

CONNECT

KYUSHU UNIVERSITY



Number 1 in Kyushu



Kyushu, Japan's third-largest island, is leading Japan's renewable energy transition. As the top academic institution on an island equaling the size and economic output of Belgium, Kyushu University is the region's engine propelling the transition to renewable energy.

Decarbonization, along with environment and food, and medicine and health, are the three pillars of Kyushu U's 'Vision 2030,' our blueprint for becoming a truly global university that drives social change with integrative knowledge. Central to this vision are our international education efforts and world-class research.

Kyushu U was the first national university in Japan to launch undergraduate programs in science taught entirely in English, starting with our International Undergraduate Programs (IUP) in

Engineering and in Agriculture. The School of Agriculture's IUP in Bioresource and Bioenvironmental Sciences now offers a double degree program with Northern Arizona University—another first in science among Japan's national universities.

Our researchers are working on breakthroughs in many areas from hydrogen and fusion energy to carbon capture and agriculture. At the Research Institute for Applied Mechanics, our researchers study the environmental impact of air pollution and mismanaged plastics through computer simulations. They are developing numerical targets—like those for carbon dioxide emissions under the Paris Agreement—to coordinate the worldwide effort of reducing these pollutants in our environment.

Our main Ito Campus is the largest in Japan, covering the equivalent area of nearly 400 soccer fields. Equipped with cutting-edge research facilities and surrounded by beautiful nature, it is becoming a powerful global hub in research and education toward a sustainable future. I look forward to seeing many more international collaborations emerging, as we welcome the faculty and students from all continents to Kyushu.

Tatsuhiro Ishibashi
President, Kyushu University

Fast Facts



135th

QS World University Rankings 2023

7th

THE World University Rankings, Japan University Rankings 2022
(out of over 200 ranked universities)



Largest single campus in Japan

272 hectares (672 acres)

FUKUOKA



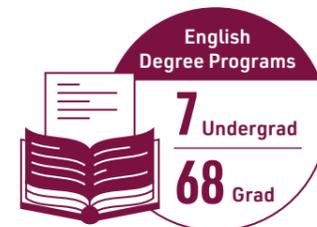
Located in the

#1

most desirable city to live in Japan

75

programs offered in English



English Degree Programs

7 Undergrad

68 Grad



29th

QS Asian University Rankings 2022



1:9

Faculty to student ratio

Contents

On the Cutting Edge

- 06 Visible ocean plastics just the tip of the iceberg
- 07 Indigenous dancers in blue jeans
- 08 For long plant life, the secret is in DNA repair
- 09 Sniffing out your identity with breath biometrics

Features

- 10 **Kyushu U Connect Community Outreach**
What you can do for the environment
- 14 **KYURIOUS**
The international student group to help you through it all
- 15 **BEAST**
An academic playground for a better future in science
- 16 **Kyushu U Students and the legacy of Dr. Tetsu Nakamura**
Streams in the wasteland

Cover Story

02

Diversity in Agriculture and the International Undergraduate Program (IUP)

Moving partnership to a new level

First bidirectional, interdisciplinary, international undergraduate dual degree program in science

Interview with Prof. Mako Nakamura

Maximizing international partnerships for students

DIVERSITY IN AGRICULTURE AND THE INTERNATIONAL UNDERGRADUATE PROGRAM (IUP)



▲ Prof. William Ka Fai Tse

William Ka Fai Tse

Associate Professor, Center for Promotion of International Education and Research, Faculty of Agriculture

To say that Kyushu University's foundation is built on the legacy of the Faculty of Agriculture is no exaggeration. The department was established in 1919, eight years after the founding of the university itself, making it one of the oldest faculties on campus. Completing its move to Ito Campus in 2018, it is housed in one of the most visually stunning buildings on site. With its gridded windows and a pale golden hue reminiscent of rice fields, the building can be seen all across Itoshima as it overlooks the ocean and the great city of Fukuoka.

Today, the department is home to one of the most extensive ranges of research fields at the university, from genetic research to high tech agronomy, and even robotics. All research topics can be found here. Given Kyushu University's history and diversity, it is no surprise that it is pioneering the International Undergraduate Program, or IUP, a four-year curriculum for international students conducted in English.

"The IUP was inaugurated in October of 2010 under the Global 30 (G30) program, a government initiative designed to establish international curriculums at selected universities," explains William Ka Fai Tse, Associate Professor in the Faculty of Agriculture's Center for Promotion of International Education and Research. "While most universities set up graduate programs, Kyushu University was one of the first national universities to start a four-year undergraduate program run entirely in English. These programs were established in the Faculty of Agriculture and the Faculty of Engineering." Faculty of Agriculture's IUP offers a Bachelor of Science in Agriculture for *Bioresources and Bioenvironment*. Naturally, this encompasses everything from entomology and agronomy to engineering and economics.

"There's a misconception that the 'agriculture department' is only about how to farm better, but this couldn't be further from the truth. The faculty here is very diverse and home to more than 60 labs. In their third year, students go through lab rounds to see which group they will join in their final year, so they get the chance to experience many different fields of study," explains Tse.

"Of course, our facilities aren't limited to the state-of-the-art equipment in the labs. We take advantage of being the single biggest campus for a national university and host our own farms covering agriculture, horticulture, and animal husbandry. On top of that, there are 11 separate facilities across Kyushu that are used to study everything from forest ecology to marine science,

▼ IUP students playing games at the welcome party



▼ IUP students at a welcome party



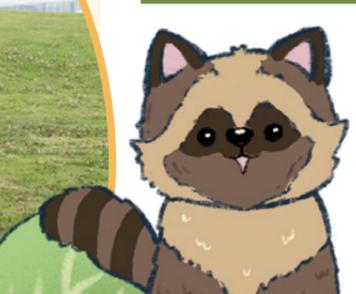
not to mention our forest station on Japan's northern island of Hokkaido. Moreover, we have now established a dual degree undergraduate program with Northern Arizona University (NAU) in the United States that is exclusive to select IUP students. They can spend a year at NAU and get two degrees in their four-year study period."

All first year IUP students diversify their knowledge through the Kikan (General) Education program and learn fundamental educational skills on "how to look, think, and learn critically." It is also an opportune time to form lasting friendships and collaborative groups with fellow Japanese and international students. In addition, IUP students take extensive Japanese language courses. By graduation, students can acquire sufficient language skills to enter Japanese companies if they so wish. Alternatively, many students continue on to post-graduate education, with close to 70% of students going to graduate schools around the world. Whatever their path, the university is equipped to support all students in their future endeavors.

"The research that takes place here is critical in confronting the sustainability issues we face today and aims to help mitigate and survive the ever-worsening climate crisis. Whether it's the diverse research, state-of-the-art facilities, location here in Fukuoka, attractive scholarships, affordable tuition, or job prospects, there are countless reasons for international students to study and thrive at the Faculty of Agriculture," concludes Tse.



Applications open every January with screenings conducted in March.



Moving partnership to a new level

FIRST BIDIRECTIONAL, INTERDISCIPLINARY, INTERNATIONAL UNDERGRADUATE DUAL DEGREE PROGRAM IN SCIENCE



▲ NAU President José Luis Cruz Rivera with faculty and staff with their Kyushu U counterparts during the online ceremony launching the dual degree program in July 2021

Kyushu University's School of Agriculture and Northern Arizona University's (NAU) College of the Environment, Forestry, and Natural Sciences have partnered to launch a dual degree program in biology and agriculture. This is the first bidirectional dual degree program for undergraduate students in science offered by a Japanese national university.

"The pairing of the degrees of biology and agriculture offers an opportunity for undergraduate students of our institutions to study the life, landscapes, and cultivation practices of the high desert of the Colorado Plateau and fertile subtropical ecosystem of Kyushu Island," said Professor Jason Wilder, Vice President for Research and the Dean of the College of Environment, Forestry, and Natural Sciences at NAU.

"They can take full advantage of the world-class education offered at both institutions, including our new on-campus farm," said Professor Miki Nakao, Dean of the Faculty of Agriculture at Kyushu U.

The dual degree program is built on friendship and partnership since 2015 between the two institutions. Kyushu U has already hosted over 30 undergraduate exchange students from NAU, providing them with outstanding experiences in science and engineering. The dual degree program brings this relationship to a whole new level.

At Kyushu U, the program is open to the undergraduate students enrolled in the International Undergraduate Program (IUP) in the School of Agriculture. Kyushu U students will spend their junior year at NAU, enrolling in classes alongside US students. NAU will send students from its Interdisciplinary Global Programs who have a strong background in the Japanese language and culture. Both Kyushu U and NAU students will do their thesis work at Kyushu U in their fourth year. ♪



Interview with Prof. Mako Nakamura

MAXIMIZING INTERNATIONAL PARTNERSHIPS FOR STUDENTS



One of the architects of the Kyushu U-NAU dual degree program is Professor Mako Nakamura, a developmental biologist in the Faculty of Agriculture. In this interview, she tells us how her own global experience contributed to her career choice, and how the dual degree program was born.

Q Why did you decide to pursue a career in biology?

During my master's at Osaka University in 1996, I got a scholarship to conduct an internship at Procter & Gamble in Cincinnati, Ohio, USA for two months. That experience taught me the power of a PhD degree at a company. People with a PhD had a private office and they could become project managers. On top of that, I saw more women in the lab in the US than in Japan.

After the internship, I decided to go for a PhD. Then, I continued my postdoctoral studies back in the US. I focused on transgenic gene modification in two developmental biology labs for five years, one in the Fox Chase Cancer Center in Philadelphia and the other at the University of Massachusetts.

Q After coming to Kyushu U, what is your key contribution to international education?

My first assignment in the Faculty of Agriculture was coordinating a graduate program taught entirely in English. In 2007, we started the online application and screening for candidates for the Japanese government scholarship, or "MEXT scholarship." We got over 150 applicants for just 11 seats for the program that single year.

"When I joined SENTAN-Q*, I felt that the support given by Kyushu U had brought me to my current position. I didn't really realize how much was available until I made a list of grants that I received. There are so many opportunities for the faculty."

— Professor Mako Nakamura



▲ Prof. Mako Nakamura and students in her lab

In 2010, we built the International Undergraduate Program (IUP) in the School of Agriculture as part of the government's Global 30 Program. Among the 13 participating universities, the Kyushu U School of Agriculture and the School of Engineering were the first to launch the English-taught undergraduate program.

Q How did the dual degree program come about?

It was Northern Arizona University (NAU) that got the ball rolling. NAU believes their students can get the best results from international partnerships by going deeper with the partner they trust rather than just increasing the number of partners. So NAU sends Japan-bound, science major students exclusively to Kyushu U. With their trust, I felt that we could build the program together. To turn it into a reality, however, took almost three years because our undergraduate education systems are very different.

Q Do you plan to build more dual degree programs?

Currently, we are trying to develop a master's program in Biotechnology with a partner university in Thailand. ♪

* SENTAN-Q program at Kyushu U is aimed to support female and early career researchers to climb up the Kyushu U professional ladder.



Follow the QR code for SENTAN-Q website:

VISIBLE OCEAN PLASTICS JUST THE TIP OF THE ICEBERG

Simulations find majority of ocean plastics may be on the seafloor or otherwise difficult to monitor, with vastly more plastic waste likely trapped on land.

Billions of tons of plastic products produced in the “Plastic Age” have drastically changed the way we live for the better. But now, this plastic waste is posing new challenges for nature.

A new study led by Kyushu University estimates that 25.3 million metric tons of plastic waste has entered our oceans, but nearly two-thirds of it cannot be monitored. Alarming, the analysis suggests this may only be the tip of the iceberg, with another 540 million metric tons of mismanaged plastic waste still trapped on land.

While scientists have been surveying beaches and the oceans’ surface to determine how much plastic waste has entered our waters, copious amounts of plastics are thought to be on the seafloor, hidden from view.

In a paper published in *Science of The Total Environment*, Professor Atsuhiko Isobe from the Research Institute for Applied Mechanics and his team used fluid dynamic computational models to estimate the amount of these hidden ocean plastics. They drew on existing studies

to derive parameters that describe how plastics breakdown and age, and used satellite-derived wind data to incorporate movement of the particles.

Their results estimate the total amount of plastics floating on the ocean surface account for about three percent of all ocean plastics. While a similar amount of microplastics—plastics less than five millimeters in diameter—was estimated to be on beaches, 23% of ocean plastic waste was larger plastics littered on the world’s shores.

However, their simulations also suggest that most of the ocean plastic may be in locations that are impossible to monitor. A little over half of this are heavy plastics that settle on the seafloor, with the remainder being old microplastics emitted decades earlier.

But compared to ocean plastics, the amount of mismanaged plastic waste on land that could find its way into ecosystems and the ocean in the future may be **twenty times** larger.

“While we were able to estimate the amount of ocean plastics, this is really only the tip of this plastic iceberg,” says Isobe. “The next task is to assess the whereabouts of the nearly half a billion metric tons of mismanaged plastics trapped on land. It’s a herculean task but we recently launched a citizen science program crowdsourcing data collection of the mass of plastic waste dumped in cities and beaches.”



► The plastic waste we know about is still the tip of the iceberg

INDIGENOUS DANCERS IN BLUE JEANS

Discovery of oil, Indigenous dance, and two different paths to tradition taken in Alaska.



▲ Prof. Hiroko Ikuta

The beating of tambourine drums, the drummers’ vocables singing echoing through the land, and dancers’ rhythmic stomping to the beat. Dancing visually depicts scenes from bowhead whaling, the central means of subsistence for Northern Alaska Natives.

In her new book *The Sociality of Indigenous Dance in Alaska*, Associate Professor Hiroko Ikuta, an anthropologist at Kyushu University’s International Student Center, explores the contrasting ways that Indigenous dance is performed by two different Northern Alaska Native communities. And why both, despite being so contrasting, are considered genuine tradition by the practitioners.

Ikuta conducted fieldwork in Northern Alaska among Yupik on St. Lawrence Island and Iñupiat in Utqiagvik between 2005 and 2007. On St. Lawrence Island

in the Bering Sea, Indigenous dance is known as “*atuq*,” a spontaneous dance event, occurring any time of the day and villagers dance in T-shirt and blue jeans. These St. Lawrence Islanders grew up with *atuq* without formal instruction. 1,000 km away in Utqiagvik—still in Alaska—this is not how Indigenous dance is practiced by Iñupiat. For Iñupiat, Indigenous dance is a choreographed event, learned through formal training and practiced on special occasions like Indigenous dance festivals in uniformed traditional regalia.

“I was wondering why different groups of people choose different aspects of culture as their tradition, and what they mean by tradition,” says Ikuta.

Ikuta pondered the reasons behind the contrasting ways in which Indigenous dance is practiced between the two communities. She found that it lies in the discovery of oil in Alaska in 1968 and the decisions Yupik made half a century earlier regarding land ownership. That was when petroleum companies came to the region and wanted to settle Indigenous land claims through the Alaska Native Claims Settlement Act (ANCSA) of 1971.

“Following the ANCSA of 1971, Iñupiat, like almost many other

Indigenous communities in Alaska, chose cash settlement over land ownership. Yupik, in contrast, chose to retain ownership of St. Lawrence Island, forgoing any cash settlement or participation in the regional corporation system. In the decades that followed, Iñupiat, in whose traditional land oil was discovered, became financially well-off but almost lost touch with their Native language. Yupik, in contrast, became one of the financially poorest communities, but retained their own Island and the Yupik language.”

For Iñupiat, Indigenous dance, like their traditional language, became the object of formal learning. In contrast, for Yupik on St. Lawrence Island, *atuq* remained part of everyday life, just as the local Yupik language remained with them.

“Dancing in the two communities may seem contrasting to outsiders, but this is not true to the Northern Alaskan Natives,” says Ikuta. “For them, dancing completes special tasks—caring for each other and paying respect to the wisdom of the Elders. And as long as dancing completes these activities, both *atuq* and choreographed dance are tradition. Whether they dance in jeans or in traditional regalia, it does not matter to them.” says Ikuta. “Dancing lies at the heart of their social relationships, relationships between humans and animals, and between Native and mainstream societies.”



◀ Drummers in Savoonga on St. Lawrence Island (Hiroko Ikuta)

FOR LONG PLANT LIFE, THE SECRET IS IN DNA REPAIR

Researchers find high copy number of DNA repair genes in long-lived trees.

The Jomon Sugi is Japan's oldest known tree, a massive conifer estimated to be more than 2,000 years old located on the remote island of Yakushima, south of Kyushu. But while conifers such as the Jomon Sugi can potentially live for thousands of years, some trees' lifespans are counted in decades, with other plants living only a few weeks.

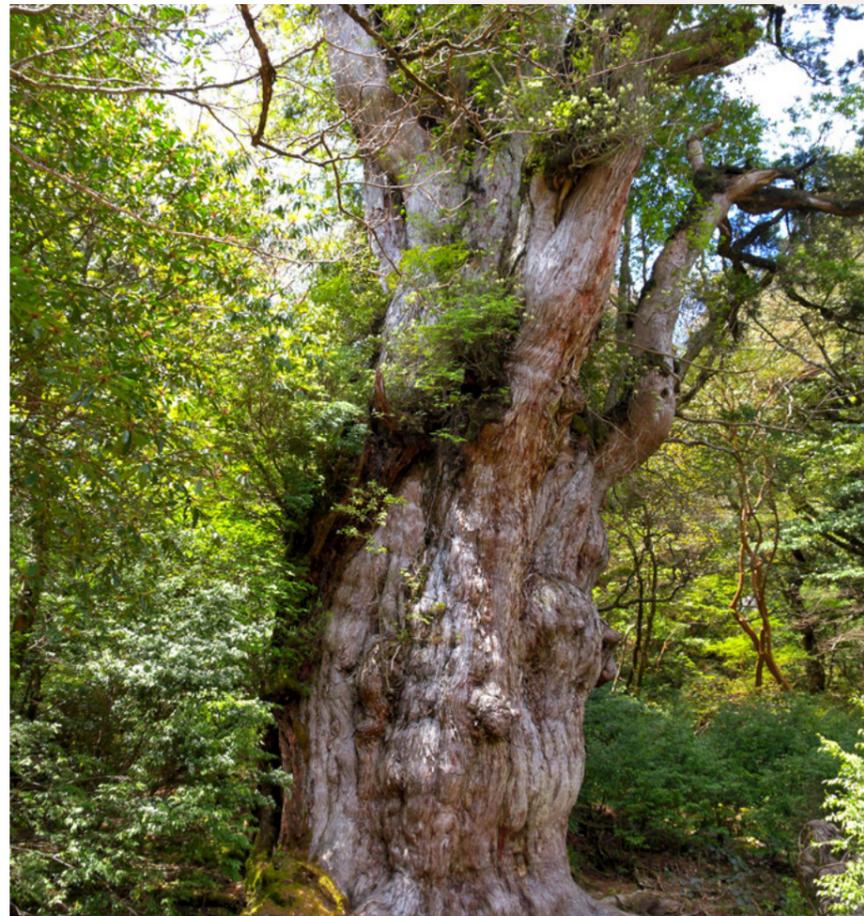
For years, researchers have been looking into why some organisms live longer than others. Thanks to the growing amount of genome data, those mysteries are slowly being uncovered.

One characteristic they have found is how well an organism can repair its DNA. However, despite advances in understanding the longevity of animals, DNA repair's role in the lifespan of plants has not been closely investigated.

Published in *iScience*, researchers from Kyushu University's Faculty of Science report that they have identified a possible gene family responsible for tree longevity. The team analyzed the genomes of 61 different plant species and found that long-lived trees had higher copy numbers of the DNA repair gene family PARP relative to herb species with short life spans.

Our daily lives are inundated with elements that damage our DNA, and the accumulated damage can lead to cellular dysfunction and disastrous consequences.

Therefore, our cells work round the clock to find and repair damage within our DNA. Recent studies in animals have shown that the more DNA repair genes an organism has, the longer they tend to live.



► The Jomon Sugi in Yakushima, Japan

To examine the role of DNA repair in plant longevity, Akiko Satake and her team compared 121 DNA repair gene families in 61 plant species, including trees, annual and perennial herbs, and algae.

They found that among the DNA repair gene families studied, PARP was the only one to have an increased number of gene copies in trees relative to annual and perennial herb species. For example, long-living trees such as conifers and Douglas firs had the highest ratio of PARP copies relative to their total number of genes.

The team explains that PARPs play pivotal roles in DNA repair and even antipathogen defense in both plants and animals, and hopes to investigate its role in longevity further. They also acknowledge the underlying mechanism for the differences in lifespans between long-lived and short-lived tree species remains unknown, but they intend to use their new findings for further study. ↴



◀ Breath odor-based individual authentication using an artificial olfactory sensor could become possible in the near future as represented by this artist's rendering

▼ Picture of an artificial olfactory sensor used for biometric authentication based on breath. The sensor is made of a 4x4 channel array for a total of 16 sensors

“The concentration of volatile compounds from your breath can be multiple degrees higher than from the skin,” continues Jirayupat. “In fact, human breath has already been used to identify if a person has cancer, diabetes, and even COVID-19.”

The team began by analyzing the breath of subjects to see which compounds could be used for biometric authentication. A total of 28 compounds were found to be viable options.

Based on this, they developed an olfactory sensor array with 16 channels. Each of these channels can identify a specific range of compounds. When a subject's breath is passed through the array, each sensor responds differently according to the concentrations of various compounds found in human breath. That data was then analyzed by a machine learning system that would study the sensor response pattern and develop an individualized profile.

Testing the system with breath samples from 20 people, the researchers found it could identify individuals with an average accuracy of almost 98%.

“This was a diverse group of individuals of differing age, sex, and nationality. It's encouraging to see such a high accuracy across the board,” explains Takeshi Yanagida who led the study.

Nonetheless, he admits that more work is needed before it arrives on your next smartphone.

“In this work, we required our subjects to fast six hours before testing,” concludes Yanagida. “We've developed a good foundation. The next step will be to refine this technique to work regardless of diet. Thankfully, our current study showed that adding more sensors and collecting more data can overcome this obstacle.” ↴

SNIFFING OUT YOUR IDENTITY WITH BREATH BIOMETRICS

Researchers develop an olfactory sensor for biometric authentication using your breath.

Biometric authentication like fingerprint and facial scans are a staple of any spy movie, and these days the technology is a common feature on many of our phones.

Now, researchers have developed a new potential odorous option for the biometric security toolkit: your breath. In a report published in *Chemical Communications*, researchers from Kyushu University, in collaboration with the University of Tokyo, have developed an olfactory sensor capable of identifying individuals by analyzing the compounds in their breath.

Biometric authentication is a critical way to safeguard valuable assets, with a variety of ways for machines to identify you.

“These techniques rely on the physical uniqueness of each individual, but they are not foolproof. Physical characteristics can be copied, or even compromised by injury,” explains Chaiyanut Jirayupat, first author of the study. “Recently, human scent has been emerging as a new class of biometric authentication.”

One such target has been compounds produced from your skin. However, these methods have their limits because the skin does not produce a high enough concentration of volatile compounds for machines to detect.

So, the team turned to see if human breath could be used instead.

Kyushu U Connect Community Outreach

WHAT YOU CAN DO FOR THE ENVIRONMENT

As one of its top priorities, Kyushu University is taking on environmental issues by bringing together its expertise in a wide range of fields and pursuing integrative knowledge.

To highlight these multi-disciplinary efforts and connect with the public, an afternoon of talks was held on July 2 in downtown Fukuoka. Read on to discover what was discussed and for excerpts from answers to audience questions.

CARBON COST OF DRIVING ELECTRIC VEHICLES



▲ Prof. Yoshida conversing with students



Professor Kento Yoshida is an environmental economist and policy specialist in the Platform of Inter-/Transdisciplinary Energy Research (Q-PIT) studying policies and consumer preferences for next-generation vehicles and renewable energy.

One of his major tasks has been evaluating the impact of technologies like electric vehicles (EVs) toward reaching climate goals. Although EVs are often considered green, they are not necessarily free of greenhouse gas emissions. For EVs to avoid emitting greenhouse gases, renewable energy, such as electricity generated by solar cells, hydroelectric plants, and wind turbines, is needed.

Q Putting more EVs on the road would require more electricity, and to produce more electricity would involve more CO₂ emissions. What can we do about this?



Prof. Yoshida ▶ When it comes to EVs, what is important is the source of electricity. Cars can run on different kinds of fuel, such as gasoline, diesel, natural gas, electricity, and hydrogen. In Brazil, there are cars that run on both gasoline and alcohol. The latter is derived



▲ A filling station in Brazil

from sugarcane, and using alcohol as fuel is intended to reduce environmental burden.

In Norway, where electricity is generated from 92% hydroelectric and 6.5% wind sources, a total shift to EVs would significantly reduce emissions. To produce 1 kWh of electricity, Norway emits only 7.2 g of CO₂, and over 86% of new cars sold in Norway today are EVs.

Japan is a different story. Initially, in the early 2000s, Japan's plan was to supply electricity generated at night by the nation's nuclear powerplants to EVs. But, following the 2011 Great East Japan Earthquake and Fukushima nuclear disaster, nuclear power plants halted their operations.

Currently, to produce 1 kWh of electricity, Japan emits almost 70 times more than Norway—487 g of CO₂. EVs were only one percent of new car sales in Japan as of 2021, while the global average for the same year was 8.6%.

The good news is that here in Kyushu, we have substantial renewable fuel sources. On a hot day like today, more than half of the electricity in Kyushu is derived from solar power, and Kyushu's annual CO₂ emissions per kWh is about the same as Germany.

However, the need to shift toward a society with fewer cars is just as, if not more, important. It would not only reduce emissions, but also air pollution and accidents.

CIRCULAR ECONOMY



▲ Prof. Valentine with a sample of mycelium, a fungus that could be an alternative for plastic-based packaging

Professor Scott Valentine is a professor and the Director of Research Promotions Office at the Institute for Asian and Oceanian Studies (Q-AOS) focusing on circular economies and regenerative planning. He is also the chair of the Advisory Board of the Australian Circular Economy Hub.

During the last two centuries, the linear economy and its dictum of "maximum gain with least effort" has dominated, leading to a culture of disposable products. A circular economy is an alternative in which things do not get wasted easily.

Professor Valentine introduced how a circular economy is like an ecosystem, using the example of a beer factory that sends brewery waste to a mushroom farm. Mushrooms not fit for sale are sent to a pig farm and the waste water to algae ponds. Pig manure can be used to produce methane gas and also combined with algae to make fertilizer. The ponds also can be used to produce pure water, fish, and shrimp. In this circular system, where things end, they start again.

Q To make a perfect cycle of circular economy and keep using products, we need to repair products. But in our culture now, we are not even trying to repair them. How can the repairing mind take root in our culture?



Prof. Valentine ▶ Since a circular economy is about optimizing resources, and not recycling or waste management, repairing is higher in priority than recycling.

As a strategy to increase repair, we aim to enlighten our consumers and have the need for repair settle in their minds. But we can also target people's actions to make them do things we want, without necessarily waiting for their minds to change, through nudging. Nudging is to make people change their way of thinking or behavior.

We can also design products in such a way that they can easily be repaired. In the circular economy, we have a term 'design for disassembly.' Design so that you can take things apart. It's really important.

We can also make products naturally decompose such as Mycelium packaging. We are now working on a project called Circular Itoshima to get these kinds of circular economic activities happening here.

▼ Kyushu U students with attendees

"We can also target people's actions to make them do things we want, without necessarily waiting for their minds to change, through nudging."

— Professor Scott Valentine



◀ Prof. Ikeda talking to students

up to 60 km per hour. To create a sense of community and garner interest in the cars, the team decorated them with images drawn by the elementary school students.

Q Cars that are considered 'cool' today drive faster, longer, and have a powerful image. How can we transform consumer thinking into seeing cars that are good for the environment in the same way?



Prof. Ikeda ▶ My team's task was to introduce values other than convenience, such as 'Slow and small is cool' and 'Sharing a car is good.' By involving elementary school students in the project, we could get them interested in the idea that they can ride a fun car with a distinct mark of their own. So, we asked the students to

draw pictures of their neighborhood and what they think is special about it.

Through this project, elementary school students came to learn and feel proud about the area they lived in. We then combined the children's drawings into one picture for each elementary school that became 'our drawing' and placed it on a C*Pod.

I believe that by including children in this manner they will involve their parents, who in turn will bring their friends, and by actually riding a community car, they may experience fun. Furthermore, since the car is so small and slow, it will allow them to learn about the neighborhood and each other better. 🌱

DESIGNING PEOPLE'S DISPOSITIONS

Associate Professor Minako Ikeda specializes in design and social communication in the Department of Design Futures at the Faculty of Design.

Design-thinking is essential when we want consumers to change their habitual thinking patterns. As an example, Professor Ikeda introduced a project in which she and her team worked with a consortium of local mobility companies called the "Yokamachi Mirai Project (Bright Town Project)" and 16 elementary schools in Itoshima to promote the use of shared community cars.

The cars, TOYOTA's micro electric car C*Pod, are two-seaters with a cruising range of 150 km per battery charge and only reach



◀ TOYOTA's micro electric car C*Pod



KYURIOUS:

THE INTERNATIONAL STUDENT GROUP TO HELP YOU THROUGH IT ALL



▲ KYURIOUS leaders and staff

It's never easy leaving your home for university. Uprooting your life can be painful, but at the same time, there is anticipation and excitement for the educational journey ahead. This is certainly the case for many new students joining Kyushu University Faculty of Agriculture's International Undergraduate Program (IUP) or International Graduate Program (IGP). Thankfully, the student group KYURIOUS, which launched in October 2021, is here to help with your new life in Japan.

"We know it's rough getting started in Japan and Kyushu University, which is why we are here to help. KYURIOUS was established to build bridges between students, as well as with the local community," explains Tsukasa Ryu, PhD student in the Faculty of Agriculture and one of the KYURIOUS leaders.

"There's a lot to navigate when you come to Kyushu U. Academic work is hard enough, but you also have to do things like find an apartment, set up a bank account, and arrange a contract for gas and electricity. Not to mention trying to make friends and then finding places to go with them," states Ryu.

Since the inception of IUP and IGP, the university has been staffed with people who coordinate international students moving to Japan. As time went on, students were hired to help with this process.

"Each student would be paired with a new international student, but we quickly

realized that doing things one-on-one was unsustainable. We might not be well equipped to handle all issues, or be available in emergencies," Ryu explains. "So instead, we moved to collectively organize and support each other."

With backing from the International Office, Ryu, along with two other students, Sohta Harigai and Yiheng Wang, established KYURIOUS. Much of their network and support is facilitated through their Slack channel where students regularly share information regarding everything from setting up a bank account to the best places to buy fish.

KYURIOUS pride themselves on providing information fast and keeping it inclusive and accessible. They take great care in making it understandable even for students whose native language may not be English.

One event they recently held brought in representatives from a local real estate agency to assist students with finding new apartments. In the end, some students came out with housing prospects already lined up. According to KYURIOUS, the response to the event was fantastic and timed perfectly since some students were looking to move out of the dorms to live on their own.

"Our membership is growing, and we hope to see students both new and old help each other during their time at Kyushu U," concludes Ryu. "KYURIOUS provides you with the opportunity and platform, but it's up to you to be proactive in organizing and connecting with others. Come join us at Kyushu!" 🐾



▲ Tsukasa Ryu, one of the founding members of KYURIOUS

Follow the QR code for more details:



BEAST:

AN ACADEMIC PLAYGROUND FOR A BETTER FUTURE IN SCIENCE



▲ BEAST Vice President Kouhei Kakino

Today the group has more than 400 members and has gathered institutional support from both the private and public sectors. Some of these include organizations such as the Japanese Association for the Advancement of Science, and the academic crowdfunding site Academist.

"The growth and support we've gotten are incredible. With the help of all these passionate students we set up our own podcast, a YouTube channel, have grown our social media following, and implemented a few PhD career training and consulting events. Not to mention building bridges between students across different disciplines through our new project called SCInterChange," continues Kakino.

"But our flagship event 'GENSEKI' is still our proudest achievement."

Roughly meaning 'raw gemstone' in Japanese, GENSEKI is an annual competition where students across Japan showcase their research in the form of three-minute pitches. The purpose was to find and encourage students with a passion for their research and provide them with the opportunity to pitch their findings to industry and academic representatives. Students are judged by said representatives, with the winner awarded a cash prize of 50,000 yen. GENSEKI 2021 had four preliminaries online with the finals in Tokyo.

"These are all live streamed and available to the public. Our secondary goal is to get the public interested in the work of these young researchers. That is why we take great care in coaching each student in good science communication techniques," explains Kakino.

GENSEKI 2022 is shaping up to be much bigger. They've received more student entries from across Japan and financial backing from industry groups. The cash prize has ballooned to 300,000 yen. Preliminaries are scheduled to run until December, with the finals scheduled for February 2023.

With the number of members wanting to get involved growing every day, BEAST is continuing to look ahead at more projects that bring students, science, and the community together.

"It's not easy being a university student in Japan, but if we can encourage and support each other while at the same time promote our research to a large audience, we can make things better for everybody. It's good for science and it's good for society," concludes Kakino. 🐾

Most students have likely had the awkward experience of trying to explain their research to a friend or family only to be met by glazed eyes and genial nods. That's understandable: communicating your research to a general audience or connecting it to society isn't a skill that is taught at university. Nevertheless, many academic institutions and governments are recognizing the value and necessity for better science communication, and are making efforts to support such endeavors.

For many university students in Japan who are keen to share their research findings, that undertaking can be found in BEAST, a self-proclaimed 'eclectic group of students' eager to bring together fellow students from around the world under the mission of "Society with Science."

"We initially founded BEAST in 2021 as a business-focused platform for students to pitch their research to venture capital firms with the hope of getting their research funded. But our priorities changed quickly to more of a network that connects science and society," explains Kouhei Kakino, Vice President of BEAST and PhD student at Kyushu University's Graduate School of Agriculture. "Now we like to think of the platform as an academic 'playground' for students who are wild, energetic, ambitious like beasts, and want to contribute to society through their work."

BEAST is student-founded and student-led, and works under four main principles: to raise recognition and understanding of science; support student research and seed their research for real-world applications; provide a place where researchers from various fields can gather to meld their work; and to foster and inspire the next generation of scientists.

Follow the QR code for BEAST Website:



▼ Members of BEAST



Kyushu U Students and the legacy of Dr. Tetsu Nakamura

STREAMS IN THE WASTELAND

Dr. Tetsu Nakamura was nothing short of a modern-day miracle worker in war-torn northeast Afghanistan, who resurrected villages by successfully drawing water from the snow-capped mountains to what had become a “valley of death.” Following his death in Afghanistan in December 2019, Kyushu University started the Nakamura Tetsu Memorial Lecture Series in his honor. Here, we interviewed students who took part in the Lecture Series.

▼ Dr. Nakamura in Afghanistan. Photograph courtesy of Peshawar-kai/PMS

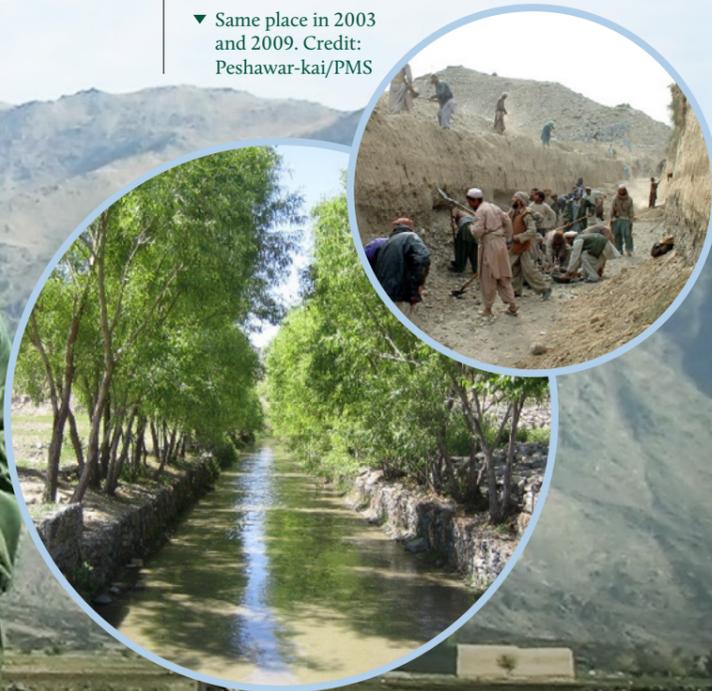
Dr. Tetsu Nakamura (1946–2019) was many things—a physician, an alumnus and Professor of Kyushu University, and the executive director of Peace Japan Medical Services (PMS), the non-governmental organization he founded to provide medical service in Pakistan and Afghanistan.

Since 1983, Dr. Nakamura dedicated all his skills in medicine and engineering to northeast Afghanistan, as wars and environmental disasters uprooted its people and unprecedented droughts turned villages into uninhabitable dryland.

In 2003, at age 56, he embarked on a canal engineering project to bring water from the Great Hindu Kush Mountains to the Gamberi Desert. The canal turned 3,000 hectares of land, once called a “valley of death,” into green pastures, resurrecting villages along the way, and began providing subsistence to over 650,000 people. Today, the same valley is awash with green, with wheat fields, vegetable gardens, and a park full of roses for people to refresh their war-torn souls.

Dr. Nakamura was shot dead along with his driver and four bodyguards in Jalalabad, Afghanistan in December 2019. He died in a place that he loved and adored. He was cherishing the time with students in Miran Training Center, equipping local communities with knowledge of the PMS/Nakamura method for irrigation

▼ Same place in 2003 and 2009. Credit: Peshawar-kai/PMS



development, a method drawn on a centuries-old, Japanese river engineering technology.

Today, the Kyushu University Dr. Nakamura Tetsu Project continues his legacy. In 2021, thirty-two students participated in the annual *Nakamura Tetsu Memorial Lecture Series: Passing on the work and the spirit of “Dr. Sahib,”* here are their voices.

Helping the weak and respecting all life



“I saw the flags raised at half-mast on campus that December morning. That’s when I realized how big a figure Dr. Nakamura was,” says Muhammad Aulia Rachman, a doctoral student at the Graduate School of Integrated Sciences for Global Society.

“I come from Indonesia, the biggest Muslim nation in the world. Debates on how intolerance and religion should play in people’s day-to-day lives are very nuanced. Depending on where and whom you speak to in Indonesia, it’s either Afghanistan is good because they are trying to be Muslim, or it’s totally bad.”

“I found it interesting that Dr. Nakamura was Japanese and pretty much a third-party. Neither from the West nor a Muslim-majority nation. A medical doctor who was building an irrigation canal, leading agricultural projects, and tackling social problems in Afghanistan. He also wrote extensively about what is truly needed in society.”

Story of environmental revival

Ryota Todoroki is a fresh graduate from the School of Pharmaceutical Sciences with interests in infectious diseases.



▲ Todoroki and his team in Nepal



▼ Muhammad Aulia Rachman

“Dr. Nakamura used to say, ‘One irrigation canal is worth more than one hundred doctors.’ And with that conviction, he built that 27-kilometer-long canal. The news about the climate crisis we hear today is mostly doom and gloom, that humans have destroyed the environment, that it’s too late. But Dr. Nakamura resurrected the environment in such a way that people have returned to their war-torn villages and are now harvesting wheat, honey, sugarcane, oranges, radishes, and sweet potatoes. His is a story of environmental revival.”



▲ Saki Okada in Nepal

Be moved by small things

“I was interested in what led the doctor to Afghanistan. He was born in Japan in an affluent family. Why did he choose to quit a life of comfort to go there?” asks Saki Okada, who earned an MSc in engineering in March 2022.

Okada thinks she found an answer to this question in Dr. Nakamura’s book *From an Afghan Clinic (1993)*: “In Peshawar, the people and their warmth I encountered in the streets were so consoling that I almost forgot about the terror and violence happening at that time.”

“The streets and the warmth of the people living in them; that’s what attracted the doctor and kept him returning to Pakistan and Afghanistan. His heart was so tender that it could be moved by such small things. I think the doctor was not that different from me, because I too am moved by such small things. It was reassuring to find in him a sensitivity similar to what I find within myself.”

▲ Miran Training Center. Credit: Peshawar-kai/PMS

Read more in The life and lessons of Dr. Tetsu Nakamura Part I & II on the Kyushu U Connect website:





KYUSHU UNIVERSITY

Public Relations Office

744 Motooka Nishi-ku Fukuoka 819-0395 JAPAN

<https://www.kyushu-u.ac.jp/en/>

