

CITY



UNIVERSITY

Osaka City University Official Magazine



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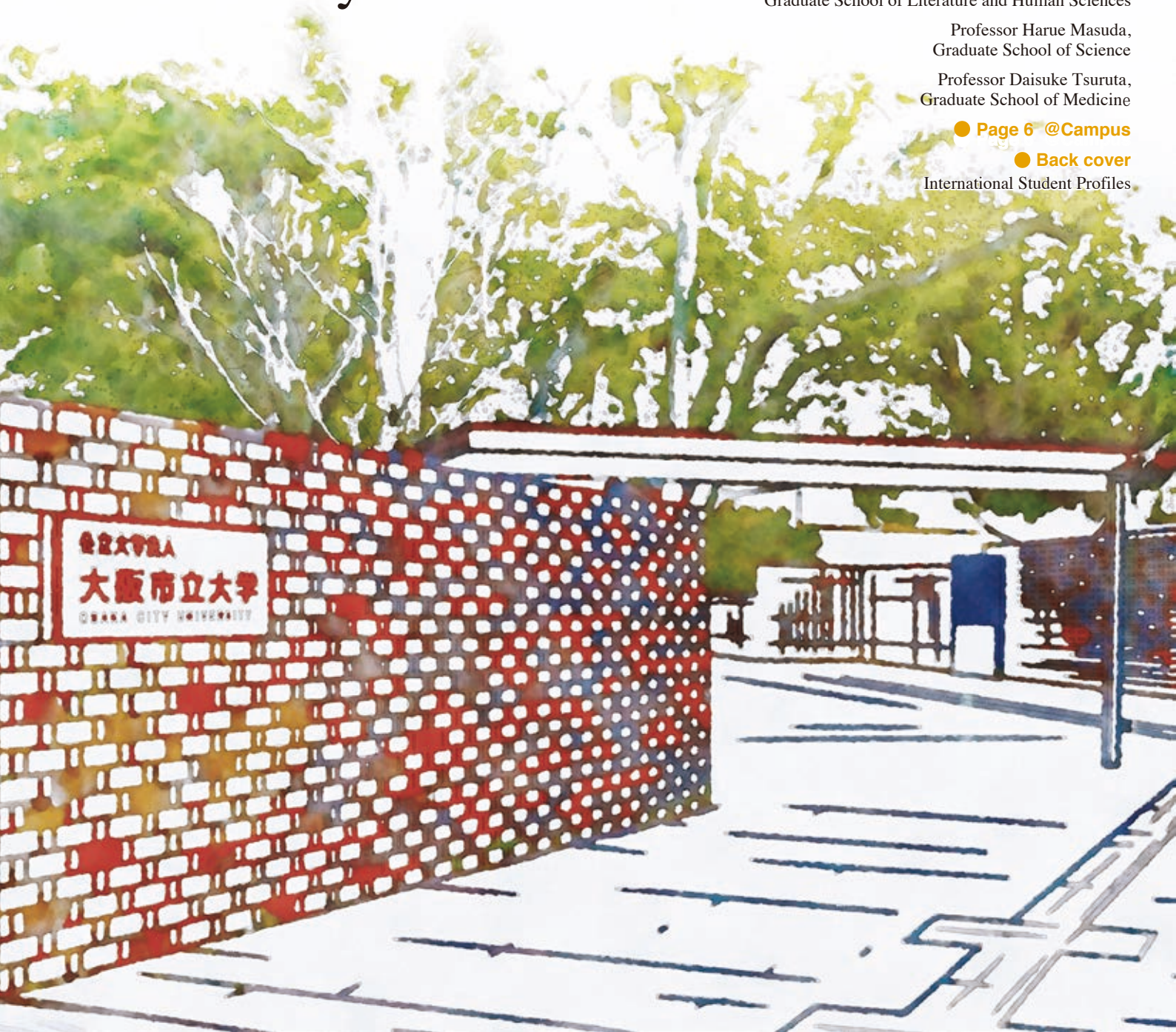
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2010

04/01
Yoshiki Nishizawa becomes eleventh President of Osaka City University.



Nakanoshima Lecture held four times as part of the university's 130th anniversary celebration.

02/11-02/20
"Osaka's Takeshi Kaiko: 80th Birthday Exhibit" held as part of the university's 130th anniversary celebration.



03/24
Students collecting donations for the 2011 Tohoku Earthquake and Tsunami at graduation.



2011

06/20
Yoichiro Nambu conferred title of "Distinguished Professor Emeritus."



09/13
President holds first round table conference with reporters.



09/29
The Student Support Center opens. All student service counters now located in one building.



03/15
Agreement reached with Sumiyoshi Ward Office regarding using the university as an emergency shelter in the event of a disaster.



2012

04/05
Learning Commons established in Media Center.



06/29
Opening of new campus-side exit of Sugimoto station and Nambu Street.



01/23
"Candle Night for the Environment" held.



2013

04/10
Sakura Street greenery planted.



06/18
Research Center for Artificial Photosynthesis opens.



07/26
Center for Health Science Innovation opens.



OCU Winter Illumination Walk



2014

04/09
Rooftop garden Asteria opens.



04/10
Completion ceremony held for new science building. Zelvova Street and MedCity21 open.



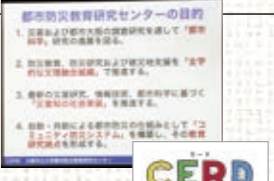
10/31
Student Support Center courtyard "Saponiwa" opens.



12/18
Foreign correspondents press tour held.



03/21
Center of Education and Research for Disaster Management opening symposium held.



Special Feature
Yoshiki Nishizawa's Six Years as University President
Timeline
2010 - 2015

2015

04/22
"Learning at Osaka City University" class for first year students.



06/01
135th anniversary.
12/18
135th anniversary forum held.



08/06
Tanaka Memorial Hall re-opens.



09/29
Distinguished Professor Emeritus Yoichiro Nambu Memorial Symposium held.



11/2
"Ginnan" University Autumn Festival held. On left, Akihiro Nishino from stand-up comedy duo King Kong.



RESEARCH

Elucidating the Structure of *Mycoplasma pneumoniae*'s Attachment Organelle in Humans



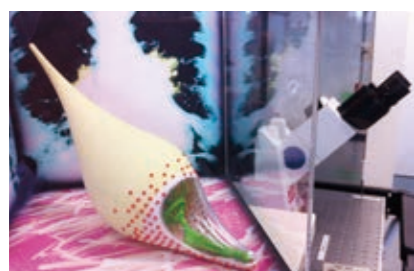
Professor Makoto Miyata, Graduate School of Science

Mycoplasma pneumoniae, which develops in tens of thousands to hundreds of thousands of patients a year in Japan, is caused by the small bacteria *Mycoplasma pneumoniae*. Each bacterial cell forms a small protrusion on one side called an "attachment organelle", binds to the surface of host tissues and exhibits "gliding motility," where the cell moves around while bound to the surface. Gliding motility is essential for *Mycoplasma* infection. The attachment organelle is a complex structure formed of many types of proteins and present only in several species of *Mycoplasma*. Previously, the structure and

mechanism of the attachment and the mobility had been uncertain.

A research group led by Professor Makoto Miyata of the Graduate School of Science newly discovered three types of component proteins and clarified which parts of the attachment organelle are formed by each of 15 types of component proteins, including those found previously, on a nanometer scale. Based on the results, they proposed the mechanism of gliding motility.

The results have led to greater understanding of common principles of biological movement. Today, when antibiotics possibly may not be the first choice for treating *Mycoplasma* infections due to the spreading of resistant bacteria, the results are also expected to lead to future measures against *Mycoplasma* infections.



Model of *Mycoplasma pneumoniae* created by a 3D printer based on the results

Reference video:
Mycoplasma gliding motility
[*M. pneumoniae*]



<https://www.youtube.com/watch?v=bjsKderHU5E>

A Community-Based Wireless Wellness Monitoring System: Supporting Elderly Individuals with Dementia Using ICT



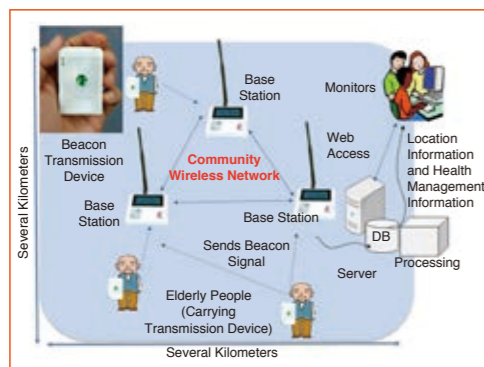
Associate Professor Tetsuo Tsujioka, Graduate School of Engineering

Graduate School of Engineering Associate Professor Tetsuo Tsujioka's group, in collaboration with Vital Information, Inc., has developed a community-based wireless wellness monitoring system that uses 920 MHz-band low power-radio, which can be used without a license under Japanese law. The 2015 revisions to the nursing-care insurance system envision the well-being of the elderly being monitored by middle / elementary school districts. Residents' associations and local NPOs play an important

role in doing so. Thus, to implement the framework presented in the revisions, there was a need for an economical system suited for a several square kilometer area that enables the local community to independently and continuously engage in monitoring activities. The developed system is comprised of beacon transmission devices, wireless base stations, and a server. Elderly individuals carry around a transmission device, which periodically transmits

to the wireless base station a beacon signal. The wireless base station, which is installed in various locations of the community (such as balconies of the users), then relays this signal to the server. Based on this accumulated data, users can understand their location and condition in real-time. This location system has a low running cost because it does not use a mobile network, and places a low burden on users.

In December 2015, a test-run began at Senboku New Town in Sakai city's Minami ward (Osaka prefecture). After improving the system based on test-run users' opinions, it will be put to actual use.



Researchers in Focus

Professor Makoto Miyata, Graduate School of Science

"Humans have been able to create anything, except living organisms created from the very beginning. This is the realm of God," said Dr. Miyata. He was immediately fascinated by the mystery of living organisms and from his first year of high school aimed to become a biologist. At his house is a huge, home refrigerator-size insect rearing cage and also he keeps 130 rhinoceros beetle larvae. Every year he has a hard time finding people to take beetles after they become adults.



Researchers in Focus

Associate Professor Tetsuo Tsujioka, Graduate School of Engineering

Associate Professor Tsujioka has a variety of hobbies: cameras, cooking, collecting stationary materials, and so on. He particularly recommends trying out amateur radio because one can experientially learn about wireless communications, and still participates in contests (participants compete to see who can exchange the most messages). When he was a university student he programmed for Ultima, and says that he'd like students to enjoy creating—rather than playing—video games.



EDUCATION

Introducing "Osaka Studies: From a Global Perspective"

◆ On the Establishment of "Osaka Studies" Vice President Toru Inoue, Osaka City University



semester.

With the aim of cultivating human resources with Osaka-based identities that are able to be globally active, this course focuses on both

community-oriented as well as global education. Its classes are led by not only Osaka City University professors but also graduates and business people active both inside and outside of Japan.

The course provides students with opportunities to (1) develop a cutting-edge understanding of the rapidly progressing phenomenon of globalization, (2) begin considering the current situation and future of Osaka in the context of globalization, (3) acquire wide-ranging knowledge that goes beyond their majors, and (4) envision their careers and lives while students as well as after graduation.

With internationalization becoming a keyword in a variety of contexts, universities are expected to educate students so that they can be active on the world stage. Based on University President Nishizawa's proposal to understand Osaka from a global perspective, an all-department education course entitled "Osaka Studies: From a Global Perspective" was launched in the 2015 fall

◆ Osaka Studies: Course Report Professor Hiroko Iiyoshi, Center for Research and Development of Higher Education

Approximately seventy students from all eight of the university's faculties participated in this all-department education course. Spanning from freshmen to seniors, they crossed the lines of departments and disciplines to jointly study the city of Osaka.

Being a course that looks at Osaka from a diverse set of viewpoints, it appears that each class provided students with thought-provoking ideas. At the end of each class students handed in jam-packed notecards on which they wrote questions as well as ideas they had relating to the day's content. Many students found these notecards and in-class questions alone to be insufficient, and would directly ask the day's lecturer things after the

conclusion of the class. While it is easy to think that we know everything there is to know about the city we're in, this course provided a good opportunity for students to carefully consider from a wide perspective Osaka's considerable potential and the issues it faces, as well as reflect upon their own future paths.



Image from the 10th class (Lecturer Kumi Fujisawa)

PICK UP!! Highlights: Osaka Studies

Class 4: Combined Management of Medical Care and Nursing Care in a Super-Aged Society: Bringing Osaka's Efforts to the World
Lecturer: Hiromichi Ikuno (Director, Social Medical Corporation Koudoukai)

Compared to other countries, Japan's population has the highest percentage of elderly people and is aging the fastest. Mr. Ikuno proposed bringing together the management of medical care and nursing care in order to address the various associated issues that will confront Japan ten years down the road. This could be done by combining non-profit social medical corporations and social welfare corporations. Efficient composite management would enable seamless care to be

provided that would handle everything from acute medical issues to home nursing. He said that Japan should become the leader in measures to address aging populations, and that Osaka's efforts in this regard need to be shared with the world. Having recognized Japan's social reality, Osaka residents must come together to address the issue of elderly care. In doing so, he hopes that the city will continue to develop.



Class 9: The History of Kansai Area Companies and Globalization
Lecturer: Hironari Furukawa (President, Hanwa Co., Ltd.)



Osaka is part of the Kansai region in Japan, which is often contrasted with the Kanto region that is centered around Tokyo. Mr. Furukawa discussed how, unlike politically-inclined Kanto area companies (Mitsui & Co. Ltd., Mitsubishi Corporation, etc.), Kansai ones developed while emphasizing older merchant-style philosophies—for example, the idea of "three-way satisfaction" (a satisfied seller, a satisfied buyer, and a satisfied society)—that share much in

common with contemporary Japanese notions of corporate social responsibility.

He also touched upon the expectation that companies create an environment in which Japan's population can be increased, and the important task of Kansai companies to develop, based on a global perspective, their economic activities overseas, where highly populated markets await.

Class 10: "Globally Active Youth at the World Economic Forum and Society's Future"

Lecturer: Kumi Fujisawa (Co-Founder of Think Tank SophiaBank)

At the annual World Economic Forum held in Davos, business leaders gather to discuss issues facing the world. Based on her personal international experience participating in this meeting as a Young Global Leader, Ms. Fujisawa discussed the importance of holding a long-term and broad perspective that filters through possibly biased information and acting out of a deep understanding of people.

Students found motivation in her strong encouraging words. Noting that "information technology has integrated into the daily lives of the young generation, who are playing a very important role in society," she told students to "just give things a shot—if you do something for the world, then the ball will start rolling."





RESEARCHERS

Associate Professor Kumiko Okuno,
Department of Language and Culture Studies, Graduate School of Literature and Human Sciences



Associate Professor Okuno's field is Japanese literature, specifically modern literature such as the works of Ryunosuke Akutagawa. In the past ten years or so, she has been researching the influence of *kodan* storybooks on modern Japanese literature. While Akutagawa is famous for his works based on *An Anthology of Tales From the Past (Konjaku Monogatari-shū)* and so on, it appears that he and other modern writers also used *kodan* storybooks, which were the manga of their time.

She says that the aim of Japanese literature scholarship is to produce recensions and annotations of literature works—which are cultural assets—based on the highest standards possible and then pass them down to later generations, thereby enabling, for example, Japanese high school students hundreds of years from now to read Akutagawa's *Rashomon*. This kind of research on stories' sources is useful for doing so.

We're able to read *The Tale of Genji* today thanks to the annotations avid readers and scholars have been producing over hundreds of years.

Associate Professor Okuno says that just like the *miyadaiku* carpenters that restore and preserve temples, shrines, and palaces, Japanese literature scholars are proud to be passing on culture. They engage in their studies with the wish that these literary works written in beautiful Japanese will be read by generations to come.

Incidentally, Ryunosuke Akutagawa was a friend of the first president of Osaka City University, Kyo Tsuneto. The latter's family entrusted a valuable set of materials—including over one hundred letters written from Akutagawa to Tsuneto—to the university's Tsuneto Memorial Room, and Associate Professor Okuno is also engaging in research that makes use of these documents.

Another side

Associate Professor Okuno is both a scholar and the mother of a first-grader. While she has trouble finding time for herself, sometimes she takes a break by going to see theater, from Takarazuka to opera and kabuki. Last year, she went with her child for the first time to a kabuki play, and hopes to do so more often in the future.

Professor Harue Masuda,
Department of Biology & Geosciences, Graduate School of Science



Professor Masuda is a specialist of hydro-geochemistry. She studies mass transfer associated with water circulation on the surface and in the shallow part of the Earth's crust. Water is the unique substance characterizing Planet Earth. Water is mostly reserved in the ocean on the Earth's surface as liquid, some is ice, and a small but important part is steam in the atmosphere. The water has been working for making the environment of Earth. Prof. Masuda is interested in roles of flowing water on and in the crust to change the environments. She has studied groundwater contamination, especially natural arsenic contamination and anthropogenic nutrition of groundwaters in Japan and Asian countries. Contamination of toxic chemicals degrades the quality of life. Groundwater is the most important water resource of the world, however, it is facing a crisis.

She has been also working on ocean floor science.

She studied submarine water circulation including hydrothermal systems (so-called submarine hot springs) in relation to the hydrothermal ore deposits and origin of life and diagenesis related to the seismicity along the convergent plate boundaries. Water circulation is also related to the volcanisms in the oceanic crust. She joined many research cruises using submersible "Shinkai 6500" and its mother ship "Yokosuka", deep sea drilling vessel "Chikyu", and others. She has been attracted by the breadth and beauty of the blue oceans, which account for 70% of the Earth's surface.

She contributes to the environmental politics as a committee member of local governments; e. g., as a chair of managing hot springs of Osaka Prefecture, she is monitoring the water resources for hot spas, giving suggestions to monitoring and mitigation of water and soil pollution of Osaka and Hyogo Prefectures among others.

Another side

As a scientist, Dr. Masuda has had the opportunity to enjoy spending time in unique places around the world. Because she easily gets motion sickness, she often has a hard time, however, especially in ocean surveys. But once she sees the big beautiful ocean, she forgets her discomfort and eventually boards the ship again. During the rainy season in the tropics it is hot and uncomfortable, but this is where the beauty of water can be experienced. She looks forward to seeing the water and communicating with the local people.

Professor Daisuke Tsuruta,
Department of Dermatology, Graduate School of Medicine



Professor Tsuruta specializes in autoimmune bullous diseases (pemphigus and pemphigoid). In addition to clarifying the pathology and development of treatments, Dr. Tsuruta's laboratory is also conducting an elucidation of the mechanism of hair growth and development of new therapeutic drugs for depilation, studying the pathological analysis of oculocutaneous albinism and its treatment, and studying the treatment of infectious diseases with photodynamic therapy (PDT).

There is believed to be no relationship between the two studies of clarifying the pathology of autoimmune bullous diseases and elucidating the mechanism of hair growth. However, both studies involve the basement membrane. The basement membrane is located between the epidermis and the dermis lying underneath the epidermis. Dr. Tsuruta focuses on the function of the basement membrane on the pathogenesis of several skin diseases. Autoimmune bullous diseases are

incurable disorders in which the body produces antibodies that attack the basement membrane. Since the basement membrane molecule laminin-332 inhibits hair growth and laminin-511 promotes hair growth, the study of how to control the two molecules has led to greater understanding of the mechanism of hair growth. In addition, recent studies reveal that endocannabinoids, which activate cells similarly to cannabis and lead to a sense of euphoria, are involved in hair growth. As such, Dr. Tsuruta advances his research from every possible angle.

Dr. Tsuruta's goal is to one day be able to say, "We could contribute to elucidating the pathomechanisms of intractable skin diseases," and to share his joy with everyone in the laboratory. Today, he continues to devote himself to studies in diagnoses and treatments of intractable skin diseases.

Another side

Dr. Tsuruta actively takes part in overseas conferences and works in international cooperation, so he has many occasions to go overseas. Since he is a skin specialist, his own skin looks marvelous, despite widespread explanations of how men's skin is drier found on the Internet and in newspapers and magazines. For a change of pace, he likes to play music, having learned piano from a young age and the horn from junior high school. While in university, he was a member of the Osaka City University Medical School Orchestra, and still enjoys sessions with his family.

Mosaic Art: International Exchange Through Art

Along with Seigan Japanese Language School students, on January 23, 2016, students from the Faculty of Literature and Human Sciences completed an international exchange art mosaic project as part of their arts management training. Participants created a work of art based on the four keywords "World, Earth, Connections, and Sumiyoshi Ward."



Participants taking photos for the mosaic.



Participants pasting together their photos.



Completed "Sumiyoshi Heart."

View a video of the creative process via this QR code.



International Exchange Event Held for Students



Participants enjoying the party.

On December 17th, 2015 an international exchange event for students was held at the Sugimoto Campus' North Cafeteria. While watching entertaining performances, international and national students and teachers got to know each other and enjoyed playing bingo for big prizes.

Education Supporters Association Tents Used for the Ginnan Festival

On October 20th, 2015 the Education Supporters Association donated seven event tents to the university. They were then used at the 65th "Ginnan" University Autumn Festival from Saturday, October 31st to Tuesday, November 3rd.



A tent donated by the Education Supporters Association.



Students hand-painted Festival Gate.

Graduate School of Engineering Student Yoshiki Otsubo Receives "Confronting the Tower of the Sun!" Special Prize

On November 26th, 2015, Yoshiki Otsubo, a first year master's student in the Graduate School of Engineering (Urban Engineering), received the special prize in the "Confronting the Tower of the Sun!" idea contest held by the Taro Okamoto Memorial Foundation for Contemporary Art & Taro Okamoto Memorial Museum.



Yoshiki Otsubo and his prize-winning "An Arboriform Dream: Expo Commemorative Park Pasture Plan."

Rowing Club: 125 Years

On November 15, 2015 the Rowing Club held a celebration for the 125th anniversary of its 1890 founding. The club's alumni association (the Koujyoukai) donated a hand-made miniature eight boat (a type of boat that fits eight rowers).



The boat is on display on the first floor of the Media Center, in front of the Conversation and Visual Corner.

Global Village Construction Started



Design model

OCU will establish a Global Village at its Sugimoto Campus. The Global Village will offer a space where all national and international students can freely get together, interact, organize events and study. The interior and concept was developed by Momoko Seta, a 4th year student of the Housing and Environmental Design department of the Faculty of Human Life Science with the active support of other OCU students. The theme of the design is 'Airport'. The opening is planned for April 2016.

International Student Profiles



Christian Bohoun

Nationality: Benin

Graduate School of Medicine,
Department of Neurosurgery
1st year of Doctoral Course

Christian Bohoun was already a medical doctor in Benin in Africa. Through his supervisor at his home university he came into contact with Prof. Ohata of the OCU Graduate School of Medicine and subsequently succeeded in securing a scholarship from the Japanese Ministry of Education. He is now studying for a PhD in the Department of Neurosurgery, a department which holds worldwide fame for the high level of expertise in skull base surgery. Christian makes long days, observing all aspects of the medical care process; from the morning conference and patient rounds to the highly-specialized operations. Operations often take several hours depending on the case, and sometimes even more than 10. On top of that he is also carrying out his PhD research into skull base surgery procedures and safety. In the little spare time that he has therefore left,

he has fortunately had a chance to travel around Japan a bit already, with Sapporo, including its beer museum as one of his favorite trips. "I am very lucky to have a chance to obtain a higher level of training in neurosurgery here at OCU and I hope more students from Benin will be able to have a chance to study in Japan", the very modest Christian says. "Benin does not yet have the financial and technological resources to carry out these kind of complex operations". As if neurosurgery is not already difficult enough, he says one of his biggest challenges after coming to Japan is to study the Japanese language. Even though discussions in his department are carried out in English and he has friends in the hospital from Nepal, Afghanistan and Vietnam, Japanese is still necessary for everyday life of course. With his talent, he will probably become completely fluent over the next years.



Jia Feng

Nationality: China

Graduate School of Science
Department of Biology
1st year of Master Course

Jia is a student from China studying for a Master degree in the Graduate School of Science and still in her first semester. She was inspired to come to OCU by the enthusiastic stories of one of her fellow biology students in China who came back from an exchange at OCU. After taking the entrance exam and passing an interview in front of an intimidatingly large exam committee, she was able to join the research laboratory of Professor Miyata. She has not yet fully mastered Japanese but the laboratory has a distinct international atmosphere, and daily communication takes place in English.

At the laboratory Jia is doing research into the gliding machinery of mycoplasma, the smallest and simplest cells that exist and that can move remarkably fast. Just like her supervising professor, for Jia the research feels more like a hobby than work and usually she spends 6

days per week in the laboratory. She enjoys microscopy, with its possibility to observe bacteria into the smallest details. "Our professor always shows how enjoyable research is and motivates everybody, making jokes, and stimulating us to practice our Japanese. It is fun every day." In the same way she is enjoying her research, she is also very fond of Japanese food, making her worried that she might be gaining weight. She has a part-time job at a Japanese restaurant where her colleagues teach her about Japanese dishes and she also often cooks with friends in the international dormitory where she lives.

Jia says life in Japan is giving her a valuable opportunity to experience life in another country, with different customs and culture. It is also a good way to become independent and she wholeheartedly recommends it to any student thinking of coming to Japan, saying "Come out and see the world!"

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