

KU Today

KAGOSHIMA UNIVERSITY NEWSLETTER

Spring
2019



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Published by

Kagoshima University
Global Initiative Centre
1-21-30, Kōrimoto, Kagoshima
Japan, 890-8580
email:
info@gic.kagoshima-u.ac.jp

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Shibundo Co. Ltd.

KUToday is a biannual publication to present information about Kagoshima University to a wider international audience. Each edition will feature one faculty for prospective overseas students as well as other topics such as educational programmes, research and alumni information. Some articles are translations from the Japanese-language publication, *Kadai Journal*, upon which *KU Today* is loosely based. Any comments or suggestions about *KUToday* will be warmly received.

PDF files on *KUToday* can be downloaded from
<https://www.kagoshima-u.ac.jp/en/about/newsletter.html>

A Note on Names

Following convention East Asian names appearing in *KU Today* are written family name followed by given name.

Spring 2019





Production and Preservation of Agricultural Resources from Temperate to Tropical Regions



Iwai Hisashi, Dean

Due to the drastic increase in world population, food production has become an urgent global issue. The pressing issues are different in Japan, where we face many other problems, including the revitalisation of farming communities, the improvement of our

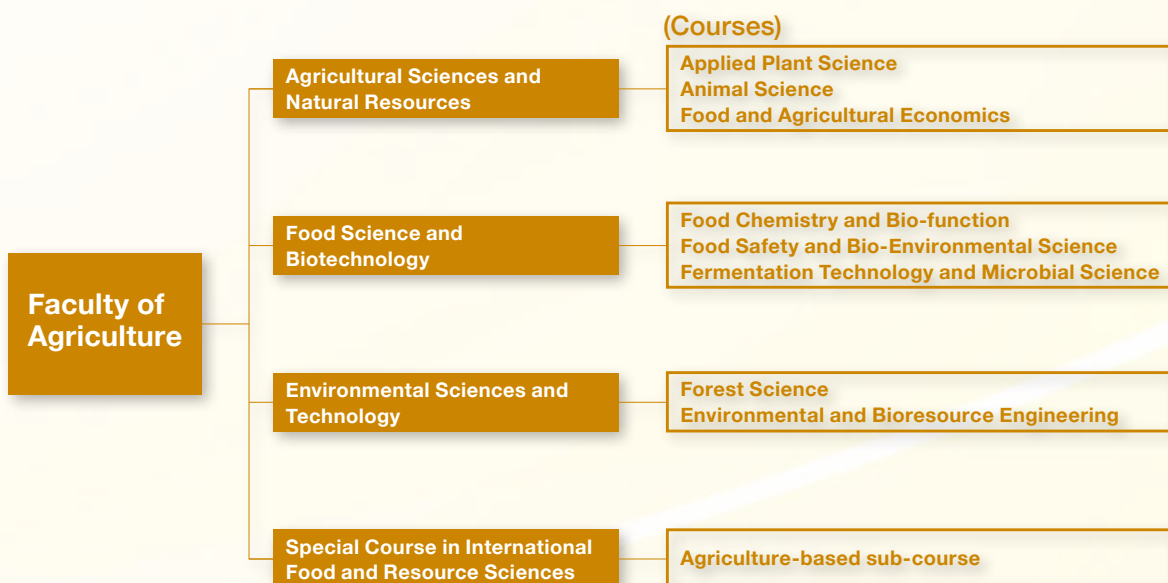
food self-sufficiency rate, food safety and security, and the coexistence between people and nature. Agricultural science is required to contribute to human life and welfare by confronting these problems.

The Faculty of Agriculture is located in one of the leading food production bases in Japan. Therefore, in order to meet social needs and expectations, we approach such particular perspectives through research and education. For

example, we work to develop technology for food production in harmony with the environment, explicate biological functions, ensure food safety, preserve and restore ecosystems, and revitalise farming communities. Our research is conducted using state-of-the-art bio-technology.

We work not only for Japan, but it is our responsibility to collaborate in research into food production and the environmental issues of Asian and African countries. Developing countries are proceeding with deforestation to expand plantations for food production and foreign currency acquisition, which corresponds to population growth. This trend influences the climate and ecology, but when human life is concerned, we cannot simply say that forest felling should be stopped for environmental protection.

The Faculty of Agriculture is a place for advanced science where we work on difficult issues to make human life better without breaking natural providence. "What is the appropriate level to restore human-disturbed ecosystems to?" is an especially important agriculture-based viewpoint held by the researchers in our faculty.



Department of Agricultural Sciences and Natural Resources

The department focuses on technological improvements to plant and animal production, the development of pest management systems, biotechnology-based plant breeding, and the economic

analysis of agricultural production and distribution process. The department comprises three courses: Applied Plant Science, Animal Science, and Food and Agricultural Economics.

Applied Plant Science Course

Our research focuses on diverse cultivation technology, pest and disease control and the genetic improvement of plants. In addition, we conduct research into a variety of agricultural issues linked to environmental changes associated with global warming. The educational mission of this course is to educate students to play an active role on a global scale as well as within local events. Graduates will have practical and applied skills developed through the acquisition of basic knowledge of crop and horticulture products. This will require learning diverse cultivation technology, pest and disease control and genetic improvement of plants. It will also involve developing professional knowledge and an understanding of the temperate climate typical of East Asia. Furthermore, in order to solve various agricultural issues due to changes resulting from global warming, we train students to maintain a wide field of view and instill

international characteristics that may allow them to play leadership roles in the future.

Research subjects on this course include: the effect of environmental factors on the growth and yield of crops, the evaluation and measurement of crop root systems, crop adaptation to global warming, plant anaerobiosis, the development of an evaluation method for the effect of rhizobia of leguminous crops, bacterial blight resistance genes in rice, the genetics of agronomic and reproductive-barrier related characters in crops and its application to breeding, inhibiting global warming and desertification with plants and crops, breeding, the genetics and genetic resources of fruit trees, physiological in fruit development from flowering to maturation and their control, environmental stress responses in higher plants, plant-to-plant communication, and the biochemistry and genetics of flower colouring in ornamental plants

Animal Science Course



Southern Kyūshū is one of Japan's leading animal husbandry areas, and the production output of meat from livestock from Kagoshima Prefecture is the largest in the country. In the 2008 reorganisation of the faculty the Animal Science Course was developed with the main purpose of fostering human resources capable of long-term contribution to the sustainable development of local livestock industry as well as educational and scientific research in that field. Three new research fields: nutritional biochemistry & feed chemistry, animal functional anatomy and meat science were also added to the already existing fields of livestock breeding, livestock

reproductive studies, and livestock management of the former Animal Husbandry Course in an attempt to further improve the educational and research systems in place.

Here we will introduce the Livestock Breeding Laboratory within the Animal Science Course. Our laboratory currently consists of six 3rd year students, eight 4th year students, three MSc and three PhD students as well as two members of teaching staff. In the laboratory, on the basis of genetic and statistical analysis, we work on improving or introducing livestock by studying the animals' genetic resources. We conduct research on various animals, from domestic livestock (cattle, pigs, chickens, horses, etc.) to native species and wild animals. Specifically, we are conducting research using molecular technology to better understand the genetic mechanisms behind various characteristics of domestic animals, such as their appearance or reproductive abilities, and how these characteristics manifest themselves. In cooperation with organisations such as Kagoshima Prefectural Government and Japan Agricultural Cooperatives (JA), we also actively engage in livestock brand development for Kagoshima to support its prosperous animal husbandry.



Solution Programme, Food and Agricultural Economics Course



In recent years, despite the growing desire for regional revitalization in rural regions, there are many areas where the first step towards its implementation

cannot be taken due to lack of trained personnel and concrete know-how.

Therefore, in the Solution Programme of the Food and Agriculture Economics course, we combine

problem-solving educational research with the accumulation and compilation of data about the availability of local resources, the problems and ideas local residents have, and market consumer needs in order to conduct advanced data analysis. The results are then provided to local government officials to assist with more effective planning and implementation of regional revitalization.

In 2017, a project by our students in the the Kareigawa area of Kirishima in Kagoshima Prefecture received the Furusato-Zukuri Grand Prize of the Ministry of Internal Affairs and Communications. The Solution Programme's detailed proposal and its effectiveness, supported by precise investigation as well as advanced analysis, were highly appreciated.

Department of Food Science and Biotechnology

The department has outstanding curricula and research fields cover a broad range of areas such as food science, life science, soil science and fermentation technology. These fields have had a significant impact on our society, especial on human and animal health as well as sustainable crops and food production. The department has three courses:

(1) Food Chemistry and Bio-function. This course provides education and research in food function & nutrigenomics, food chemistry, biochemistry & nutritional chemistry, macromolecular biochemistry, and applied carbohydrate chemistry. Various techniques are employed from molecular and cellular levels to animal level to explore the link between food components and health promotion. Studies include the structures and functions of phytochemicals, enzymes and polysaccharides, disease-preventing effects of bioactive compounds, development of new bioactive materials and components from animals and plants as well as microorganisms.

(2) Food Safety and Bio-Environmental Science. This course provides education and research in soil and environmental sciences, plant pathology, plant physiology and nutrition, fertilisers, postharvest physiology and preservation, food processing and distribution. These studies are being carried out in

many aspects of food safety to harmonise the stable provision of safe and high-quality food products with environmental conservation.

(3) Fermentation Technology and Microbial Science. This course provides education and research in shōchū (distilled alcoholic beverage) fermentation technology, fermentation microbiology and applied molecular microbiology. The studies specialise in two aspects: one is to learn the regional climates and traditions of fermented foods, and bring a fresh perspective to the fermentation industry. Another is to study microbe functions on the molecular level and apply these findings to new fermentation technologies.

The department has undergraduate programme and an MSc graduate programme leading to the PhD programme in the United Graduate School of Agriculture. The department plays a central role in the research and development of national and local food industries, and many excellent research results are published annually in world-class journals in the field of food, agriculture, medicine and pharmacology. Our high standard of research facilities in the aspects of food chemistry, analytic chemistry, biochemistry, molecular biology, genomics, and animal experiments ensure excellent job prospects for our graduates in industry, government and academia.

Laboratory of Applied Molecular Microbiology

Ishibashi Matsujirō, Professor

Tsurumaru Hirohito, Assistant Professor

Our research interests relate to the basic and applied chemistry of environmental microorganism. Here, we briefly introduce two of our research topics: the function and application of enzymes and halophilic bacteria (bacteria that live in high salt concentrations); and the biology and ecology of plant-associated bacteria.

(1) The function and application of enzymes and halophilic bacteria

Halophilic archaea (single-celled microorganisms that lack a defined nucleus) and bacteria can be divided formally into two classes: extreme and moderate halophiles. Both can survive or even thrive in salty environments. These halophiles are thus used in certain commercial applications that require high salt concentrations. They use different strategies to raise the internal osmotic pressure and cope with the external high salt concentrations. As the external salt concentrations are similarly high in the habitat of both halophiles, their extracellular proteins are intrinsically resistant to high salt concentrations. However, the cytoplasmic proteins are different between the two halophiles. The cytoplasmic proteins and enzymes of extreme halophiles, but not moderate halophiles, are also resistant to high salt concentrations. Thus, cytoplasmic proteins from extreme halophiles and extracellular proteins from both habitats have unique characteristics that make them salt-tolerant (i.e., a high acidic amino acid content (Fig. 1)). We research such unique characteristics of halophilic proteins for commercial applications and scientific interest.

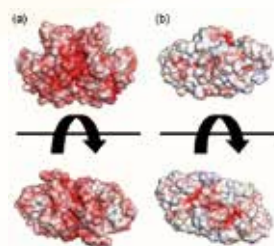


Fig. 1 Comparison of the electrostatic potential of the molecular surface of (a) halophilic and (b) nonhalophilic enzymes. Positive and negative charge is presented in blue and red, respectively.

(2) Biology and ecology of plant-associated bacteria.

As shown in Fig. 2, plant-associated bacteria are known to affect growth and quality of the host plant (Tsurumaru et al. *Microbes and environments* 30:63-69). However, only limited success of bacterial inoculants for crop production has been achieved. This is because the phylogeny and ecology of plant-associated bacteria are yet to be fully understood. Therefore, our laboratory investigates the plant-associated bacterial community by using culture independent methods, and isolates bacteria from plants to construct a bacterial library. The strains, selected based on the analysis of plant-associated bacterial community, are likely to be used as prospective bacterial inoculants to enhance growth and quality of important plants.



Fig. 2 Bacterial plant growth promotion.

Laboratory of Food Function and Nutrigenomics

Hou Dexing, Professor

Sakao Kozue, Assistant Professor

Accumulated evidence shows that most phytochemicals from vegetables and fruit potentially reduce the risk for a variety of chronic diseases and provide beneficial effects for human health although the mechanisms are not fully clear. Thus, our research interests focus on the systematic estimation of food functionality and safety, using advanced methodologies and technologies of chemistry and molecular biology at cellular and animal levels.

Two major research projects are now underway in our laboratory: the structure-activity relationship investigation of cancer chemopreventive effects of phytochemicals in human cancer cells (1); and the preventive effect and mechanism clarification of phytochemicals on lifestyle-related diseases (2).

(1) Polyphenols and their health effects have been

extensively studied in the last several decades. Quercetin (3, 3', 4', 5, 7-pentahydroxyflavone) is one of the most abundant flavonol-type flavonoids. Flavonoids are part of the polyphenol class of phytonutrients, and exhibit antioxidative, anticarcinogenic, anti-inflammatory, anti-aggregatory, and vasodilating effects. Therefore, quercetin is an attractive natural compound for cancer prevention. The hydroxyl groups of flavonoids are important for their bioactive functions and also prone to oxidation to quinones. To directly demonstrate the role of hydroxyl groups and generate a stronger bioactive compound, we have synthesised various derivatives of quercetin. Their bioactive functions are then evaluated for the ability to inhibit cell proliferation and induce apoptosis in different human cancer cells (Fig.1).



(2) Lifestyle-related diseases are primarily based on the daily habits of people, and include many chronic diseases such as cancer, heart diseases and diabetes. Non-alcoholic fatty liver disease (NAFLD) is known as one of the lifestyle-related diseases affecting modern society. NAFLD tends to develop in people who are overweight or obese, or have diabetes, high cholesterol or high triglycerides. The proinflammatory cytokines and oxidative stress are suggested to play a critical role in NAFLD promotion. On the other hand, we have demonstrated that dietary phytochemicals can attenuate both oxidative stress and inflammation. Thus, we are studying the protective effects and mechanisms of dietary phytochemicals on NAFLD by investigating the biomarkers of inflammation and oxidative stress, and gut

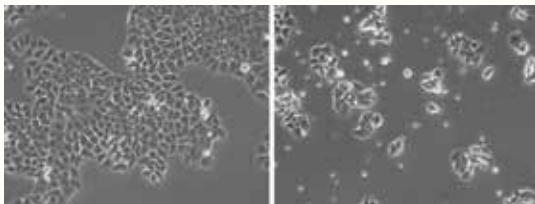


Fig.1 Cell morphological changes of breast cancer cells treated with 0.2% DMSO as control (left) and quercetin (right).

microbiome status. Some significant effects have been obtained (Fig.2).

Our laboratory is international. We have had many students from China, Korea, Indonesia, Philippines, Australia, Myanmar, Mexico and Vietnam. They study well together with our Japanese students, and have published many high quality research papers. Our students are very active in both studies and research with some postgraduate and doctorate students having been awarded prizes at international congresses. Additionally, we have published more than 30 papers in international journals in the last five years. Some of our research papers have been covered by the journal, *Molecular Nutrition Food Research*.

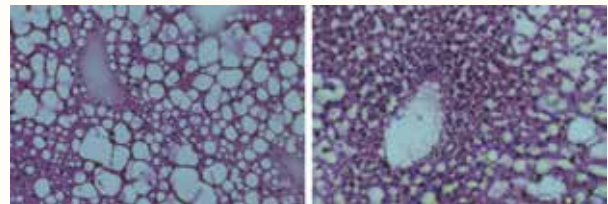


Fig.2 Representative liver sections from high fat diet (HFD: left) and high fat diet with bilberry (HFD+BB: right).

Department of Environmental Sciences and Technology

The department has two education courses: Forest Science, and Environmental and Bioresource Engineering. We provide education and research programmes on forest ecology, management, and planning, the utilization of forests and forest products, biomass production and utilisation, agro-environmental informatics, erosion control and hydrology, the conservation and management of agricultural lands and water resources, and environmental education.

Our educational goals are to develop students who will have acquired specialised knowledge and skills in the fields of effective utilisation of local resources, conservation of forest and agricultural lands, disaster prevention, and who can also contribute to forming a foundation for agricultural and forest production in harmony with natural environments, the promotion of local development, and the improvement of the living environment in rural districts.

The Forest Science course provides education that develops students who will have deepened their understanding of the ecosystems of warm temperate to subtropical forests, and who possess the knowledge and ability to plan and manage cyclic utilisation of forest resources in southern Kyūshū, one of the largest wood supply bases in Japan, and for land prevention. The research topics on this course are the mechanism and prediction of sediment disasters, silviculture, forest ecosystems and their conservation including

forest animals, insects and microbes, wood demand and production, effective forestry operation, wooden buildings, forest resource monitoring, sustainable forest management, and rural development based on forest resource utilisation.

The Environmental and Bioresource Engineering course provides education and research related to the management of regional resources, the conservation of the environment, the improvement of the agricultural production infrastructure, and information for regional disaster prevention in order to establish improved agricultural productivity and the creation of sustainable regional environment in harmony with the natural ecology. The research topics on this course are the effective utilisation, management and conservation of agricultural water resources, geotechnical approaches to the conservation of agricultural land, the conservation of geo-environment and landscape design in rural areas, labour-saving technologies for environment-friendly crop production systems, the development of biomass production and utility systems as an energy source, modelling and geographic information systems for climate-smart agriculture, field image observation techniques for monitoring runoff from sloping farmland, predicting crop growth and yield, processing and utilisation of wood biomass, the prediction and utilisation of sediment disaster, the sustainable development of local biomass resources and forest environmental education for the sustainable regional development.

Laboratory of Forest Planning

Kajisa Tsuyoshi, Associate Professor



We focus on forest planning, forest mensuration, remote sensing and GIS for forestry. Forest planning involves making plans to manage forests spatially and temporally from different perspectives

(economic, ecological, social, cultural) for sustainable forest and wood use. For this, spatio-temporal forest resource information is required. One of our interests is how can we get precise forest resource information efficiently using field inventory and remote sensing techniques. The development of tree measurement

tools has changed the forest resource information. For example, UAVs can take photographs from the sky (Photo: Canopy of Japanese cedar plantation). Laser measurement can detect the trees and measure their size with suitable accuracy. This precise tree size information could make trees more valuable. Another topic is to evaluate the stand structure and develop a tree and stand growth model to predict future wood supply for sustainable forest management. A current hot issue is to develop ICT for efficient forestry. The integration of forest resource data, forest engineering techniques and wood demand information could provide new opportunities for forest use by combining big data. Forestry is an important industry for local resource usage and rural development, which is why we are considering these new forestry systems for sustainable forest management.

Laboratory of Water resources and water use engineering

Momi Kazurō, Professor

Itō Yūji, Associate Professor

Water resources and water use in agriculture are at the core of any discussion of water and food security. Our research interest is on techniques and scientific information to manage and conserve water resources, examined through field observation, laboratory experiments, and hydrological mathematical modelling. Our laboratory covers modelling of hydrological cycle (key issues: evapotranspiration, hydrological and energy budget, and climate change) and water quality assessment (key issues: seawater intrusion, red tide, and eutrophication) related to irrigation systems. Recent studies concentrate on the following topics: understanding the development mechanism of red tides, developing an evapotranspiration observation system with an open-source electronics platform, i.e. Arduino, and estimating the effect of climatic changes on the hydrological environment of water resources. The studies on red tide may reveal the possibility of an occurrence of a massive mixed bloom of bi-algal species such as *Heterosigma* and

Chattonella in the future and can also estimate the timing of the initiation of a red tide. The introduction of open-source hardware to meteorological observations allows for simple and multiple measurement of evapotranspiration at a low cost, which leads to “smart-agriculture”. Our long-term numerical analyses of hydrological and energy budget predict the transformations of aquatic systems under various climatic conditions. This, for example, contributes to the enhancement of prediction accuracy for water shortages in which we will face climatic crises in the future.



Facilities

The University Forest

The University Forest is an outdoor classroom where various educational and research activities related to forestry and environmental studies are conducted. The two forests, at Takakuma and Sata, were both designated

in December 1909. The Takakuma forest is a 3,061ha area located in Tatumizu on the Ōsumi Peninsula side of Kagoshima Prefecture. Its elevation ranges from 100m to 885m above sea level with a yearly average temperature



of 14° -15°C, and an annual rainfall averaging at 2,800mm. The warm temperate climate supports permanent evergreen broadleaf vegetation. The geology of the

area is dominated by the Shimanto belt layers and throughout the region volcanic ash soil as well as pumice rock have formed deposits several metres deep. The forest includes 1,878ha of natural forest and 1171ha of artificial forest, and in the latter Japanese cedar trees (*Cryptomeria japonica*) show solid growth. Through the use of these abundant forest resources the training of forestry engineers is advancing.

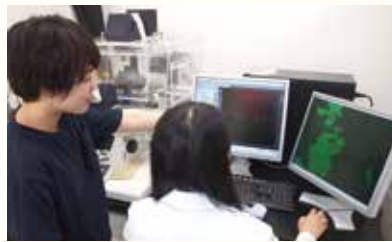
The Education and Research Centre for Fermentation Studies

The Education and Research Centre for Fermentation Studies has four divisions, Shōchū Fermentation Technology, Fermentation Microbiology, Basic Science for Fermentation and Fermentation & Culture. Here we aim to provide extensive education about the production techniques, culture, history and climate of fermented products such as shōchū as well as the characteristics of microorganisms such as kōji molds and yeasts which are used in making shōchū. From the third year in the Department of Food

Sciences and Biotechnology, undergraduates join one of three courses: Food Chemistry & Biofunction, Food Safety & Bio-Environmental Science or Fermentation Technology & Microbial Science. For students on the latter course, we aim to make them work-ready by offering not only specialised subjects such as shōchū fermentation and fermentation microbiology but also in practical areas like marketing and visual design, shōchū making in our distillery and shōchū tasting.



Education and Research Centre for Fermentation Studies



Looking at yeast cells through the microscope



Making kōji mold

Experimental Farm



Our farm is where the students can put the theories, knowledge and techniques they have learnt in the classroom into practice. The farm is spread over five locations: two campus farms (livestock and arable/horticulture), Toso Orchard, Ibusuki Experimental Botanical Garden and Iriki Livestock Farm. Taking full advantage of southern Kyūshū's warm climate, these five facilities are extensively used, allowing students to receive training in production activities closely connected with the different areas such as raising crops, horticulture, fodder production and animal husbandry as well as providing members of faculty with a research base. The farm produce is sold at a popular farmers' market held on campus every April.

Campus arable and horticulture farm: Here we conduct crop rotation for rice and other crops, as well

as cultivating crops both indoors and outdoors. We also research crop rotation systems and sustainable agriculture.

Campus livestock farm: A wide range of research and education is carried out with livestock and poultry such as Tokara goats, mini pigs, chickens, Japanese quails and domestic ducks.

Toso Orchard: Primarily temperate and sub-tropical fruits are grown here and used for research and education purposes. The orchard maintains a good selection of commercially-important fruit trees such as citrus fruits, loquats, persimmons, peaches and blueberries.

Ibusuki Experimental Botanical Garden: Using the warm climate and heat from the hot springs, research and education into the introduction and acclimatisation of tropical and sub-tropical crops and the cultivation of warm region crops is carried out.

Iriki Livestock Farm: We do educational research on Japanese black cattle, from breeding to fattening up. We also breed the genetically important Tokara horse and Kuchinoshima cattle.

Student Voice

Pakornkiat Saenrungsrot (Thailand)
MSc student

I am Pakornkiat Saenrungsrot from Thailand. From September 2016, I have been studying on the shōchū course. After starting as a research student, I am currently in the second year of my degree course. This was also the first time I started living abroad all by myself. Being at Kagoshima University has been a once in a lifetime experience for me. It is an international environment where I can experience different cultures, languages and traditions in one spot. It was really tough to get used to the different environment and life away from my hometown, but I have overcome this challenge with the kind help of my professors and friends here. Of course, the Japanese language was my biggest problem when I first came here, but the university provides Japanese classes every day during semester. Learning Japanese helped me to understand Japanese culture and society better. Also it can help future studies and daily life. Kagoshima is a peaceful city surrounded by a beautiful landscape, clear sky and sea, as well as our lovely volcano, Sakurajima. Nowhere in the world will you have a chance to be located near an active volcano like this city, which is why this city is an excellent place to learn about life and grow as a person.

Since I became a postgraduate student here, I have been continuously developing my career path and further research on biotechnology. My research theme is mainly focused on the genetic engineering of the shōchū kōji mold, *Aspergillus kawachii*, to improve

the process called gene targeting by homologous recombination.

Gene targeting has been widely used to study gene function by removing ("knocking out"), or adding ("knocking in"), specific mutations of interest. Advances in gene targeting technologies enable a new wave of fungal genetic engineering and facilitate the development of significant strains used on an industrial scale. During my experimentation, I realised that to satisfy my desire for additional knowledge, I would need to pursue a doctoral degree. Designing and executing the project I am working equipped me with all the virtues of a true researcher, the systematic approach, the research framework, the technical know-how and the most important, patience and the ability to deal with failures. These experiences made me a more ambitious and confident person to overcome failures. My academic experiences did not just teach me what science is, but also shaped me into a successful and confident person. I stay in the laboratory as much as possible under my belief that I want to find a new scientific reason behind the practices and discover a new phenomenon that I can extend for future work.



Student Voice

Zeng Chuantao (China)
MSc student

I first came to Kagoshima University as an exchange student in 2013. During that year, I felt that there was a good atmosphere both for learning and living here. And with the help of teachers and classmates, I acquired a lot of knowledge about shōchū. When I was an undergraduate student in China, I majored in Chinese liquor making which stimulated my strong interest. In order to increase my knowledge, I once again came to Kagoshima University and completed my postgraduate course through two years of study and research. And now, I am very proud of being a PhD student at our

university, studying biological science and technology and doing some research about it. The university provides good laboratory equipment and I have flexible free time to use it. In the future, I would like to contribute to the technical and cultural exchanges between Japan and China.



Student Voice

Nguyen Thi Duyen (Vietnam)
BSc student

I started living in Japan in April 2016. Before coming here, I was studying at Hanoi University. Since my major was Japanese, I had many chances to hear and study about the people and culture of Japan. I wished I could study here someday.

When I was a 3rd-year student at Hanoi University, I heard about the Japanese government scholarship from my friends. I tried to apply for it and finally was accepted.

Now I am a 3rd-year student in the Faculty of Agriculture and belong to the Laboratory of Vegetable Crop Science. I am studying the effects of plant originated volatiles on the induction of crop immunity or defence. My dream is to get the knowledge to provide safe and secure vegetables not only for my family, but also for people living in my country, Vietnam.

I love Kagoshima very much. Here, I can experience and enjoy a

countryside life-style. People living here are very nice and friendly. The food is also great, especially *torisashi*, raw chicken eaten with soy sauce and minced garlic or ginger!

At first, like the other international students, I felt difficult to get used to Japanese customs. For example, the traffic regulations are the opposite of my country. It confused me and took much time to get used to.

For me though, Japan has become my second hometown. I am sure that I will have even more experiences during my stay in Kagoshima and I will try to gain some precious memories.





Kafrelsheikh University

Yahya Zakaria
Professor, Vice-Dean for Graduate Studies,
Research and Cultural Affairs, Kafrelsheikh University



Kafrelsheikh University (<http://www.kfs.edu.eg/>) is an Egyptian public university established in 2006. It has a student population of around 45,000 and 1,561 faculty staff. Located in the northern Egyptian town of Kafr-El-Sheikh, the university has a modern campus with plenty of greenery.

The university has nineteen faculties and three higher institutes. The five scientific faculties are Agriculture, Engineering, Science, Fisheries and Computers and information, in addition there are seven health faculties: Medicine, Pharmacy, Dentistry, Physical Therapy, Nursing, Medical and Applied Sciences as well as Veterinary Medicine. The university also includes six faculties for humanitarian sciences: Education, Specific Education, Physical Education, Arts, Commerce, Languages and Law. The scientific institutes are Nano Science and Technology Institute, Institute of Drug Discovery and Development and Technical Institute of Nursing. The university has a hospital equipped with the latest medical equipment to provide health service for all categories of society, with a capacity of 433 beds, 13 operation rooms and 63 beds for intensive care.

University president Prof. Maged Elkemary is very keen that Kafrelsheikh University takes serious steps to attain a prestigious position and high-level reputation to be one of the most distinguished in scientific research, education and community service by providing an academic environment that enables creativity, excellence and innovation in all fields. Kafrelsheikh University is the second ranking environmentally friendly university in Egypt, according to the Global

Green Metric ranking system. It is also gaining a reputation nationally as a research centre, ranking fourth among the country's universities in international research citations. Recently, Kafrelsheikh University ranked 601-800 in the Times Higher Education (THE) ranking for the year 2019, and was awarded the first rank among the Egyptian universities in the Egyptian presidential initiative for the academic year 2018/2019.





Hyakunin Isshu Society

Komura Chie, BEd student,
Faculty of Education



The intense feeling in the quiet of the room. The moment when you even want everyone to hold their breath. The moment when you await the next sound. The most intense moment, when the first syllable of the poem is read. At the same time, your body moves into action. Your hand reaches for the card as straight as an arrow.

Welcome to the world of competitive karuta - a game where competitors race to take hyakunin issyu uta-garuta cards first. The Hyakunin Isshu is an anthology of 100 waka poems by 100 poets compiled in the early 1300s. Waka are short poems filled with the feelings of the poet and are a traditional means of expression in Japan. For this reason, competitive karuta is a traditional game incorporating the spirit of Japan.

Today people of any age can take part in competitive karuta. At competitions there are different classes, and it is not unusual for young children to be put against senior citizens. And even though this is a game based on traditional Japanese culture, it is not at all strict. People wear T-shirts and tracksuits and some see it as a sport needing instantaneous force, memory skills and mental stamina. It is often likened to “martial arts on tatamis” since it is a two-player game using force to try to grab the cards before your opponent, and mental toughness and physical strength for long games. But the appeal of competitive karuta lies in the fact that even though it is a tough sport, it can be played by anyone.

The Hyakunin Isshu Society is a small friendly club of about 30 students. Most are novices when they join and have no idea about karuta, but everyone becomes remarkably good with the guidance from the older members of the club. We travel all over Japan to competitions usually arriving the day before they

start. This gives us time to do some sightseeing and spend extra time getting to know each other better. This year, we have been to onsens in Ōita, the beach in Miyazaki and shrines in Kyōto amongst others. Since the games are all one on one, after they have finished we sit down and talk about the good points and the bad points of each other’s games. We also hold practice competitions with other universities, which gives us chance to get to know the students there and in turn broaden our own views of the world. Competitive karuta is not just a game but a way to bring people together. That is another of its appeals. A game where you can feel the spirit of Japan, a game where you can broaden your social circles, that is the game that is competitive karuta.



If you are an overseas student at Kagoshima University and you have some free time, why don't you come and give karuta a try? We are always on the lookout for more club members, and you will be able to learn a little bit more about Japan and meet new people too. We are looking forward to seeing you.



Kick-off symposium held for the U.S.-Kagoshima-Asia Triad Programme in a Multi-Polar World



The panel discussion

The university's Global Initiative Centre held a symposium on 5th December to start the U.S.-Kagoshima-Asia Triad Programme in a Multi-Polar World, an interuniversity exchange project for the formation of collaborative programmes with partner universities using COIL-style education. (COIL: collaborative online international learning). The programme is one of 10 adopted by MEXT to promote Collaborative International Online Learning (COIL) and will receive funding from the government for four years from 2018. Kagoshima University will act as the gateway for educational and student exchange among seven universities in the USA and eight universities across Asia.

The symposium was held in the Inamori Auditorium and was attended by about 180 people, including representatives of the local municipalities, local people as well as faculty and students. Members of staff from eight of the universities involved in the programme participated in the symposium, which was held all in English with simultaneous translation into Japanese.

After opening words from university president, Dr. Maeda Yoshizane, Professor Nakatani (Global Initiative Centre) gave an outline of the programme, followed by explanations from the different university representatives of the eight

List of Courses in the programme

Course	Partner University	Country
Japanese Culture	San José State University	USA
	Burapha University	Thailand
Rural and Island Healthcare	Berea College	USA
	Red Cross College of Nursing, Chung-Ang University	Korea
Clinical Veterinary Medicine	University of Georgia	USA
	National Chun Hsing University	Taiwan
Beef Production	Texas A&M University	USA
	Chiang Mai University	Thailand
Food Safety	Oklahoma State University	USA
	Mae Fah Luang University	Thailand
Food and Health	North Dakota State University	USA
	Hunan Agricultural University	China
Nanoscience and Biotechnology	North Dakota State University	USA
	National Cheng Kung University	Taiwan
Environmental Architecture Design	Tuskegee University	USA
	Diponegoro University	Indonesia

courses: Japanese Culture, Rural & Island Healthcare, Clinical Veterinary Medicine, Beef Production, Food Safety, Food & Health, Nanoscience & Biotechnology, and Environmental Architecture Design. The symposium finished with an active panel discussion including all of the overseas participants to discuss the educational effect of using COIL to promote trilateral cooperation as well as what role the other institutions hope Kagoshima University will take as intermediary.

In their comments on the attendance questionnaire, many members of the audience were very optimistic for the programme to connect Japan with the rest of the world and create an opportunity for students here and overseas to study together.



Brazilian Amazon studies and education, community cooperation and non-formal education aimed at multiculturalism

As we move into the future, one of the biggest missions for universities is to help revitalise local communities involving people from a variety of different cultural and academic backgrounds. Dr. Sakai Yūsuke is applying his experiences of non-formal education in the Amazon for urban development in Kagoshima and the revitalisation of local communities involving Japanese and overseas students and local people. We asked him about his wide-ranging research and education activities.

Getting education without schools

Dr. Sakai's ambition to work in international cooperation started when he was at senior high school. When he was at university he took part in a programme to build houses in the Philippines organised by the NGO, Habitat for Humanity, which provides housing support in over 70 countries worldwide. Participation in a Japan International Cooperation Agency (JICA) urban development programme, then took him to Brazil for 10 months. Volunteer work in the favelas piqued his interest in social inequality. After graduating, he worked for one of Japan's largest car makers in Mexico, before returning to do his master's. Once again he found himself in Brazil, this time researching agricultural communities in Tomé-Açu in Pará State. "It's a four-hour drive from Belém, the capital of Pará and many Japanese emigrants live there. There are cooperative societies, cultural societies, and the local people have developed their agriculture by learning from each other." Dr. Sakai picks up a packet of chocolate from a well-known confectionary company that you can find in any convenience store. "This is made with cacao grown in Tomé-Açu." You can sense the affection and respect he has for those Brazilian farmers in his voice.

The inevitability of multiculturalism

"Do you know how many foreign residents there are in Kagoshima today?" The topic of conversation has come back from the other side of the world to Kagoshima. "There are 9500, and that number is increasing. In particular, the number of participants on the government's technical intern training programme is growing in rural areas." Dr. Sakai points out that globalisation is inevitable if we are to make up for labour shortages. "Rather than debating about whether we need workers from overseas or not, with the low birthrate and ageing population as it is, people in their 40s and 50s

now will have to be looked after by foreign care-workers when they are older." We need to admit the fact that the waves of internationalisation are washing at our feet and get working on urban development that will improve living conditions for foreigners in Japan.

For example, people often say that Muslims are extremists, but this is just one of the prejudices that they have picked up from the media. It's important for people to actually get to know one other. Here at the university we have 300 wonderful overseas students and I am working on classes and projects to get them and Japanese students to look at issues that local communities are facing."

Open our hearts and minds

Since 2016, Dr. Sakai has been involved in an urban renewal project in Izumi in northwest Kagoshima Prefecture. In 2017, he took a class of seven Japanese and six overseas students there to look at the issues facing foreign tourists in the area. The students presented their ideas to the local people. "Instead of getting some bigwigs down to preach about internationalisation and urban revitalisation, having students come to the area and work with the local people has much more resonance. You really can't underestimate the power the students have." Cooperation with Izumi is continuing and they are currently talking about introducing halal menus and using an empty house as a prayer room. Dr. Sakai's tutorial group are also working on disaster prevention in the Kishaba area of the city next to the university where many overseas students live. Students who come from countries where there are no earthquakes have never experienced an earthquake drill. When the city had a large earthquake in 2017, many of those students said they just froze and were unable to do anything." So, they decided to draw up a disaster prevention map of the dangerous places and evacuation shelters after walking around the area with the overseas students and the local people. Making



the map was not in itself the goal though. Bringing the different people in the community together to work on these kinds of issues was the main objective, explains Dr. Sakai. “This is how we can foster tolerance in the community. You have to have an open mentality.”



Taking part in a tea ceremony in an old samurai house in while on fieldwork in Izumi



Students on a two-week study tour of Latin America organised by Dr. Sakai



Working on a disaster prevention map for the Kishaba area near the university

Lecturer

Sakai Yūsuke

Course of Community Studies, Faculty of Law, Economics and Humanities
Lifelong Learning Department, Kagoshima Centre for Community Development

PhD from Tokyo University of Agriculture and Technology in September 2017. Worked at amongst others Nissan Mexicana (Mexico) and the World Agroforestry Centre (Brazil) before starting at Kagoshima University in 2012.

Member of Japan Association for International Education, Japanese Society of Environmental Education, Japan Society for the Study of Adult and Community Education, Japan Association for Latin American Studies

Field: Social pedagogy, lifelong learning, area studies (Brazil)

Research topics: Unlearn, non-formal education, multiculturalism, immigration; the role of education for multiculturalism in Kagoshima; immigrant education in the Brazilian Amazon



Tashiro Yasusada (Tashiro Antei)

Udo Satoshi

Associate Professor, Faculty of Law, Economics and Humanities

Born in 1857 as the son of a samurai in Kajiya-chō (Kagoshima City), Tashiro Yasusada (Tashiro Antei) studied French and natural history at the private school of Shibata Keizō, a French interpreter and professor in Kagoshima. In 1872, he entered the prefectural school, Zōshikan, and became an assistant professor. In 1875, he was hired by the Home Office and, in 1882, ordered by the Ministry of Agriculture and Commerce to conduct a field survey in Okinawa for the experimental planting of cinchona, the raw material of quinine. In 1884, he was delegated to the International Horticultural Exposition in Saint Petersburg and studied under Carl Johann Maximowicz, a pioneer of botanical research in northeast Asia. Tashiro became a friend member of the Russian Academy, and was decorated by the Russian Emperor. Returning home in 1885, he argued the necessity of maritime defence and insisted on a survey of the Yaeyama Islands (in southwest

Okinawa adjacent to Taiwan). However, he ended up resigning the Ministry of Agriculture and Commerce after the survey.

With the outbreak of the Sino-Japanese War (1894–1895), Tashiro set his mind on Taiwanese studies under the advice of his compatriot from Kagoshima, Count Kabashima Sukenori, who was the first Japanese Governor-General of Taiwan. Tashiro then went to Penghu Island as a Ministry of Army employee and, after a research survey throughout Taiwan, he formed the Taiwanese Society of Anthropology with Inō Kanori. In 1902, he opened the Hengchun Tropical Plant Experiment Station on the Hengchun Peninsula (the site of the first battle with the Japanese Army led by Saigō Tsugumichi). He served as a lecturer at the Agricultural College of Kagoshima from 1911 to 1916.

Leaving a large footprint in the anthropological and botanical studies of the Nansei Islands, Taiwan, and the South Seas, Tashiro died of a heart attack in 1928, at the time of his homecoming in Kagoshima. In the following year, on behalf of his former students at the college, Matsuzaki Naoe visited Taiwan to sort his library out. The books were mostly donated to Taihoku Imperial University (now the Tashiro Collection in the National Taiwan University), but some of them were also presented to the college by his son, Yasutami, and are now preserved in Kagoshima University Library.



Monument commemorating the birthplace of Tashiro Yasusada (Tashiro Antei) in Kagoshima



Front Cover: Experimental Farm, Faculty of Agriculture, Kagoshima University

KAGOSHIMA UNIVERSITY NEWSLETTER NO.17