectural Agricultural Technology Center regarding educational and research cooperation through the collaborative graduate school system. The purpose of this is for the two parties to cooperate to promote research activities, disseminate research results, and enhance education and research activities through a collabora-

tive graduate school system that provides research guidance to graduate students, thereby contributing to the promotion of agriculture in Gifu Prefecture and the development of human resources who will lead in this area.

The Center anticipates that deepening collaboration with the university, will stimulate research using the university's knowledge and expertise in advanced technology, leading to the development of research personnel who will support Gifu Prefecture's agriculture in the future.

The School sees collaboration with the Center as extremely important in the context of demand for applied practical education. Moving forward, graduate students will be directly involved in prefectural agricultural research, and researchers from the Prefectural Agricultural Technology Center will serve as advisors to guide graduate students in enhancing their studies at the Graduate School of Natural Science and Technology.



The signing ceremony: Director Miyata (left) and Dean Mitsunaga

#### Collaboration with Gifu Prefectural Chuo Livestock Hygiene Service Center

We are undertaking various initiatives under the collaborative agreement between Gifu Prefecture and Gifu University signed in 2014.

On June 3 and 17, 2021, as part of a collaborative project, a special lecture on public veterinary medicine was held by Gifu Prefecture, and was attended by sixth-year students from Gifu and Tottori Universities. The lecture was given by an official from the Prefectural Chuo Livestock Hygiene Service Center on the scope of veterinarian work in various prefectures and specific examples of maintaining animal health and productivity, and was followed by a question-and-answer session.

On June 8, 2021, two first-year students from Gifu University accompanied a routine inspection for Johne's disease (an infectious disease that affects cattle) and a survey for enzootic bovine leukosis conducted by the Livestock Hygiene Service Center, and joined blood collection from 111 dairy cows.



Lecture



Blood collection at a farm

## Nagoya University

### New initiatives for a sustainable future

The Nagoya University Institutes of Innovation for Future Society focuses on various activities to realize a sustainable future, primarily through joint research with companies and governments.

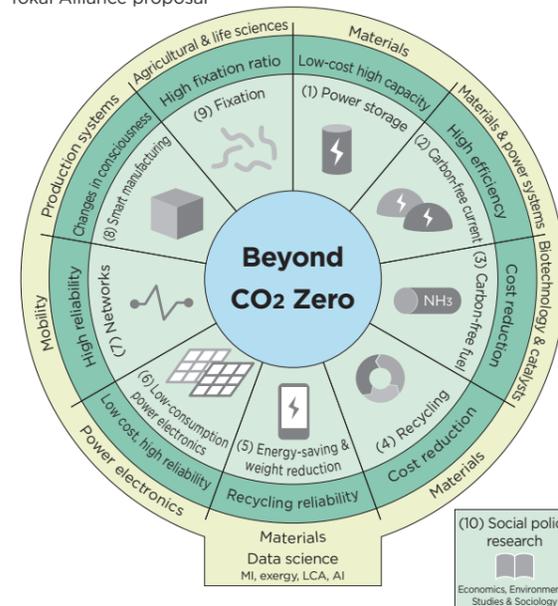
#### Beyond CO<sub>2</sub> Zero Tokai Alliance

With the aim of achieving zero CO<sub>2</sub> emissions by 2050, the Institute is conducting R&D focused on solving issues for practical implementation of zero CO<sub>2</sub> technologies broadly linked with each technological field. This is an open innovation type of research and development in which Nagoya University can participate as a member of the alliance utilizing the humanities, social sciences and other disciplines that underpin the importance of the SDGs.

Specific research topics include the linkage of nine technological areas, including power storage and carbon-free power sources, and the use of data science, as well as social policy research through research and analysis of global trends and the latest technological trends concerning the SDGs, ESGs, and other social issues.

One example of collaborative research is the creation of a new energy virtuous cycle system. The Institute conducts research and development aimed at practical implementation while utilizing the research results of the Materials/Energy Renovation Co-Creation Consortium (JST Open Innovation Platform with Enterprises, Research Institute and Academia (OPERA)) and other research programs.

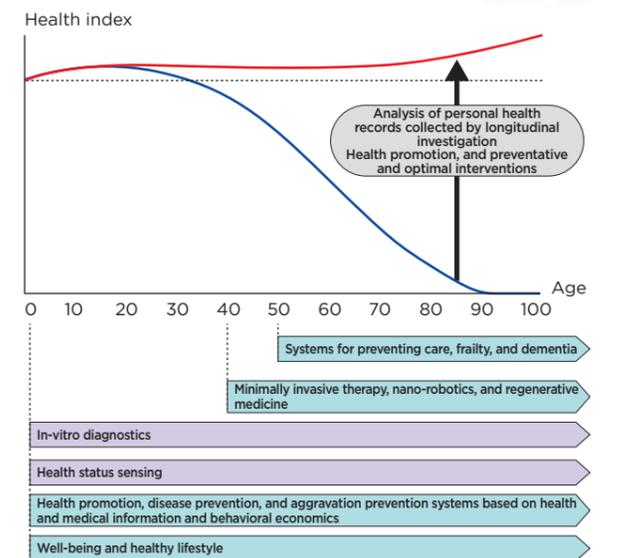
Beyond CO<sub>2</sub> Zero Field: Practical implementation issues Tokai Alliance proposal



### Lively centenarians: Tackling the SDGs in the social medicine and biotechnology domains

The 100-year life era has come, and the Institute conducts research and development of integration of health and medical information over people's life with advanced inspection methods such as quantum dot or IoT technology. The institute aims to the development of health promotion, the prevention method, or the optimal interventional method custom-made for the person.

#### Lively centenarian society



Fluclair™, an ultra-low toxicity quantum dot for stem cell labeling developed by joint research with companies to address issues in the field of regenerative medicine, enables fluorescence imaging and accurate diagnosis of the in vivo dynamics of transplanted cells, their accumulation in tissues and organs, and the efficiency of their engraftment. This has progressed from research and development to commercialization and is expected to play an active role in the field of regenerative medicine.

#### Creation of richly connected activity spaces

While utilizing remote technology, we are exploring methods of mobility that can demonstrate the importance of activity through real-space mobility, and conducting research and development for the creation of activity spaces with fewer constraints.

The three research themes are (1) research on human-centric evaluation methods for lifestyle and the town, (2) research on the value and methods of mobility, and (3) empirical research on the town and mobility that enable a high quality of life and sustainability.

Specific examples of these include the practical implementation of Mobility Blend® at the Nagoya University COI, and the WISE Graduate Program for Lifestyle Revolution based on Transdisciplinary Mobility Innovation.

# Management Base

## Basic Stance on Initiatives

Tokai National Higher Education and Research System was immediately faced with COVID-19 pandemic upon its establishment, and this became the greatest issue in the communication and sharing of awareness of the two universities. For this reason, the THERS executive committee and the departments of both universities engaging in dialogue on the medium- to long-term vision, and at the same time engaging in ongoing dialogue in the executive committee on cross-sectional areas such as education, research, industry-academia collaboration and regional contribution as initiatives for actively leveraging the effect of the integration of the corporations are seen to be essential for building the future management base, and consideration will be given to various measures.



## Governance Structure

### About the Governance Structure

Tokai National Higher Education and Research System is the first initiative of its kind in Japan to integrate national university corporations across prefectural borders, and a governance structure is being built to leverage the benefits of a system of one corporation and multiple universities. Decisions on the management of the corporation are made by the THERS Board of

Trustees chaired by the Chancellor, and matters related primarily to education in each university are decided by Steering Committee and Education and Research Councils chaired by the President of each university. Furthermore, the Chancellor participates in the Steering Committee and Education and Research Councils of both universities as a member to create an executive structure with attention to factors such as the unity of management and education, the balance of the two universities and streamlining.

In addition, THERS has established an Administrative Council

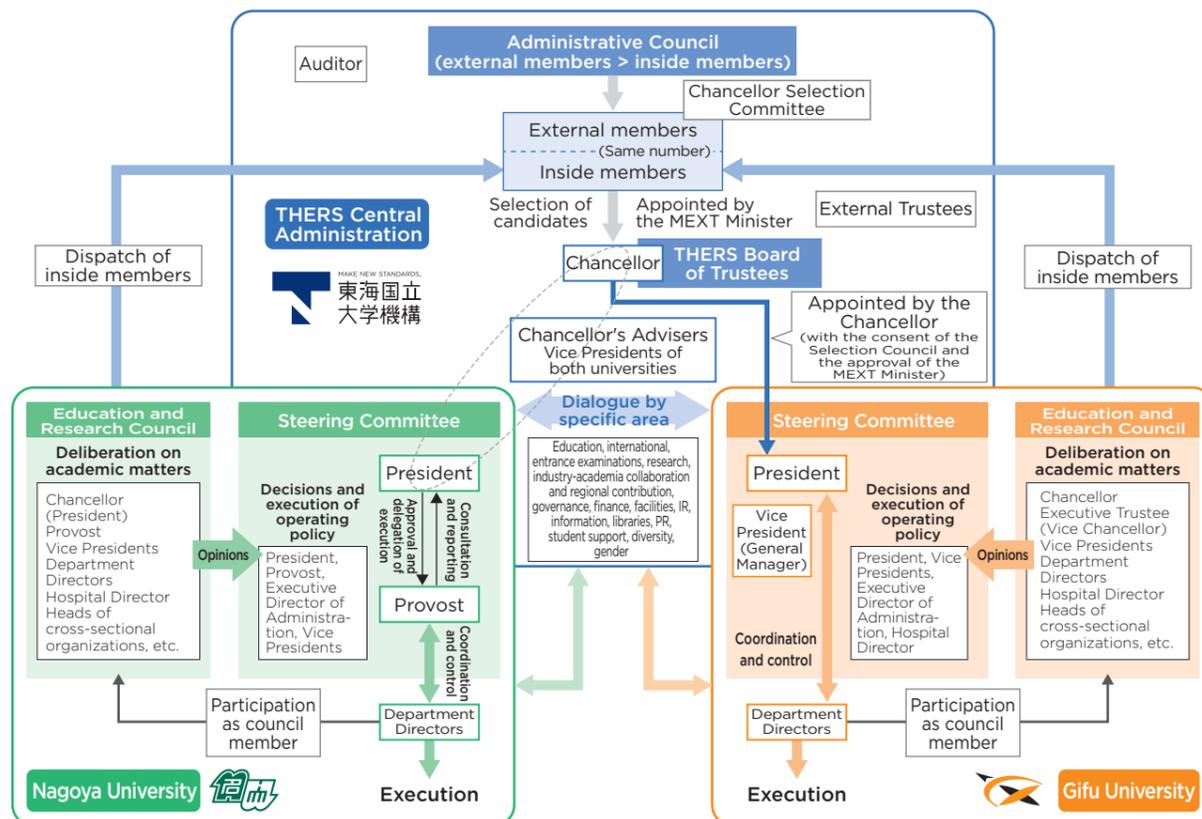
and Auditors, and the majority of members of the Administrative Council are outside members to reflect outside opinions on the management of THERS and perform the role of checking the operation of THERS. It is important that outside members of the Administrative Council have a deep understanding of THERS management and university operation, and THERS also believes it is important to proceed with the creation of such an environment.

In each university, the Steering Committee has authority and responsibility for university operations, and the Education and Research Council submits opinions to the President (Steering Committee). Department Directors participate in the Education and Research Council as members, and very active discussion is

carried out. Furthermore, they have the authority to select inside members of the Chancellor Selection Committee, and are dispatched as members of this.

To ensure unified strengthening of management and education in THERS management and university operation, the Chancellor and the Executive Trustee (President) maintain a strong presence on the THERS Board of Trustees, the Administrative Council and the Steering Committee and Education and Research Councils of each university, enabling communication between the THERS Board of Trustees and each university, and smooth implementation of strategic education and research activities in each university.

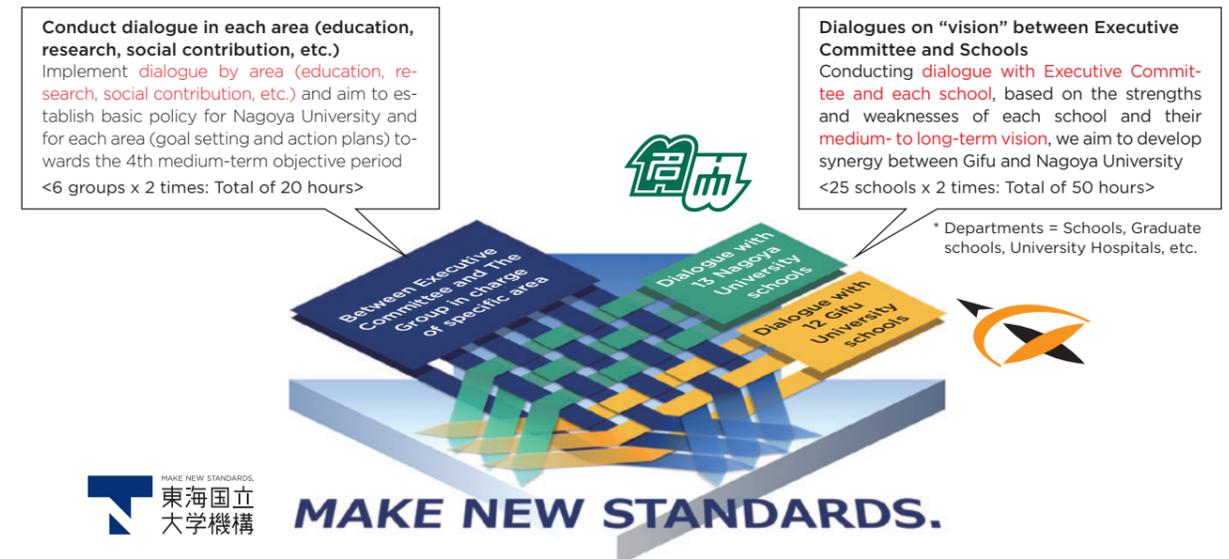
### Governance Structure of Tokai National Higher Education and Research System



### Thorough Dialogue by Specific Area and by Department

Tokai National Higher Education and Research System was immediately faced with the COVID-19 pandemic upon its establishment, and this became the greatest issue in the communication and sharing of awareness between the two universities. For this reason, in order to proceed with coordination and integration within THERS and between the universities with the aim of fully leveraging the benefits of the integration of

corporations and achieving the vision of the corporation, the thorough dialogue was conducted in two layers of "between the executive committee and departments (warp)" and "by specific area of responsibility within the executive committee (woof)." This combination of warp and woof of dialogue was used to create the basic course and basic policies of Tokai National Higher Education and Research System for the 4th medium-term objectives (FY2022-FY2027).



## Compliance and Risk Management

Tokai National Higher Education and Research System recognizes compliance and risk management to be important management issues, and makes improvements with awareness of the PDCA cycle. It establishes and operates various rules, policies and guidelines to be followed by the officers, faculty and staff, and students of each university. The content is revised as needed according to changes in the education and research environment, and efforts are made to ensure members are aware of them.

### Audit Office

The Audit Office is positioned as an organization directly under the Chancellor of Tokai National Higher Education and Research System, and is an organization that conducts internal audits. Tokai National Higher Education and Research System conducts internal audits in Gifu University and Nagoya University, and works to improve self-management systems, in addition to providing a unified response to various audits and inspections. Furthermore, the purpose of internal audits is not only to prevent illegal and wrongful execution of operations, but also contribute to the rational and efficient governance of THERS and university operations. In 2020, audit operations were conducted with enhancement of effectiveness and efficiency of controls and processes, monitoring and verification of compliance, etc., the status of cost reduction initiatives, legality and appropriateness of execution of duties, and following up corrections and improvements in past audits as priority audit matters.

Furthermore, in order to maintain social trust in Tokai National Higher Education and Research System and contribute to fairness of operations, a whistle-blowing response contact and a response contact for unauthorized use of research funds, etc., have been established.

### Research Risk Management

In recent years, researchers are facing more intense competition than in the past, and the occurrence of research misconduct such as data fabrication and falsification in research institutes inside and outside Japan has become a social issue. In addition, although not going as far as misconduct, there are constant temptations to compromise intellectual integrity and prioritize immediate results. However, such misconduct and lack of intellectual integrity breaches the trust of society in researchers and research institutions, and significantly impedes the advancement of academic research.

In light of this situation, Tokai National Higher Education and Research System does its best to ensure fair research is carried out in a way that serves as a model for others, and both universities have established basic policies and codes of conduct. Furthermore, to increase the quality and strengthen the functions of research ethics and bioethics, various rules, etc., have been established, and a system has been established for deliberation in committees and ethical education of members.

- (e.g.)
- Rules on the handling of research misconduct in Tokai National Higher Education and Research System central administration and organizations promoting education and research in THERS
  - Committee for Fair Research
  - Rules on life science and medical research involving human subjects
  - Rules on recombinant DNA experimentation
  - Regulations on animal care and use in research, etc.

### Industry-Academia Collaboration Risk Management

In recent years, in Japan as well, complex risks involving deemed exports, economic security and conflicts of interest have emerged due to the provision of technology to international students and foreign researchers, and there is an increasing need for total management to manage cases involving multiple risks from different angles from an all-encompassing view. Ensuring research integrity centered on the management of conflicts of interest is extremely important to fulfill contributions to society through the promotion of industry-academia collaboration activities, which are being actively engaged in.

### Management of Conflicts of Interest

When a university conducts social contribution activities, there is a possibility that so-called conflicts of interest will arise for the university or its officers, faculty and staff due to differences in the objectives and roles of the university and the companies, etc. Therefore, for the university to actively make social contributions while appropriately fulfilling its responsibilities concerning education and research, there is a strong need to maintain public utility and neutrality in such activities, ensure transparency, and fulfill external accountability. Tokai National Higher Education and Research System requires understanding and cooperation of society including industry about the management of conflicts of interest, and will seek to control damage caused by conflicts of interest and promote industry-academia-government collaboration activities.

### Protection and Management of Confidential Information

In the event it is found that the state of management of research information is inappropriate in a university, it is expected that this will have a significant impact on the social evaluation of the university as a whole.

For this reason, it is necessary to protect faculty, staff and students from legal violations and violations of employment regulations, regardless of whether by intentional or random acts, by managing the confidential information that is important knowledge, etc., of companies obtained by universities in industry-academia collaboration activities.

Based on these, a confidential information management policy on industry-academia collaboration has been established to indicate the basic approach on management of confidential information to systematically manage confidential information and ensure industry-academia collaboration activities better contribute to society in order to enable companies, etc., provide important knowledge with a sense of security and enable to researchers produce the best results in joint research, etc., based on the public utility of the universities and the effect on education and research.

### Security Export Control

Major powers including Japan have internationally created a framework for security export control to prevent weapons and goods and technologies with military applications from falling into the hands of nation states and terrorists presenting security concerns, and international society works together to implement stringent controls. In Japan, trade controls in line with the framework for security export control are implemented based on the Foreign Exchange and Foreign Trade Act.

Universities are subject to security trade controls based on the Foreign Exchange and Foreign Trade Act and applications for permits must be obtained from the Ministry of Economy, Trade and Industry in the following cases. For this reason, Tokai National Higher Education and Research System has established Security Export Control Rules, and supports education and research activities.

- Export of research equipment, chemical substances, microorganisms, etc. (including when carried while traveling from Japan)
- Contract research and joint research related to overseas governments and companies
- Technical guidance for overseas companies
- (Provision of technology in relation to) Acceptance of researchers and students from overseas
- Exchange of data and materials, with overseas researchers in the course of research

## Environmental Management

When Tokai National Higher Education and Research System was launched in FY2020, Environment, Health & Safety and Facilities Management were established as administration support organizations overseeing the entire organization in relation to environmental management, etc. Environment, Health & Safety shares information, plans and

drafts basic policy and management matters on the environment, health and safety. An Energy Management Supervisor and an assisting Energy Management Planning Promoter have been assigned to Facilities Management, which strategically conducts operations for appropriately securing and utilizing facilities according to the education and research activities of Tokai National Higher Education and Research System as a whole.

Furthermore, Tokai National Higher Education and Research System tracks the environmental load generated in the education, research and medical activities of Gifu University and Nagoya University, and endeavors to reduce the environmental load by collecting and analyzing data. The environmental performance or THERS as a whole is reported by indicating the environmental performance of each university aimed at reducing environmental load and changes therein, while also representing aggregate data for Tokai National Higher Education and Research System. Environmental management of Tokai National Higher Education and Research System is aimed at the realization of a sustainable society through education, research and medical activities through synergies leveraging the strengths of both universities.

## Respect for Diversity

Tokai National Higher Education and Research System aims to realize campuses enabling all people to display their individuality and capabilities regardless of gender, disability, nationality, or age. Efforts are being made to promote the utilization of personnel with respect for diversity through initiatives such as the promotion of gender equality, the establishment of guidelines on LGBT, etc., the elimination of discrimination based on disability and the improvement of international diversity.

Officers, etc.		* Outside part time. ** Outside.	
Chancellor	Seiichi Matsuo	Chancellor's Adviser (Vice President of Gifu University)	Hirokazu Fukui
Executive Trustee, Vice Chancellor (THERS Project Management, Medium-Term Objectives, Medium-Term Planning, Industry-Academia Collaboration and Regional Contribution)	Hisataka Moriwaki	Chancellor's Adviser (Vice President of Gifu University)	Zhigang Wang
Trustee (Research and International Affairs)	Naoshi Sugiyama	Chancellor's Adviser (Vice President of Gifu University)	Chiho Oyabu
Trustee (Education, Student Support, Diversity and Human Rights)	Makoto Sugiyama	Chancellor's Adviser (Vice President of Gifu University)	Toru Iwama
Trustee (General Affairs, Finance, Facilities and Information) and Executive Director of Administration	Koji Takahashi	Chancellor's Adviser (Vice President of Nagoya University)	Akira Fujimaki
Trustee (THERS Management)	Takeshi Suzuki*	Chancellor's Adviser (Vice President of Nagoya University)	Shogo Kimura
Trustee (THERS Management)	Satoko Kato*	Chancellor's Adviser (Vice President of Nagoya University)	Kazuhito Kawakita
Auditor	Yojiro Kakuma**	Chancellor's Adviser (Vice President of Nagoya University)	Akihiro Sasoh
Auditor	Satoko Nakatani*	Chancellor's Adviser (Vice President of Nagoya University)	Junichi Sakuma
Vice Trustee (Executive Director of Administration of Gifu University)	Noriaki Matsuda	Chancellor's Adviser (Vice President of Nagoya University)	Masafumi Nakahigashi
Vice Trustee (Director of Gifu University Hospital)	Kazuhiro Yoshida	Chancellor's Adviser (Vice President of Nagoya University)	Hiroko Tsukamura
Vice Trustee (Director of Nagoya University Hospital)	Yasuhiro Kodera	Chancellor's Adviser (Vice President of Nagoya University)	Kinji Ohno
		Chancellor's Adviser (Vice President of Nagoya University)	Kazuya Takeda

# Tokai National Higher Education and Research System Financial Strategy



**Koji TAKAHASHI**

Trustee  
(General Affairs, Finance,  
Facilities and Information)

We will seek financial soundness while strengthening initiatives to respond to society's needs.

## Creation of a Financial Strategy Emphasizing Overall Balance

As the environment surrounding the operation of national universities becomes increasingly difficult, financial strategy is becoming more and more important. Due to the trend of decreasing management expenses grants, which are the central part of funding, it is essential to make self-reliant efforts aimed at securing funds in order to maintain and strengthen financial soundness.

In particular, the activities of both universities under THERS were significantly restricted in FY2020 due to the impact of COVID-19 pandemic, making it a year of difficult fiscal administration.

Revenues were significantly affected, especially in the University Hospitals. A decrease in the number of patients due to people refraining from receiving examinations, and a decline in the number of surgeries due to securing beds for COVID-19 led to a significant drop in hospital revenue, and operations were narrow-

ly maintained using subsidies from the national government and municipal governments.

Meanwhile, with regard to expenses, costs related to travel and events decreased dramatically, such as travel expenses decreasing by almost 90% compared to the previous fiscal year due to difficulties in attending academic conferences. By contrast, new costs related to COVID-19 also arose, such as the establishment of communication environments for remote classes and the establishment of hygienic environments for the prevention of infection.

Looking at the finances of Nagoya University and Gifu University within THERS under such conditions, the former actively conducts industry-academia collaboration backed by its global research capabilities, and its dependence on management expenses grants could be considered to be comparatively low. Meanwhile, as the latter conducts university operations

rooted in the regional community, its dependence on management expenses grants is high. However, efforts were made to increase its non-subsidy income and to reduce expenses in order to maintain a stable financial base. In this way, the creation and steady execution of a financial strategy with an emphasis on overall balance are essential for maintaining the sound operations of both universities facing different financial

situations.

To address this, THERS will endeavor to obtain more external funding such as joint research expenses than in the past, and also aims to increase revenue from donations through the establishment of a fund-raising system. Furthermore, due to the issuance of university bonds by national universities becoming possible since last year, this will also be considered as option.

## Allocation of Budget Based on the Concept of Social Impact

The main focus of the financial strategy of THERS is that strengthening the financial base is an important issue amid the trend of decreasing management expenses grants. While focusing on securing external funding, strategic budget allocation will be implemented from the perspective of the total budget. Furthermore, we will actively proceed with initiatives such as strengthening profit-making activities centered on the Financing Strategic Office and obtaining external funding with the aim of diversifying sources of funding.

However, a point that must be noted here is that universities differ from private enterprises in that they do not succeed solely through the pursuit of marketability and growth potential. Although some research areas of universities provide significant economic value, others have great social significance but have difficulty generating economic value. Focusing on the marketability and growth potential of research content when allocating the budget could lead to questioning the reason for existence as a university.

To address this THERS intends to perform evalua-

tions of research areas and allocate budget by using the concept of social impact in portfolio management. Within this, we will evaluate each area of research based on both social value and economic value, and consider well-balanced budget allocation.

Meanwhile the creation of a highly efficient organization through reviews of the research system is also believed to be important. National universities have conventionally tended to have vertically integrated organizations with inadequate horizontal coordination. We intend to revise this point and create a system at the discretion of the executive committee of THERS based on the portfolio. For example, existing research organizations are conducting activities aimed at the global requirement of decarbonization, and we will strengthen this research system with sense of speed using the "build & scrap" concept of determining new steps to take before reviewing existing operations rather than "scrap & build" in which existing operations are cut before establishing alternative operations.

## Seeking to Contribute to Society as a Presence Leading National Universities

In the future, THERS will also adopt the ESG investment perspective that is being emphasized by private enterprises. Needless to say, national universities are engaged in education and research that contributes to the advancement of humankind including the environment and society. In this context, THERS will conduct investment focusing on climate change and social conditions in an effort to improve social value.

Meanwhile, with regard to governance, we will strengthen the operation of the organization through the unification of the two universities. In addition, we intend to make the content of communication of financial information easier to understand for outsiders.

In order to ensure the objectivity of budget allocation in the future, we intend to enhance the functions of the Administrative Council. In the past, this mainly involved budgets determined by the executive committee being approved in the Council, but we have revised this approach and created a system in which

the executive committee and members of the Administrative Council exchange opinions as needed, and constant advice on THERS operations including budget allocation can be obtained from outside experts.

Tokai National Higher Education and Research System has achieved the first integration of national university corporations in Japan, and aims to enhance international competitiveness and contribute to regional revitalization as a new university model. Going forward, we will seek to become a university organization that is sustainable in the long term by promoting university reforms ahead of the times. In this process, we intend to actively embrace the challenges presented by themes that have been difficult to realize in conventional organizations. We also strongly wish to reform university culture in Japan, and grow into a presence in which we can take pride on the global stage. We sincerely ask that you follow the efforts of THERS and continue to provide your generous support.

## Five-Year Financial and Non-Financial Summary

(Unit: Millions of Yen)

	FY2016	FY2017	FY2018	FY2019	FY2020
<b>Financial Statement Data</b>					
<b>Balance Sheet</b>					
Noncurrent assets	315,904	316,757	306,730	303,289	288,851
Current assets	42,697	44,820	46,608	52,125	61,099
<b>Total assets</b>	<b>358,601</b>	<b>361,577</b>	<b>353,339</b>	<b>355,415</b>	<b>349,950</b>
Noncurrent liabilities	121,016	121,442	111,584	110,798	107,947
Current liabilities	46,396	48,106	49,970	52,165	60,691
<b>Total liabilities</b>	<b>167,413</b>	<b>169,548</b>	<b>161,554</b>	<b>162,964</b>	<b>168,638</b>
Capital stock	125,274	125,274	125,257	124,787	111,280
Capital surplus	39,748	38,275	37,408	35,155	32,600
Retained earnings, etc.	26,165	28,478	29,118	32,507	37,430
<b>Total net assets</b>	<b>191,188</b>	<b>192,029</b>	<b>191,784</b>	<b>192,450</b>	<b>181,311</b>
<b>Income Statement</b>					
Ordinary expenses	142,394	144,317	150,426	152,041	149,865
Ordinary revenue	145,730	147,169	152,208	155,706	155,033
Extraordinary profit or loss	166	(98)	(724)	(167)	(95)
Amount withdrawn from reserve fund	432	17	59	48	218
<b>Current-term gross profit</b>	<b>3,934</b>	<b>2,770</b>	<b>1,117</b>	<b>3,880</b>	<b>5,291</b>
<b>Cash Flow Statement</b>					
Cash flows from operating activities	16,304	17,388	16,273	16,342	21,737
Cash flows from investing activities	(723)	(18,349)	(5,971)	(6,227)	(11,419)
Cash flows from financing activities	(5,418)	98	(7,926)	(5,110)	(4,913)
<b>Cash and cash equivalents at end of term</b>	<b>27,887</b>	<b>27,023</b>	<b>29,399</b>	<b>34,403</b>	<b>39,811</b>

### Statement of Operating Costs of National University Corporation

	FY2016	FY2017	FY2018	FY2019	FY2020
Expenses on income statement	142,507	144,632	151,276	152,819	150,494
(Deduction) Non-subsidy income	(91,900)	(94,852)	(99,650)	(103,955)	(101,773)
Other adjustments	5,981	4,386	5,293	3,770	4,984
<b>Operating costs of national university corporation</b>	<b>56,588</b>	<b>54,166</b>	<b>56,918</b>	<b>52,634</b>	<b>53,705</b>

### Statement of Account

	FY2016	FY2017	FY2018	FY2019	FY2020
Proceeds from management expenses grants	43,334	43,195	42,534	43,651	41,672
Non-subsidy income	71,610	73,476	76,666	81,231	76,671
Research income from industry-academia collaboration, and proceeds from donations, etc.	22,715	25,473	27,488	28,869	31,899
Other revenue	13,535	18,812	10,420	12,367	17,948
<b>Revenue</b>	<b>151,195</b>	<b>160,957</b>	<b>157,110</b>	<b>166,119</b>	<b>168,191</b>
Expenditure	145,039	153,236	149,555	156,675	153,863
<b>Revenue - expenditure</b>	<b>6,156</b>	<b>7,721</b>	<b>7,555</b>	<b>9,444</b>	<b>14,327</b>

### Other Financial Data (Status of Receipt of External Funding)

	FY2016	FY2017	FY2018	FY2019	FY2020
Donations received (excluding donations in kind)	3,591	4,599	5,288	5,323	6,397
Donations received (donations in kind)	9,793	2,468	1,994	1,962	2,316
Contract research expenses received	9,890	10,717	11,579	10,512	11,878
Joint research expenses received	3,526	3,998	3,790	5,089	4,981
Contract project expenses received	1,148	1,181	1,046	1,289	937
Grants-in-Aid for Scientific Research received	9,085	8,778	8,496	9,141	9,225

### Non-financial Data

	FY2016	FY2017	FY2018	FY2019	FY2020
Number of undergraduate students	15,551	15,495	15,366	15,301	15,247
Number of graduate students	7,597	7,647	7,765	7,836	7,782
Number of faculty members (full-time)	3,176	3,246	3,235	3,207	3,191
Land area (m <sup>2</sup> )	9,647,867	9,616,737	9,616,653	9,611,383	10,424,926
Building area (m <sup>2</sup> )	1,107,476	1,099,653	1,133,079	1,132,711	1,140,199

\* The figures shown are as of May 1 each fiscal year (the average number of faculty members who are paid each fiscal year). Land area and building area exclude leases.

## Financial Statements (Summary)

### Balance Sheet

This represents and clarifies the condition of the assets, liabilities and net assets (financial condition) of the national university corporations as of the closing date (March 31).

(Unit: Millions of Yen)

(Assets)	FY2018		FY2019		FY2020			Change (2019 - 2020)			
	Gifu University	Nagoya University	Gifu University	Nagoya University	Gifu University	Nagoya University	Common				
<b>Assets</b>											
Noncurrent assets											
Property, plant and equipment											
Land	111,066	40,495	70,571	110,127	40,495	69,632	91,684	22,317	69,366	—	(18,443)
Buildings and structures	126,437	34,001	92,436	123,352	33,639	89,713	122,981	36,377	86,029	574	(371)
Tools, furniture and fixtures	21,579	5,346	16,233	21,633	5,526	16,106	22,132	5,596	16,286	250	499
Books	27,038	4,934	22,104	27,095	4,921	22,173	27,166	4,939	22,226	—	71
Construction in progress	652	409	242	2,187	1,326	861	2,864	1,668	1,195	—	676
Other property, plant and equipment	1,938	61	1,876	1,920	100	1,820	1,833	87	1,745	—	(87)
Intangible assets	793	108	684	1,080	95	984	1,086	158	847	80	5
Investments and other assets											
Investment securities	17,196	2,324	14,872	15,868	1,983	13,884	19,081	—	—	19,081	3,213
Other investments and other assets	28	12	16	22	7	15	20	5	14	—	(2)
Current assets											
Cash and deposits	30,599	6,566	24,033	34,403	8,843	25,559	39,811	—	—	39,811	5,407
Accounts receivable - university hospital	10,603	4,092	6,510	11,012	4,399	6,613	12,675	4,466	8,208	—	1,663
Accounts receivable	3,172	938	2,234	3,784	987	2,796	5,660	1,110	3,720	829	1,876
Securities	1,199	800	399	1,600	300	1,300	401	—	—	401	(1,199)
Medicines and medical examination materials	589	402	187	574	407	166	806	627	179	—	231
Other current assets	444	108	335	750	112	637	1,744	70	321	1,352	993
<b>Total assets</b>	<b>353,339</b>	<b>100,600</b>	<b>252,738</b>	<b>355,415</b>	<b>103,148</b>	<b>252,267</b>	<b>349,950</b>	<b>77,426</b>	<b>210,141</b>	<b>62,382</b>	<b>(5,464)</b>

### (Liabilities and Net assets)

(Liabilities and Net assets)	FY2018		FY2019		FY2020	Change (2019 - 2020)		
	Gifu University	Nagoya University	Gifu University	Nagoya University				
<b>Liabilities</b>								
Noncurrent liabilities								
Contra-accounts for assets	57,025	10,136	46,888	57,556	10,279	47,276	58,700	1,144
Long-term donation liabilities	7,359	—	7,359	7,359	—	7,359	7,359	—
Inherited debts and long-term loans payable	42,848	14,605	28,243	39,742	12,414	27,328	36,066	(3,676)
Long-term lease and PFI liabilities	2,305	1,791	513	3,483	1,275	2,207	2,843	(640)
Other noncurrent liabilities	2,045	678	1,366	2,656	1,199	1,456	2,977	321
Current liabilities								
Liabilities for management expenses grants	575	143	432	494	—	494	1,818	1,323
Donations liabilities	17,497	3,149	14,347	18,631	3,279	15,352	22,035	3,403
Advanced fund for contract research, etc.	6,177	522	5,655	6,213	844	5,369	7,246	1,032
Deposited Grants-in-Aid for Scientific Research	1,646	137	1,509	1,807	126	1,681	3,069	1,262
Current portion of inherited debts and loans payable	5,428	2,233	3,195	5,015	2,190	2,824	5,025	10
Accounts payable, etc.	15,733	3,664	12,069	17,216	5,547	11,668	18,312	1,096
Lease and PFI liabilities	1,154	594	559	879	618	261	852	(26)
Other current liabilities	1,756	569	1,186	1,906	469	1,437	2,330	423
<b>Total liabilities</b>	<b>161,554</b>	<b>38,227</b>	<b>123,327</b>	<b>162,964</b>	<b>38,245</b>	<b>124,719</b>	<b>168,638</b>	<b>5,673</b>
<b>Net assets</b>								
Capital stock	125,257	52,911	72,346	124,787	52,911	71,876	111,280	(13,507)
Capital surplus	37,408	(180)	37,588	35,155	210	34,945	32,600	(2,554)
Retained earnings								
Reserve fund	955	156	799	1,106	620	486	1,659	552
Reserve fund (including reserve fund carried forward from previous mid-term objectives period)	27,045	8,689	18,356	27,520	8,887	18,633	30,480	2,960
Current-term unappropriated retained earnings	1,117	796	321	3,880	2,273	1,606	5,291	1,410
Valuation difference on available-for-sale securities	—	—	—	—	—	—	—	—
<b>Total net assets</b>	<b>191,784</b>	<b>62,373</b>	<b>129,411</b>	<b>192,450</b>	<b>64,902</b>	<b>127,548</b>	<b>181,311</b>	<b>(11,138)</b>
<b>Total liabilities and net assets</b>	<b>353,339</b>	<b>100,600</b>	<b>252,738</b>	<b>355,415</b>	<b>103,148</b>	<b>252,267</b>	<b>349,950</b>	<b>(5,464)</b>

\* Aggregate amounts may not match due to rounding down to the nearest million yen.

# Income Statement

This represents and clarifies the profit and loss (operating conditions) by aligning the expenses and revenue of national university corporations in a single fiscal year (from April 1 to March 31 the following year).

(Unit: Millions of Yen)

	FY2018		FY2019		FY2020			Change (2019 - 2020)			
	Gifu University	Nagoya University	Gifu University	Nagoya University	Gifu University	Nagoya University	Common				
Ordinary expenses											
Operating expenses	145,901	40,470	105,430	147,444	42,153	105,291	145,601	40,573	101,833	3,194	(1,843)
Educational expenses	6,107	1,870	4,237	6,200	1,907	4,292	6,020	1,842	4,081	96	(179)
Research expenses	11,908	1,813	10,094	11,151	2,118	9,032	10,546	1,861	8,481	203	(604)
Medical expenses	38,274	14,811	23,462	39,437	15,198	24,238	39,605	14,768	24,837	—	168
Education and research support expenses	3,526	622	2,904	2,834	646	2,188	2,500	433	2,018	48	(334)
Contract research expenses, etc.	15,950	1,387	14,563	16,491	1,453	15,037	16,533	1,575	14,596	361	41
Personnel expenses for executives	363	114	248	504	271	233	133	—	3	130	(371)
Personnel expenses for faculty members	37,848	9,546	28,301	38,485	9,695	28,789	36,096	9,522	26,534	39	(2,388)
Personnel expenses for staff members	31,921	10,302	21,619	32,339	10,861	21,478	34,164	10,568	21,280	2,314	1,824
General administrative expenses	3,978	989	2,989	4,154	1,113	3,040	3,924	977	2,108	838	(229)
Financing expenses, etc.	546	284	261	442	268	173	340	200	136	2	(102)
<b>Total ordinary expenses</b>	<b>150,426</b>	<b>41,744</b>	<b>108,682</b>	<b>152,041</b>	<b>43,535</b>	<b>108,505</b>	<b>149,865</b>	<b>41,751</b>	<b>104,078</b>	<b>4,035</b>	<b>(2,175)</b>
Ordinary revenue											
Revenue from management expenses grants	41,334	10,195	31,138	42,799	11,115	31,683	39,539	10,056	27,356	2,126	(3,259)
Revenue from student tuition fees	13,725	4,406	9,319	13,480	4,309	9,171	13,411	4,252	9,158	—	(69)
Revenue of university hospital	60,778	23,290	37,487	63,731	24,894	38,837	62,091	23,383	38,707	—	(1,639)
Revenue from contract research, etc.	16,296	1,389	14,907	16,855	1,454	15,401	16,764	1,567	15,136	60	(91)
Revenue from donations	3,516	904	2,611	3,560	897	2,662	3,469	848	2,611	9	(91)
Revenue from subsidies	4,623	573	4,049	4,200	830	3,370	8,532	1,768	6,437	326	4,332
Miscellaneous revenue (property rental, livestock treatment, etc.)	4,810	897	3,913	5,180	1,027	4,153	5,272	1,119	4,144	8	91
Reversal of contra-accounts for assets	6,510	786	5,723	5,521	795	4,726	5,283	814	4,442	26	(238)
Other revenue	611	88	522	375	284	90	668	238	429	—	293
<b>Total ordinary revenue</b>	<b>152,208</b>	<b>42,533</b>	<b>109,675</b>	<b>155,706</b>	<b>45,609</b>	<b>110,096</b>	<b>155,033</b>	<b>44,050</b>	<b>108,424</b>	<b>2,558</b>	<b>(673)</b>
Extraordinary loss	850	0	850	778	0	777	629	118	510	—	(149)
Extraordinary profit	125	0	125	945	156	789	533	84	449	—	(411)
Amount withdrawn from reserve fund	59	6	52	48	44	3	218	202	16	—	170
<b>Current-term gross profit</b>	<b>1,117</b>	<b>796</b>	<b>321</b>	<b>3,880</b>	<b>2,273</b>	<b>1,606</b>	<b>5,291</b>	<b>2,468</b>	<b>4,300</b>	<b>(1,477)</b>	<b>1,410</b>

\* Aggregate amounts may not match due to rounding down to the nearest million yen.

### Factors Causing Changes, etc.

- Educational expenses: 6.02 billion yen (down 170 million yen year on year) / Research expenses: 10.54 billion yen (down 600 million yen year on year)
  - ... Decrease in travel expenses due to the impact of COVID-19
- Personnel expenses for faculty members: 36.09 billion yen (down 2.38 billion yen year on year)
  - ... Decrease in retirement benefits (2.07 billion yen → 1.33 billion yen), decrease due to change in classification of medical personnel (1.52 billion yen, personnel expenses for faculty members → personnel expenses for staff members)
- Personnel expenses for staff members: 34.16 billion yen (up 1.82 billion yen year on year)
  - ... Increase in University Hospital personnel expenses due to COVID-19-related allowances, etc., increase due to change in classification of medical personnel (1.52 billion yen, personnel expenses for faculty members → personnel expenses for staff members)
- Revenue from management expenses grants: 39.53 billion yen (down 3.25 billion yen year on year)
  - ... Decrease of grant amount (43.07 billion yen → 41.17 billion yen), decrease associated with an increase in the unused amount (amount carried over to the following year without revenue recognition)
- Revenue of university hospital: 62.09 billion yen (down 1.63 billion yen year on year)
  - ... Decrease due to people refraining from receiving examinations and restriction on the use of general beds
- Revenue from subsidies: 8.53 billion yen (up 4.33 billion yen year on year)
  - ... Increase due to support for University Hospitals affected by COVID-19

# Income Statement (Recomposed)

A profit (black ink) eventually arose in the "Income Statement" above, but taxes such as management expenses grants and subsidies account for the source of much of the revenue.

In order to clarify the state of the shortage of funding in national universities, revenue from non-subsidy income such as student tuition fees is reclassified as "operating revenue" and revenue not from non-subsidy income is reclassified as "non-operating revenue." This reveals the current condition in which there is an operating loss, meaning that expenses cannot be covered by non-subsidy income alone. (When the amount equivalent to depreciation costs not included in income statement\* is taken into account, income is decreased further.)

As management expenses grants continue to be reduced, we will endeavor to increase the non-subsidy income of universities to increase the quality of education and research, but we sincerely request further support in the form of donations, etc.

\* Amount equivalent to depreciation costs not included in income statement: The depreciation costs of noncurrent assets provided in kind by the national government at the time of incorporation, and of noncurrent assets obtained through facility expense subsidies and facility expense grants, which are excluded from expenses on income statement. The reason for using this system is that "it is anticipated that the necessary steps will be taken by the national government, which is the investor" when renewing the relevant noncurrent assets, but the portion actually borne by each national university corporation, such as repair expenses until renewal, is by no means small.

(Unit: Millions of Yen)

	FY2018		FY2019		FY2020			Change (2019 - 2020)			
	Gifu University	Nagoya University	Gifu University	Nagoya University	Gifu University	Nagoya University	Common				
Revenue from student tuition fees	13,725	4,406	9,319	13,480	4,309	9,171	13,411	4,252	9,158	—	(69)
Revenue of university hospital	60,778	23,290	37,487	63,731	24,894	38,837	62,091	23,383	38,707	—	(1,639)
Revenue from contract research, etc.	16,296	1,389	14,907	16,855	1,454	15,401	16,764	1,567	15,136	60	(91)
Miscellaneous revenue (property rental, livestock treatment, etc.)	4,810	897	3,913	5,180	1,027	4,153	5,272	1,119	4,144	8	91
<b>Total operating revenue (1)</b>	<b>95,612</b>	<b>29,983</b>	<b>65,628</b>	<b>99,248</b>	<b>31,685</b>	<b>67,563</b>	<b>97,539</b>	<b>30,323</b>	<b>67,147</b>	<b>68</b>	<b>(1,709)</b>
Educational expenses	6,107	1,870	4,237	6,200	1,907	4,292	6,020	1,842	4,081	96	(179)
Research expenses	11,908	1,813	10,094	11,151	2,118	9,032	10,546	1,861	8,481	203	(604)
Medical expenses	38,274	14,811	23,462	39,437	15,198	24,238	39,605	14,768	24,837	—	168
Education and research support expenses	3,526	622	2,904	2,834	646	2,188	2,500	433	2,018	48	(334)
Contract research expenses, etc.	15,950	1,387	14,563	16,491	1,453	15,037	16,533	1,575	14,596	361	41
Personnel expenses for executives	363	114	248	504	271	233	133	—	3	130	(371)
Personnel expenses for faculty members	37,848	9,546	28,301	38,485	9,695	28,789	36,096	9,522	26,534	39	(2,388)
Personnel expenses for staff members	31,921	10,302	21,619	32,339	10,861	21,478	34,164	10,568	21,280	2,314	1,824
General administrative expenses	3,978	989	2,989	4,154	1,113	3,040	3,924	977	2,108	838	(229)
<b>Total operating expenses (2)</b>	<b>149,879</b>	<b>41,459</b>	<b>108,420</b>	<b>151,598</b>	<b>43,266</b>	<b>108,331</b>	<b>149,525</b>	<b>41,550</b>	<b>103,942</b>	<b>4,033</b>	<b>(2,073)</b>
<b>Operating profit or loss (3): (1) - (2)</b>	<b>(54,267)</b>	<b>(11,475)</b>	<b>(42,791)</b>	<b>(52,349)</b>	<b>(11,581)</b>	<b>(40,768)</b>	<b>(51,985)</b>	<b>(11,226)</b>	<b>(36,794)</b>	<b>(3,964)</b>	<b>363</b>
Revenue from management expenses grants (4)	41,334	10,195	31,138	42,799	11,115	31,683	39,539	10,056	27,356	2,126	(3,259)
<b>Operating profit or loss (after management expenses grants) (5): (3) + (4)</b>	<b>(12,932)</b>	<b>(1,279)</b>	<b>(11,652)</b>	<b>(9,550)</b>	<b>(466)</b>	<b>(9,084)</b>	<b>(12,446)</b>	<b>(1,170)</b>	<b>(9,438)</b>	<b>(1,837)</b>	<b>(2,895)</b>
Revenue from donations	3,516	904	2,611	3,560	897	2,662	3,469	848	2,611	9	(91)
Revenue from subsidies	4,623	573	4,049	4,200	830	3,370	8,532	1,768	6,437	326	4,332
Reversal of contra-accounts for assets	6,510	786	5,723	5,521	795	4,726	5,283	814	4,442	26	(238)
Other revenue	611	88	522	375	284	90	668	238	429	—	293
<b>Total non-operating revenue (6)</b>	<b>15,261</b>	<b>2,353</b>	<b>12,907</b>	<b>13,658</b>	<b>2,808</b>	<b>10,849</b>	<b>17,953</b>	<b>3,670</b>	<b>13,920</b>	<b>362</b>	<b>4,295</b>
Financing expenses, etc.	546	284	261	442	268	173	340	200	136	2	(102)
<b>Total non-operating expenses (7)</b>	<b>546</b>	<b>284</b>	<b>261</b>	<b>442</b>	<b>268</b>	<b>173</b>	<b>340</b>	<b>200</b>	<b>136</b>	<b>2</b>	<b>(102)</b>
<b>Operating profit or loss (8): (5) + (6) - (7)</b>	<b>1,782</b>	<b>789</b>	<b>992</b>	<b>3,664</b>	<b>2,073</b>	<b>1,591</b>	<b>5,167</b>	<b>2,299</b>	<b>4,345</b>	<b>(1,477)</b>	<b>1,502</b>
Extraordinary profit	125	0	125	945	156	789	533	84	449	—	(411)
Amount withdrawn from reserve fund	59	6	52	48	44	3	218	202	16	—	170
Extraordinary loss	850	0	850	778	0	777	629	118	510	—	(149)
<b>Total extraordinary profit or loss (9)</b>	<b>(664)</b>	<b>7</b>	<b>(671)</b>	<b>215</b>	<b>200</b>	<b>15</b>	<b>123</b>	<b>168</b>	<b>(44)</b>	<b>—</b>	<b>(92)</b>
<b>Current-term gross profit (10): (8) + (9)</b>	<b>1,117</b>	<b>796</b>	<b>321</b>	<b>3,880</b>	<b>2,273</b>	<b>1,606</b>	<b>5,291</b>	<b>2,468</b>	<b>4,300</b>	<b>(1,477)</b>	<b>1,410</b>
Amount equivalent to depreciation costs not included in income statement (11)	5,078	1,315	3,763	4,627	1,154	3,472	4,783	1,421	3,361	—	155
<b>Current-term gross profit taking into account equivalent to depreciation costs not included in income statement (12): (10) - (11)</b>	<b>(3,960)</b>	<b>(518)</b>	<b>(3,442)</b>	<b>(746)</b>	<b>1,119</b>	<b>(1,865)</b>	<b>508</b>	<b>1,046</b>	<b>938</b>	<b>(1,477)</b>	<b>1,254</b>

\* Aggregate amounts may not match due to rounding down to the nearest million yen.

# Efforts to Diversify Financial Resources

THERS is engaged in a variety of initiatives as measures to increase non-subsidy income as described above.

## Examples of Initiatives by Gifu University

- Improvement of efficiency of treatment by renewing 3D radiotherapy planning equipment, etc., and hiring pharmacists in the Animal Medical Center
- (1) Review of indirect expenses, (2) utilization of increase of revenue associated with revision of indirect expense rate, (3) recording of amount equivalent to personnel expenses for faculty members in direct expenses, and (4) determination and implementation of measures to verify effects

## Examples of Initiatives by Nagoya University

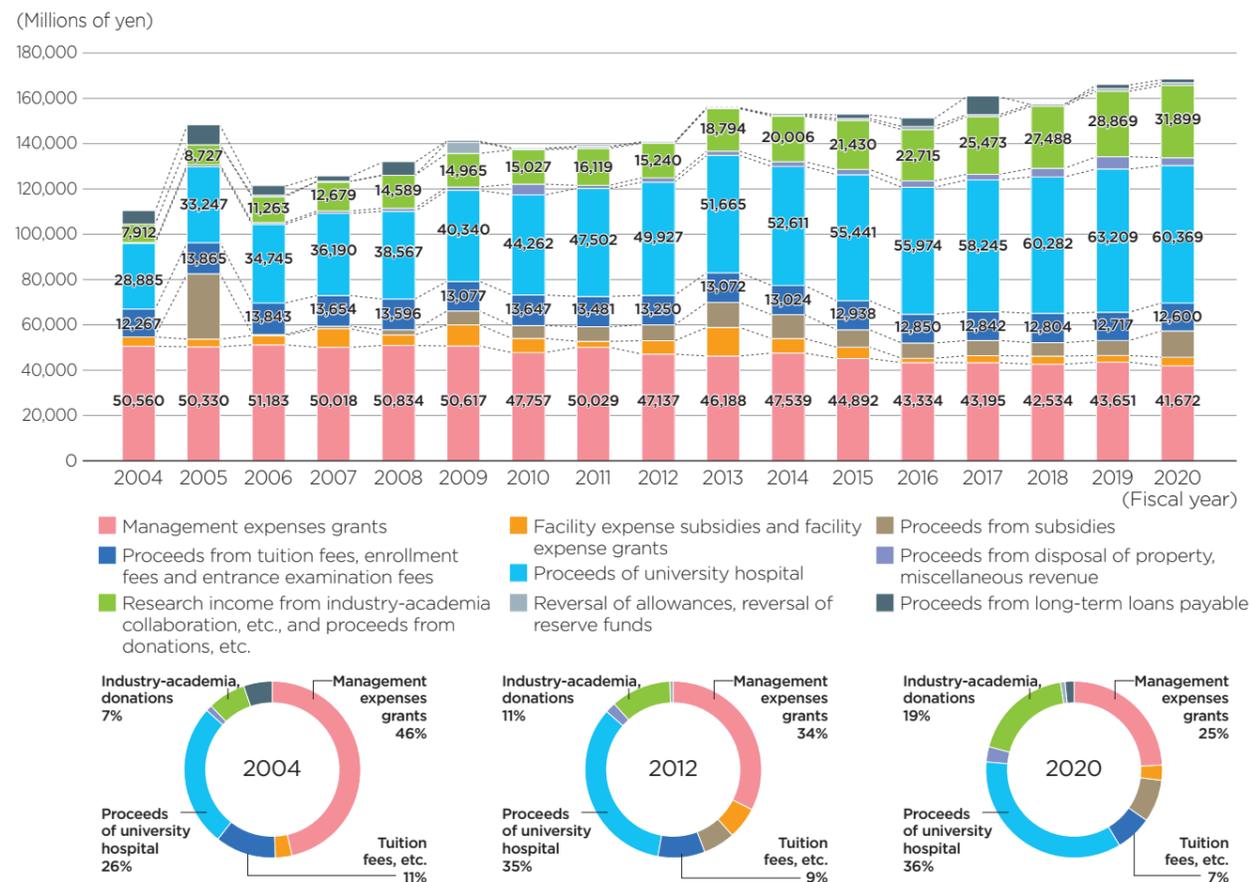
- Utilization of the URA of Academic Research & Industry-Academia-Government Collaboration to implement support such as public tender briefings, application form checks, and mock hearings when making applications for large external funding programs
- Implementation of planning of profit-making activities by the Financing Strategic Office inviting members from private enterprises for the purpose of establishing a financial base

In addition, the percentage of non-subsidy income such as proceeds of the university hospital and research income from industry-academia collaboration, etc., increased, while the percentage of revenue from taxes such as management expenses grants and subsidies, etc., decreased as a result.

The scale of operations will be increased by securing diverse sources of funding with the aim of a total scale of operations exceeding 1 trillion yen during the 4th medium-term objective period (FY2022-2027).

\* Actual results for the 3rd medium-term objective period and earlier (ordinary revenue basis): 1st period (FY2004-2009): Approx. 700 billion yen  
 2nd period (FY2010-2015): Approx. 800 billion yen  
 3rd period (FY2016-2021): Approx. 900 billion yen (projected)

## Changes in Revenue (Based on Statement of Account)



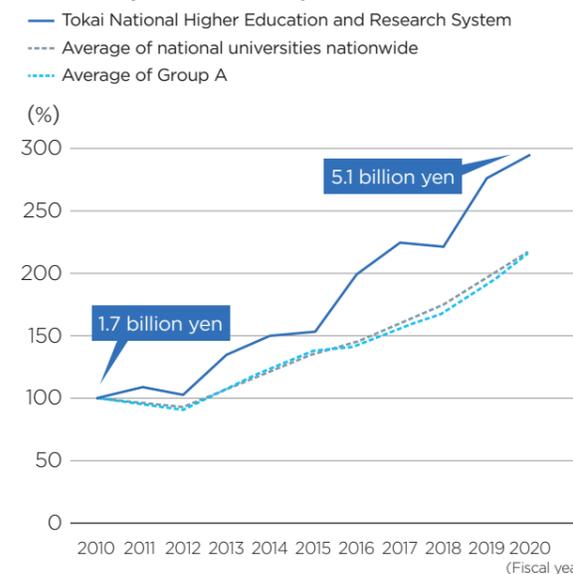
## Growth in Acquisition of External Funding

Although the increasing non-subsidy income and particularly external funding such as joint research expenses is a critical issue for all national universities, the growth rate of THERS outstrips that of other universities by far.

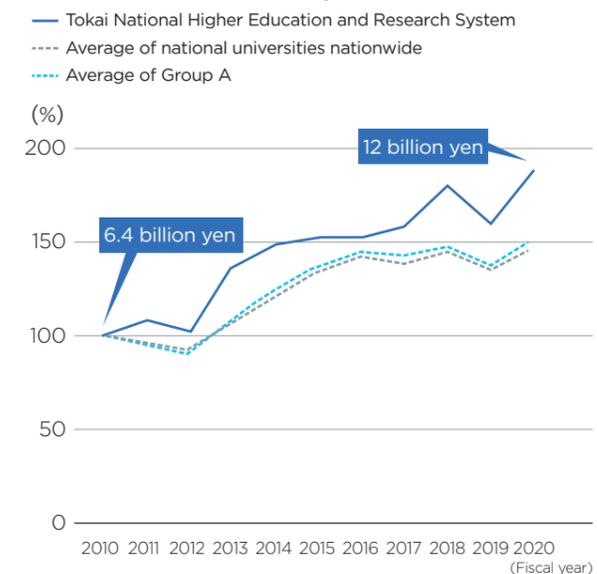
This is the greatest strength of THERS with its vision of "strengthening the financial base through the funding cycle based on coordination with society and industry" and we will continue to endeavor to increase further acquisitions and optimize resources allocation.

### (Growth with FY2010 as 100%)

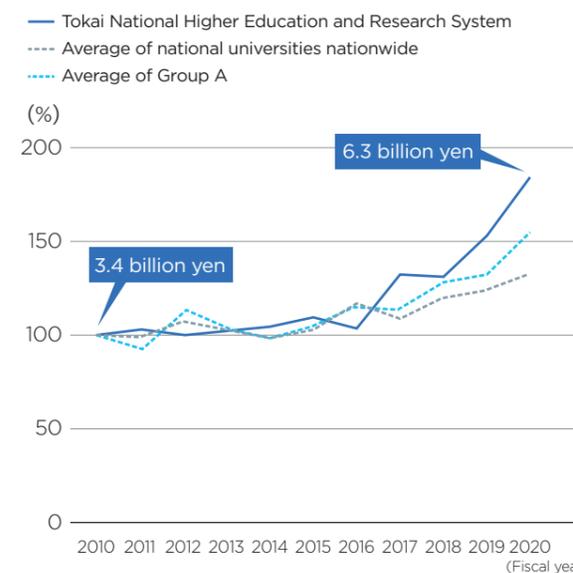
#### Growth in joint research expenses received (cash basis)



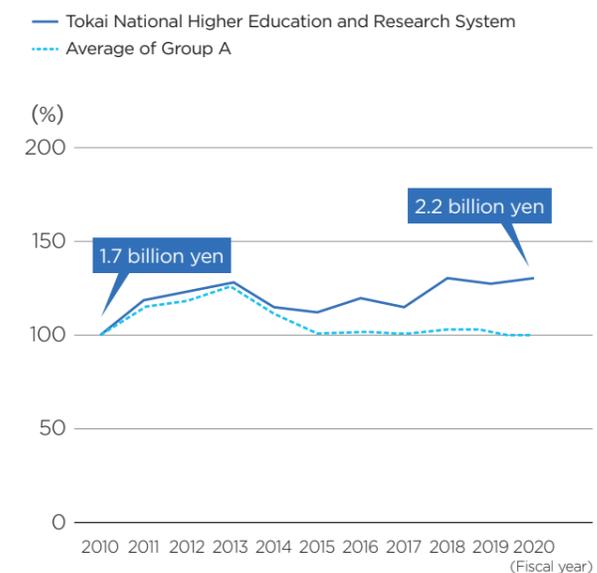
#### Growth in contract research expenses received (cash basis)



#### Growth in donations received (cash basis)



#### Growth in research-related proceeds (revenue basis)



\*1 Group A: National universities with a capacity of 10,000 or more students and with around 10 or more faculties (13 corporations: Hokkaido University, Tohoku University, Tsukuba University, Chiba University, University of Tokyo, Niigata University, Tokai National Higher Education and Research System, Kyoto University, Osaka University, Kobe University, Okayama University, Hiroshima University and Kyushu University)

\*2 Cash basis: Calculated using the Cash Flow Statements of each national university corporation. Due to the breakdown of joint research expenses and contract research expenses being unknown for FY2010-2015, these are allocated at a ratio of joint research expenses : contract research expenses = 1:3.7 based on the amount received shown on the supplementary schedules and the status in FY2016.

\*3 Revenue basis: Calculated using the Income Statements of each national university corporation. "Research-related proceeds" refers to indirect expenses of subsidies (such as Grants-in-Aid for Scientific Research projects). Only compared with Group A because these are aggregated in items such as "miscellaneous revenue" in some universities other than Group A, and the breakdown is unknown.

## Efforts to Diversify Financial Resources “University Foundation”

### Gifu University Foundation

#### General Fund Projects (Projects Not Specified by Donors)

The Fund operates projects centered on student support such as international exchange support, support for education and research activities and support for activities contributing to the regional communities.

#### Specified Projects (Projects Specified by Donors)

In addition to learning support projects subject to tax deductions, the Fund operates projects to support international students, project-funded scholarship donations, projects supporting academic archives and projects commemorating the founding of the university.

#### Sponsored Projects

A sponsored project can be established if a donation of a certain amount or more is made, and the following sponsored projects are currently being implemented.

Valor and V Drug Overseas Training Scholarship Grant Program

Shozo Takefuji Commemorative Scholarship Fund

Gifu University 70th Anniversary API Scholarship Grant Program

Fukutomi International Student Support Fund

Inquiries

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Last fiscal year was a year racked by COVID-19. It was difficult to hold classes in the same way they have been held in the past, and a sudden change was made to hold classes remotely, but we were thankfully able to respond appropriately. It seems that the inability to hold classes in person continued in areas such as Greater Tokyo, but Gifu University was fortunately able to implement measures to prevent infection, resulting in 60% of classes being held in person especially for new students, and we are confident that we have been able to ensure a certain level of educational effectiveness.

Although steady progress is being made in steps to address COVID-19 such as the development of new vaccines, implementation of vaccinations and also the development of new drugs for treatment, caution is still required, and there is a lack of the necessary funding in conditions where it is necessary to continue providing economic support for enrolled students and new support for new students.

We would like to express our gratitude to those who have already provided donations, and humbly ask again for further cooperation and for additional donations to the Fund to support students facing difficulties learning due to economic hardship caused by the COVID-19 pandemic.

**Hisataka MORIWAKI**  
President, Gifu University

### Nagoya University Foundation

#### Nagoya University Foundation (Supporting the Entire University)

The generosity provided to the main part of the Nagoya University Foundation is accumulated as a stable fund for the future without eating into the principal, and the proceeds from the investment are used carefully and permanently to conduct a variety of scholarship programs, international exchange projects and programs supporting young researchers.

#### Special Funds (Supporting Specific Schools, Graduate Schools and Projects)

We have many projects that have received donations specifying the objective of support in detail. These specified funds directly support each project using donations instead of spending the investment proceeds of funds.

#### Eco Gift for Nagoya University (Supporting With Items That Are No Longer Used)

This is a project enabling people to donate items that they no longer use to Nagoya University. The items are appraised by a company partnered with Nagoya University, and the appraisal value is donated to Nagoya University.

Tokai National Higher Education and Research System Start-up + 150th Anniversary of the Foundation of Nagoya University Nagoya University Foundation, Fund-raising Campaign

**GO NEX T**

Campaign period  
April 2019 - March 2022

2019 80th anniversary of establishment (1939 Nagoya Imperial University)  
2020 Tokai National Higher Education and Research System established  
2021 150th anniversary of foundation (1871 Temporary Medical School/Public Hospital)

Inquiries

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We are aiming for the promotion of global-standard education and world-leading research, the realization of an appealing campus chosen by the world, and further expansion in Asia. In addition, as a university located in one of Japan's leading areas of industry contribution to innovation through industry-academia-government collaboration is also positioned as an important goal for the future. The education and research activities conducted by Nagoya University as a Designated National university present the courageous challenge aiming to resolve the issues faced in such times. Although there are great obstacles in our way, we would like to work toward them with courage.

In order to achieve these goals, it is necessary to greatly improve the “Nagoya University Foundation” serving as the university's own funding, and your understanding and support are essential for this. The donations that have been received to date are used mainly for student scholarship support, and are steadily producing results.

2021 is a special year for the university as it marks the 150th anniversary of its foundation. Taking this opportunity, faculty and staff are currently working as one toward the goal of realizing the world's top level of education and research. I sincerely ask for your ongoing support for the Nagoya University Foundation.

**Seiichi MATSUO**  
President, Nagoya University

## Explanation of National University Corporation Accounting Standards

### Revenue Recognition Assuming Balance of Income and Expenses

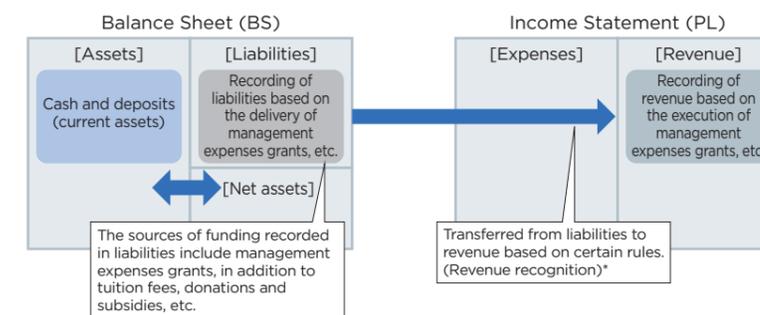
Like the accounts of an ordinary company, the revenue and expenses of a national university corporation are recognized on a realization basis, but the standard for recognition of revenue is treated specially.

For example, when management expenses grants are received, they are recorded as liabilities (liabilities for management expenses grants, etc.) rather than revenue in the accounts of a national university corporation, and transferred to revenue according to the progress of management of operations. This is based on the approach that by accepting grants, the university receives the necessary funding for management of operations and also a public mandate to manage operations, and recognition of revenue progresses as its obligations as the management of operations progresses and its obligations are fulfilled.

For this reason, revenue in a national university corporation represents the source of revenue corresponding to the expenses required for operations implemented, and the accounting standard is designed to balance income and expenditure when normal operations are conducted as planned. This is based on the approach that the purpose of a national university corporation is to implement the education and research operations mandated by the national government rather than making a profit, and accounting in a national university corporation is for appropriately indicating the state of operations.

\* Revenue recognition is performed using three methods based on progress of the period, progress of expenses or achievement of operations, which are used according to the source of funds, etc.

### Accounting in a National University Corporation



### Treatment of Depreciation

Depreciation in national university corporations is also treated specially based on the above approach of balancing revenue and expenses.

When a depreciable asset is purchased, there is not generally a balance of revenue and expenses corresponding to the acquisition of the asset because the cost of the purchase is recorded as depreciation is normally recorded over the depreciation period. However, depreciation in a national university corporation balances revenue and expenses by performing special “accounting by source of funds.”

When depreciable assets are purchased using management expenses grants, the depreciable assets are recorded as assets, and the liabilities for management expenses grants are transferred to contra-accounts for assets funded by management expenses grant equivalent to the depreciation costs are reversed and recognized as revenue to balance expenses and revenue.

Furthermore, assets contributed in kind by the national government and facility expenses granted by the national government are excluded from the scope of depreciation costs and the responsibility of the national university corporation because there are no plans to obtain revenue from use and the national government is thought to be responsible for implementing basic education, etc., as a national project. For this reason, depreciation costs are not recorded, and the capital surplus is directly reduced while accumulated depreciation cost not included in the income statement is represented to account for this in a way that does not impact the income statement.

