

CONNECT

KYUSHU UNIVERSITY



九州大学

Issue 3

Our Position, Privilege, and Responsibility in the World



Few of Japan's premier research-intensive universities enjoy the privilege of having superb natural surroundings and a farm on a 272-hectare (672-acre) campus bordering a growing metropolis like Kyushu University. In addition to research capabilities that shine especially in materials science, medicine, life science, agriculture, and environmental studies, the university also has numerous distinct programs in research and education such as math-for-industry and design.

Our location in Fukuoka on the island of Kyushu is a remarkably fertile ground for innovation in science and technology. The region's openness to the world and the local population's innate vigor to try new things create the perfect conditions for catalyzing social change. Such a spirit can be seen throughout the region's history as Kyushu is where Japan's industrial revolution began and the Meiji Restoration of 1868 was initiated—two events that radically transformed Japanese society.

In this issue's cover story, read how Kyushu University's Vision 2030 of "Driving social change with integrative knowledge"

will utilize our position, privilege, and responsibility in the world to further give back to society the fruits of steady investments since 1911. Come and join our growing intellectual community and change the course of the world for the better!

Makoto Aratono
Provost*, Executive Vice President,
and Senior Vice President

*The Provost is a position, which was newly established in 2020 with a responsibility for strategizing and executing the university's vision.



◀ Credit: by Fukuoka City

Fast Facts



137th

QS World University
Rankings 2022

8th

Times Higher Education
Japan University
Rankings 2021



Largest single campus in Japan

272 hectares
(672 acres)

FUKUOKA



Located
in the

#1

most desirable
city to live in Japan



70

Programs offered
in English

29th

QS Asian University
Rankings 2022



1:9

Faculty to
student ratio

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Driving Social Change with Integrative Knowledge



KYUSHU UNIVERSITY'S VISION 2030

Driving Social Change with Integrative Knowledge

Kyushu University was chosen as a Designated National University Corporation by Japan's Minister of Education, Culture, Sports, Science and Technology (MEXT) on November 22, 2021 – an honor given to only certain elite national universities. The designation comes with the expectation to excel in the world, coupled with a broader freedom to generate funds through university-led startups and public-private collaboration in research and education. These profits are then reinvested into the university's research, teaching, and outreach activities.



▲ President Tatsuro Ishibashi

▶ Professor Aya Hagishima



In this feature, Aya Hagishima, Vice President for Research and Gender Equality and Professor in the Interdisciplinary Graduate School of Engineering Sciences, speaks to President Tatsuro Ishibashi about Kyushu University's vision.

AH Could you tell us about Kyushu University's vision?

TI ▶ The global climate crisis is threatening our existence and a single discipline of science is powerless to tackle it. Therefore, the vision's multidisciplinary nature corresponds to the complex nature of such problems the world is facing. Sustainability and wellbeing form two pillars of the vision. So, we chose three research areas where we excel as areas for intervention to tackle related complex problems: **decarbonization, medicine and health, and environment and food.**

We then coordinate our efforts in these three areas through knowledge integration, or 'integrative knowledge.' For example, to make science societally relevant, we need policies for the social implementation of discoveries in science and technology. For such policies, we need knowledge from the humanities and social sciences. By being *integrative*, we can maximize the application of new technologies into areas never even thought of before.

AH What factors did you consider when coming up with this vision?

TI ▶ First, the vision should live up to young researchers' expectations and ensure that they will benefit most from it. Second, the vision should outline the university's positive contributions to society. Lastly and most importantly, the vision should enable financial replenishment, meaning that new value we create—be it economic or social—should bring us profit. The fruits of our achievements that we bring to society should then lead to a return on investment.

AH Why are you keen on investing in young researchers?

TI ▶ Reflecting on my own experience as a researcher, I was most productive around the age of 30—that was when my brain was the sharpest. I think this is true with other researchers as well. So, investing in this fruitful generation is our priority.

AH Do you think Kyushu University is particularly good at generating integrative knowledge?

TI ▶ Yes. Kyushu University is a comprehensive university with 12 undergraduate and 18 graduate schools. Our disciplines extend from the humanities and social sciences to natural sciences and even design. We can draw on this diversity of disciplines to generate integrative knowledge.

We have four campuses, with Ito Campus as the largest single campus in Japan. Home to popular faculties such as engineering, agriculture, social sciences, and education, the Ito Campus also hosts our new undergraduate school, the School of Interdisciplinary Science and Innovation that specifically trains students in integrative knowledge. Besides the **Ito Campus**, we also have the **Ohashi Campus**, our state-of-the-art design center, and the **Chikushi Campus**, our innovative science fusion center. There is also the **Maedashi Campus**, our frontier in medicine and life science.

AH What is important when generating integrative knowledge?

TI ▶ It is important to have an environment where researchers can freely pursue curiosity-driven, open-ended research. In our vision, we made it our responsibility to secure an environment where researchers can pursue both basic and applied science, as many of them work with the goal of coming up with new findings and academic theories. Such basic research is fundamental if we want innovation.



AH Many young researchers across the world are looking to pursue their post-doctoral training in Japan. A global, multidisciplinary environment seems to have more potential for innovation. What are your thoughts on this?

TI ▶ Diversity enriches research. To attract young researchers from overseas, we must reach out to them. Information about Kyushu University should be put out there, such as the excellent research conducted here, how advanced we are, and how great our campus is. Essentially, international outreach is crucial.



I am speaking from personal experience. I went to the US as a young ophthalmologist because my area of research was more advanced there. Of course, the climate in California was lovely—no need for an umbrella—but what really attracted me was their advanced research environment.

AH Could you tell us about your experience in California?

TI ▶ I was in Los Angeles (LA) from 1984 to 1986 at the Estelle Doheny Eye Foundation, affiliated at that time with the University of Southern California's School of Medicine. People in California read a paper I wrote after graduating from the Kyushu University Graduate School of Medical Sciences and invited me to come over.

In LA, I was given a monthly stipend of US\$3,000—that's when US\$1.00 was worth ¥250—and dedicated two years solely to conducting research. It's this kind of conducive environment I hope to introduce here at Kyushu University, beginning with the 'free quarter for research,' an academic quarter dedicated solely for research.

AH Why is graduate education emphasized in the vision?

TI ▶ Graduate education is the key to developing a university and even society at large. I believe Japanese society should change to help it succeed. At present, many Japanese companies do not provide appropriate salaries to graduate degree holders. To make graduate education an

attractive career, companies should pay them better. Universities should also give more financial and career support. In the vision, we promise to provide graduate students with scholarships to pursue research abroad, opportunities to conduct company internships, and even start businesses.

AH What is the greatest advantage of Kyushu University?

TI ▶ Our location and quality of life. Fukuoka is a growing metropolis, and because of its proximity to the Asian continent, throughout history almost everything that came to Japan arrived first at Kyushu. Additionally, the local community is very supportive of our work. Both the public and private sectors are very willing to be part of our vision to try and implement new technology and ideas in Fukuoka.

Fukuoka has it all: we are right by the ocean, next to a dazzling countryside like Itoshima, and we are now rated as one of the world's best places to live. Nature and urban life are also both very accessible here—along with the rest of Japan. Tokyo is just a six-hour ride by the bullet-train. But you'll be hard pressed to leave once you are awed by Kyushu's beauty and culture. ♪

"In the vision, we promise to provide graduate students with scholarships to pursue research abroad, opportunities to conduct company internships, and even start businesses."

— President Tatsuro Ishibashi



DECARBONIZATION



A better way to capture carbon from thin air

In October 2020, the Japanese government set an ambitious goal: ‘carbon neutrality by 2050.’ But can Japan achieve net zero greenhouse gas emissions in a mere 30 years?

Kyushu University has the experience to face such a herculean task, thanks to its significant work in the field of renewable energy. But a more ambitious approach must be taken to assure a better future. Today, the university is spearheading efforts to accelerate the shift toward a more sustainable society—one that goes beyond carbon ‘neutral’ to carbon ‘negative.’

This eco-friendly future ultimately requires bringing together people from all walks of life—citizens, scientists, industry professionals, policymakers, and economic experts alike. By collaborating with the city of Fukuoka, the Kyushu region, and the world, the university is fostering the talent needed to build a survivable future for humanity.

Distinguished Professor Shigenori Fujikawa

International Institute for Carbon-Neutral Energy Research

Even if all carbon dioxide (CO₂) emissions stopped today, it would still take decades for rising global temperatures to stabilize. So, what can be done?

For **Shigenori Fujikawa** the answer is clear: capture CO₂ directly from the atmosphere through a process known as **Direct Air Capture (DAC)** and reuse it in a new carbon cycle.

Carbon capture has already been implemented in power plants and industrial factories to mitigate CO₂ emissions. However, current processes use large amounts of liquid to capture the gas—requiring significant space, money, and energy. While separating gases using permeable membranes could be more efficient, few have considered it as only small amounts of gas can cross the membrane.

“For the past decade, we have been developing ultrathin membranes that can selectively filter CO₂ with high gas permeability. The filter itself is only about 1/100th the thickness of plastic wrap,” Fujikawa explained. “Our goal is to implement these filters not only in the factory, but also at a scale where we can directly extract CO₂ from the air and convert it into usable hydrocarbons.”

Imagine a future where every air conditioning unit is accompanied by a machine that captures the resulting CO₂ and converts it into methane. In turn, the hydrocarbon powers the energy grid—and the air conditioner once again.

“It’s a bold proposition, and there are many obstacles to be cleared, but this is the kind of future I hope my research will bring” stated a bright-eyed Fujikawa. 🌱

◀ Prof Fujikawa with his students working on filter materials



Hailing the future of hydrogen

Distinguished Professor Kazunari Sasaki

Director of the International Research Center for Hydrogen Energy



▲ Professor Kazunari Sasaki

▶ Motor show at Kyushu University demonstrating Toyota’s hydrogen fuel cell vehicle Mirai



Some of the oldest parts of the sprawling Ito campus are the research centers focused on **hydrogen energy**. To say that hydrogen is a cornerstone of Kyushu University is no exaggeration.

“Our vision of the future is to develop the ultimate carbon neutral society,” explained **Kazunari Sasaki**, who has been a central figure in the university’s hydrogen energy research program since its founding.

“We have a large team working to realize a future ‘Hydrogen Society,’ researching the fundamental methods of hydrogen production, storage, transport, and utilization.”

Over the last few years, Sasaki has been working with the business school to examine the models and infrastructure needed for this hydrogen society. At the same time, he is working with government ministries and local communities in policy development.

Sasaki recognizes that the path to a hydrogen society will take time, and he may not live long enough to see it. But thanks to the university’s fellowship programs that bring in talented researchers, the future looks promising.

“Half of my work now consists of raising the next generation of researchers. We have many promising students and researchers from all around the world. By providing funds, technology, and expertise, we want to continue facilitating their talents,” shared Sasaki. “If you want to change the world, come to Kyushu University.” 🌱

Driving into the future green economy

Distinguished Professor Shigemi Kagawa

Department of International Economy and Business, Faculty of Economics

What do you see when you look at a car? It depends on what you know: a mechanic can tell you how the engine works, while a factory engineer can explain how the vehicle was put together. For **Shigemi Kagawa**, the same multi-faceted perspective applies to the current climate crisis.

As an economist, Kagawa views the solution to climate change through the lens of the dizzyingly complex **global supply chain** sustaining our current lifestyles. To that end, businesses and policymakers are looking to his research for insights into reducing their carbon footprint.

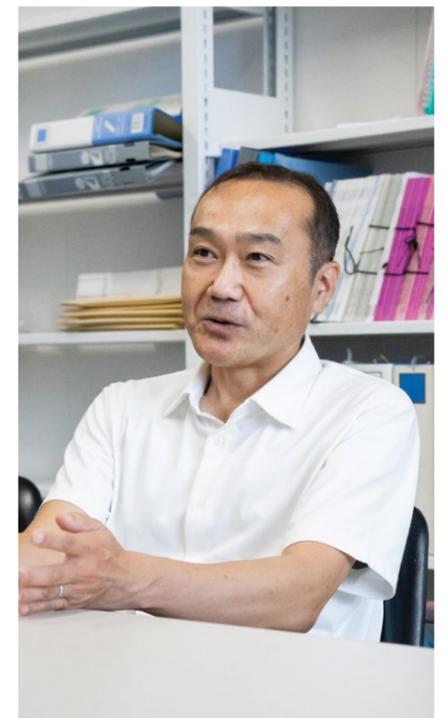
“As consumers, we are welded into the global supply chain, but its scale is ultimately unseen. Simply knowing how much CO₂ or pollution a factory or country

produces is not enough to make meaningful strides towards a sustainable future,” explained Kagawa.

For example, the steel that makes up a car’s body must be extracted from the earth, then refined, transported, and molded, all before arriving at the assembly line. Only by understanding and visualizing each link in the global supply chain—and how they interact with one another—can we begin implementing consequential actions that reduce emissions and waste.

“As we continue our research, we will gain better insights into country-level applications and incentives, as well as what local communities can do. The road to decarbonization may be complicated, but we can help pave the way,” concluded Kagawa. 🌱

▼ Professor Shigemi Kagawa





ENVIRONMENT AND FOOD

Our survival on this very planet is under threat. From the climate crisis to the worsening impact of environmental pollutants, and the ever-growing threat of food instability, finding solutions to complex existential problems requires close collaboration across nations and academic disciplines.

Kyushu University is tackling these challenges head-on, with researchers from diverse disciplines spanning from agriculture to mathematics. By actively undertaking efforts to understand the current climate and environmental crises, our scientists are taking steps towards a better, brighter, and more livable future.



Ensuring food security amid the climate crisis

Associate Professor Yushi Ishibashi

Department of Bioresource Sciences, Faculty of Agriculture

As scientists race to find ways to address the climate crisis across all fronts, **Yushi Ishibashi** is on a mission to ensure the **stability of agriculture** amidst a warming world. After all, while we humans can find ways to respond to the changing climate, the crops that feed the world cannot—with plants often bearing the brunt of environmental disasters.

“Our crops currently have to contend with unprecedented stressors like higher temperatures, drier weather, and wetter seasons. We want to understand how these stressors affect crops by studying their



▲ Prof Ishibashi and his students collecting grain samples for analysis

genetics, morphology, and physiology, in hopes of building a more resilient agricultural system,” explained Ishibashi.

According to him, plants have several protective measures to help them remain resilient against stressors. Currently, his team is studying how such traits are passed on to the next generation through epigenetic mechanisms, and reversible yet inheritable changes in gene expression.

While these heritable mechanisms remain under investigation, it’s clear

that for Ishibashi’s work to bear fruit—literally—interdisciplinary collaboration will be crucial.

“Considering that food is a cornerstone of culture and society, we must be mindful of how our research will affect it. The good thing is that collaboration is very easy here at Kyushu University,” noted Ishibashi, who added that he had even been approached by engineering colleagues to collaborate on a project studying the effects of low temperature plasma on seeds. ♪

Mapping the fate of microplastics

Distinguished Professor Atsuhiko Isobe

Research Institute for Applied Mechanics, Center for Oceanic and Atmospheric Research

It was in 2007 when physical oceanographer **Atsuhiko Isobe** started tracking **microplastics in the oceans** around Japan. Proving that great minds think alike, the following years saw an explosion of international research analyzing the effects of microplastics on global ecosystems.

Isobe shared that while exploring marine ecosystems, he and his colleagues would often come across ocean plastic. Seeking to find the source of the trash, he started developing simulations during field monitoring. Still, the team kept encountering smaller and smaller pieces of plastics—otherwise known as microplastics—leading them to develop a map of their distribution.

Even with the map at hand, there are many questions for Isobe to tackle. For instance, how does the ocean environment react to plastic waste? Where do the microplastics eventually end up?

“We’re also working with polymer scientists to investigate exactly how plastics break down and how small they can actually become. Meanwhile, our colleagues in the environmental toxicology lab are helping us examine the biological impact of microplastics,” shared Isobe.

Isobe hopes to fully understand the circulation of microplastics from the land to the ocean and into organisms, and develop evidence-based action plans to address the growing scourge of microplastic waste.

There is no doubt that such an expansive undertaking would require several experts from different fields, such as environmental economics, and even policymakers.

“We are just scratching the surface of this field. Thankfully, Kyushu University has many prominent researchers who are willing to collaborate,” Isobe concluded. ♪



▲ Professor Atsuhiko Isobe

▶ Ocean sample collected during Prof Isobe’s field work



Introducing the insect bioreactor

Professor Takahiro Kusakabe

Insect Genome Sciences, Department of Bioresource Sciences, Faculty of Agriculture



Entomology is arguably one of the oldest fields at Kyushu University, with research on the **silkworm** as one of the initial stitches in the tapestry of the university’s rich history.

These insects were cultivated at the university as a genetic resource for academic use back in 1922, and today they produce something significantly valuable: proteins for medicine and pharmaceuticals.

“Artificially making a specific protein usually requires bacteria, yeast, or plants. Generally, this is done by adding DNA into one of these organisms so that they can make the protein within their own cells, which we then purify,” explained **Takahiro Kusakabe**. “Sometimes, however, certain proteins cannot be cultivated in these organisms.”

This is where silkworms come in. To produce previously unobtainable proteins at a fraction of the cost, Kusakabe is using silkworms as high-efficiency bioreactors. These proteins could then be used in numerous applications, such as components in vaccines.

“Some of the proteins we’ve produced are already being tested in vaccines for livestock,” said Kusakabe. “The silkworms are very efficient. Just one worm can produce 5 mg of norovirus protein, enough to develop a vaccine for 1,000 people!”

In 2018, Kusakabe founded the startup KAIKO, partnering with medical and pharmaceutical companies to ensure the public can benefit from the silkworm bioreactors. Indeed, his research shows that even big breakthroughs can come in tiny sizes. ♪

▼ The silkworms that make it all happen





MEDICINE AND HEALTH

Kyushu University traces its origins to 1867 when the *San-seikan*, a school for Western medicine, was established in the then-'Fukuoka domain.' Eventually, the school became affiliated with the prefectural hospital, and was officially chartered as Kyushu Imperial University in 1911.

Through the years, the university has been at the forefront of medical care and research in Japan. Its connections with the local community are a cornerstone of ongoing cohort studies, providing a deeper understanding into the long-term health of individuals and communities. But further research into human health requires a fundamental understanding of how the body—and biology—works. For this reason, basic medical research has always been a key tenet of the university.

Today, Kyushu University plays a critical role in advancing the treatment and understanding of the human body. With investments in telemedicine, omics, and precision medicine, researchers and stakeholders alike are excited to see what the future holds.



The massive impact of the micro-world

Professor Yoko Yamanishi
*Department of Mechanical Engineering,
Faculty of Engineering*

In the field of micro- and nanodevices, everything is—by any measure—impossible to see, but **Yoko Yamanishi's** work in the micro-world has had significant repercussions across everything from medicine to engineering.

Lined up on her desk are a series of what looks like **injectors—what she calls the 'fusion of biology and mechanics.'**

"All of these devices were developed to dispense microbubbles at incredibly high speeds. While it may sound benign, these bubbles act very peculiarly in the micro-environment," explained Yamanishi. "Depending on the bubbles' speed, they can act almost like a knife—carving a very small hole into the surface of individual cells, essentially becoming a needleless injector."

For researchers who need to inject small molecules like DNA or proteins into specific cells without damage, such a technology could prove incredibly useful. With enough power, the bubbles can even penetrate the hardened cell walls of plants. On the other hand, if power is reduced, the bubbles can act as a microscopic, localized hammer.

"We are testing how these low-power bubbles can dislodge blood clots in small blood vessels like those found in the eye," said Yamanishi. "Through our investigation, we also found that at a high enough power, these injectors produce microscopic plasma arcs. We are now exploring ways to apply this discovery in the micro-scale etching of chips and organic surfaces." ↴

▲ A closer look at a needleless injector

◀ Professor Yoko Yamanishi

▼ 2019 health checkup with Hisayama residents



Preventive medicine, 60 years in the making

Professor Toshiharu Ninomiya
*Department of Epidemiology and Public Health,
Faculty of Medical Sciences*

About 12 kilometers northeast of downtown Fukuoka, is the town of Hisayama. Since 1961, Kyushu University has conducted a **prospective cohort study** with Hisayama's residents, periodically studying their lifestyle to evaluate—and perhaps predict—their future health.

Today, **Toshiharu Ninomiya** heads the program, which intends to help people model their future wellbeing using data and evidence 60 years in the making.

"This cohort study began by looking at the causes of stroke. Over the years, we added studies into diabetes and, more recently, dementia. Thanks to technological advancements, we can collect more data including a patient's genetic profile and key biomarkers," explained Ninomiya. "We hope to build a healthier community by implementing evidence-based policies and applying data generated through the

collaborative efforts of the university, the Hisayama community, and the local medical establishment."

To identify early dementia markers, eight other locations across Japan are being studied using the knowhow and protocols from Hisayama.

"You need to be patient with cohort studies. The results we put out now come from data collected 10 to 20 years ago. In turn, the data we collect today will only become valuable in the upcoming decades. This is why training the next generation of doctors and researchers is important," continued Ninomiya.

"Ultimately, the Hisayama study helps us visualize an individual's health and predict long-term outcomes. As we establish the fundamentals of 'preventive medicine,' perhaps we can build a future where we can prevent illnesses before they even happen." ↴

The transformative world of transomics

Professor Hiroyuki Kubota
*Research Center for Transomics
Medicine,
Medical Institute of Bioregulation*



The 'central dogma of molecular biology' describes the flow of genetic information from DNA to RNA and finally to the proteins that are essential for life. While conceptually straightforward, real-world biological systems are absurdly complex.

Hiroyuki Kubota hopes to unify these systems by mathematically deconstructing the central dogma, level by level. His research forms part of an emerging field known as **'transomics.'**

"Research fields that study each 'layer' of the central dogma—genomics, transcriptomics, proteomics, and metabolomics—seek to understand how each system functions and affects each other," explained Kubota. "You can spend your entire career looking only at a few molecules or genes. But in biology, you need to see the forest and not just the trees."

Such a feat would require tremendous amounts of experimentation and data, noted Kubota. "But as more data is analyzed, we start to see how certain molecules affect different pathways and vice versa," he added.

Eventually, he hopes that whole disease pathways can be mapped out and simulated, allowing the discovery of new treatments and possible side effects. Looking forward, such insights may be applied in individualized medical treatments.

"We need more time and resources to experiment," says Kubota. "As this is such a multidisciplinary field, the more people, ideas, and collaborations we have, the better we become." ↴

School of Interdisciplinary Science and Innovation

ISSUE-BASED AND CROSS-DISCIPLINARY

Founded in 2018, the School of Interdisciplinary Science and Innovation (ISI) is a bilingual undergraduate program offering a Bachelor's degree in the arts and sciences (BASc) at Kyushu University. The program spearheads issue-based, cross-disciplinary efforts at the university. At the ISI, students work on relevant societal issues ranging from climate change and cybersecurity to pandemics. They then address these complex problems by integrating perspectives and coming up with action proposals to bring about social change.

Johan Lauwereyns, Kyushu University's Vice President of International Affairs and Vice Dean of the ISI, talks about the School's hallmarks.

Q Who are you training?

We train three groups of people: skilled civil servants, entrepreneurs, and innovative researchers. We develop people who can design and organize projects as well as analyze concepts and problems. We nurture people who can lead teams and facilitate social change.

These people might end up working in local or global governments, or become managers in large international organizations. We are also developing graduates to be innovative researchers with a cross-disciplinary perspective to social issues.

Our liberal arts-like approach gives students at least two years to

find their interests. Four years down the road, they might turn to a field like oceanography and focus on an interdisciplinary research topic such as microplastic pollution.

Q What is your School's teaching philosophy?

Collaboration among people with different kinds of expertise and backgrounds. That is why we emphasize our international outlook. We want to be flexible in our school's medium of communication. In their first year, Japanese students receive intensive English training, while international students learn Japanese.

Q What is the ISI's unique style of teaching?

Our hallmark is Collaborative Courses, oriented towards teamwork and problem solving. Here, students work in small groups, draw on instructor-provided materials, gather information, and analyze data to come up with feasible projects for positive impact.

Our current style of teaching, Issue-based, Collaborative Online International Learning (Issue-based COIL), is an unexpected gain resulting from COVID-19 restrictions. The pandemic caused our hallmark Collaborative Courses to go online, and this allowed us to connect with students worldwide.

Q What are Issue-based COIL courses particularly good for?

The first in a series of Issue-based COIL courses I teach is on bioethics and bio-engineering, in collaboration with King Mongkut's University of Technology Thonburi (KMUTT) in Thailand. We get KMUTT bioengineering students to work on action proposals together with our ISI students.



▲ Professor Johan Lauwereyns

Another Issue-based COIL course in preparation is about the Holocaust, in collaboration with The Holocaust Museum-Yad Vashem in Israel and the University of Macau. Virtually putting students from such different backgrounds in one classroom and making them reflect on World War II is not an easy endeavor. By discussing the Holocaust, we hope that the students can find a common ground to address these atrocities.

Issue-based COIL makes these collaborations possible and comes with many advantages. Through it, the university can forge new collaborations with overseas institutions; teachers can make connections with researchers from around the world; and finally, students can gain a foretaste of studying abroad. ↴

Humans and Life
The emergence and evolution of life, human thought, cognition, and decision mechanisms through the lens of biology, cognitive science, and neuroscience.

People and Society
The language and communication mechanisms, prehistoric societies, multicultural coexistence, societal welfare, and religious views through the lens of sociology, cultural anthropology, and communication studies.

A Glimpse into the Interdisciplinary Study Areas
At the School of Interdisciplinary Science and Innovation (ISI), students study interdisciplinary courses in four areas of global and human challenges that transcend conventional academic disciplines. Through these courses, students are expected to contribute knowledge and values in an ever-changing society.

States and Regions
National and regional history, economic and social phenomena as well as political and economic relationships through the lens of political science, economics, and history.

Earth and Environment
The earth's resources, disasters caused by global environmental changes, and the impact of life on the environment through the lens of earth and planetary sciences, social and safety system science, and biology.

The Recipe for Interdisciplinary Success

Solving complex problems and effecting social change is easier said than done, but the ISI has pioneered a distinctive curriculum to maximize educational outcomes. Here are six hallmarks of the School's curriculum.



1 Where humanities meets science

Integrating humanities, social sciences, and natural science, the curriculum instills both humanities-based and scientific thinking in students and familiarizes them with the diverse methodologies needed to address practical challenges.



2 Teamwork makes the dream work

The curriculum incorporates collaborative learning, making students discuss themes in groups and learn by working with others—cultivating a broad outlook that enables them to view topics from a variety of angles.



3 Multilingual learning makes its mark

The curriculum provides both English and Japanese classes as well as intensive language courses tailored to each student's proficiency level. Through this multilingual curriculum, students will be able to improve on their practical language skills.



4 Cultivating collaboration

By building classroom environments where Japanese and international students collaborate and actively interact with staff and faculty members, Kyushu University is envisioned to become a Global Hub Campus that generates synergistic outcomes.



5 Going beyond the classroom

Our curriculum offers internship opportunities for firsthand experience at Japanese companies. The university's dormitory provides myriad opportunities for international interaction and gaining multicultural perspectives.



6 Learning from great minds

We invite Japanese and international researchers, government officials, and practitioners to talk about their experiences to broaden the horizons of students. These guest lecturers provide both academic and practical perspectives on real-life events and their impact.

With Japan in Today's World (JTW) alumni

REIMAGINING INBOUND PROGRAMS



▲ From left: Executive Vice President Toshiyuki Kono, Consul Daniel Rakove, Visiting Scholar Ran Zwigenberg, and Professor Natalie Konomi

▲ Professor Natalie Konomi

▲ Executive Vice President Toshiyuki Kono



Japan in Today's World (JTW) is Kyushu University's long-standing inbound exchange program that provides opportunities for students from 126 partner universities to study in Fukuoka, Japan. JTW students can choose between a one-semester or year-long program, both taught in English. If students wish to they can also take Japanese language courses and conduct an independent study with university faculty. The program does not require Japanese language proficiency.

Toshiyuki Kono, one of Kyushu University's Executive Vice Presidents, and **Natalie Konomi**, Professor in the Global Strategies Office, met with JTW alumni **Daniel Rakove** and **Ran Zwigenberg** to talk about the program's future. Both alumni have since established successful careers spanning Japan, the US and beyond.

NK Why did you come to Japan under the JTW?

DR ▶ I wanted to study the language and experience living in Japan.

RZ ▶ I wanted to study the language too.

NK Why did you choose Kyushu University?

DR ▶ In my freshman year, there were three options for studying abroad in Japan: JTW as well as other programs in Kyoto and Tokyo. I chose Kyushu University because it had options to take courses in Japanese. I spent my entire junior year (2003–2004) at the university.

It was my first chance to live overseas for a full year. In my Modern Japanese Literature class, we were studying the works of great Japanese authors like Mori Ogai. I would work with an electronic dictionary to get through one book a week. By the end of class, I felt very accomplished—having learned another country's literature and culture in a different language. I became more confident in my Japanese and my ability to live abroad.



Daniel Rakove

US State Department Foreign Service Officer; Consul for Political and Economic Affairs, US Consulate Fukuoka at the time of the interview.

Rakove has 12 years of global experience in public service, including in Mongolia, Washington D.C., Bangladesh, South Korea, and Japan.

also taking these courses. Through the connections I made at the university, I eventually made studying Japan my career.

Now, I'm back as a professor conducting research in Nagasaki and Hiroshima. Fukuoka is right in between the two cities, enabling easy travel. Fukuoka is a great gateway, not just to the rest of Japan but also to South Korea and China.

I eventually came back as Consul for Political and Economic Affairs in the US Consulate in Fukuoka with a goal of establishing people-to-people ties between Fukuoka, Kyushu, and the US. In this role, I am proud to have recruited nine startups in Fukuoka and Busan in South Korea for an English-language pitch contest, judged by a visiting American angel investor. Two of the participating startups were led by researchers at Kyushu University.

RZ ▶ I spent a whole year here before going to graduate school between 2004 and 2005. I chose the program because it was in Fukuoka, because the program is integrated in the university, and because Japanese students were

"I felt very accomplished – having learned another country's literature and culture in a different language."

– Daniel Rakove

TK While JTW has served us well, we believe it is the time for a new inbound program to boost Kyushu University's reputation. What do you think we should do?

RZ ▶ First and foremost, it should have the element of intensive language training. That was our main reason for participating in the exchange program. Company internships and work experience while studying abroad would also be great. Students are very CV-focused and are under great academic and financial pressure. Many can only afford short-term programs or those with a scholarship.

Additionally, at Pennsylvania State University, our South Korea popular culture class gets over 400 enrollments. Because travel between Busan and Fukuoka is just three hours by jet ferry, I suggest making an Asian program and including a boat trip to Busan.

DR ▶ I agree. When I was at Kyushu University, my Korean language professor who was affiliated with the Korean Research Center allowed me to join him on research trips to Busan and Seoul. I remember taking Korean language classes in Japanese and seeing so many connections between the two countries.

Ran Zwigenberg

Associate Professor of Asian Studies, History, and Jewish Studies, Pennsylvania State University.

At Kyushu University, Zwigenberg is a Visiting Scholar in the International Student Center. His work concerns the World War II memory of the atomic bomb, Hiroshima and Nagasaki, and the Holocaust.



TK ▶ That's interesting! We should explore developing such a program. In fact, we just started an annual exchange with our strategic partner Seoul National University.

NK The next program could be 'Gateway to East Asia.' Would you like to share a final message for prospective students?

DR ▶ Science was never my focus, but because of my work I've visited many Kyushu University labs. The International Institute for Carbon-Neutral Energy Research is working toward a clean energy world, the Research Institute for Applied Mechanics is doing pioneering research on marine microplastics, and the Agriculture department conducts fascinating insect science, such as using silkworms to produce vaccine candidates. So I recommend that students majoring in science should also consider Kyushu University.

RZ ▶ Come here, immerse yourself, travel, and make friends. This is a once-in-a-lifetime opportunity. At Kyushu University, you can really dive into another culture—and not just Japan's. You are so close to South Korea, Taiwan, and China. It's easy to just cross the straits. 🌊

"Come here, immerse yourself, travel, and make friends. This is a once-in-a-lifetime opportunity."

– Ran Zwigenberg

▼ A beach within a short bike-ride from Ito Campus.



Follow the QR code to hear more about Prof. Zwigenberg's JTW experience



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