

Autumn 2018

LITTERAE POPULI

A news magazine presented by Hokkaido University



Recent News from Hokkaido University



Litterae Populi

Litterae Populi is a bi-annual magazine with the latest news about Hokkaido University. Its name is Latin for "letters of the poplar trees."

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Feature: Challenges

Since its establishment as Sapporo Agricultural College more than 140 years ago, Hokkaido University has continued to cultivate a frontier spirit — one of its founding philosophies. The university continually rises to new challenges to help resolve global and local issues in this new era.

Under the theme of "Challenges," this feature highlights three ongoing research initiatives at Hokkaido University.

Welcome to the World of Soft Matter

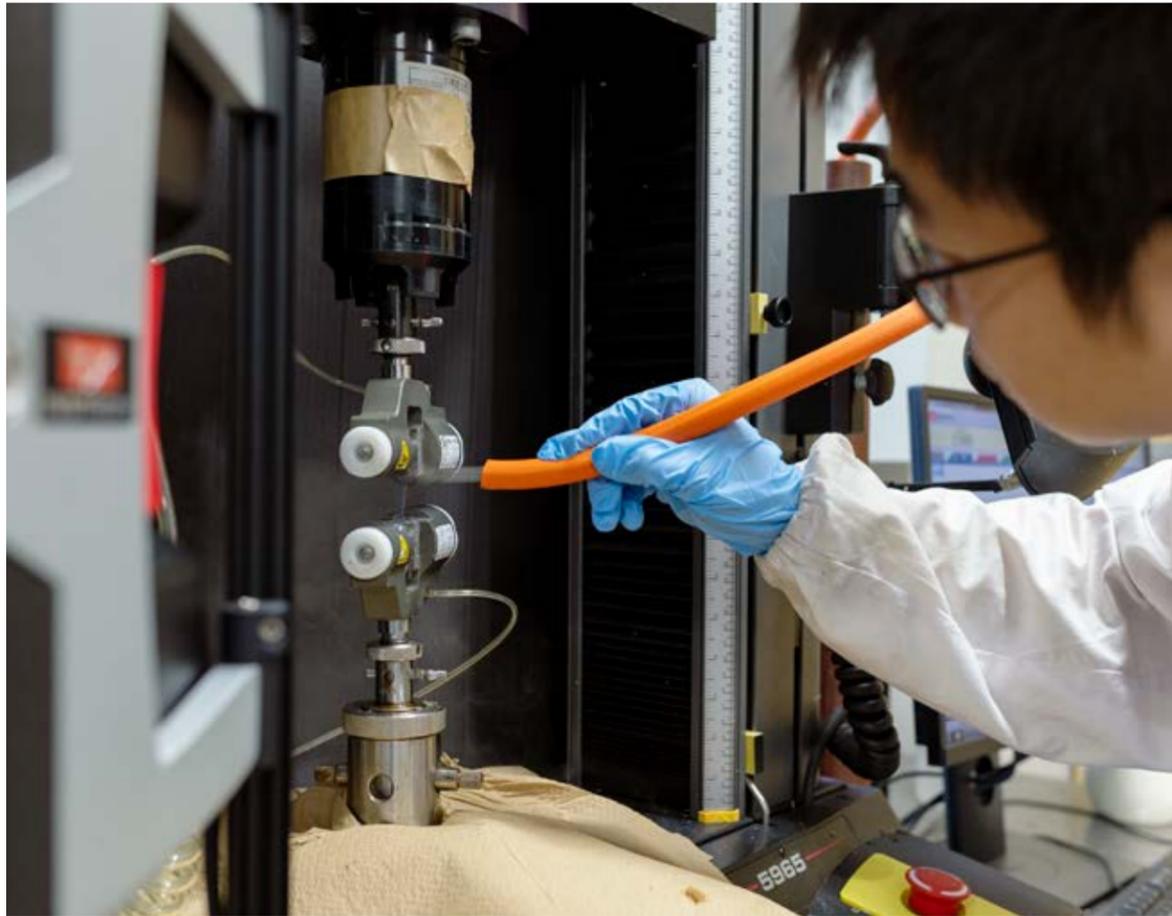


Students engage in their own individual research projects at a laboratory in the Division of Soft Matter.



**Division of Soft Matter, Graduate School of Life Science/
Global Station for Soft Matter, Global Institution for
Collaborative Research and Education (GI-GoRE)**

In April 2018, Hokkaido University launched the Division of Soft Matter in the Graduate School of Life Science to produce world-leading, globally minded professionals. The division was created through the university's Global Station for Soft Matter (GSS) within the Global Institution for Collaborative Research and Education (GI-CoRE), which has hosted research teams from universities abroad and promotes world-class research programs.



Students adopt their own analysis methods to analyze gel strength.

In the ever-advancing field of life science, the development of interdisciplinary research involving scientists in materials and information science has spurred expectations for next-generation innovations. Soft matter is an up-and-coming field at the forefront of materials research, and it is attracting attention in a wide range of sectors, including industry, medicine, and green energy.

Hokkaido University established the Division of Soft Matter in the Graduate School of Life Science in April 2018, becoming Japan's only research and educational organization with a world-leading soft matter research center. The division offers a master's program and a doctoral program that provide systematic education on soft matter science for students who will become global leaders in the field of soft matter research and development. The division includes the Functional Soft Matter Laboratory, which was established to provide education in collaboration with the National Institute for Materials Science and to produce professionals capable of finding comprehensive solutions to issues in wide-ranging materials and life science fields.

In April 2018, a total of 29 students enrolled in the master's and doctoral programs. The master's program received far more applicants than it could admit, indicating

the division's popularity with students.

Multidisciplinary and international curriculum

The Division of Soft Matter is characterized by its multidisciplinary curriculum, as the life sciences today involve research in various fields that extend beyond the traditional boundaries of academic study. Since multidisciplinary education requires collaboration among different departments, faculty members hailing from various backgrounds—from the Faculty of Advanced Life Science, the Faculty of Medicine, Hokkaido University Hospital, the Research Institute for Electronic Science and more—teach classes on theory, experimentation and basic research. The division also invites guest instructors from the National Institute for Materials Science and private companies, including Bridgestone Corporation and Osaka Organic Chemical Industry Ltd.

Playing a central role in the division is the Global Station for Soft Matter (GSS) within the Global Institution for Collaborative Research and Education (GI-CoRE). Launched in 2016, the GSS consists of three units: the Hokkaido University Unit, the U.S. Unit and the France Unit. Each unit takes charge of its own research: the



Students and staff of various nationalities in the division—a familiar sight.

Hokkaido University Unit in soft matter development, the U.S. Unit (Duke University, North Carolina State University, and Iowa State University) in theoretical development, and the France Unit (ESPCI Paris, University Pierre and Marie Curie, University Paris Diderot, and University of Bordeaux) in soft matter fracture. The GSS's implementation of a cross-appointment system with these overseas universities enables world-class researchers to teach classes at the division, making its curriculum even more appealing.

The advanced classes given by these faculty members are not just lectures; they also include practical education through research guidance. Researchers invited from

overseas frequently come and stay at Hokkaido University, creating an atmosphere where world-leading specialists can always be found at the division to share the latest research and provide research guidance through seminars and discussions.

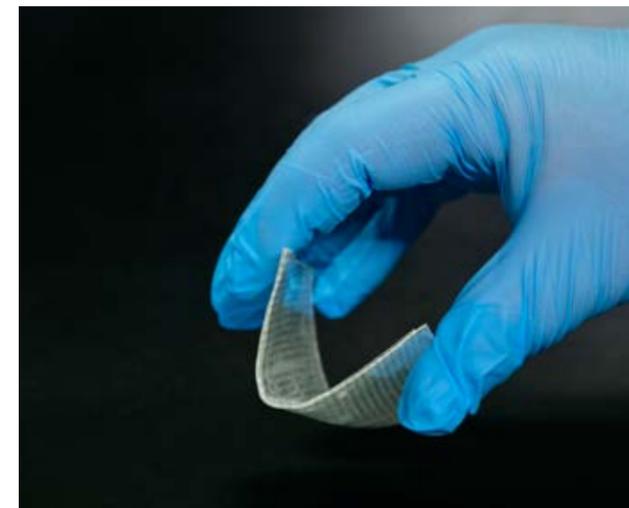
The Division of Soft Matter provides doctoral students with internships at overseas businesses, offering special programs to familiarize students with processes from research and development to distribution and marketing, over a period of approximately six months.

Familiar materials

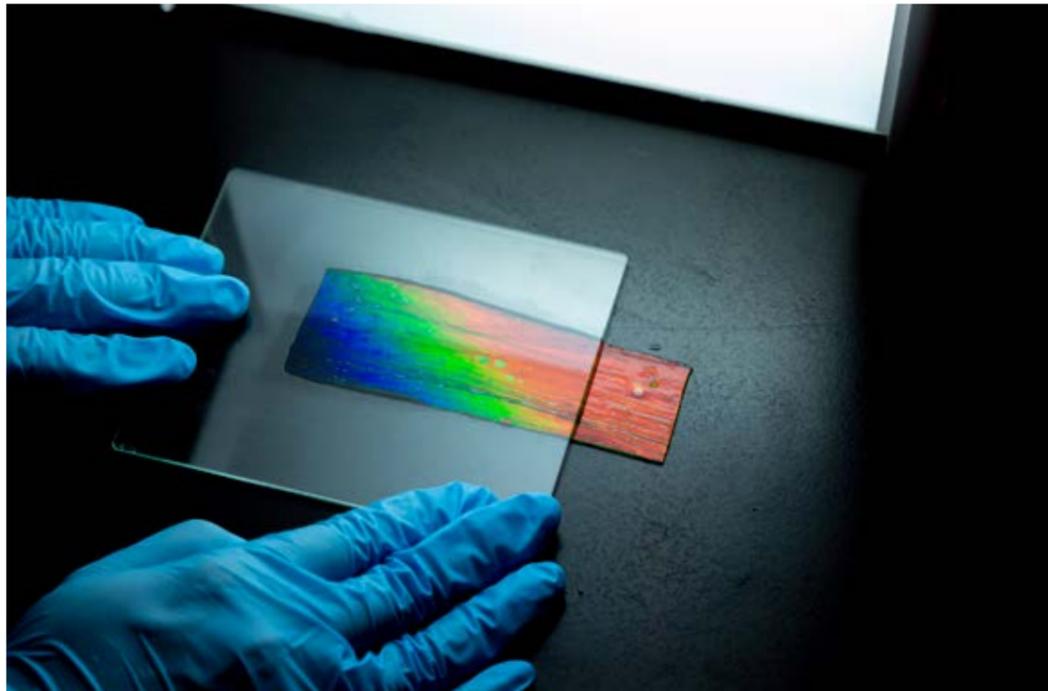
So what is soft matter anyway? It refers to all materials whose state lies in the intermediate region between liquids, like water, and solids, like rock. Numerous materials around us exist in a soft matter state, so soft matter science plays an important role in solving countless issues we face.

Soft matter has a wide range of applications, from daily necessities such as shampoo and facial cleansers to state-of-the-art medical devices such as artificial internal organs and joints. Soft matter science is a relatively new academic discipline, but it's closely connected to our everyday lives.

Hydrogels epitomize the research into soft matter that is being conducted at Hokkaido University. While living organs—the ultimate soft matter—are durable and functional due to their flexibility and high moisture content, most artificial materials don't manifest the high functionality that living organs do because the materials are mostly hard and low in moisture content. As



Fiber-reinforced hydrogel that is highly flexible and tougher than metals.



A structural colored hydrogel that displays vivid colors when force is applied.



An ultra-tough double network gel (DN gel), which has a high breaking stress that offers the prospect of its application as a cartilage substitute, among other uses.

soft, wet materials that contain water, hydrogels may be developed into materials that are even more functional than living organs. Hydrogels, which are high in elasticity and strength and are resistant to corrosion and wear, have a vast potential for the development of biological replacements.

Professor Jian Ping Gong of the Laboratory of Soft & Wet Matter in the Division of Soft Matter enthuses about the potential of soft matter. “Conventional artificial hearts and artificial joints, which are mostly hard, create friction where they come in contact with living organs, causing stress on the soft living organs and damage to the surrounding tissues,” Professor Gong says. “However, the use of materials that are as soft as tissue can mitigate such adverse biological effects.”

Examples of ordinary gels include foods such as konjac jelly and other jellies, and contact lenses. They’re soft due to their high water content, but they lack strength. To overcome these issues, Professor Gong’s laboratory developed a hydrogel that is known as a double-network gel (DN gel), which has gained worldwide attention. The DN gel exhibits high strength and toughness stemming from the combination of two different networks.

Amazingly, DN gel has a water content of 90% but is tough enough to resist cutting even with a utility knife. It also has a high breaking stress—so high that a piece of gel as small as a one-yen coin can withstand the weight of 30 adults without breaking. DN gel is also highly stretchable, with some types capable of stretching as much as 30 times their original length. Such highly elastic, ultra-tough DN

gels have a broad range of applications and are creating high expectations within the scientific community, particularly for their use in the aforementioned artificial joints and other biological replacements for damaged tissues.

Fusion of soft matter and medical science

Efforts are also underway to use soft matter in clinical medicine.

Cancer stem cells are known to cause cancer recurrence and metastasis, and the eradication of these cells is required for a complete cure for cancer. But there’s a limited number of cancer stem cells in cancer tissue, making it a major challenge to separate such cells for analysis by conventional methods. Against such a background, Associate Professor Masumi Tsuda and her team in the division’s Laboratory of Pathology recognized the advantages of the DN gel developed by Professor Gong and her team. Their joint research team found that non-cancer stem cells cultured on a DN gel change into cancer stem cells within 24 hours and enhance the tumorigenic potential of the cancer stem cells. This means that cancer stem cells can be induced swiftly from a patient’s cells cultured on a DN gel for screening to identify anticancer drugs effective against the patient’s cancer stem cells. Clarification of induced stem cells’ characteristics can also lead to treatments for recurrence prevention. Going forward, if DN gel becomes available in an in-vitro diagnostic kit to identify cancer stem cells, it will lead to precision medicine and personalized treatments that are quick, simple, cost-effective, and efficient.

Difficulties in establishing a new academic division

Professor Makoto Demura of the Laboratory of Protein Science looks back on when he and his colleagues prepared to apply to the Ministry of Education for the establishment of the Division of Soft Matter. “We had a hard time,” he says, “because the names of degrees to be conferred on students contained katakana characters and not the kanji-only names that have traditionally been used.”

To get the green light from the ministry, Professor Demura and his colleagues conducted numerous surveys while planning details about the division, including surveys on student needs, social needs, business needs (ideal human resources), and curriculum needs. Difficulties they faced in establishing a new division within an existing graduate school included coordination with existing divisions about its size, but Professor Demura says they took it all in stride, saying with a smile that he remembers only fun things.

Professor Demura and his colleagues also had to recruit members of other Hokkaido University departments to join the division. They visited various departments to request cooperation and negotiated with researchers outside Japan. Professor Demura said that everyone was cooperative and readily accepted their requests due in part to a track record of joint research and other collaborations. In this way, it was thanks to the contributions of many people that the Division of Soft Matter was established.

A trailblazer on the world stage

There has been research on soft substances and materials since early times, and the term “soft matter” came to be used to denote a concept that unifies such substances and materials. The term gained worldwide currency when the 1991 physics Nobel laureate Pierre-Gilles de Gennes delivered a Nobel Lecture titled “Soft Matter.”

Today, soft matter research is entering a worldwide boom, with soft matter centers having been established in the U.S., Europe and China. That said, Hokkaido University is the first institution for higher education in the world to have established a dedicated division with a curriculum specializing in soft matter.

The Division of Soft Matter is committed to forging ahead, remaining at the forefront of soft matter research around the world.



Summer School on Soft Matter: The lecturers are world-leading scientists in the field of soft matter.



Faculty members of the Center for Advanced Tourism Studies are active in Japan and elsewhere in their fields of expertise.

Center for Advanced Tourism Studies (CATS)

The Center for Advanced Tourism Studies is the first tourism studies center to open in a Japanese university. As new forms of tourism have recently come into the limelight, the center engages in various research activities in order to become a Center of Excellence in tourism studies in Japan.



Toward the “Creation” of Tourism

In 2006, three years after then Prime Minister Junichiro Koizumi stated his goal of making Japan a tourism-oriented country, the Center for Advanced Tourism Studies (CATS) was established as the first tourism studies center in a Japanese university. Since then, the center has opened new paths in the relatively new academic field of tourism studies through research and education programs that are designed to promote regional revitalization, tourism industry transition, lifestyle innovation, and international collaborations through tourism.

Tourism for regional development

The Director of CATS, Professor Noriaki Nishiyama, stresses the importance of tourism studies that are oriented

toward regions and not toward specific industries, because tourism should cover wide areas and lead to regional revitalization and development. Although conventional college courses in tourism-related fields have focused on promoting the tourism industry, CATS has spotlighted regions ever since its establishment. A division in the Graduate School of International Media, Communication, and Tourism Studies (IMCTS), for which CATS faculty members are also responsible, was named the Tourism Creation Major based on a belief that tourism is something to be created and nurtured by regions.

From regions to the world

CATS is engaged in numerous projects in collaboration with

local governments, private companies and other organizations in Japan and abroad. In Hokkaido, CATS signed a partnership agreement with the Town of Biei and has engaged in formulating the town’s landscape ordinance and landscape conservation action plan. Partnership with the Town of Ikeda began with the renovation of the Ikeda Wine Castle and includes the provision of advice and the coordination of initiatives to develop tourism resources and attract tourists. In 2016, CATS signed a partnership agreement with the Hokkaido Nippon Ham Fighters, a professional baseball team, to research sports tourism and look into the relationships between tourism and baseball spectating. Projects implemented by CATS are not limited to Hokkaido. CATS helped Okinawa’s Taketomi Island with landscape preservation and tourism promotion, and assisted Gifu Prefecture’s Shirakawa Village with the development of a World Heritage Master Plan and a Fundamental Tourism Plan. In Toyama Prefecture’s Nanto City, CATS has studied regional revitalization using anime as part of its research and educational programs in media content and tourism.

Noticing the results of these domestic research projects, the Japan International Cooperation Agency (JICA) asked CATS to take part in its overseas projects. After initially feeling its way through a technical cooperation project in Ethiopia and a tourism development project in Jordan, CATS formulated a management and tourism plan for a World Heritage site in Fiji and supported the promotion of community-based tourism for poverty alleviation in Zimbabwe. In 2017, it conducted a survey for future support in Iran.

Training people of diverse backgrounds

Findings from domestic and international projects conducted by the Center for Advanced Tourism Studies are also utilized in teaching at the Graduate School of International Media, Communication, and Tourism Studies (IMCTS), which annually admits graduates from various undergraduate schools in the sciences and humanities, as well as adult learners with rich experience, despite the fact



On behalf of Hokkaido University, a CATS faculty member gave a lecture at a Tokyo Otona University event in December 2017.

that Hokkaido University has no undergraduate school in tourism studies. Although it’s not easy to teach tourism from scratch to students of different backgrounds, IMCTS has produced graduates who pursue careers not just in the tourism industry, such as in travel and transportation businesses, but also in a wide range of tourism-related fields, including government organizations, NPOs, the media, and retail businesses. Professor Nishiyama emphasizes that IMCTS welcomes motivated students regardless of their majors, as it’s committed to fostering professionals who can draw on their experience in various fields based on their sound knowledge of tourism-related social phenomena.

In 2017, IMCTS launched Japan’s first destination manager training program. It’s a program that confers a certificate of completion for prospective leaders of destination management organizations (DMOs)—a hot phrase in tourism these days. Destination management involves perceiving one’s own region from a visitor’s perspective as a destination to rediscover, brand, and manage the appeal of. Professor Nishiyama maintains that DMOs will play a vital role in tourism going forward and that DMOs must benefit the regions by not only remaining viable as businesses, but also by inspiring locals as sources of pride. To this end, careful thought must be given to the future of tourism and regions, he says. Expectations are high for this newly launched program, as shown by the large number of applicants.

According to the United Nations World Tourism Organization (UNWTO), the number of tourists is increasing around the world, but Japan has been slow to respond to such increases. Professor Nishiyama senses this growing public interest in tourism as he has been receiving increasing media requests for interviews.

As new types of tourism capture the limelight, careful consideration must be given to how tourism should be connected to regions and made sustainable so that they don’t end up as a passing fad. CATS remains committed to rising to new challenges to “create” tourism.



Brochures that CATS has been involved in publishing. CATS has provided this type of support domestically and internationally.

Usu Volcano Observatory, Institute of Seismology and Volcanology affiliated to Faculty of Science

The Institute of Seismology and Volcanology (ISV) Usu Volcano Observatory of Hokkaido University's Faculty of Science is located near the Usu Volcano. Completed in 2001, the current building replaced the original built in 1978. The observatory attracts researchers from across Japan, as it offers valuable firsthand insights into the workings of this volcano, which erupts every 30 years or so. The observatory is also used by students for fieldwork.

The Faculty of Science's ISV Usu Volcano Observatory is located in the Tatsuka district of Sobetsu, a town bordering the eastern half of Lake Toya. About 8 km east of the Usu Volcano summit, the observatory affords a view of the Usu Volcano and Mt. Showa-Shinzan, which tower as if overlapping each other. This view is a favorite of Dr. Hiromitsu Oshima, the specially appointed associate professor who is in charge of the observatory.

The Usu Volcano Observatory was established in April 1977 as part of the Faculty of Science, and in August of the same year the Usu Volcano erupted. Since the construction of the observatory building had not yet started when the volcano erupted, members of the observatory were forced to collect data in a prefabricated building. Construction of the observatory building began in March 1978, when seismic activity had subsided to some degree, and was completed

that October at Sobetsu Onsen near Lake Toya, 1.5 km north of the volcano summit. However, only one week after completion, accommodations for faculty members near the observatory were hit by a debris flow. The observatory staff have been combatting the forces of nature from the start.

More than 20 years later, in March 2000, the Usu Volcano erupted again. After the eruptions, the observatory was moved to its current higher location for safety, taking advantage of advances in telemetry. Since eruptions draw many volcanologists and their data-collecting instruments from around Japan, the observatory was ingeniously designed to house as many instruments as possible in its limited space.

At the forefront of Usu Volcano observation

The observatory receives data in real time from 19

Feature:
Challenges

observation sites installed around the Usu Volcano for sharing with numerous local governments, observatories and research institutes within and beyond Hokkaido. Since facilities at observation sites entail large costs and long-term maintenance and operation, Dr. Oshima considers it desirable to use systems that lab staff can maintain on their own as much as possible.

Currently, only Dr. Oshima and one other staff member are stationed at the observatory, but in summer, students from the School of Science's Department of Earth and Planetary Sciences use the site to engage in practical training in Earth observation through volcanological measurement. This popular fieldwork enables students to get a firsthand look at the activity of the Usu Volcano, which emits fumes as hot as 300 degrees Celsius even in its current stable period. Dr. Oshima has students come up with their own observation themes and methods, and their ideas and viewpoints are "pretty sharp", he says pleasantly.

Striving to understand the mechanisms behind volcanic eruptions

Records show that the Usu Volcano has erupted eight times since 1663. Each eruption in this series began with earthquake swarms that included numerous noticeable earthquakes. The eruptions were accompanied by billowing fumes and the formation of new mountains from ground uplift, the latter of which continued for some time even after the eruptions stopped. In fact, it took several years for all these activities to end, during which time damage was often caused by cinders, ash falls and debris flows. Recent eruptions have occurred every 30 years or so, each of them invariably preceded by noticeable earthquakes.

The last eruption took place in 2000. It caused such damage to the Hokkaido Expressway and the JR Muroran Line that they became impassable. Rising magma lifted the ground surface along part of National Highway 230, a major traffic route, disrupting traffic and ultimately turning the area into a swamp. Parts of areas damaged by crustal deformation were turned into soil erosion control facility sites and have been preserved as remnants of the eruption. Prior to the eruption, the Usu Volcano Observatory promptly informed local governments of signs of the imminent eruption, the expected eruption time, and other details, and provided advice as necessary. In addition to appropriate responses by the local governments, local residents' thorough knowledge of previous eruptions enabled their evacuation without any loss of human life.

Dr. Oshima, who also assists with the region's disaster mitigation activities, finds local residents' full understanding of previous eruptions unique to the region. The residents have accepted that in exchange for periodic volcanic eruptions roughly every 30 years, they receive the volcano's blessing: hot springs. The observatory hosts many fact-finding missions from other local governments with volcanoes, but the necessary levels of preparedness vary depending on volcanic characteristics and local circumstances. Dr. Oshima says he feels a sense of frustration as a scientist when people claim it's possible to predict all



Dr. Oshima inspects instruments at the Kita-gairin observation site. He's been engaged in research at the Usu Volcano Observatory for nearly 30 years.



As part of an earthquake prediction project, the observatory developed the so-called "Oshima System" and is testing it for practical application together with municipalities in Hokkaido.



Former National Highway 230: The 2000 eruption lifted the ground surface, disrupting traffic and ultimately turning the area into a swamp.

Conversation with the Earth with an Eye toward the Future



The Ginuma Crater and the new mountain that formed from the 1977 eruption, a fieldwork site for students.

volcanic eruptions, without realizing that not all volcanoes show clear warnings of eruption.

There are still lots of unknowns surrounding the Usu Volcano. For example, an approximately 1,000-meter-deep boring survey failed to shed light on the depth of the top of the magma body. Crater locations vary with every eruption, making damage prediction and disaster mitigation planning difficult. Dr. Oshima says, "We can't really say we've successfully predicted a volcanic eruption until we've been able to identify the location beforehand and not just forecast when the eruption would occur. People praised our response to the 2000 eruption as a great success, but as a scientist, I believe there was more that could've been done. There's a long way to go before we can elucidate the mechanisms behind volcanic eruptions, because our conversations with volcanoes and with the Earth have just begun. This is a challenge we bequeath to the next generation of scientists."

Eighteen years after the last eruption, the Usu Volcano Observatory continues to keep an eye on the volcano.



| Interview by the President

Guest

Toshihiko Sato

Senior Managing Director,
Citizen Watch Co., Ltd.

Citizen Watch Company has led Japan's watchmaking industry for the 100 years since its foundation. As one of the world's few manufactures d'horlogerie (watchmaking manufacturers), Citizen has introduced its own technologies and designs to the world. Citizen has garnered domestic and international acclaim for its products, and nearly 70 percent of its sales come from overseas markets. In addition to its core watchmaking business, the company also manufactures and sells machine tools, devices and components, and electronic products, continuously rising to new challenges as a global company.

Dr. Toyoharu Nawa, in his second year as president of Hokkaido University and busy working on university reforms, asked Mr. Toshihiko Sato, a Hokkaido University alumnus and senior managing director of Citizen Watch, about his life, the company's philosophy, and his expectations for Hokkaido University, among other topics.

Striving to Carve Out an Exciting Future

Taking on New Endeavors to Respond to Changes on the Horizon

Spending all his time helping the family business and working part-time

Dr. Nawa: Without further ado, let me ask where you're from.

Mr. Sato: I'm from Honhorobetsu Peyaman Bangaichi, Utanobori Town, Esashi-gun, Hokkaido. This address, which includes "bangaichi" (unnumbered location), sounds so out of the way that senior colleagues who saw a copy of my family register when I joined the company would often tease me about my hometown. My house didn't have electricity until I turned four years old, so we were using oil lamps.

Dr. Nawa: What was your childhood like?

Mr. Sato: I disliked skiing to school in winter, but I had to because I needed to climb over a mountain to get there. It was bitter cold in winter, with the temperature sometimes as low as minus 32 degrees Celsius. It snowed, occasionally as much as 50 centimeters at once, and the snow could pile up two meters deep. I woke up at 5AM and cooked breakfast and made boxed lunches for my family. After returning from school, I cooked supper, and when school was off I was on the farm helping my parents with dairy farming. During my elementary school and junior high school years I spent most of my time outside school working.

Dr. Nawa: It was tough, wasn't it?

Mr. Sato: My elder brother went on to high school because he was to take over the family business, but being the second of four brothers, I was told that my parents couldn't afford to pay for my high school. I managed to persuade my parents to let me just take the high school entrance exam and owing to the high score I happened to get, my father allowed me to attend high school as long as I agreed to work my way through school. I worked part-time at a small grocery store on both weekdays and weekends, so I can't remember ever studying back then.

Dr. Nawa: Yet you were admitted to Hokkaido University, which I think is great. What made you choose Hokkaido University?

Mr. Sato: In high school, I spent lots of time playing table tennis and working part-time, but for some reason I had good grades. I was at the top of my class from the third term of my second year onward. Although I'd given up on college due to my family

circumstances, I started to become interested in going to college in the third term of my third year. I decided to go to a national university (due to lower tuition fees) since I had to work my way through it, and I ultimately chose Hokkaido University. I took the entrance exam but couldn't answer most of the questions. I then attended a private cram school in Sapporo while working part-time. I spent two whole years preparing for the entrance exam, sacrificing hours of sleep, before I finally managed to pass.

Dr. Nawa: You worked hard, didn't you?



No matter how fluent you sound in English, you can't make yourself understood without communication skills.

– Mr. Sato

Mr. Sato: I wasn't sure I'd be able to make it physically because I didn't sleep more than four hours a day.

Dr. Nawa: What were your college days like?

Mr. Sato: In those days, tuition fees increased every year, which ultimately left me unable to afford them. I took a leave of absence and worked a high-paying waterproofing job for one year to pay for my tuition fees and living expenses. The president of that company generously asked me to stay, but I went back to college because I thought that once I'd entered, I should graduate.

Struggles in the liquid crystal business and a turning point

Dr. Nawa: What made you decide to work at Citizen?

Mr. Sato: I wanted to join a precision equipment maker in Nagano Prefecture, which is known for having a natural environment that's similar to Hokkaido's, but I couldn't take the job application test for that company. My supervisor at Hokkaido University then told me I might enjoy Citizen if I wanted to work at a precision equipment maker. This was how I chose Citizen. Immediately after joining the company, new



Students must acquire skills to communicate in Japanese first.

– Dr. Nawa

employees were asked to share their aspirations, and I declared my aspiration to become a vice president of the company.

Dr. Nawa: That was great.

Mr. Sato: I got a scolding from my senior colleagues. I was a smart aleck who called a spade a spade.

Dr. Nawa: I think it's just that you had faith in yourself because you'd worked hard from childhood and you'd graduated from college on your own without depending on your parents.

Mr. Sato: You're right. I was overconfident in myself, and this was mistaken as arrogance. There was a senior

colleague who grabbed me by the collar and said I was too cocky, so I set a mental goal of going out for a drink with him. Ultimately I made friends with him, so things turned out fine and I had fun.

Dr. Nawa: Among the various lines of business you've been engaged in, what's left the strongest impression on you?

Mr. Sato: A series of experiences in the liquid crystal business leading up to the establishment of a liquid crystal plant in Hachinohe, Aomori Prefecture, have left the strongest impression. Citizen began R&D on liquid crystal panels in the late 1960s. As my major had been mechanical engineering, I wanted to engage in watchmaking, but I continued to be assigned to the liquid crystal business. In those days, the company was pursuing business diversification, and the liquid crystal display business was one of the company's business segments. I figured that the liquid crystal business would be a difficult challenge for Citizen, but the business kept growing, and in 1985 the company got contracts to manufacture personal computer displays for U.S. companies.

Dr. Nawa: Citizen was manufacturing liquid crystal panels for personal computers?

Mr. Sato: Yes. While developing liquid crystal panels, we were also working to mass produce them because the technology for mass production had not yet been established. Initially, production yields were 20 percent, and naturally the business was in the red. I asked the general manager of the liquid crystal business division why the business had produced no profits, adding that I didn't want to be drawing a salary from an unprofitable business. I was about 27 years old then. I told him I would raise the yield rate to 80 percent, asking him to tell all the employees of the division to follow my instructions. We assembled at 6:00 PM every evening to bring to light all the factors that might cause defects. Eventually, the yield rate rose to 60 percent in one year and to 94 percent in a year and half.

Dr. Nawa: That's great.

Mr. Sato: The general manager was promoted to a director of the company. Although my salary didn't increase much, he rewarded me with a three-month overseas training stint.

Dr. Nawa: Citizen is a great company in that it readily accepts proposals from young people and rewards



them for their achievements.

Mr. Sato: I was thinking about changing jobs after the overseas training, but when I returned home, the general manager told me about the plan to build a plant in Hachinohe based on my ideas and design. I was taken to Hachinohe as if dragged by the scruff of the neck.

Dr. Nawa: It must have been a major turning point in your life.

Mr. Sato: Indeed. My transfer to Hachinohe marked a turning point. I made up my mind to stay with the company for the rest of my career.

Dr. Nawa: Are there people who influenced you in your career?

Mr. Sato: Yes, there are. First and foremost, my father taught me that life isn't easy. When I would play instead of coming straight home from school, my father would come to me by motorbike, give me a scolding, and then return home without taking me back on his motorbike with him. Other people who have influenced me include the top executives of overseas companies that I had opportunities to talk with through my work. I had great experiences talking with them face to face, not just about business models, but also about technical theories, future prospects and various other topics.

Dr. Nawa: Do you speak in English with people overseas?

Mr. Sato: Yes. I don't think it matters whether you're good at English or not. I believe Japanese people should develop communication skills in Japanese before trying to improve their English. No matter how fluent you sound in English, you can't make

yourself understood without communication skills.

Dr. Nawa: Agreed. Students must acquire the skills to communicate in Japanese first. Hokkaido University is working on fostering global leaders, but I often tell faculty members that students must be taught in Japanese until the fourth year because they must cultivate their minds. You can build character by fostering your mind and speaking in your own words. You'll then become able to make yourself understood in English.

Mr. Sato: Exactly. I also believe that learning a foreign language boils down to communication skills.

Dr. Nawa: I believe you can get your ideas across to foreigners because you know your own mind and have the ability to act. Depth of thought can be seen in how one talks.

Mr. Sato: Indeed. People can see right through shallow thinking.

Dr. Nawa: That's exactly what I'd like you to talk about with our students.

Traditions that have been passed down

Dr. Nawa: Next, let me ask about Citizen. What's the origin of the company name?

Mr. Sato: It's from the first pocket watch the company's predecessor developed specifically so that every citizen in Japan would be able to afford one. The then mayor of Tokyo, Shimpei Goto, christened the watch Citizen in the hope that it would be forever loved by the citizenry. The name was later adopted as the company name, and the ideal has since been enshrined in Citizen's corporate philosophy: "Loved

by citizens, working for citizens."

Dr. Nawa: Citizen was founded in 1918 and celebrated its centennial this year. Does Citizen have values or traditions that it has passed down during its long history?

Mr. Sato: Citizen was established during Japan's drive to catch up with the West—a period when the people were full of hope and the passion to develop products that would excel in global markets. Citizen opened a watch school in 1921 to offer its engineers a superior technical education. Since the beginning, the company has been willing to take on new challenges and has released numerous world-firsts, and this pioneering spirit has been passed down to the present. The company continues to develop innovative products based on the "Better Starts Now" belief that "it's always possible to make something better, and now is the time to start doing it." Actually, we unveiled another world-first in March of this year: the Cal.0100 Eco-Drive movement with an annual accuracy of ± 1 second. We're planning to put it on the market in the near future. Our manufacturing sector has also continually risen to new challenges to develop skills and techniques, and our veteran engineer won the Monodzukuri Nippon Grand Award's Prime Minister's Award in January of this year.

Dr. Nawa: Citizen has steadily passed down its traditions, hasn't it?

Mr. Sato: Watches aren't just tools for checking the time. We're committed to continuously developing new technologies to respond to changes on the horizon so that we can carve out an exciting future in timepieces.

Dr. Nawa: You said earlier that approximately 70 percent of sales come from overseas markets. Could you please elaborate on the company's global strategy?

Mr. Sato: Citizen currently operates in more than 130 countries. To cater to ever-diversifying customer needs, a multi-brand strategy is effective, because leveraging multiple brands allows Citizen to quickly respond to market needs.

Dr. Nawa: Is there anything you hope for Hokkaido University?

Mr. Sato: I have the impression that there are fewer ambitious researchers at private companies. Corporate researchers may lack the real desire to create novel business models through their own R&D efforts. I believe ambitious research is possible at Hokkaido University, so I hope students will be ambitious, as Dr. Clark suggested, and engage in research that will contribute to the well-being of society.

Dr. Nawa: Before ending this interview, I'd like to ask for a comment for our students.

Mr. Sato: I'd like them to pursue their studies while asking themselves what their ambitions are and what boundaries they want to push. There are things they're uniquely qualified to do in Hokkaido. I also hope they'll visit other countries while at college to learn about other cultures and lifestyles.

Dr. Nawa: I also think it's important for them to reflect on themselves in the cold, severe Hokkaido climate. Thank you for giving us your valuable time today.

I'd like them to pursue their studies while asking themselves what their ambitions are and what boundaries they want to push.

– Mr. Sato

Toshihiko Sato

Senior Managing Director, Citizen Watch Co., Ltd.

Born in Hokkaido in 1955, Toshihiko Sato received his bachelor's degree from Hokkaido University's Faculty of Engineering. In 1981, he joined Citizen Watch Co., Ltd., where he has been the director and general manager of the Technology Department of Citizen L.C. Tec Co., Ltd., the director and head of the Hachinohe Plant of Citizen Displays Co., Ltd., and the general manager of the R&D Division of Citizen Holdings Co., Ltd. (today's Citizen Watch Co., Ltd.). He became a director of Citizen Watch in 2015 and a managing director in 2017. He's been the senior managing director since April 2018.



I also think it important for them to reflect on themselves in the cold, severe Hokkaido climate.

– Dr. Nawa

Toyoharu Nawa

President, Hokkaido University

Born in 1954 and from Hokkaido, Toyoharu Nawa received his bachelor's degree at Hokkaido University's School of Engineering and his master's degree at the university's Graduate School of Engineering. He is a Doctor of Engineering (Tokyo Institute of Technology). He joined the Central Laboratory of Chichibu Onoda Cement Corp., before being hired as an Assistant Professor by Hokkaido University's Graduate School of Engineering in 1997. He became a Professor in the Graduate School in 2004, before holding the posts of the Dean of the Faculty of Engineering, Dean of the Graduate School of Engineering and Dean of the School of Engineering at Hokkaido University. He has been in his current position since April 2017.

Refining: Cell Biology



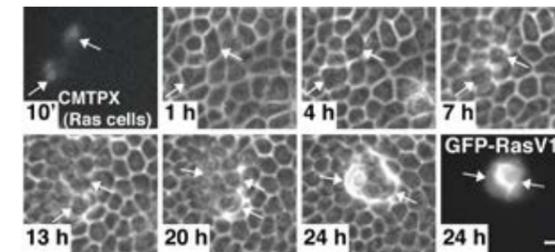
Laying the Foundation for Cancer Prevention Studies with Cell Competition

Yasuyuki Fujita

Professor, Institute for Genetic Medicine

Yasuyuki Fujita, M.D., specializes in fundamental medicine, biological science, and cell biology. He received his bachelor's degree from the Kyoto University Faculty of Medicine and worked for a hospital before going on to earn his Ph.D. at the Kyoto University Graduate School of Medicine. He served as a postdoctoral fellow at the Max Delbrück Center for Molecular Medicine and then a group leader at the MRC Laboratory of Molecular Cell Biology, the University College London (UCL). He's been a professor at the Hokkaido University Institute for Genetic Medicine since 2010. He is an up-and-coming researcher and has received the title of Hokkaido University Distinguished Professor.

Data showing the behavior of Ras-transformed cells surrounded by normal epithelial cells. The transformed cells are seen to deviate over time as if expelled by the normal cells.



Elimination of cancer cells by normal cells

Despite rapid medical progress, there are still many patients who lose their lives to cancer. It is widely known that cancer develops when normal cells mutate into cancer cells due to some fault in one or more of a cell's genes. If researchers could identify early signs of normal cells turning cancerous, that would lead to cancer prevention, ultra-early-stage diagnosis and ultimately the development of cancer prevention drugs. Today, however, none of these are anywhere near possible because current pathological diagnostic technologies can only identify relatively advanced-stage cancer cells. Against such a background, Professor Yasuyuki Fujita of the Hokkaido University Institute for Genetic Medicine has been engaged in progressive research focusing on a phenomenon known as cell competition.

Professor Fujita says he's had ambitions to research and cure cancer since he was in high school. After graduating from the Kyoto University Faculty of Medicine in 1990, he worked for three years at Maizuru Municipal Hospital before going on to graduate school. He says, "I'd made up my mind to pursue a career in medical research, but I thought it'd be shallow if I engaged in basic research without any experience of actually working with cancer patients." Those experiences treating cancer patients have provided to be a powerful motivation to keep his research going. After three years of experience as a hospital doctor, he earned his Ph.D. from the Kyoto University Graduate School of Medicine before becoming a postdoctoral fellow at the Max Delbrück Center for Molecular Medicine in Berlin in 1997. In 2002, he became a group leader and had his own lab at the MRC Laboratory of Molecular Cell Biology at the University College London (UCL). It was about this time when he began to engage in cell competition studies.

In conventional cancer research, normal cells and cancer cells are cultured separately in order to compare their differences. However, Professor Fujita focused on phenomena that occur at the interface between normal cells and cancer cells when cancer cells are surrounded by normal cells. The phenomena were largely unknown; a mystery within the field of cancer research. Professor Fujita began to study the phenomena using newly developed cell culture systems. He vigorously advanced his research, and as there were no previous studies on this topic, he spent great time and effort to create the environment necessary to materialize experiments from his ideas. Subsequently, he discovered that normal cells can eliminate cancer cells from their community. Known as "cell competition," in this phenomenon cancer cells surrounded by normal cells are exposed to stress and excluded by the surrounding normal cells. His idea about cell competition was inspired by a graduate school classmate who was totally uncooperative. Professor Fujita thought this classmate was truly cancer-like, and while wondering what he should do about him, Professor Fujita realized he could think of the situation in

terms of a cell community. The idea was that "Villains—those too harmful to be handled by ordinary people—are handled by the police, but for slightly wayward boys like my classmate, the people around them try to do something about them. Similarly, while malignant cells are handled by immune cells, slightly wayward cells—those in their initial stage of malignant transformation—might be handled by neighboring normal cells rather than by immune cells."

Striving for the development of a new cancer prevention and treatment strategy

Professor Fujita has published his findings about cell competition in journals from 2009 onward, causing a sensation worldwide. Although experiments proved that normal cells have the ability to eliminate cancer cells, the mechanisms underlying the phenomenon have yet to be fully explained. "In cell competition, it remains unknown how normal cells recognize transformed cells," says Professor Fujita. "It's also largely unknown what differences in transformed cells are recognized by normal cells, how normal cells recognize such differences, and how normal cells eliminate the transformed cells upon recognizing the differences."

While working to elucidate the mechanisms of cell competition, Professor Fujita is also seeking to develop a new cancer prevention and treatment strategy. Identifying early signs of cancer cell elimination by normal cells will lead to the realization of ultra-early-stage cancer diagnosis, which has been impossible until now. Furthermore, the development of drugs to enhance the normal cell's inherent ability to eliminate cancer cells may open potential avenues for cancer prevention, a topic which has been considered to border on the taboo. "Of course, I'd like to find a cure for cancer," the professor says, "but the fact of the matter is that little is known of how cells recognize each other. I'd like to shed light on those mechanisms in some way." Professor Fujita continues to challenge himself in studies to fully understand and apply cell competition to minimize the number of cancer patients.

Relaxation

Stress management through badminton

Busy with research and other work, Professor Fujita spends his lunch break playing badminton at the campus gymnasium—an effective way for him to eliminate stress.



Encountering, Learning, and Communicating: Broadcasting People's Thoughts, Charms, and the Unknown



Ken Gamada

Radio Personality, Timely-Office Co., Ltd.

| School of Letters Graduate |

Mr. Ken Gamada is a graduate of Hokkaido University and a Tokyo-based veteran radio personality with approximately 20 years of experience. He also makes appearances on TV and narrates television commercials. During the interview, he talked about his thoughts on his career and college days.

What made you pursue the career of radio personality?

Back in college I was living in a boarding house, and all I had was a radio. I loved listening to the radio and music, and I'd spend all day listening to FM radio. I was particularly influenced by the popular narrator Tatsuya Jo, who served for decades as the first host of the program Jet Stream. I admired him, thinking I wanted to be like him someday. That's how I came to aspire to become a radio personality, and I still hope to work for Jet Stream.

Has any work you've done left a strong impression on you?

Every project is interesting to me because no two are the same. I find it particularly fascinating that I can learn a lot

from all the people I interview on radio programs. I've served as a stadium disc jockey for the JEF United Ichihara Chiba professional football team since 2001, and the team left a vivid impression on me when it won the title of the Nabisco Cup for the first time in 2005. I was pleased with the opportunity to see an underperforming team become strong over the years and to introduce the players at the final.

How would you describe the work of a radio personality in a single word?

Working as a radio personality boils down to encountering unknowns. It gives me access to things I don't know, giving me the opportunity to know what I don't know.

Could you share some tips on how to make an interviewee open up and talk?

I suppose interviewers are like batting-practice pitchers. If I compare an interview to batting practice for the "two-way player" Shohei Ohtani, what spectators want to see is how great Ohtani is as a slugger, not the types of pitches the

batting-practice pitcher will throw. So if I were the batting-practice pitcher, the first thing I'd do is to look into what pitches Ohtani hits best. Naturally, I'd have to be able to throw difficult ones, because lobbing softballs would bore the crowd. I'd have to pitch at about 130 km/h, if not 160 km/h, and maintain command by moving through several types of pitches in my repertoire. I'd work to have the spectators impressed by letting Ohtani hit low outside curves, for example. To make that happen, I'd need the skill to pitch such curves. This is exactly what I do as an interviewer, too. As a batting-practice pitcher, I research the player in advance. If the player is good at hitting inside balls, I throw plenty of inside balls with the occasional low outside ball to keep the player focused and respectful of me. This is what the spectators really want to see. Likewise, an interviewer has to prepare for the interviews and then ask the best questions while assessing the reactions of the interviewee.

What was a turning point in your career?

The turning point came when I started a radio talk show in 2006, titled the Radio Version of Gakumon-no-Susume (Encouragement of Learning). I had experience in narration and deejaying for live morning programs, but I was poor at interviewing—or so I thought. I'd also found telephone interviews challenging. Anyhow, the new program began, and I honestly thought it would be a challenge to keep an interview going for an hour, but I gave it a try because I was given the opportunity. It was difficult at first, but I gave it my all to find myself, and lo and behold, I'm pretty good at it today. I'm grateful for the opportunity. I've drawn on that experience to serve as an emcee for events and to conduct interviews onstage.

Let me ask you about your college days. What made you decide to enter Hokkaido University?

At cram school, I read Ryoma-ga-Yuku, a novel about the life of Ryoma Sakamoto, one of Japan's most revered historical figures. The book convinced me that I should aspire to do something great as a man. I chose Hokkaido University because I wanted to head to a place where I had no friends or family to support me and "be ambitious", without fully understanding what that meant. I applied for the Faculty of Letters since I'd been interested in behavioral science and psychology.

What impressed you most during college?

After passing the entrance exam, I decided to join the rowing club when I read a brochure of sports clubs that was sent by the university together with other documents. Rowing is a sport which many people begin at college, so I thought my late start wouldn't handicap me. The decisive factor in choosing the club was the phrase "A chance to become No.



Live on the air for a radio program where Mr. Gamada works as a personality on Wednesday and Thursday mornings; his lovely voice can be heard nationwide.

1 in Japan" on the club's page in that brochure. The Hokkaido University rowing club became No. 1 in Japan in 1954, and I thought it was great. I always biked from the university to the boathouse in Barato—a 10-kilometer trip that took about an hour in a headwind but only 20 minutes in a tailwind. It's a wonderful memory for me today.



Mementoes from Ken Gamada's college days: When he crewed a boat for the first time, he was surprised how far a single stroke could propel him, he says.

What's your plan going forward?

I think the time to build my career is limited. I've been in this for about 20 years—time has flown by. I think I should focus on small goals in front of me, tackling one at a time. Since time is limited, I have to stay focused and not succumb to distractions.

You've also been engaged in lots of sports-related work. What are your thoughts about the Tokyo 2020 Olympic and Paralympic Games?

I'm very much looking forward to the Games. My dream is to emcee the opening ceremony of the Olympics to roaring cheers at the new national stadium. I'd also like to work at various sports competitions.

Finally, do you have a message for current students at Hokkaido University?

As an alumnus, I really think Hokkaido University is a great institution. I hope current students will appreciate the wonderful environment they're in and enjoy campus life. Since time is really limited, I hope they'll enjoy each day to the fullest.



At the studio where the Radio Version of Gakumon-no-Susume was being recorded, with Mr. Takeshi Tsuruno as a guest.

PROFILE

Born in Tokyo, Ken Gamada received his bachelor's degree in 1991 from the Hokkaido University Faculty of Letters (Department of Behavioral Science). After working for Mitsukoshi, Ltd., a Japanese department store chain, he began working as a radio personality and narrator in 1999. He has been active in various fields, making appearances on TV and radio, narrating commercials, and serving as a stadium disc jockey. Having been involved in many activities related to the Olympics and other sporting events, he hopes to play an active part in the Tokyo 2020 Olympic and Paralympic Games.

This issue features contributions from HU Ambassador Christofora Hanny Wijaya, representative of the Liaison Office in Indonesia, and HU Partner Evangeline Cancio Amor, representative of the Liaison Office in the Philippines. Both have greatly contributed to the Ambassador and Partner System and are active in their respective liaison offices.



 **Dr. Christofora Hanny Wijaya**

Professor, Head of Hokkaido University Liaison Office in Indonesia, Bogor Agricultural University (IPB), Chairperson of Hokkaido University Indonesian Alumni Club, appointed as a Hokkaido University Ambassador in September 2016

The first thing that came to my mind when I received the offer to become a Hokkaido University Ambassador was a mixed feeling of honor and doubt; I wasn't sure that I was the proper candidate for this position. On the other hand, I also felt I had an obligation to do something good for Hokkaido University, and saw this as an opportunity for me to give back to the institution which helped propel my career. I do hope I can do a lot to help HU become one of the 100 top universities in the world.

At HU, I studied in the Department of Agricultural Chemistry for my master and doctoral degrees. My time at HU not only sharpened my skills to work as a professor in Bogor Agricultural University (IPB), but it also gave me an opportunity to create a dream and the tools to pursue real action to achieve that dream. Even now, I am still working on my dream to "create a better world by investing in people as the most valuable resource through love, honesty, passion, and education in the agriculture field".

The Hokkaido University Liaison Office in Indonesia was established in 2017 and provides information about services such as research opportunities, the summer school program, student exchange programs, and scholarship programs between HU and IPB. Daily operations are supported by volunteers affiliated with HU, such as alumni and former PARE and HUSTEP participants. I hope that the HU Liaison Office in Indonesia (LO Hokudai) can provide not only information, but also work toward concrete action in implementing available MoUs and benefits for both countries.

I love Sapporo very much and consider it my second home town; a beautiful, clean and "warm" city with hearty people. We do not have snow here in Bogor, Indonesia, so sometimes I miss those beautiful (although very cold!) days in the "winter wonderland." I also love that "spring spirit" when the leaves start appearing after the long winter, and that beautiful, romantic "Koyo" (autumn leaves) scenery during the autumn. However, I do feel blessed as well living now in Bogor since I don't need to wear a

coat or shovel snow!

In conclusion, I would like to invite all HU alumni from all over the world to feel free to contact us if you have any inquiries. It is our destiny to come into one "Wa" (circle) as a big family of HU, and as family members, it is our obligation to help each other. I am waiting for your comments, suggestions, and proposals for our next step together in the very near future. Finally, to quote from Clark-sensei, "Boys (and Girls) should be Ambitious", shouldn't we? Gambarimashou!

Yoroshiku onegai itashimasu!

¹ Program to Foster Pioneers to Transform the Populations-Activities-Resources and Environments (PARE) Chain. PARE is conducted by the PARE consortium comprised of 6 partner universities in Indonesia and Thailand.

² The Hokkaido University Short-Term Exchange Program. A 'junior year abroad' type program designed to provide undergraduate students from affiliated universities with the opportunity to study at Hokkaido University.



1. The Appointment Ceremony for Prof. Wijaya at Hokkaido University.
2. The Appointment Ceremony for HUAPs from Indonesia at Jakarta, Indonesia.
3. Traditional Sundanese dancers at the opening ceremony of the HU Liaison Office in Indonesia.
4. Professor Hanny and volunteers of the Liaison Office wearing HU symbol printed original batik (a traditional ware of Indonesia).

I felt honored to be asked to become a Hokkaido University Partner. I was excited to facilitate and strengthen the connection between Hokkaido University and University of the Philippines Dillman, especially considering the ongoing collaboration between the two universities on the Diwata micro-satellite project.

In the first quarter of this year, the Hokkaido University Liaison Office was established in the University of the Philippines – Diliman, which is the first of its kind. Because renovations are planned in the original location, we proposed to call it the HU Nook until a permanent place is built after the renovations are done. The HU Nook is envisioned to be a place where students interested in knowing more about Hokkaido University can go to and find information they are looking for. It also provides a facility

for tele-conferencing between current and future collaborators of Hokkaido University and UP Diliman where they can interact and hold discussions.

The HU Nook is housed inside the Office of International Linkages-Diliman, which is the main office in charge of the relations between students and faculty of UP Diliman and its various partner universities. Hosting the Nook supports the International Linkages-Dillman Office in carrying out its main activities: international student mobility, faculty and REPS (Research, Extension, and Professional Staff) mobility program, joint academic and extramural program, and research, creative and extension work.

Quezon City, where The University of the Philippines-Diliman is located, is the largest city of Metropolitan

Manila and the former capital of the Philippines. Sapporo and Quezon City both enjoy a summer season but where Sapporo's daily mean temperature during the summer is about 22°C, Quezon City's is about 33 °C. Another stark difference is that Sapporo experiences four seasons, spring, summer, fall, and winter, while Quezon City and the rest of the Philippines experience only the summer and rainy seasons.

I invite you to explore many possibilities and look forward to welcoming you to the University of the Philippines-Diliman, and I am excited to witness productive engagement between our two universities.

Mabuhay!



1. International students at the University of the Philippines Dillman. (Credit: UP Diliman Information Office)
2. UP Diliman Administration Building. (Credit: UP Diliman Information Office)

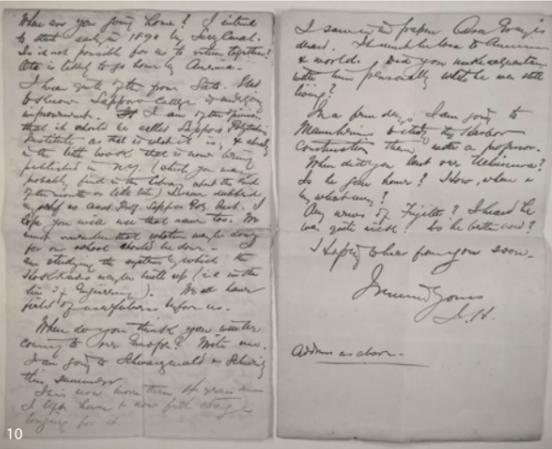
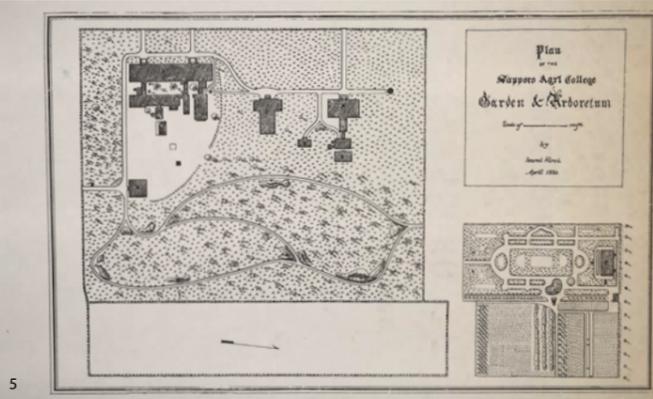
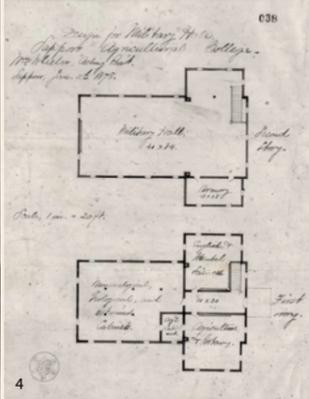
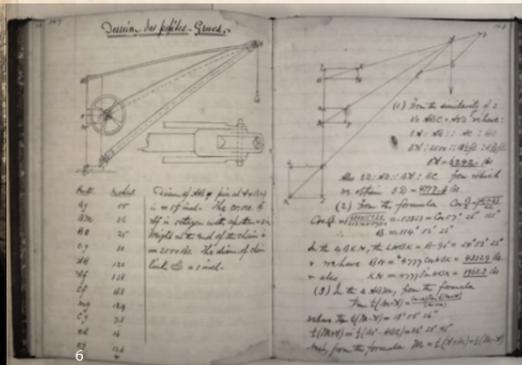
3. Quezon Memorial Circle, Quezon City, Philippines. (Credit: Communications Coordination Center, Quezon City Local Government)
4. Hokkaido University Liaison Office Opening Ceremony group photo. (Credit: Office of International Linkages Diliman)

140 years of challenge

SCENE-9

1887-1924

Sapporo Agricultural College's Engineering Division



1. Toyohira Bridge, designed by William Wheeler. (1877, Hokkaido University Archives)
2. Practical training in surveying by the Department of Civil Engineering. (ca. 1908, Hokkaido University Archives)
3. W. Wheeler. (ca. 1879, Hokkaido University Archives)
4. Rough sketch of the drill hall, by Wheeler. (1878, Hokkaido University Archives)
5. Schematic of the Sapporo Agricultural College Garden and Arboretum, by Isami Hiroi. ("Fourth Annual Report of Sapporo Agricultural College, 1879-80")
6. Isami Hiroi's notebook for the civil engineering course taught by C. H. Peabody. (1881, Hokkaido University Archives)
7. Graduation photo of the Department of Engineering's inaugural class. (1891, Hokkaido University Archives)
The third person from the left in the front row is Professor Isami Hiroi, and next to him (the fourth from the left) is Professor Shosuke Sato. On the far left in the second row is Takimatsu Hirano, and on the far left in the third row is Bunkichi Okazaki.
8. Opening Ceremony of the School of Engineering. (1926, Hokkaido University Archives)
9. Professor Isami Hiroi of the Department of Engineering. (ca. 1896, Hokkaido University Archives)
10. A letter dated January 20, 1887, sent from Isami Hiroi to Kingo Miyabe. (Hokkaido University Archives)
Hiroi suggests that Sapporo Agricultural College be renamed "Sapporo Polytechnic Institute."

Teaching both Agriculture and Engineering

Hokkaido University, which was originally founded as Sapporo Agricultural College (SAC), has its roots in agriculture, but since its inception it had also set its sights on engineering. In fact, the Kaitakushi (Hokkaido Development Commission) Provisional School, the predecessor of SAC which opened in Tokyo in 1872, had planned to foster experts who would be engaged in Hokkaido's development in the fields of engineering (geology, surveying, mining, architecture, civil engineering, and mechanics) and agriculture (agricultural science, botany, zoology, and animal husbandry). However, the plan fell through because of the lack of faculty members' competence and students' academic ability. After its relocation to Sapporo, the school opened as SAC in 1876. It was one of the earliest institutions of higher education specializing in agriculture in Japan, along with the Komaba School of Agriculture (today's Faculty of Agriculture at the University of Tokyo), which opened in 1878.

Joining the faculty of SAC together with Vice President W. S. Clark was W. Wheeler. Credentialed as a civil engineer, Professor Wheeler taught classes on civil engineering, mechanics, and mathematics, among other classes. He also doubled as a civil engineer for the Kaitakushi, designing the Toyohira Bridge over the Toyohira River and the SAC Drill Hall (today's Sapporo Clock Tower). C. H. Peabody, who succeeded Wheeler in 1878, specialized in mechanical engineering and taught mathematics and civil engineering. Through their guidance, engineering was taught at SAC from the very start.

Isami Hiroi

A member of the second graduating class of SAC, Isami Hiroi studied under the tutelage of professors Wheeler and Peabody. After graduating in 1881, Hiroi moved to the United States in December 1883, where he engaged in flood control on the Mississippi River as an engineer.

SAC put a greater emphasis on engineering education after

Shosuke Sato, a graduate from SAC's inaugural class, was appointed as professor. In 1886, Sato presented a written opinion on the reorganization of SAC to the Governor of the Hokkaido Government, stressing the need to establish an engineering department for the construction of roads, bridges, drainage canals, river ports, railroads, and houses across Hokkaido, as well as for the surveying of the wildernesses on this Northern island.

Approval was given for the establishment of a Department of Engineering as Sato requested, and it was planned that Hiroi, who had been in the United States, would teach in the department. SAC appointed him as assistant professor in April 1887 with an order that he study in Germany. Hiroi studied civil engineering and hydraulic engineering at the Karlsruhe Institute of Technology and the University of Stuttgart. While in Germany, Hiroi expressed his delight at the ongoing reorganization of SAC under Sato's leadership in his letter to Kingo Miyabe, also a member of the second graduating class,

"I hear quite often from Sato. Glad to know Sapporo I am of the opinion that it should be called Sapporo

adding that SAC should be renamed Sapporo Polytechnic Institute.

SAC Department of Engineering

After returning home in August 1889, Isami Hiroi assumed the post of professor at the SAC Department of Engineering. He proposed in 1891 that the SAC be renamed Sapporo Agricultural and Engineering College and that the Department of Engineering's curriculum be revised. Although his proposal for the school's renaming was not accepted, a more detailed curriculum was developed that covered roads and railways, transportation and traffic theory, beam bridges, masonry, architecture, river port improvement and canals, sanitary engineering, water supply work, and electrical engineering.

The Department of Engineering turned out 16 graduates until its abolition in 1896. These include Bunkichi Okazaki, who took charge of flood control on the Ishikari River; Tsuneharu Ono, who was responsible for port repairs as an engineer for Karafuto Prefecture; Yoshitaro Togawa, who was in charge of the construction of the Port of Keelung as an engineer for the Government-General of Taiwan; Yukuma Totake, who was responsible for the construction of subways in Tokyo; Takuichi Omura, who served as director general of the Railway Agency of the Government-General of Korea and president of the South Manchuria Railway Co., Ltd.; Kenzaburo Mashima, who advocated for the earthquake resistance of flexible structures; and Suetaro Sakaoka, who became professor of Hokkaido University's School of Engineering.

SAC provided advanced engineering programs from its inception. The Department of Engineering was small, as it admitted only several students each year, but it was the best institution of higher education for engineering after

College is undergoing improvement. Polytechnic Institute as that is what it is."

the Technical College of Imperial University (previously the Department of Industry's Engineering Section), which opened in 1873 and is today the University of Tokyo's Faculty of Engineering.

Following the path carved out by our forebears in engineering

Following the abolition of the Department of Engineering, SAC attached importance to technical education and established a new Department of Civil Engineering. The new department was later reorganized into the Hokkaido Imperial University Civil Engineering Department, which focused on the development of engineers. After SAC became the Agricultural College of Tohoku Imperial University and then Hokkaido Imperial

University, the School of Engineering was established in 1924. Hokkaido University's agricultural roots stemming from its days as SAC are often emphasized, but the narrow path in engineering carved out by H. Wheeler has widened tremendously thanks to the contributions made by Isami Hiroi and those involved in the Department of Engineering, the Department of Civil Engineering, the Hokkaido Imperial University Civil Engineering Department, and the Hokkaido University School of Engineering.

Hokkaido University HISTORY 1887-1924

1887 April	Sapporo Agricultural College appoints Isami Hiroi as assistant professor and orders that he study in Germany.
September	Sapporo Agricultural College establishes the Department of Engineering (higher education course).
1888 August	Isami Hiroi suggests that Sapporo Agricultural College be renamed "Sapporo Polytechnic Institute."
1889 September	On returning home, Isami Hiroi assumes the post of professor in the Department of Engineering.
1891 February	Professors Isami Hiroi and Bunzo Sugi of the Department of Engineering propose that Sapporo Agricultural College be renamed Sapporo Agricultural and Engineering College.
October	The Department of Engineering curriculum is revised.
1896 August	The Department of Engineering is abolished.
1897 August	Isami Hiroi resigns from his post of professor of Sapporo Agricultural College.
September	The Department of Civil Engineering (engineer course) is established.
1918 April	Hokkaido Imperial University is established, and the Department of Civil Engineering is reorganized into the Hokkaido Imperial University Civil Engineering Department.
1924 September	The School of Engineering is established.

Hokkaido University Archives

This facility collects, classifies and preserves historical documents and records of Hokkaido University. It also conducts investigations and research on its history.



The 1st General Assembly Meeting of the Association of Institutions of Higher Education of the Russian Federation and Japan

The meetings were held as a part of the Human Resource Development Platform for Japan–Russia Economic Cooperation and Personnel Exchange (HaRP) at both the Hokkaido University Conference Hall and Keio Plaza Hotel Sapporo.

The assembly opened with remarks from Hokkaido University President Toyoharu Nawa, who acted as representative of one of the organizing universities and co-chair of the meeting. Following the opening ceremony, faculty members of Hokkaido University delivered lectures to the attendees following the General Assembly Meeting theme of the “Promotion of Human Resource Development for Japanese–Russian Economic Cooperation and Personal Exchange.” The following day, Prof. Victor Sadovnichy, Rector of Lomonosov Moscow State University, gave a keynote speech about the history of the Japanese–Russian Forum of Rectors and the Russian Rector’s Union.

Three parallel sessions under the subtopics “Personnel Exchanges,” “Health and Medicine,” and “Regional Development” were held as well as the HU–MSU Round Table “Russian–Japanese Cultural Dialogue.” In each parallel session, exchange plans were introduced by each university and there were active discussions concerning the promotion of future inter-university exchanges. President Nawa and Rector Sadovnichy agreed upon a shared vision of a new era in Japan–Russia inter-university exchanges, promising that both universities would lead the future of these exchanges together.

In the last part of the General Assembly Meeting, a communique was created based on the outcomes of the parallel sessions and the Japan–Russia Student Forum discussions. The results of these discussions included the establishment of the Committee for Personnel Exchanges

between Japan and Russia, the Japan–Russia Student Union, and the Steering Committee for Specialized Sections. In addition, both sides agreed to promote transdisciplinary exchanges among young researchers, interdisciplinary research, and industry–academia collaborations.

Coinciding with the General Assembly, the Japan–Russia Student Forum was held on May 18th and 19th in the Conference Hall of Hokkaido University. The purpose of the forum was to build mutual understanding and friendly relations through student exchanges. 34 students in total from Japan and Russia participated in the forum and earnestly discussed the proposed Japan–Russia exchanges for many hours. The students proposed the establishment of the Student Union, which was agreed upon and praised by both the Minister and Consul.



President Nawa and Rector Sadovnichy of Lomonosov Moscow State University holding the communique.

Launch of the Hokkaido University Future Investment Program

Since the establishment of the Hokkaido University Frontier Foundation in October 2006, we at the university have offered various forms of support to students, including those from outside Japan, thanks to the generous contributions made by faculty and administrative members, alumni, corporations and other organizations.

To further enhance this support, we have established the Hokkaido University Future Investment Program as part of the Hokkaido University Frontier Foundation. This program is run by donations from alumni in Japan and abroad to support the studies of working students who are struggling to support themselves and to aid extracurricular activities, including overseas study.

We greatly appreciate the support and cooperation of our alumni members.



Hokkaido University Future Investment Program

It’s you who will pioneer the future of Hokkaido University.

This program is for alumni who wish to donate funds to support current students. Visit the Hokkaido University Frontier Foundation website at:

<https://www.hokudai.ac.jp/fund/mirai.html>

Hokkaido University Future Investment Program

Search



Footsteps of Winter

Photographer: Akihito Yamamoto



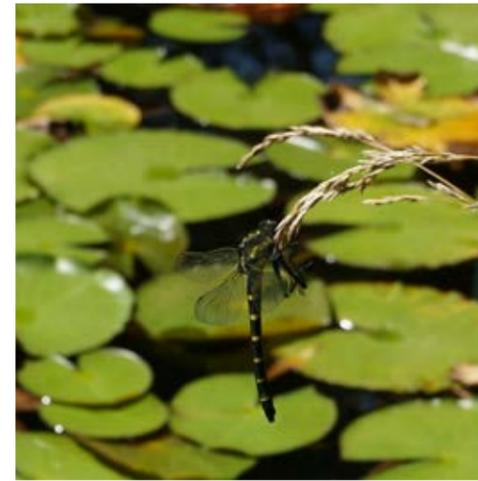
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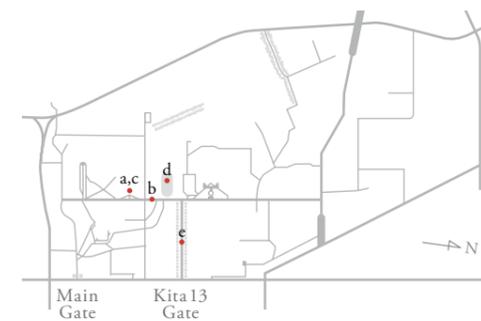


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Hokkaido's short summer is gone, and autumn breezes are in the air. The seasons change so quickly. Before long, trees will take on their autumnal hues, enlivening the landscape on campus.

When the seasons change again, and the campus becomes covered with a thin layer of snow, the trees brace themselves against the cold of winter. Those trees turn vivid green again in the spring, with beautiful blooms, refreshing our memory of the appeal of the four seasons.

Listen closely and you'll hear the quiet footsteps of the approaching winter.



- a. Hokkaido University Museum
- b. Main Street
- c. Hokkaido University Museum
- d. Ono Pond
- e. Ginkgo Avenue

