HOKKAIDO UNIVERSITY magazine 2014

The Dinosaur Hunter

Could Dinosaurs have survived the meteor?

SPECIAL LIFT-OUT: Launching our brand new MODERN JAPANESE STUDIES PROGRAM

Delving into the Future with GIFT 'Global Issues Forum' for Tomorrow'

Veterinary Education Across Borders

Winter in Hokkaido Photography Competition

To the Big Apple! A Hokudai students journ NEW YORK

Sustainability Weeks Poster Contest goes GLOBA



Message from the President

Welcome to the 2014 edition of the Hokkaido University Magazine...



Keizo Yamaguchi President, Hokkaido University

This year's Hokkaido University Magazine is once again a testament to the depth and breadth of the research which is taking place within this great academic institution.

Few universities in Asia can boast such robust research activity, and these pages give you just a snapshot of our strengths, from research being conducted which causes us to rethink the way dinosaurs lived on the earth, to managing and controlling the spread of infectious diseases.

I am also very excited about the launch of our new Modern Japanese Studies Program, which will begin accepting students in October 2014. The development of this brand new course is a major step forward for Hokkaido University in our ambition to becoming a truly global campus.

I hope you enjoy reading the 2014 Hokkaido University Magazine.

Keigo Yanguchi

Where else would you choose **?**

TOP 10 UNIVERSITY IN JAPAN

In 2013, Hokkaido University was ranked equal 4th in Japan by the Academic Ranking of World Universities and in the world's top 150. Since our inclusion as one of the Imperial Universities back in 1907, we have remained within the top tier of universities in Japan.

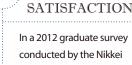


In a special edition of the Asahi Newspaper, Sapporo Campus was voted the most beautiful in Japan. Of the 9350 who responded to the questionnaire, more than 40% voted for Hokkaido University (2009).

SAPPORO : MOST DESIRABLE CITY

In the last three surveys conducted from 2007, 2010, and 2012, Sapporo has consistently ranked in the top 3 cities in Japan to live. *SBI Life Living

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HIGHEST

STUDENT

conducted by the Nikkei Newspaper, Hokkaido University graduates gave us the overall highest satisfaction ratings of all Japanese universities.





Letter From for the for the for the formed to the formed t

Hokkaido University is proud to bring you the 2014 edition of the Hokkaido University Magazine. This is our third edition and similar to previous years, this edition features all of our regular items as well as providing a more immediate look at university wide research taking place across the campus. We also present to you important news covering the University - and in this edition - a HU Magazine first! We include a special lift-out featuring our brand new Modern Japanese Studies Program. Be sure to tell your friends about this exciting new bachelor's degree offering starting this year.

This year our cover page article,' Dinosaur Hunter' is a fascinating piece on Professor Yoshistugu Kobayashi who belongs to the Hokkaido University Museum and researches the Earth's previous rulers - the dinosaur. He gives us his theories on one of the remaining mysteries of the Earth - Exactly how did the dinosaurs become extinct? We also give a run-down of last year's Global Issues Forum for Tomorrow event, the flagship event of Sustainability Weeks. Another great article outlines the work we are doing internationally in the field of Veterinary Medicine. Be sure to check out 'Veterinary education across borders.'

In 'From the Land of Fire to the Land of Snow,' international student Alibay Mammadov provides an entertaining account of his country and how he came to study at Hokkaido University. We also tell the story of one of our students going to New York City and conducting research at Columbia University. Winning entries from our third annual photography competition are also featured which attracted more entries than ever this year. The theme this year was 'Winter in Hokkaido' and many students successfully showcased the natural beauty of this island in winter. Find out how to enter this year's competition on page 20.

There are these articles and so much more in the 2014 Hokkaido University Magazine. We hope you enjoy reading this edition, and we invite you to continue the conversations we have begun here. Feel free to send us any comments or queries to pr@oia.hokudai.ac.jp

WARREN POHL & ELIZABETH TASKER

THE DINOSAUR HUNTE Could dinosaurs have survived the meteor?

On the third floor of the Hokkaido University Museum is the cast of a skeleton from an ancient giant crocodile. Stretching a full 7 metres in length, its bones show numerous holes and breaks: evidence that this was a male, fighting for his territory and mates. "It's my baby," says Assistant Professor Yoshitsugu Kobayashi fondly.

This might be a surprising view of a reptile that would clearly consider humans snack-sized delights, but Kobayashi is no stranger to massive creatures. In fact, he is a dinosaur hunter.

66 million years ago, a meteor slammed into the Earth and raised a cloud of dust so thick that the Sun's rays were obscured from the majority of the Earth's surface. It is this event that many believe is responsible for the extinction of the dinosaurs; the colossal beasts that began to roam the planet more than 200 million years before humans first appeared.

Kobayashi's search for the true story of the Earth's previous rulers has taken him on a pan Pacific sweep of countries that has recently landed him in Alaska.

"You don't know where to start digging," Kobayashi explains as he describes how to locate dinosaur remains. "Statistically, there is probably bone in the area you are in, so you just walk around and look."

Despite this sounding like the idiom 'to find a needle in a haystack', Kobayashi's team has made an important find every season that they have been in the field.



Part of his success is learning to differentiate rock from bone, since exposure to air and erosion frequently brings small fragments of dinosaur skeleton to the surface. Once located, Kobayashi's team can dig to uncover what is more deeply buried and return with heavier equipment if necessary. Kobayashi's discovery of dinosaur remains in Alaska is particularly interesting, due to the chilly temperatures in this upper part of the North American continent. Despite the duration of time since the dinosaurs lived, the Alaskan landmass has remained in approximately the same global location, meaning that dinosaurs walked through the same subzero conditions that Alaskans experience today.

This is immensely difficult to explain if the traditional image of the dinosaurs as giant reptiles is true.

Until recently, opinion has been that dinosaurs are the ancestors of our own crocodiles and alligators. These creatures live in warm climates because their cold blood means they have to absorb heat from their surroundings in order to survive. However, for dinosaurs to have lived in Alaska, they must have been able to generate their own bodily heat. "To survive winters in Alaska, the dinosaurs would need to be warm blooded," Kobayashi explains. "This allows them to adapt more easily to different environments."

This led to Kobayashi's next big question: to what extent were the dinosaurs able to flourish in different living conditions? Humans are an immensely adaptable species, able to move between the barmy heat of the Caribbean and frozen lands of Svalbard. Other species require genetic variations to survive in different climates, taking many generations to adapt to change. Which of these two categories best described the dinosaurs?

To explore this, Kobayashi and his team examined the fossils found in Alaska and compared these with known dinosaur groups elsewhere in the world. Their results aimed to differentiate between three main possibilities:

(1) The Alaskan population of dinosaurs could match that of North American dinosaurs at lower latitude, implying that same group had migrated north. (2) Rather than North American, the dinosaurs could be kin to those found in Asia. This would require a migration across from Russia to Alaska and its likelihood is determined by the condition of the Bering Strait; an 82 km stretch between Russia's Cape Dezhnev and Cape Prince of Wales in Alaska. In the present time this gap is a sea passage but in the past, a natural land bridge has existed and is thought to be responsible for the first human migration into America. Could the dinosaurs have taken the same path millions of years before?

(3) The third option is that the Alaskan dinosaurs resemble neither their North American or Russian cousins and a different kind of dinosaur evolved to inhabit these frozen grounds. Examining their finds, Kobayashi's team concluded that what they had were North American dinosaurs. This meant that dinosaurs --like humans-were capable of living across an incredibly wide range of environments, with different climates, food sources and dangers.

"People often picture the dinosaurs as having small brains," Kobayashi amends. "But the same dinosaurs lived in very different places. They were intelligent and adaptable." This adaptability has one very important consequence; the meteor that hit the Earth 66 million years ago is unlikely to have been solely responsible for the dinosaurs' demise.

As the dust from the meteor's impact blotted out the sun, a dark and cold new world was suddenly created. Had the dinosaurs been cold blooded, such a massively extended winter would have proved fatal, but Kobayashi's research supports suggestions that not only were the dinosaurs warm blooded, they were also equipped to deal with this new harsh environment.

This doesn't mean the meteor failed to have an impact on the dinosaur population. With a drop in sunlight, the vegetation would have decreased, reducing the food source for herbivores and subsequently, the carnivores who fed on them. Yet, it does appear that the dinosaurs could have survived if this were the only disaster. So what else could have happened to destroy this species?

Kobayashi pointed to two other possible causes: The first is major volcanic activity in the vast mountain range that covers large parts of India. In a series of prolonged eruptions that persisted for thousands of years, lava poured over hundreds of miles of

THE DINOSAUR HUNTER

land and the ejected carbon and sulphur dioxide combined to acidify the oceans. The impact on life was catastrophic and longer lasting than that from the meteor. The second possibility stems from the drop in the sea levels that occurred towards the end of the 66 million year mark. As the water receded, land bridges were formed between the continents, allowing dinosaurs to travel freely across the globe. The ability for animals to meet and mate resulted in a drop in the genetic diversity among the dinosaur species. This uniformity in dinosaur genetics made them highly susceptible to eradication, since a physiological or environmental impact will equally affect the entire, near-identical, population.

It was most likely a combination of these three catastrophes that caused the death of the dinosaurs, Kobayashi concludes. However, while the largest dinosaurs died out, not all life on Earth met the same fate. Several branches of animals survived, including those dinosaurs most closely resembling our current day birds. "Birds, not reptiles, evolved from dinosaurs," Kobayashi explains. "The dinosaurs' adaptability, intelligence and warm-blooded bodies are characteristics of a bird-like physiology."

This link with birds is an area Kobayashi is particularly interested in. On his desk sits a cast of the head of dinosaur known as a ornithomimosaurs or 'ostrich mimic'. It strongly resembles its name sake, with a lightly built skull and no teeth. The ornithomimosaurs were also very fast runners. Belonging to the class of theropod dinosaur, ornithomimosaurs are unusual in that they are non-meat eaters and represent a point in the transition between typical dinosaurs and birds.



Above left: Kobayashi at the Hokkaido University Museum. Above: A recent field trip to Mongolia where valuable Dinosaur eggs were found. Photos courtesy of Yoshitsugu Kobayashi, Hokkaido University Museum

THE DINOSAUR HUNTER

Since the mid-1990s, the link between dinosaurs and birds has become well established, with a series of fossils demonstrating the steps in this progression. The development of feathers, for instance, began initially as hairs used to keep the dinosaur warm. These then developed into feathers but not for flight; they existed on all four limbs and were used in mating displays. Finally came the formation of wings and our birds' ancestor took to the air.

Being smaller bodied with a faster metabolism, these animals were better equipped than their larger cousins to deal with disaster. Smaller creatures breed faster, allowing a higher percentage of genetic mutations to occur. These random mutations allow a species to make a large evolutionary jump, producing a variation that can survive an environment even the adaptable larger dinosaurs couldn't cope with.

A second species to survive through the catastrophe 66 million years ago was the giant crocodiles. With limbs that come out from the body sideways, not straight, these huge beasts were distinct species from the dinosaurs. Like their modern day decedents, they were genuinely cold blooded and existed alongside the dinosaurs in warmer climates from 230 million years ago. The skeleton in the University Museum lived in Osaka 500,000 years ago, making it a decedent of the giant crocodiles from the dinosaur period, but an ancestor to our smaller current species.

Exactly how the giant crocodiles and dinosaurs lived together was explored in an exhibition (pictured below right) at the Museum last Autumn, in an attraction that welcomed over 60,000 visitors during its 4 month run.

"Dinosaurs were so successful," Kobayashi concludes. "They could be 40m long and weigh 100 tonnes. That is a huge challenge for physics to grow such a large body from soft tissue and bone. Mammals cannot grow larger than elephants. Dinosaurs somehow found a strategy to exceed our limits and do something totally different from the world that we know."

Article by Elizabeth Tasker









Kobayashi with media at a recent excavation at Mukawa, Hokkaido. Photos courtesy of CoSTEP and the Hokkaido University Museum

Veterinary education across borders

"Our African story ... it begins with veterinary medicine."

At the start of the 1980s, the Emperor of Japan (then a prince) visited Zambia and asked the country's government what they most needed that Japan could provide. The reply was a request for veterinary education. During the British occupation of Zambia, natives to the country were trained only to the level of veterinary assistants. This meant that the Zambian independence twenty years before had left the country free from colonial rule, but with a desperate lack of individuals qualified in animal care. At the time of the Prince's visit, there were only 19 trained veterinarians in the entire country. In response to this request, Japan established a school for veterinary medicine in the Zambian capital of Lusaka.

"But the building... it's just a building," points out Professor Masahiro Okumura (pictured below left) from Hokkaido University's Graduate School of Veterinary Medicine. "They needed teachers." These teachers came from around the world in a project chaired by Hokkaido University. Over a 13.5 year period, more than 200 professors were sent to Zambia. Among their number was Okumura himself, who spent two years in Zambia as part of a volunteer program after his own graduation in veterinary science.

"Zambia is a very safe place to live," Okumura enthuses. "Since independence, the country has been very stable and the people are very friendly."

This is no mean praise. In a country where 73 different languages are spoken, uniting the people is a challenge few other countries must face. To counter the divergent linguistics, the official language of the country was selected to be English, and it is in this tongue that the veterinary instruction is carried out.

As the Zambian School of Veterinary Medicine produced its first graduates, Hokkaido University looked to accept the newly qualified veterinarians into its own graduate program. One of those to travel to Asia was Professor Aaron Mweene, who completed his PhD in the Laboratory of Microbiology at Hokkaido before returning to Zambia. Five years ago, he became Dean of the School of Veterinary Medicine.

Zambia now has about 300 trained veterinarians, and has taken over the teaching and running of the school. The effect of the veterinary education can be seen immediately in the efficient way the country now deals with disease outbreaks, says Okumura.

Okumura describes the results from a recent discovery of African Swine Fever: a highly infectious and dangerous virus that attacks pigs. Once found, all the pigs in the city must be slaughtered to prevent the outbreak spreading through the country. "Ordinary people do not understand the risks," Okumura explains. "They may try and eat the infected meat once the animal has been sacrificed."

This was a situation that Okumura had experienced first hand after an outbreak of anthrax 23 years before. However, after this discovery of African Swine Fever, Zambian veterinarians moved swiftly to annihilate the problem: ensuring the animals were slaughtered and the meat destroyed. Their quick action contained the disease and prevented a country-wide disaster.



Dean Aaron Mweene with Hokkaido University delegation August 2012



Departing to take samples on a field trip. Some of the many Veterinary Specialists who spent time at Hokkaido University conducting research.



Professor Masahiro Okumura



Hokkaido University representatives holding an information session to local citizens in Lusaka.



The improvement in veterinary standards has had a positive financial impact for the whole country, which is now considered 'clean' and able to export beef and chicken to more than 10 countries worldwide. The veterinary school attracts students not just from Zambia, but from the surrounding nations of Mozambique, Botswana and South Africa.

These successes, however, did not spell an end for Hokkaido University's collaboration with Zambia. As the teaching program came to a close, Hokkaido initiated a new research collaboration, founding the Centre for Zoonosis Control to study diseases that can be transmitted between humans and animals. Such a centre provides an important sharing of knowledge, since Zambia harbours lethal diseases such as rabies and anthrax that are not in Japan, but are vital to recognise early.

"Before graduation, I had not seen any rabies cases," says Okumura. "Yet most countries are not rabies free, so the probability of it being accidentally brought into Japan are very high. Our veterinarians need the experience of dealing with the disease so they know how to diagnose and handle it." This need for experience in situations not commonly found in Japan has led the Hokkaido's Graduate School of Veterinary Medicine to have one of the most international programs on campus. Roughly 1/3 of the graduate courses are taught in English and the school has recently begun an international exchange with universities in Thailand for 6th year undergraduate studies.

The push for internationalisation is not driven just from the lack of particular diseases in Japan, but also from the difficulty in gaining experience with certain types of animals.

"We have no camels in Japan!" Okumura jokes. "But also we have very few horses."

As a rough estimate, there are only 6,000 horses in Japan and most of these are race horses. With high finances resting on their health, these animals are insured for large sums and are not seen by regular vets, making it difficult for Japanese veterinary students to gain hands-on experience in their equine studies.

A similar problem exists for chicken and pigs, where fear of human-infectious diseases such as Swine 'Flu results in the poultry and swine industry being immensely careful about potential cross-contamination. Since universities handle a large range of animals, students carry too high a risk to be welcome on industrial farms.

By exchanging students with neighbouring countries, Japanese veterinary students can gain essential practical experience in these areas and with more exotic animals. The result is a veterinary certificate that can be respected across the world.

This international recognition is also of key importance. If Japanese veterinarian skills are not recognised by other countries, the import and export of agricultural products and animals becomes difficult.

"If Japan trades with another country, such as the USA," Okumura elaborates. "and they do not recognise each others veterinarians, vets must be sent between the countries to approve quarantine, hygiene and storage. But if they recognise each others qualifications, there is no problem."

The need for a broad and thorough veterinary education lands Japan with a second problem. While the country graduates around 1000 new veterinarians each year, each national university has a year size of approximately 40 students, a size too small to support the number of professors needed to cover each discipline.

To counter this problem, the schools in Japan are collaborating in joint education programs which allow each university to have its own speciality while still providing students with the broad experience they require.

Hokkaido University has combined with Obihiro University of Agriculture and Veterinary Medicine to graduate students under one such program. Obihiro's location in the countryside allows it to specialise in large farm animals while Hokkaido's city campus makes it ideal for our smaller friends. While Hokkaido University has been principally catering to small animals for around 50 years, it is a change from its historical focus on working farm animals. Veterinary medicine at the University has a long history that goes back 150 years and prior to World War I, most of the clients were cattle and horses.

The switch to household pets ultimately required a change in facilities and in 2013, Hokkaido University opened a new hospital dedicated to small animals.

"Cows and horses are economic animals," Okumura says as he discusses the changes that are needed to convert a site from large to small animal care. "Treatment cost is very important when designing hospital facilities. But pets are family members; our clients require sophisticated treatments to be available."

The new hospital has risen to meet these expectations, with a linear accelerator used in cancer treatments that is the number one facility in Japan and third in the world.

Cancer care has become increasingly important as extended life expectancy for our furry companions has resulted in a larger incidence of tumours.

A second animal disease that is on the rise is osteoarthritis; a joint disease that is Okumura's own research speciality.

Problems in the joints arise when the protective cartilage that sits at the intersection where the limb bends is worn away to expose the edge of the bone.

Such cartilage deficiency can occur from two causes: The first is from the cartilage gradually degrading during the animal's lifetime. As with humans, older animals can then experience pain due to no longer having this protective padding between their joints. This problem is another condition that is becoming more common as our pets' lives are prolonged through improved medical care.

The second cause of cartilage deficiency comes from the dysplasia (abnormality) of a joint. If the joint forms incorrectly, the points of maximum pressure and cartilage may not coincide, resulting in the cartilage being unable to protect the bone. Unlike the previous cause, this problem can occur in much younger animals and has been exacerbated by the overbreeding of pedigree pets. In the effort to keep the characteristics of a breed confined to a narrow spectrum, the number of animals in a pedigree breeding pool is reduced. In some cases, this has lowered the variety of genes present in a breed to the point that inherited problems such as joint dysplasia can flourish. The flat coated retriever is one such animal that is particularly susceptible to hip problems, while the standard poodle can suffer shoulder dislocations and Bernese mountain dog commonly has both elbow and shoulder issues.

Okumura's research group focusses on addressing these problems via several plans of attack. One branch of his work focusses on techniques to identify the issue in animals before they begin experiencing any pain. With an early diagnosis, veterinarians can try and preserve the existing cartilage and consider realignment surgery for displaced joints in young animals.

A second method is to encourage cartilage regrowth. Natural cartilage production is a slow process since there is no blood supply to the cartilage and no feedback mechanism that encourages the body to make more cartilage if it is required. Okumura's team have been trying new drugs designed to suppress the pain from osteoarthritis and stimulate cartilage reconstruction.

A third route is to attempt to insert cells into the joint that will themselves become cartilage. By planting very immature cells in the joint region, medical and veterinary scientists can encourage them to develop into cartilage cells in a process known as induced pluripotent stem cells (iPSC).

Beyond both its small animal care and continued initiatives with Zambia and Thailand, Hokkaido University's Graduate School of Veterinary Medicine will extend its collaborations this year to Mongolia, working with the country's universities to re-establish their own veterinary program.

Okumura does, however, harbour some apprehensions about this new direction:

"It's so cold!" he protests humorously. "It's now -40 degrees celcius! How can you survive? Zambia is very easy to enjoy... except perhaps for the malaria."

Article by Elizabeth Tasker



Hokkaido University's brand new Veterinary Teaching Hospital

Delving into the Future with Global Issues Forum for

How sustainable is our society?

It is a question with at least two different interpretations; one environmental and one social. Both present serious quandaries but then, Hokkaido University's annual 'Sustainability Week' is not the time to shirk from tough questions.





Professor Junijiro Negishi

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Forum meeting in Davos, water scarcity was listed as the second most important risk



facing the world in the years ahead. One way to alleviate this problem would be use the same water for multiple purposes, purifying it after each use. This would allow you to flush the toilet with the same water you later shower in or even drink. Such a concept isn't new with countries such as Singapore using treated waste water as a major source of their total water supply. However, for such a scheme to be a global success, the treatment of water needs to be cheap and easy to operate. This is where Kimura's own research comes into play. He has been helping to develop membrane bioreactors (MBR): filters that can clean wastewater and —as he puts it— save the world. The membranes work in same way as a filter in a school laboratory, catching grit while letting the clean water pass through. However, the pores in the membrane are so tiny that they can remove all dirt greater than 0.1 micrometers. Such a system will allow cheap installation of local water treatment facilities, greatly increasing the availability of reused water. Professor Helena Fortunato looks at the

water not in our homes, but in the ocean. She warns that the increased production of carbon dioxide from industrial activities is acidifying the seas, turning the water to vinegar. Even mildly acidic waters take their toll on wildlife, damaging bone which will dissolve in the vinegar oceans. Fortunato explains that Japanese waters hold almost 15% of the diversity within the oceans, a number that corresponds to around 33,000 species. Unless we can reduce the CO₂ escaping into the atmosphere, that diversity will not be here



Professor Emma Cook

tomorrow.

From salt water to fresh water, Junijiro Negishi's job is to read rivers. He does this in a manner almost as literal as it sounds: snorkelling in Japan's waters to examine the river bed. Negishi tells us that the degradation of the river environment is not just bad for the species living there, it's also bad for us. Their research found that rivers which contain the largest number of fish species also have the most number of visitors, suggesting that to lose species richness will also cost us a cultural centre.

This point rolled the question of sustainability over to examine culture itself and ask how society is catering to the diverse needs of its individuals. One particular group that is being studied by Professor Emma Cook are the Japanese male 'Freeters'.

The term refers to 15 - 34 year olds who work part time, but are neither students nor housewives. The growing number of men in this role carry with them a strong social stigma that results in a lower fraction of marriages, and their increase in number is listed as part of the reason for Japan's falling marriage rate. Studying this social phenomenon in a conservative area of



Tomorrow



'The Global Issues Forum for Tomorrow' event is held annually and features speakers from Hokkaido University coming from a wide range of fields and backgrounds.

Japan, Cook finds that male Freeters are perceived as mentally and emotionally weak, with their part time work accounted to laziness or lack of tenacity. The result is that girlfriends of Freeters are embarrassed by their social status, leading to less wishing to take the marriage step, even when financial considerations are not a concern. Cook concludes that gender norms need to change for society to successfully support the emerging roles of its people. Professor Philip Seaton looks not at one social group, but at the wide variety of people who contribute to Japan's tourism. He focusses on 'film tourism' where visitors are drawn to a site because it has featured in movies or on TV.



Q&A session

Such events produce a boom of interest that decays rapidly after the broadcast has ended, making it hard to transfer this into a sustainable business plan. Seaton examines the impact of two historical dramas, Shinsengumi! and Ryomaden, both set in the bakumatsu period between 1853 - 1858. Multiple tourist sites were associated with the dramas, but they did not manage to benefit equally from their short-lived fame. The Ryozen Museum of History in Kyoto successfully showed a sharp peak in visitors in the years of the dramas, but a site of equal importance, Hino in Tokyo, gained little revenue from the tourist interest. Seaton highlights several reasons for this, including Hino being in easy reach of the Tokyo metropolis, reducing the high-spending overnight tourists

The original museums in Hino were also only open a few days a month, with the major museum opening a year after the drama was broadcast; too late to take advantage of the boom in interest. For business to be sustainable, Seaton concludes, a model must be constructed based on the normal number of visitors per year, but be able to take advantage of a sudden influx if the site reaches brief notoriety in film.

The final speaker was Professor Susanne Klien who looked at people in their 20s and 30s who are abandoning the city to live in the countryside. This 'life style migration' is spurred by non-economic factors focussed on searching for a more meaningful life. One of the examples Klien cites is of Abe Hiroshi, an engineering graduate in his mid-30s who moved to Ama Town, a remote island in the Shimane Prefecture. Hiroshi set up a company to encourage interest in the area, a job that gave him so much satisfaction he declared "Right now I enjoy every day so much I cannot describe it". Klien points out that urban and rural lives are no longer polar opposite life choices, but a divide that people can move freely between.

While tackling vastly different topics, the six speakers gave one uniform message: the world is changing. For this to be successful, we need to adapt both our use of the world's resources and also our views on the places in society.

Article by Elizabeth Tasker



Global Poster Contest

 \blacklozenge

The Hokkaido University Research Poster Contest Goes Global!

For the first time, the annual Sustainability Weeks poster contest became open not only to HU students, but to students from partner universities around the globe and was an unmitigated success. The event, held over two days in December attracted 19 students from 8 countries.

The task was a simple one; students were asked to review their current research from the viewpoint of how it serves to contribute toward the realization of a sustainable society. According to Riyuki Takemura, the organizer of the event and Secretariat of Sustainability Weeks, (pictured right) the overall objective of the annual event is to help shape outstanding individuals who can tackle issues affecting all humanity.

'The idea to go global with the competition came from a student a few years back who suggested a more diverse participant base could work to bring unique and exciting perspectives on sustainability related issues to the table and allow for a platform for fascinating and productive dialogue. It turned out to be a wonderful thing to witness over the course of the few days as the students freely shared their ideas.' Over the afternoon of December 9th, judging panels examined poster presentations given by all participants grading them on a series of criteria, such as content relevance, presentation clarity and poster design.

One of the winners Chukwunonso O. Nzelu was extremely happy to win.

'It was a great experience, I felt really challenged to explain my research to judges who were outside of my field.' Organizers will hold the event in 2014 and again open it up to students from partner institutions. Travel allowance to and from Japan to participate can be made available. For more information, please email sw2@oia.hokudai.ac.jp





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HOKKAIDO UNIVERSITY magazine 2014

Award Winners ${}^{ m theta}$ 'Special Outstanding Presentation Award'

Category

Creating a New Society

Junko Hasegawa 🍈

Graduate School of Health Sciences Hokkaido University Towards the Realization of Community Based Rehabilitation in Malawi





Category Z

Human Well-Being

啦 Chukwunonso O. Nzelu

Graduate School of Veterinary Medicine Hokkaido University Outbreak of Cutaneous Leishmaniasis in Ghana: Finding the Vector Species Involved For A Sustainable Future



Category 3

Mitigation & Adaptation in relation to Environmental Change



Mana Gharun 啦

Faculty of Agriculture and Environment University of Sydney Impact of Bushfires on Water Availability in Australia



Category



Appropriate Resource Usage

啦 Fenjie CHEN

Graduate School of Fisheries Science, Hokkaido University Observations on sound production and associated behavior in captive walleye pollock during the spawning season

 'Other participants were also issued with the following awards;
 'Outstanding Presentation Award' MD. Shariful Islam, Graduate School of Environmental Science, Hokkaido University
 'Special Award' Zhangkan Zhou, Department of Landscape Architecture and Regional Planning, University of Massachusetts Amherst Riku Eskelinen, Department of Process and Environmental Engineering, University of Oulu Francis Maemu, Kalumba, School of Business, The Copperbelt University

HOKKAIDO UNIVERSITY SETS UP NITOBE COLLEGE

Hokkaido University set up Nitobe College in 2013 in order to strengthen Japan's ongoing efforts to foster the development of its human resources for global leadership.

The College enrols a select group of Japanese undergraduate students from the 12 undergraduate schools of Hokkaido University. In addition to fulfilling the curricular credit requirements of their bachelor degrees, Nitobe College students are expected to enrol in an additional 15 credits. Students are also required to study abroad for one semester or take multiple short-term programs. The College also provides career advice and support by select fellows who are themselves, alumni of Hokkaido University.

Who was Inazo NITOBE?

Nitobe College is named after one of the most illustrious alumni of Hokkaido University, Inazo NITOBE. He authored a well-known book, "Bushido: the Soul of Japan" and served as one of the first Under-Secretary-Generals of

the League of Nations, the forerunner of what is currently known as the United Nations.

A Bridge across the Pacific …

Subjects taught at Nitobe College

✓ Practical English for Overseas Study

This course seeks to improve the English communication skills of students in order to facilitate the successful completion of their overseas programs of study.

Arts and Sciences Courses in English

These courses aim to provide students with knowledge and appreciation of specialized areas in Arts and Sciences. With international students from Hokkaido University as co-enrollees, the courses, likewise, seek to offer Nitobe College students with a range of opportunities to interact and develop mutual relationships with people of various nationalities.

☑ Specialized Subjects Given in English

These specialized subjects taught in English are intended to provide students with higher-level communication and academic skills.

Experience-based Training (Fieldwork Seminars)

These courses are designed to develop the leadership ability and organizational skills of first-year students by immersing them in real-world situations, such as on board a ship and/or doing field-work on a farm and forest.

Co-learning in Multicultural Classrooms

These courses seek to hone problem-solving skills through multicultural interaction between Japanese and international students. Both are expected to deepen their knowledge and understanding of various cultures and cultural events and situations.

✓ Japanese Culture and Society

These courses are designed to sensitize Nitobe College students to their Japanese identities in the context of the challenges and complexities in a globalized world.

Volunteering and Internship Experiences

This two-pronged program aims to provide students with a variety of opportunities to acquire work and volunteering experience in various settings at home and abroad.

Nitobe College Curriculum (Example) Understanding Ability in practical Overseas others and Global leadership English and study different cultures communication 2nd 3rd 4th Specialized Volunteer and Practical English Arts & Science Subjects for Overseas Courses in Internship English Given in English Experiences Study Japanese Culture Experience-based Training and Society n thei Co-learning in huntin Multicultural Classrooms First Step Program Specialised short-One or two or other shortterm programs semester or term language around overseas programs students' field study

Find out more about what Nitobe College offers!

https://www.oia.hokudai.ac.jp/international-affairs/hokkaido-universitys-nitobe-college/



Experienced based training onboard the Oshoro-Maru and on a fa







HOKKAIDO UNIVERSITY



On the 2nd floor of Building 5 in the Faculty of Science, the Office for International Academic Support (OIAS) recently celebrated its first birthday.

Created in December 2012, OIAS was established to assist the growing number of international faculty, researchers and students in the Faculty of Science and encourage collaborations throughout Hokkaido University and with institutes abroad.

"Every day is different," says Hiroshi Kawamura, who leads the team. "You don't know what problems are going to walk through the door."

It is true that Kawamura, Miyuki Masuda, Mari Igarashi, Kyoko Takane and Miki Sugawara tackle a wide range of tasks. Their daily jobs include translating the stream of notices that are emailed through the faculty in Japanese, assisting international members with everything from event organisation to day-to-day living and sharing news and information through the faculty webpage and the office's Facebook group. They also provide English translations of department prospectuses, guidelines and safety manuals, contracts and attend events both in Japan and abroad to encourage relationships (including student exchanges) between Hokkaido University and its neighbours.

"Before OIAS was formed, I had never seen my job contract in English," Elizabeth Tasker from the Department of Physics admitted. "Even though I was learning Japanese, I wasn't anywhere near the level needed to read official paperwork. It was a little scary signing something I could not understand on my own."

One of the most exciting projects OIAS has begun is the creation of the 'Sci-Tech' talk series. These are open seminars by an invited speaker to talk about their research to anyone with an interest in science. All the talks are held in English and are free to attend.

The first Sci-Tech talk was held last summer when Dr Saneatsu Saito from the Japan Agency for Marine-Earth Science and Technology visited to talk about the research expedition that set out to track

down the origin of the devastating 2011 Tohoku earthquake. With a team of scientists consisting of representatives from 10 different countries, Saito boarded Japan's scientific drilling vessel, 'Chikyu': the largest research ship in the world. Chikyu has the ability to drill through the sea floor and extract a core of material from the exact place the quake occurred. By examining the rock, Saito and his team were able to see that the mineral composition was 80% smectite; a clay which holds moisture and can act as a lubricant. This slick surface allowed the colliding continental plates to slide a much larger distance than if there had been more friction, causing an overshoot that slammed into the bottom of the Pacific Ocean trench and triggered the tsunami that would overwhelm Japan's coastline.

From deep sea to deep space, OIAS welcomed Professor John Wise from the Georgia Institute of Technology in October to explain his research into the first galaxies to be born in the Universe. Wise took us through the Universe's history, starting from its first beginnings 13.8 billion years ago. He explained that before stars and galaxies were formed, the Universe was a pool of atoms. Small differences in the density caused matter to collect together and be compressed by gravity into the first stars. These burning balls of gas were huge, isolated objects, with masses 100 times greater than our Sun. In their centres, the first heavy elements began to fuse and create the mix of atoms that would one day form the Earth and ourselves. As these gravitational behemoth attracted one another, the first galaxies were formed and the cosmos as we now see it began to appear.



In December, OIAS held their 3rd Sci-Tech talk when Dr Naohiko Otsuka from the International Atomic Energy Authority (IAEA) discussed the peaceful applications of atomic and nuclear data. University academics working in nuclear physics, Otsuka explained, rarely talk to the nuclear scientists in industry. Part of this is a concern that industrial nuclear physics is interested only in nuclear weaponry; an area both top secret and highly controversial. Yet data on the nuclear properties of elements, such as the radiation they emit and how they decay into other elements, is important for a wide range of fields, including medicine, nuclear power plant safety and earth sciences. This information is not secret and should be useful to both groups. Otsuka has been working to bring these teams together so that their shared knowledge can aid peaceful scientific projects.

Sci-Tech talks are held throughout the year and advertised on OIAS's website and facebook page. Further descriptions of both John Wise's and Saneatsu Saito's talks can be found as part of the monthly research blog on the University website.

OIAS: http://www.sci.hokudai.ac.jp/international/ Facebook: https://www.facebook.com/OIAS.Sci Research blog: http://www.oia.hokudai.ac.jp/blog/category/news/research-blog/



Dr Naohiko Otsuka from the International Atomic Energy Authority (IAEA) at a recent Sci-Tech Talk

Exchange to the Big Apple

"Using coins was very difficult. American coins are different to Japanese currency and my wallet became full of pennies!" This amusing complaint came from Yusuke Fujimoto, a graduate student in the Department of Cosmosciences. Yusuke has recently returned to Hokkaido after spending five months at Columbia University on Manhattan island, the heart of New York City. Like many young researchers, Yusuke was initially anxious about going abroad. His primary concern was one of safety as he moved from Japan's notoriously low casual crime rate to one of the largest cities in the United States. This concern proved to be unnecessary, since Yusuke discovered that he never felt in danger during his time in the USA

711

"The skyscrapers were great," Yusuke enthuses as he discusses his first impressions of the city. "I had seen them in movies and they reminded me where I really was!"

Yusuke's journey across the Pacific was made possible by a research grant offered by the Japanese Society for the Promotion of Science. Listed under the unwieldy English title 'Strategic Young Researcher Overseas Visits Program for Accelerating Brain Circulation', this scheme was designed to encourage graduate students to work with international collaborators.

Such opportunities are immensely important both for young researchers and the science they are studying. Sharing ideas with scientists across the globe enables research projects to progress at a much faster pace and avoids unnecessary duplication of results. In addition, the student involved in the collaboration has their work promoted outside their own country and establishes connections with other universities that could last their whole career.

Yusuke's own work looks at the formation of stars in spiral galaxies. Like our own Milky Way, spiral galaxies resemble flattened discs with glittering arms full of stars wrapped around their centre. Yet why do the stars form in the spiral arms? A single star like our own Sun is vastly smaller than a galaxy, so how does it know to form in the spiral rather than in-between these arms?

Several possibilities exist to explain this phenomenon. One is that the spiral arms contain more gas clouds out of which the stars form. Alternatively, it could be that there are more collisions and interactions between the closely-packed gas clouds in the spiral arms and these events trigger star formation. A third option is that gas clouds in the spiral arms are fundamentally different from those in-between the arms and can form stars more easily.

Such scenarios can be compared to asking why the birth rate in a city is higher than that in the countryside. The first possibility is equivalent to saying that the larger number of people in the city leads to a larger number of babies being born during the year. The second option declares that it's not the extra people that is important, but the fact they are able to interact more easily. Increased meetings between people increases the likelihood of relationships and therefore the number of new families. The final choice suggests that city people are a different species of human to country people and are able to breed more easily.

Yusuke has been exploring these scenarios using computer simulations run on Cosmoscience's own machines and the supercomputer down in Tokyo. By examining the star-forming gas clouds made in the simulated galaxy, he discovered that it was the interactions between the clouds that were of key importance.

These interactions led to clouds merging to build-up massive entities dubbed 'associations' that could form many stars. The associations could potentially form anywhere in the galaxy, but they were found mainly in the spiral where the greater number of clouds led to a higher number of mergers.

However, the story does not stop with the creation of the gas cloud. Once the star begins to form, it will produce heat and energy that can destroy the cloud around it. To include this properly in the simulation, Yusuke needed expert advice. This was when he turned to Columbia University in New York City.

Yusuke continued his research at Columbia with Professor Greg Bryan, an expert in both star formation and in the computer code Yusuke was using for his work. After working together, Greg spoke enthusiastically about their project.

"Yusuke did a tremendous job," he describes. "The research was exciting and it was very rewarding to see Yusuke's confidence and ability in English grow with each passing week. At the end of his stay, he was able to present his results at a seminar in Princeton!"

Greg also notes the importance of exchanges such as this one, which he says opens up new pathways to share and explore ideas.

Of course, moving across the world to a different country and culture is not without its difficulties. Yusuke was surprised to see the amount of litter in the streets and noted it was very hard to find a public bathroom, which were often not very clean. While he found it easy to get Japanese food at the supermarkets, the American sandwich delis had their challenges:

"There were so many unfamiliar options to choose from, especially the types of bread and cheese," he explains. "The shop assistants spoke very quickly and never smile so I was always terrified they were angry with me!"

So what advice does Yusuke have for another Japanese student thinking about going abroad?

"Practice speaking English and not only the grammar," he says seriously. "Many people in Japan can listen to English, but they do not say anything. This is very bad! To say what you are thinking is very important so the person who talks to you can understand your views."

Yusuke admits that this advice also applies to himself, since he was initially much more hesitant at speaking.

"And..." he adds. "... remember to disinfect the toilet seats! They can be very dirty."

This autumn Yusuke will return to New York for the second half of his exchange. Columbia University are very much looking forward to having him back while we at Hokkaido will be excited to see his latest research results from this great collaboration.

Article by Elizabeth Tasker



From the Land of Fir

The way from Baku to Sapporo by Alibay Mammadov.

My name is Alibay Mammadov. But in Japan, everyone calls me "Aribei" (the Japanese pronunciation). I am currently in the first year of my master's at the Graduate School of Letters.

historians. After the collapse of the Soviet Union my parents took me there and I grew up in Baku, the capital and largest city in the country. The meaning of Baku is "Wind-pounded city". Let me share a little information about my country. Azerbaijan is the largest country in the Caucasus region located at the crossroads of Western Asia and Eastern Europe. Azerbaijan has an ancient and historic cultural heritage, including the distinction of being the first Muslim-majority country to have operas, theater and plays. It is also a very fortunate country with its large stocks of natural resources - especially oil and natural gas, centuries-old culture, history and ancient people, whose lifestyle presents a unique and harmonious combination of the traditions and ceremonies of different cultures and civilizations. Azerbaijan is also known as The Land of Fire. A

As a child my mother gave me a lot of information about Japan, Japanese history, the beauty of Japanese culture, Japanese people and from an early age, I grew to love and respect Japan.

When I graduated from high school I decided to learn the Japanese language to try and understand this marvelous country better. It took four long years, but after committing myself to the language, I began to speak Japanese fluently and also made many Japanese friends.

I also read a lot of books, articles and magazines and began to discover the territorial issues that Japan faces with her neighboring countries. These issues fascinated me partly because Azerbaijan also is dealing with the same kind of issues.

In order to learn more about territorial disputes from the Japanese perspective, I decided to come to Japan to study the issue first-hand. As luck had it, I had one particular Japanese friend in Azerbaijan who recommended Hokkaido University as a great place to research territorial issues facing Japan. In order to enter, I had to pass an exam at the Embassy of Japan in Baku. I was so relieved when I found out I had passed – it also made my family so happy knowing the opportunity had opened up so many doors for me and my future.

e to the Land of Snow

Finally I got the chance to come to my dreamland- Japan.

After coming to Japan, I made a lot of friends from different countries in Sapporo. We often meet and talk about what is going well and not so well in our lives studying abroad. Thanks to this discussion, I really feel we are becoming stronger as people as well. I personally love living in Sapporo. It's beautiful all four seasons of the year. Back in Baku, the climate is similar to that of Tokyo and it snows just once or twice over winter. I think that winter without snow is not a real winter and Sapporo is the land of snow. During my first winter spent in Sapporo, I was shocked at the amount of snow that falls!

When I have free time I love to play futsal with my friends. I have a strong passion for futsal. Futsal is not a just game for me, it's a way to unwind after study and reenergize for new challenges that I may face in my daily life in Hokkaido. So far, my life in Sapporo has been fantastic. It's a great place to study and the people of Hokkaido are really nice and very kind to foreigners. This makes it so much easier to know that there is genuine support out there from the community. In the future I would like to become a bridge between Azerbaijan and Japan.







Location: South Western Asia, bordering the Caspian Sea Borders: Armenia, Georgia, Iran, Russia, Turkey Population: 9.36 million Language: Azerbaijani Currency: Azerbaijani Manat Area: 86,600 km² (just slightly larger than the island of Hokkaido)

Enjoying the wonderful winters of Sapporo, January 2014



Capital: Baku

Independence: 30th of August, 1991 (from Soviet Union) Nominal GDP: 72.2 Billion (per capita \$7,850 based on 2012 estimates)

Natural Resources: Petroleum, natural gas, iron ore, nonferrous metals, bauxite, and underground water

Yanar Dag translated as "burning mountain", is a natural gas fire which blazes continuously on a hillside near Baku which itself is known as the "land of fire." Flames jet out into the air 3m from a thin, porous, sandstone layer. Its flames are never extinguished!





Silent Melody

This mesmerizing photograph of a row of trees across a peaceful wintery landscape taken by Zhao Shanshan wins this years' photography contest. For her winning entry, Zhao wins a book voucher worth 10,000 yen.

CONGRATULATIONS!





Competition Results

Late last year, we asked currently enrolled international students to capture through photography winter in Hokkaido. We were amazed with the awesome entries we received! Winners were judged by the Student Support Desk.





Jin Can Graduate School of Education

'I took this photo of a train headed to Otaru from Sapporo on a snowy morning. It had snowed so much that you couldn't even see the train tracks giving the illusion that the train was floating. This type of scenery can only be seen in Hokkaido right?'



First Sunvise of 2014

Siyu Xu School of Letters, Auditing Student

'I took this from JR Tower. I saw the first sunrise of Sapporo 2014 with many friends from around the world. '



d The higher mountain you climb up, the wider area you can see The higher goal you can reach, the wider your vision can be.'



Shakotan Peninsula



Monkey Hotspring

Wu Meiqin Graduate School of Fisheries Sciences 'Monkeys enjoying a hotspring bath in Hakodate. There were large ones and small ones yying for space in the bath. It was a sight...'



Zhu YiDan HUSTEP 2013-2014

This photo was taken at Lake Toya. The scenery was so beautiful that it made me feel like l was standing in a painting and not in the real world.'

Kanisha Senadeera Graduate School of Engineering The afternoon at the coast line at Shakotan Peninsula, This photograph was taken as the light from the sun, dimmed by overhanging clouds hit the ocean waters and lit up the cliffs and snow. It was incredibly beautiful.'



Candles at Otaru

Lizeth Gonzalez Carabarín Graduate School of Engineering Otaru is one of my favourite places to visit in Hokkaido and during winter it is particularly beautiful.'

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HOKKAIDC

HOKKAIDO UNIVERSITY magazine 2014

Love Horrando?

WORLD LOVES HOKKAIDC

Express the charm of Hokkaido to the people of the world and receive remuneration for it!



hat is the 'World loves Hokkaido' project?

Hokkaido University together with the company INSIGHT (http://www.ppi.jp/) have teamed up to promote this great island of Hokkaido! You, the International Students of Hokkaido University can play your part in this promotion and receive remuneration by simply submitting a photo with a short comment. You can send us anything! Photos of delicious ramen, sushi, genghis khan you've eaten, places you've visited such as the Otaru Canal, Mt. Moiwa, activities you have done - ski, snowboarding! Anything you've enjoyed within the confines of Hokkaido! The comment doesn't have to be long. Just provide a photo with a comment like you would upload onto Facebook!

here will my captioned photo be publizhed?

All photos selected will be published on the World Loves Hokkaido (WLH) website, currently being designed which will showcase the charm of Hokkaido to potential international tourists. This is why we need YOUR voice!

hat are the condition/?

- You must be a current international student of Hokkaido University.
- The maximum number of entries to be published is 100 *In the case we receive an over-supply of submissions, we will select the best based on content and quality.
- Your photo must have been taken within the past two years.
- The comment must be more than 50 words and less than 100 words and must be written in your native language and in English. If your native language is English, then only an English comment is required.

ow do I enter?

Submit your entries by March 31 (If you have missed this deadline, stay tuned for later application periods as this is an ongoing project) Please use the WLH template downloadable from http://www.oia.hokudai.ac.jp/blog/2014/02/13/world-loves-hokkaido-2/ and fill your name, nationality, department, subject, year, phone number, and e-mail address and send your entry to wlh@ppi.jp

hat do I receive?

A WLH original designed Quocard with 1000 yen value for EACH published entry. If you get multiple entries published, you receive multiple WLH Quocards each with 1000 yen value on them. The Quo card is a prepaid card that can be used at all kinds of restaurants, convenience stores, gas stations, book stores, hotels etc. The value is printed on the card, and you can pay with it by presenting it at the register at the time of purchase. Here's a list of stores where it is accepted: http://www.quocard.com/member/



ant further information?

For further details and to download the template, please see; http://www.oia.hokudai.ac.jp/blog/2014/02/13/world-loves-hokkaido-2/ You can also e-mail Mr Sato at World Loves Hokkaido, sato@ppi.jp





Hokkaido University has brought together all our degree programs offered in English and listed up course objectives, entry requirements, completion requirements, scholarship availability and much much more in one easy to use brochure. We have a plethora of full degree programs offered in English at all levels from Undergraduate to Masters and Doctoral Programs.

You can source all our brochures on-line at http://www.oia.hokudai.ac.jp/about/publications/ For printed versions, please contact pr@oia.hokudai.ac.jp