

Bouquet

Vol.3
News Letter

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JAXA Tour,
with Dr. Chiaki Mukai

Feature

Let's expand the possibilities of knowledge!

Let's talk! Student interview

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Let's expand the possibilities of knowledge!

—Let's talk! Student interview (Part 2: Graduate School of Social Sciences, Hitotsubashi University)—



In this feature, graduate students in the minor course of Science and Technology for Global Leaders interview female leaders who work in science-related fields and thereby serve as role models for the student body. The interviews cover various topics, such as research, work, and family life. For the first interview, the students visited a researcher working in the corporate sector. For this (the second) interview, the students visited and spoke with associate professor Yurina Otaki at her laboratory at Hitotsubashi University's Graduate School of Social Sciences. Dr. Otaki is a particular role model for the student interviewers as they are following in her footsteps to pursue the same research theme.

Yurina Otaki's Profile

Dr. Otaki joined Japan Tobacco Inc. after earning a master's degree from the Department of Urban Engineering at the University of Tokyo. She later returned to academia and earned a doctorate from the Graduate School of Interdisciplinary Information Studies at the University of Tokyo. Dr. Otaki has been in her current position since 2014. She conducts research on the environment with a focus on the relationship between people and water.

Aiming to integrate science and the social sciences

—Thank you for taking the time to see us today. Please tell us about your current job.

As you know, Hitotsubashi University, which I work has been specializing in the humanities and social sciences, but there are also some students who are interested in science. I lecture on materials science and environmental science as well as offering educational seminars where we do experiments and exercises with a small group of students. I also provide research guidance to students taking seminar courses at my laboratory and conduct research of water which is my own field of study. My research has two aspects of water, one is the water in people's daily lives and the other is the awareness of people who use it.

—What made you decide you wanted to become a researcher on the environment and water?

For one thing, in my early years at elementary school, I learned about pollution diseases such as Minamata disease and Itai-itai disease. I found out the fact that the diseases were caused by environmental pollution which was brought by human activities, so I wanted to work in an area that would help to resolve these problems and contribute to environmental preservation. Then, I read lots of books on the environment and listened to lots of talks. So this is where my interest originated from. One other thing was that my parents often took me on outings where I was able to come into contact with the natural environment, such as trekking and gathering mountain vegetables. I think this was another reason why I acquired an interest in the environment. (to the interviewers) By the way, what made both of you to do research on the environment?

—Student (Nagase): I originally studied chemistry in the engineering department, so my original interest was in creating chemical products. During my studies, I began to feel that when creating products, we need to be constantly aware of the environmental issues. That is why I felt that I wanted to learn more about the environment.

Student (Nishida): I was also interested in environmental pollution from the time I was in elementary school. Also, when I entered university, I wanted to study something that was closely related to our lives. And so, in the end, I chose to join the Environmental Engineering Laboratory.

Finding a research theme

—Could you tell us about your research during your student years?

I earned two master's degrees. The first one was in urban engineering. I was doing research on creating biodegradable plastic with the microorganism which was used in sewage treatment. In sewage treatment, the microorganism's metabolic function creates clean wastewater, since the microorganisms can store phosphorous within themselves so that they are used to remove phosphorous from the wastewater.

This substance that the microorganisms store serves as the ingredient for making biodegradable plastic. So I conducted research on how we could enhance the rate at which phosphorous was being stored by the microorganisms. I later went on to work in the private sector, but I wanted to conduct research with a broader view of the environment. So after a few years, I went back to graduate school and approached my studies in a way I had not been able to before, such as by studying history as well as conducting field work.

—We read your thesis on the water system of Edo [the old name for Tokyo]. It was very interesting.

Thank you. Since I am also interested in history, I thought about combining this interest with my expertise and took on the challenge of writing this paper.

—When you started working in the private sector, did you think you would be going back to school?

No, I had no thought of it. I joined the company not as a researcher but as a general employee, so my work was related to international business planning. The reason I returned to graduate school was because the timing was right in various ways.

—So, what happened?

When I had just completed a big job and I was thinking of going abroad to get an MBA so that I would be able to advance in the corporate world. While I was looking into different schools, I started having this general feeling that if I was going to go back to study, there was something else I really wanted to do rather than get an MBA. Right around this time, I had the opportunity to attend the final lecture of my former professor, Professor Tomonori Matsuo. The professor talked about environmental studies in the context of a huge historical span. It was then I thought, "Oh, this is what I want to do." Also, right at that time I learned that the Graduate School of Interdisciplinary Information Studies was being newly created and that it would combine both the humanities and the sciences. And I thought, "Maybe if I go there, I will be able to do what I want to do." So the timing for everything was just right.



Experience at the new graduate school

—You were among the first students of the new graduate school. We are also the first students of the minor course of Science and Technology for Global Leaders. What kind of difficulties did you have as the inaugural students at a new school?

There were many difficulties, but there were also just as many joys. For example, I didn't have a space to do my research and I had to get research grants. These

experiences gave me a keen realization of the necessity of submitting applications and getting grants in order to be able to do research.

—What was it like to study at a graduate school where you were trained by professors in both the humanities and sciences?

In my first class, the professor told us, "This is what Hegel is saying." That was a culture shock for me. Up until then, the training that I had received at engineering school emphasized the primacy of facts, like, "This is the data that we have collected" or "This can be reproduced." What someone said about something was not important. My first class was Hegel, the second class was IT, and the third class of the day was education, so there was a lot of variation in my classes. At first glance, these subjects may seem to have nothing to do with my current research. However, they were all very interesting, and I think what I learned then is still serving me well. There were many fields that I had no prior knowledge of, so it was not easy. But it was a truly great experience. I lost any feeling of fear or discomfort in regard to challenging myself to do new things. Now I can tell myself that this is how things are in the beginning, and that it will all work out in the end.

—I think it must have been difficult to earn a doctorate at such an interdisciplinary graduate school. But how was it for you?

Yes, it was very difficult! The expertise of the professors who were to review my doctorate thesis was spread across a variety of fields, such as engineering, international relations, sociology, and the field of science, technology, and society. So I was grilled from a variety of perspectives. Professor Osamu Sakura, who was my adviser, once said, "A doctorate is like a temporary license; afterwards, you have to proceed along the actual path by your own efforts." And I thought over and over how difficult it was just to get this temporary license.

—How did you overcome the difficulties?

Well, I became depressed, cried and gave it up...and then I thought I could try it harder. Actually I wasn't only person who was having these kinds of difficulties. My fellow students also were having a tough time. Now I believe people can grow for all the difficulties they have, so maybe it was a necessary process for me.

Absorbing new knowledge every day

—Did everything go smoothly after you acquired your doctorate?

I left the school after completing my coursework, and I later earned my doctorate while I worked as a specially appointed assistant professor at the University of Tokyo. At the University of Tokyo, I was in a position that related to the administration of the entire university, such as planning and implementing lectures for all students, regardless of whether they were specializing in the humanities or sciences. I came to Hitotsubashi University this April and I met professors and students from fields that are different from what I had known before, so every day feels like a new day.

—Is there anything that you pay particular attention to when you meet people from a field different from your own?

I think I try to accept things with an open mind. I try not to have preconceived ideas and to not adopt the attitude that this field has nothing to do with me or that its norms are different from mine. There is something to learn from every field and I think that



I can always get something out of it that will be of value to me. I sometimes hear people in science say, "I don't know what the humanities researchers are doing" (and vice versa), and I try not to be like that.

—How do you balance

After interview

Tomoka Nagase: "I thought I would like to expose myself to a variety of values beyond those related to my own expertise during this valuable period of studying for my doctorate."

Kaori Nishida: "I thought I would like to make the five years spent on my doctorate worthwhile with regard to my future by coming into contact with different fields and experiencing different things without viewing them as a waste of my time."

your current work and your lifestyle?

I don't know what is meant by this idea of "balance," but if it means to have a fulfilling private life, then I feel fulfilled. After the Great East Japan Earthquake, my family has been living with a dog who was a victim of the disaster. At the time, I wondered if it would be possible for me to take care of a dog, since I was very busy with my work and my life. But you manage somehow and now this dog gives me a lot of comfort.

—What are your interests?

I love to travel and I do so often. I used to go overseas a lot but these days I visit more domestic destinations, together with my dog. My husband is also doing research related to water, so we will go and check out the toilets in different places or look at ruins of places related to water. Recently, we took our dog and went to see the reservoir and irrigation system in Kunisaki Peninsula, which has been recognized as a Globally Important Agricultural Heritage System. I also go on overseas research surveys and have gone on field research trips to Chiang Mai in Thailand and Hanoi in Vietnam. We visited dozens of normal households and studied how they use water and how much of it they use. This was a fun experience, since nobody usually can visit local households during private trips.

Challenge a lot of things without thinking it may be useless or not

—Fusing your research with your interests is very intriguing. And now, what is your advice to students like ourselves who are about to go out into the real world?

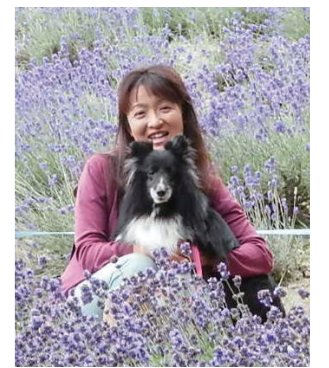
My advice is that you challenge a lot of things without thinking it may be useless or not and expose yourself to different values. I am often asked by students, "What is the best thing to do?" I believe that taking the shortest route is not necessarily always the best thing. It is definitely important to take what is considered the most effective steps at the time, but when you look back at things from a broad perspective I think that many of the things that you did that were considered fruitless at the time will actually prove very useful. Also, you should expose yourself to lots of different values. You need to be able to accept the views of people who are different from you, such as people in different fields and from different cultures, as well as those of a different gender or age. In other words, I recommend that you try to experience many different things.

—When I see my friends who have already graduated and are already working in the real world, I sometimes become anxious about the fact that I am still a student.

There's no need to feel anxious! In five years' time, you will also be working extremely hard, so don't worry. Do now what you won't be able to do later and get as many experiences as you can under your belt!

—Thank you for your invaluable insights. Finally, please give us one last tip as a female researcher who is forging a path for us, who are coming up behind.

A little while ago, I think women thought that they had to be tough and work hard in order to prove themselves. But now there is nothing unusual about working women. Rather than working hard because you are a woman or trying to prove yourself in relation to men, you will be fine if you work with integrity as a human being. And especially for both of you, we should go on a research survey together! I'll be waiting for you in Vietnam!



In Hokkaido with her dog



J-Win W-STEM Networking Conference 2014

Saturday, November 15, 10:00 - 17:30, Ochanomizu University

Participants: 500 people

Held at Kiindo (auditorium) in Ochanomizu University, the conference was a great success with having nearly 500 guests. Beginning of the morning session, President Sawako Hanyu of Ochanomizu University who co-hosted this conference, took to the podium following the host's greeting to welcome everyone to the conference. She commented on what educational institutions required in furthering the prospects of women in society.



The Leading Program participated in poster sessions with the sponsors and was able to inform a number of companies of the efforts being made by the program.

Workshops by the students



The purposes of this workshop were to let people know our students' research on PBTS and to attract their interests into this program. The students made three groups among participants to discuss three different topics that they usually have debated in PBTS. Even for only one hour session, all could have enriched discussion. Not only students could share worthwhile time with participants, but also could receive various opinions from them. We hope this experience would be very useful for our program.

Presentation on PBTS I

Friday, September 5 & 19

We had a series of presentations from students on PBTS I project plans. Each of the four teams gave 15 min talks in English followed by questions and discussion.

Voice from a student

Our "Brain science" team gave a presentation about making the mathematical model that could describe the interactions between nerve cells and the complex network of circuits. By making the model, the team believed that it was possible to understand its mechanism and contribute to the progress of information technology. It was the first time for me to give a presentation in English, so it was a good experience even though I was very nervous. I wish I could do it much better on the next time.



Seminar on Career Development; <Ochadai Metdho> How to lead a bright future for "Rikejo" (science women)

Wednesday, October 29, 15:00-18:00, Ochanomizu University

Participants: 30 people

Attended by not only students of Ochanomizu University, but also graduates and many students of other universities, this seminar proved very fruitful. The invited speaker, an executive from Kirin Company, talked about her own experiences in marketing by using examples from Kirin's own product development as well as career development for women in science. Her lecture, which was very well received, was both pragmatic and packed with information, offering advice on creating work-life balance for women in science as well as providing an opportunity to gain firsthand insight into marketing.



JAXA, Tsukuba Space Center Tour

Monday, November 10, Tsukuba Space Center

Participants: 35 people

On the tour at JAXA's Tsukuba Space Center, we could visit the "KIBO" Flight Control Room and the Astronaut Training Facility. Dr. Chiaki Mukai, the head of JAXA Space Biomedical Research Office, informed us of the importance of space medicine and biological improvements, taking killifish experiments she performed during her space mission as an example. Other members of the center introduced water purification processing techniques for the space station and climate observation using GPM satellites. Students asked many questions about carrier and research activities for them and happily could get valuable advice based on experiences.



Mini-workshop

Wednesday, November 19, 13:30-17:30, Ochanomizu University

Participants: 45 people

A 'Mini-Workshop Program' was held to let people learn how research and development in science/technology link to social requirements and benefits through simulated experience in product development processes. Three subjects, Health & Beauty, Electronic Equipment and Furniture Design, were promoted by guest facilitators who have been working in product development in companies. Participants from various majors and grades formed three groups and exchanged opinions actively.



Voice from the Study Commons (lecturer)

Each team worked hard till the last minute to refine their plans and prepare the presentation slides in English, and their efforts paid off beautifully on the day. They proposed unique approaches to solve topical or global problems. The "Olympic team" planned to clean the Tokyo bay for 2020, the "Environment team" talked about a plantation program to tackle the desertification problem and the "Education team" presented a strategy to improve science education in schools. It would be exciting to see how these projects develop in future.



Messages from the Study Commons Teachers

Tell us your story of Studying Abroad



Atsuko Sato

Birth Place: Kagoshima Prefecture
Project lecturer for Biology
Eco-Evo-Devo (Biology)

What led you to be interested in science?

When I was a child (too long ago to remember!), I was a big fun of plants, insects and seashells.

My Second home town (Oxford, UK)

My second hometown is Oxford in England, where I did my doctoral degree. It is a mixture of ancient tradition as a university town (about 750 years) and modern industrial development. Oxford University is in the heart of the town, consisting of departments of a variety of different subjects and over 40 different colleges where students live and have tutorials (discussion with small group). Every year many tourists in the middle of the University and ask locals "where is THE University of Oxford?" Because of its long history, there are many stories to tell, but one of the unique events in Oxford is "Town and Gown" held in May every year. Traditionally, there have been continuous conflicts between people in the "Town" (local people not involved in University) and people in the University ("Gown"). However on the day of "Town and Gown", both "Town" and "Gown" get together to enjoy a nice spring day in Oxford – many people wear funny costumes; some students run with their long scholar's gown and sweat all over!



Message from overseas student



Biological Sciences,
the Division of Life Sciences

LI DONGYANG

Birth place:
Tangshan City (neighboring town of Beijing),
Hebei Province, China

[My hometown] I came from the city named "Tangshan" which is well known as the great earthquake occurred in 1976. Tangshan is one of the most important heavy industry cities in China, especially for the minerals.
[My research] I belong to the laboratory that is researching glycan of cell surface. I still have not decided exact theme of my research yet, though I am very interested in researching glycan. In this program for leading graduate schools, I have joined the "anti-aging" team with other three members. We have cooperated together to make food-restricted menus for anti-aging. In the future, I hope I could make a contribution to the life and health of human beings.
[My chance to come to Japan] I was graduated from the university in China, where there were many Chinese professors with experiences of studying in Japan, and also several professors from Japan. These teachers influence many students including me to encourage studying in Japan.
[Living in Japan] Everything I see is new to me since this is the first time for me to come to Japan. For example, I found the drug stores in Japan are very interesting, because they sell not only medicine, but also a lot of glossaries and foods. This is very useful for my daily life in Tokyo. I hope that both research and life in Japan go smoothly.



at the university graduation ceremony (far left)

Relay essays by program members

Essay

My research

Head of Advanced Sciences Department,
Graduate School of Humanities & Sciences, Ochanomizu University

Katsuyoshi Kobayashi



My field of research is condensed matter physics and I mainly conduct theoretical research based on numeric calculations. I have conducted a variety of research projects in the past. I will introduce a few of them here.

My research focuses on the surface of solid matter, particularly the characteristics of electrons. The reason for this is because at the end of my third year at university, when I had to decide which laboratory I would join, I was interested in the word "surface." During my fourth year at university, I calculated the NMR chemical shift of graphite. I continued this research until my master's degree and came up with a new theory for explaining the NMR shift of graphite that could be seen in experimental results.

When I entered the doctoral program, I began research on calculating the images produced by scanning tunneling microscopes (STMs). The STM is a microscope that uses the tunnel effect of quantum mechanics to discover the condition of electrons at an atomic scale. At the time, it was only shortly after the microscope had been invented, so research on STMs had just begun to get going. I created a new numerical calculation program for calculating the image produced by an STM and applied it to a variety of surfaces of solid matter. I then conducted research to help interpret the images gained from the experiments.

I also acquired an interest in research on the superlens. The superlens is a

lens that uses a medium to create refractions of light. In particular, it has the effect of amplifying evanescent waves, which are not ordinary waves, and it has been theoretically shown to have a performance level that exceeds the resolution limit of a traditional lens. What interested me was applying this principle to the electron system. I described the principles for applying it to the electron system and considered specific systems that would amplify the evanescent waves.

These days, my main research interest is topological insulators. A topological insulator is a new classification method of insulators that was first theoretically explained in 2005. Crystals are divided into metals that conduct electricity and insulators that do not, but it was found that the insulators can be further classified into two new groups. Research on topological insulators is being conducted all over the world. There are new theories being proposed that I had never imagined as well as experimental results being continuously reported, so it is a very stimulating research field.

For those of you in the Leading Program, you are required to not only conduct outstanding research in your specialized field within your major but must also complete your studies for the Leading Program's minor courses, thus broadening your perspective. I think it is a difficult curriculum to manage, but I hope that you will work hard to earn your degree and that in the future you will be working in the global arena.

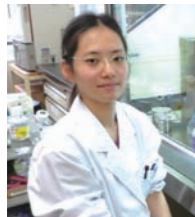


Around the time of appointment as assistant professor at Ochanomizu University

Messages from the Students

Chemistry & Biochemistry,
the Division of Advanced Sciences

Akiko Mito



I'm a biochemist and studying barrier functions of intestinal mucosa. In particular, my research focuses on the physiological activities of the protein secreted to mucosa. In PBTS, I formed the education team with two information scientists. Our aim is to develop a new education system or materials in order to cultivate students' logical thinking ability. Currently, we are visiting schools and the ICT education forum as preliminary study. We hope that our research would contribute to improving the education system for future generations.

Food & Nutritional Science,
the Division of Life Sciences

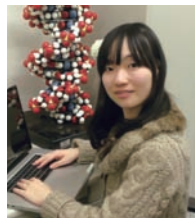
Yuko Caballero



I am studying about the food and nutrition of Paraguay in my major. Previous studies showed that food-restricted diets are effective for anti-aging and can prevent life-style diseases. For the increasingly aging society in Japan, in the PBTS program, we will design a food-restricted menu that is effective for extending healthy life expectancy and preventing life-style diseases, cooperating with colleagues who specialize in biology and biochemistry. I'm excited to make this study with wonderful colleagues receiving good advice from supervising teachers even though it is difficult to manage both this program and my major study.

Computer Science,
the Division of Advanced Sciences

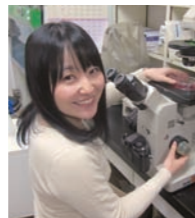
Midori Yano



My major is computational biology and I use computational techniques to analyze protein structure data. In PBTS, I study the synchronization phenomenon of cardiac muscle cells by participating in seminars and visiting research institutes with the team members. I have learned the importance of communication, as the team consists of students whose majors are different. I have come to think of the meaning of working as a project team. I would like to continue to do my best and make the best out of this opportunity.

Biological Sciences,
the Division of Life Sciences

Kei Hashimoto



I study synchronization of rat myocardial cells with students whose major are mathematics, physics and computer science in PBTS. Though we were hard to plan the theme that is able to take advantage of our specialty, we could make the theme by discussing. From now, we will study the synchronization of myocardial cells that I culture and analyze the experimental data using mathematical methods. This research is very new for me. I want to improve my research ability with help of team members and nice teachers.

Student's life A Diary of Student "HANAKO" No.3



Monday, Nov. 10, 2014

Today, I visited JAXA Tsukuba Space Center with my colleagues and some students of my university. I could hear some stories from Dr. Chiaki Mukai, the astronaut whom I have respect as a great woman scientist. I also could observe the control room of "KIBO" and the astronaut training facility. It was a very valuable experience for me. Researchers of JAXA told us some stories about water reproduction technology, rain observation by satellite and space medical sciences that were very interesting. The universe was unfamiliar for me before this visit but now I could feel the universe much closer. I could imagine that the human could have a space trip very soon in the near future. By T



Thursday, November. x, 2014

Today, it was the last class of Essential Physics I. Students were divided into 3 teams, and each team made presentation with different topic. The speaking language was of course English. The theme of my team was Neutrino. I wanted to choose this theme because I was interested in neutrino and also I wanted to learn new field of science, however I had a little knowledge of particle physics, and there were many unfamiliar words or terms for me, such as, Muon, Tau, Pion... etc., they were appeared in the paper one after another. However, we could manage to go through both our presentation and Q&A session. Then I became to feel a sense of solidarity that was unexpected. This was because I had several meeting with members before and shared time with them to overcome difficulties. Other two teams also assigned their roles well. Anyway, I felt speaking English was not so difficult as understanding the particle physics. I wish that was because my presentation skill in English was getting better. Yes!

By K

■ Event information Note: Please check the website for more details

Information session for prospective students for the minor course of Science and Technology for Global Leaders, April 2015 semester

Date & Time: Wednesday, January 21, 12:20 p.m. - 1:10 p.m.

Venue: Room No. 201, Inter-Faculty Building 2, Ochanomizu University

Recommended for: Students planning to enter Ochanomizu University's master's program (in life sciences or science) from April 2015 as well as students interested in the Leading Programs

"Welcome Week": Individual meetings and consultations

Period: January 15 (Thursday) - 23 (Friday)

9:00 a.m. - 4:00 p.m. (excluding weekends) Note: No reservations necessary.

Venue: Leading Graduate School Promotion Center, Ochanomizu University
2nd floor of pre-fabricated building (next to Student Hall)

Recommended for: Students planning to enter Ochanomizu University's master's program (in life sciences or science) from April 2015 as well as students interested in the Leading Programs
Students scheduled to enter Ochanomizu University who wish to participate or are interested in this program.

Note: Please take advantage of this opportunity if you cannot attend the information session for prospective students on January 21.

■ Information on admission

Ochanomizu University is accepting applications for admission to the minor course of Science and Technology for Global Leaders, April 2015 semester

Entrance exam

One day only on February 19, 20, or 23, 2015 Note: Please see the admissions information for further details.

Where to get information on how to apply: Website or the Leading Graduate School Promotion Center (2nd floor of pre-fabricated building next to Student Hall)

Application period: February 2-9, 2015 (applications must arrive no later than this day)

Notice of acceptance: February 27, 2015

■ Report of activities

October 29, 2014	Seminar on Career Development; <Ochadai Metdho> How to lead a bright future for "Rikejo" (science women)
November 10, 2014	JAXA (Tsukuba Space Center) Tour "Talk by Dr. Chiaki Mukai"
November 15, 2014	J-Win W-STEM Networking Conference 2014
November 19, 2014	Mini workshop "Bridging research/lectures with a social contribution"

■ Scheduled activities

January 21, 2015	Information session for prospective students
January 15 - 23, 2015	"Welcome Week": Individual meetings and consultations
February 19, 20, 23, 2015	Entrance exam
March 2015	Guidance and pre-seminars scheduled for new students



We now have Leading Program items!

(Upper left) A4-sized file

(Lower right) Non-woven bag

Editor's notes

Students of this program have now divided into teams and started PBTS research in line with their research theme. We hope that students will be disciplined in their studies and exhibit growth as they acquire training at corporate and research organizations. We look forward to their future success as we welcome new students in April.



About our logo "Bouquet"

The shape of the bouquet of flowers represents the educational system of this program. We place the pink flower in the center representing the major courses. Traditional education at graduate schools were designed to bring growth to only major studies, however we add the flowers around the center to show providing foundational strength and qualities to be a global leader. Our goal is to keep grow students' abilities as flowers are blooming like this logo.

Ochanomizu University

Fostering long-term creativity and innovation with science and technology disciplines based on Ochanomizu spirit "Migakazuba" in the next generation of global leaders

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