

# 筑波医療科学

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## SAKURA Undergraduate Medical Science Course in Tsukuba 2023-Aug



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## 【目 次】

**SAKURA Undergraduate Medical Science Course in Tsukuba 2023-Aug**

・ ・ ・ ・ 1-19

**SAKURA Undergraduate Medical Science Course in Tsukuba 2023-Aug**

Norihiko Ohbayashi, Aya Fukuda, Keiko Ookawa,  
Yukari Okita, Vuong Cat Khanh, Hyojung Jeon, Cosmin Florescu,  
Suzuyo Nakane, Mizuho Cohen, Kiong Ho, Kazuya Morikawa, and Koji Hisatake

Undergraduate Medical Science Course in Tsukuba 2023-Aug was held from August 27 to September 2, 2023. We invited 11 foreign students from some of our partner universities in Indonesia, Vietnam, Taiwan, and Egypt, and our 10 students from School of Medical Sciences, University of Tsukuba have taken part in this program.

**Participants:**

University of Indonesia (Medicine):	1 student
University of Indonesia (Pharmacy):	1 student
University of Padjadjaran (Pharmacy):	1 student
University of Science HCMC (Biotechnology):	1 student
University of Medicine and Pharmacy HCMC (Medicine):	1 student
International University, VNU HCMC (Biotechnology):	1 student
International University, VNU HCMC (Biomedical Engineering):	1 student
National Taiwan University (Plant Pathology and Microbiology):	1 student
National Cheng Kung University (Medicine):	1 student
Cairo University (Biotechnology and Biomolecular Chemistry):	2 students
University of Tsukuba (School of Medical Sciences):	10 students

This program was supported by “Japan-Asia Youth Exchange Program in Science” (SAKURA Exchange Program in Science), Japan Science and Technology Agency (JST). <http://ssp.jst.go.jp/EN/index.html>

## Schedule

Schedule			
27-Aug	Sun		<b>Arrival</b> (Narita airport ) <b>Check-in</b> (Global guest house)
28-Aug	Mon	AM	<b>Orientation</b> -Course guidance, Self-introduction etc.,(10:00~ Innovation building 8F)/ <b>Welcome Lunch</b>
		PM	<b>Laboratory Works</b>
29-Aug	Tue	AM	<b>Laboratory Works</b>
		PM	<b>Laboratory Works</b> / <b>Lecture for English Presentation</b> (13:00~14:00, Clinical lecture room D)/ <b>Hospital Visit</b> (18:30~)
30-Aug	Wed	AM	<b>Laboratory Works</b>
		PM	<b>Laboratory Works</b>
31-Aug	Thu	AM	<b>Laboratory Works</b>
		PM	<b>Laboratory Works</b>
1-Sep	Fri	AM	<b>Practice for Presentation</b> (10:00~11:30, Clinical lecture room D)
		PM	<b>Presentation</b> (13:30~ Clinical lecture room D)/ <b>Farewell Party</b> (17:00~ Innovation building 8F)
2-Sep	Sat	AM	<b>Check-out and Science Tours in Tokyo</b>
		PM	<b>Departure</b> (Narita airport)

## List of participating laboratories

Participating Laboratories		
Laboratory	Supervisor	Research Topic
Laboratory Animal Science 実験動物学研究室	Seiya MIZUNO	Analysis of in vivo homeostasis mechanisms using gene-modified mice
Laboratory of Experimental Pathology 実験病理学研究室	Mitsuyasu KATO	Molecular Mechanisms of Stem Cell Induction in Cancer Growth
Regenerative medicine and Stem cell Biology 再生医学幹細胞生物学	Osamu OHNEDA	Breast cancer and COVID-19
Laboratory of Gene Regulation 遺伝子制御学	Koji HISATAKE/ Aya FUKUDA	In vivo imaging of beige adipocyte induction and gene expression analysis
Laboratory of Gene Regulation 遺伝子制御学	Koji HISATAKE/ Ken NISHIMURA	Neural differentiation with controlled transcription factor expression
International Institute for Integrative Sleep Medicine (WPI-IIIS) Lazarus/Oishi Laboratory 国際統合睡眠医科学研究機構 (WPI-IIIS) ラザルス / 大石研究室	Michael LAZARUS	Understanding the link between sleepiness and motivation by exploring mesolimbic glia-neuron interactions
Department of Hematology 血液学	Mamiko SAKATA – YANAGIMOTO	Oncoimmunology mediated by immune cells with somatic mutations
Immunology 免疫制御医学研究室	Kazuko SHIBUYA	Expression analysis of surface antigens on immune cells by flow cytometry
Endocrinology and Metabolism 内分泌代謝・糖尿病内科	Hitoshi SHIMANO	Lipid Diversity in Organs towards New Concept for Pathophysiology and Therapy in Global Diseases ~ Break the Central Dogma of Molecular Biology ~
Molecular Virology 分子ウイルス学	Atsushi KAWAGUCHI	Molecular mechanisms of emerging virus infection (influenza viruses and SARS-CoV-2) and innate immune responses against the viruses.

### **About the course:**

This program was designed for qualified undergraduate students majoring in the field of biomedical sciences. In this year, 11 undergraduate students from Egypt, Indonesia, Taiwan, and Vietnam were selected by their institute to visit the University of Tsukuba, Japan, to obtain research experiences and trainings in the medical science laboratories. A student from Tsukuba and a student from abroad formed a pair to join in one of the laboratories and work together on a research project. All students gave an oral presentation on their accomplishments on the final day of the program. During the program, the participants also had a chance to visit the proton beam therapy center at University of Tsukuba hospital, and attended a lecture to learn how to give a good English presentation.

We thank all of the participants and persons involved in this program for the participation, cooperation, and supports. We hope that we can see you again in near future.

### ***Photos:***



**Welcome to JAPAN!!**







## Orientation and self-introduction



## Laboratory works



## UT Hospital Visit



## Lecture



## Presentation





## Excursion



## See-off at the airport



## *Letters from participants:*

*By NGUYEN HOANG CHAU NHI, International University – VNU HCMC*

### **Purpose:**

As a second-year student, the Sakura course plays an important role in the first step of my research career. Coming to the program, I hope to **gain precious experience** in doing research and **have global connections** with friends from many different countries. Moreover, I always **seek an opportunity** to be a **master candidate** at Tsukuba University with a full-fee scholarship.

### **Experiences:**

First, the program gave me a chance to experience interesting **diverse cultures**. I am grateful for working with Japanese friends who are very helpful and kind. Furthermore, **Japanese foods** are delicious, healthy, and tasty. Fortunately, the International Office of Tsukuba provided me with a bicycle, which I used every day to go to Tsukuba University, which makes me feel like a 'real' Japanese student.

Secondly, **experiences in doing research** are most precious to me.

My research topic related to the effects of interested genes in neuronal differentiation that are potential and meaningful for further research in stem cell therapy. Interestingly, this lab work was the first time done in the research, which means that I had a chance to contribute a little new data to the wonderful research of the Lab of Gene Regulation.



### **Achievements:**

Through the lectures and instructors of Prof. Ken Nishimura, Prof. Koji Hisatake, and current master students in the lab, I have had an **overview of the research process** and ideas to deal with scientific problems and create experimental designs. I also did experiments with cutting-edge techniques in Japan, which are very efficient for research.



Working in a professional scientific environment with great experts is the greatest memory and experience for me. The **presentation day** was meaningful when all students could present the results of their research. I gained wonderful knowledge from different fields of study and also learned how to present my achievements appropriately to other friends. The positive feedback from my supervisors and other friends has been my **greatest motivation**. Moreover, the passion for science of my sensei and senpai inspired me a lot to study and research more in their field of research.

### Feelings:

I want to say many thanks to the organizers for this wonderful Sakura program. I felt fulfilled with the experience within 7 days at Tsukuba. I love Japanese people and culture and dream to become a part of Tsukuba University as a master or PhD student. Therefore, I really want to come to Tsukuba again to progress my research in the future.

Once again, thanks for everything and hope to see you soon, Japan.



P/s: To record memorable memories from this trip, I have created a video of the course at the below link:

<https://drive.google.com/file/d/15-NgDFdkwjWAhGjXew2IXZV9ZPekLro3/view?usp=sharing>

***By Bintang Heiza Yudistira, University of Indonesia***

Reflecting on my participation in the SAKURA2023-Aug program, I find myself overwhelmed with gratitude for the profound impact it has had on my personal and academic journey. As an Indonesian medical student, this experience not only deepened my understanding of oncoimmunology but also introduced me to the world of international collaboration and cross-cultural exchange.

Foremost, I extend my sincere appreciation to the organizers and all those who contributed to the realization of this program. Your unwavering dedication and vision have given rise to a platform that transcends geographical boundaries, uniting bright minds from diverse backgrounds to share knowledge and foster enduring connections. Being a part of this remarkable initiative is a privilege I shall forever hold dear.

My involvement in the SAKURA2023-Aug program began with a strong desire to learn more about the intricate workings of immune cells derived from somatic mutations in relation to colorectal cancer. Alongside this desire, there was a strong desire to learn from eminent mentors like Prof. Mamiko SAKATA-YANAGIMOTO, Dr. Sasaki, and Dr. Tran Nguyen as well as to work with international peers. These expectations were not only met, but also exceeded by the program, which created an atmosphere that encouraged learning and intellectual development.

My one-week program in Japan turned out to be a fantastic experience that went above and beyond the limitations of laboratory work. It was quite enlightening to collaborate directly with my Japanese colleague, Mayuko Ohki. Our collaboration showed the value of many viewpoints in the field of research. However, what made this program truly special was the sense of solidarity and togetherness among the other participants, who came from Vietnam, Egypt, Taiwan, and my counterparts from Indonesia.

A particular highlight was our captivating takoyaki party, where we celebrated our diverse cultures through the shared joy of cuisine. These moments of cultural exchange solidified the bonds among us, nurturing a sense of unity despite our varied backgrounds. The program's ability to bridge cultural divides and cultivate friendships that transcend borders is a testament to its exemplary design.

The SAKURA2023-Aug program provided me with enlightening research opportunities, as well as opportunities for cultural exchange. However, I was also fortunate to have the chance to see proton beam therapy in action. A very sophisticated type of radiation therapy used to treat cancer is known as proton beam therapy. Proton beam therapy uses positively charged protons rather than the X-rays used in conventional radiation therapy. Protons can now be



precisely controlled to target tumors with amazing accuracy while minimizing damage to neighboring healthy tissues, which is a clear advantage. It was not only impressive to see this cutting-edge technology in action, but it also brought to light the potential for game-changing improvements in cancer treatment.

The highlight of our journey was during the research presentation on the program's concluding day. Witnessing the remarkable research endeavors undertaken by my peers was profoundly enlightening and motivating. It emphasized the core essence of this program: the cultivation of collaboration and the nurturing of a global community of researchers. These presentations not only reaffirmed my dedication to the field of research but also served as a catalyst for my enduring pursuit of opportunities to make meaningful contributions.

The impact of the SAKURA2023-Aug program extends far beyond its conclusion. It has left an indelible mark on my academic and personal voyage. The knowledge and experiences acquired have broadened my horizons and ignited a fervor for international research collaboration. As I move forward, I am resolute in my commitment to harness the connections forged and insights gained during this program to contribute meaningfully to the field of oncoimmunology.

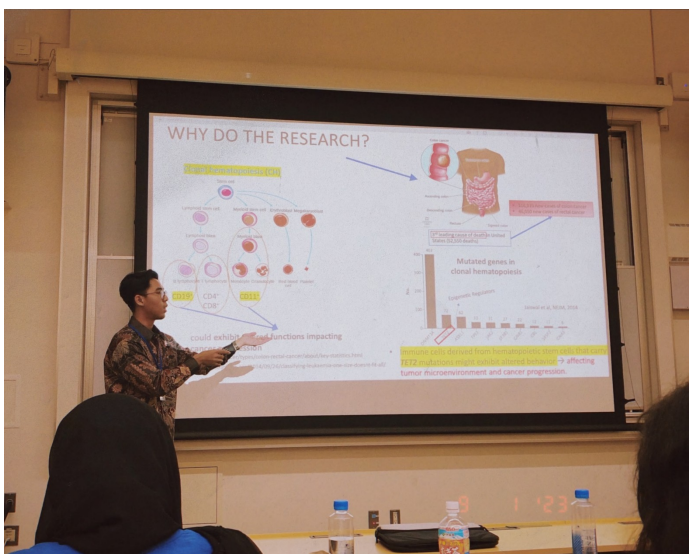
My future vision includes continued collaboration with international colleagues, drawing upon the invaluable lessons gleaned during this program. I aspire to pursue further research opportunities, with Japan holding a special place in my heart. This program has elucidated that borders are not barriers but gateways to new possibilities, and I am eagerly poised to embark on this exciting journey.



Eating Sushi with other Students



Farewell Party



Research Presentation

*By Chang Chih-jung, National Taiwan University*

### **Motivation**

Although I am not a student at College of Medicine in National Taiwan University (NTU), when I knew that I was selected to join the program, I was very willing to go and immediately had a discussion with my family, including my uncle who is a professor at NTU and have been to University of Tsukuba (UT) before. They all encourage me to join the program, so I made the decision to go to Japan. Organizers of the program were so nice and polite to inform us how to prepare for the program before we went abroad, showing the willingness and kindness to us. I already felt the passion before going to Japan, which makes me feel safe and satisfied.

### **Experiments**

In this program, my laboratory host is Professor A. Kawaguchi in Transborder Medical Research Center, and my partner is Hiyori Miki. The laboratory mainly focuses on Molecular Virology, which is highly related to my major. In this 3-day experiment, although there were only 3 days, Miki and me still completed the experiment and had some results which could share with others during presentation. The reason why we could successfully achieve the goal was because Miki's preparation in advance. In this program, we study the relationship between protein A of Bovine enterovirus and host cells' mitochondria. This study needs to prepare enough quantity of cells, and Miki have cultured them



before I went to Japan, which increased the efficiency of the experiment. In addition, since I lacked background knowledge and haven't done the similar experiment before, Miki taught me step by step and described the principle of the experiment to me to let me finish my job and understand what exactly I was doing. As for confocal microscopy, thanks to Dr. Kawaguchi, who personally performed the process, we could see the results clearly.

## Achievements

After immunostaining and confocal microscopy, we saw that protein A present inside (or on the surface) of the mitochondria and observed that the signals of mitochondria are weaker inside the protein A expressing cells. We could finally conclude that protein A might be a protein which can interrupt the immune response of mitochondria against viruses. Additionally, with the hard works that Miki and I did and Mr. Cosmin's suggestion, we performed very well at the English presentation, which was the first time for both of us to present in front of so many people using English.



## Future plans

I used to be a member of my uncle's laboratory at NTU. I studied the relationship between the endosymbiont *Buchnera* and its host, pea aphid. However, I have made a decision to leave and hope to explore more about my interest this semester. Frankly speaking, after doing the experiment in University of Tsukuba, I'm really interested in studying at UT for master or doctorate degree of Medicine field in the future. I think that maybe I can study in UT in the future or even become a professor who can teach in UT.

## Acknowledgements

First of all, I want to thank all the organizers of the program. I must say that this is a program which makes me sad when it ends. Thanks for your hard works!

Secondly, Miki is a really kind partner with passion, patience, and generosity. Before going abroad, Miki have informed me a lot of information of the program and also, information of UT. As I mentioned, she took me step by step to complete the experiment. Besides, she even took me to have lunch and dinner almost every day. Last but not least, she bought me a bag of tea in the mall of Tokyo Skytree. I can't express all the gratitude for her help during this program.

Of course, I also have to thank my professor, A. Kawaguchi. Professor Kawaguchi is a kind, humorous, and handsome mentor with a lot of patience. Although professor was very busy, He gave me and Miki lots of suggestions about our experiment and presentation. Consequently, Miki and I had a wonderful performance of presentation.

Finally, thanks all the Japanese students who prepared the wonderful party. I felt I was home even though I was not in Taiwan. Last day at Asakusa, thanks Miki and Masashi's kindness and generosity to guide me to visit the temple and Tokyo Skytree and take Yu-yun and me to have お好み焼き and もんじゃ焼き. Also, thanks all the students from other countries and Yu-yun from Taiwan, they were all very nice to me and helped me with anything I need.



In conclusion, this is a challenging, joyful, and unforgettable experience. I hope I can go to UT again to meet all the people in the future.



***By Maram Adel Abdelghany Hassan, Cairo University***

I was motivated to come on this program Japan is such a beautiful city with advance in research and technology, when my professor nominated me, I felt like it was a dream come true and every step of the preparation was exciting. I wanted to make the most out of it and to learn the best I could, I attended the SRP online course to get to know the labs better and requested the lab that I had very much interest to be a part of and participate in which was the lab of sensei Ohneda in regeneration and stem cells.

My purpose is to specialize in molecular neuroscience and regenerative neuroscience, I want to pursue graduate degrees master, PhD and then post-doc and hopefully one day get the opportunity to be a group leader or professor and head of a lab to be able to guide students and do research in an area of my interest and make a contribution to the scientific field.

At Tsukuba, I experienced a new culture, a new way of behavior that is I believe is different from one country to another. I had the opportunity to make a lot of Japanese friends and other nationalities participating in your program. Everyone was so kind and helpful; my partner was a great guide throughout the program. I learned some Japanese words, ate a lot of delicious Japanese food and enjoyed the last day trip to Japanese historical places in Asakusa.



In the lab, I was supervised by Nga a PhD student and Khanh sensei, they taught me everything in detail explaining the protocol very well, we had a structured lab work schedule that was amazing in time management. I learned new techniques, and tricks to optimize my lab work. The techniques I learned were RNA extraction, cDNA synthesis, qPCR, scratch assay, drug resistance assay. From the English presentation lecture and practice, I learned a lot about how to improve my presentation skills.

I think my biggest achievement was being a part of this program besides getting to know the Japanese culture and making Japanese friends. Also, getting great results from our work in the lab and being able to present it clearly which lead to my presentation getting a lot of questions which meant the participants was interested and was able to follow up and I had the ability to answer questions to my knowledge and felt really satisfied with how it ended. Our project is about the effects of Sars cov2 on breast cancer and we wanted to study the effect of the M protein on aggressive breast cancer cell in inducing malignant phenotype through released extracellular vesicles to non-aggressive breast cancer cells, I am honored to have contributed to the work in this week of scientific research.





*By Shuri Mineno, University of Tsukuba*



I couldn't imagine myself being confident and motivated like now one month ago. Everything I experienced in the Sakura science program was so interesting that I started thinking about my future more widely and deeply. There were two differences in my mind before and after the program.

The first difference is my mindset toward learning English and science. I spent a long time with foreign students in a week, what impressed me most were their strong motivation to learn

science and their high level of English. My partner, Chau Nhi was one of the wonderful students I met. We are the same age, but she understood almost all methods of lab work. Moreover, she kindly taught me everything about our research which I'm not sure about. I was also surprised because many foreign students are good at giving presentations. They didn't read their scripts but tried to tell their research in their own words. I did my best in the presentation, but I think that it wasn't as good as foreign students. Therefore, now I'm very motivated to study English, especially scientific English, and how to convey my ideas effectively in English. Moreover, I was impressed by my partner's enthusiasm for learning science. As she asked many questions to our professor and tried to make an effort in the lab work, I could see that she had a strong willingness to build her career in science so that she could improve her country which is now developing. To add, comparing my study environment and hers, I reaffirmed how fortunate my study situation is. Now I've got a passion not to waste my great surroundings in the University of Tsukuba.



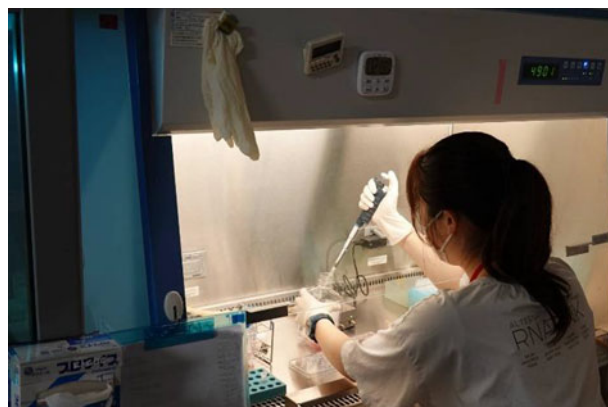




The second change was my attitude to consider my future. After all, I found that it is one of the biggest fun for me to communicate with foreigners in English. While I was talking with them, I was always excited to know the cultural differences so talking in English seemed to be like an adventure for me, and thus I got interested in gaining overseas experiences in the future. I had been interested in studying and traveling abroad before this program, however, my willingness to see other countries, talk with people who have various backgrounds, and study abroad has become much stronger. Besides, surprisingly, I also got curious about lab work. I thought that I was not suitable for research because of my stereotype of studying. By struggling

with lab work firsthand in a week, I realized that I could enjoy discovering new things. Thanks to our professor, Mr. Nishimura, I could do an experiment in which even he hadn't gotten the results, so we actually experienced the moment a new phenomenon was found. It was one of the most wonderful memories that we could contribute to the development of science.

I got interested in many things through the Sakura science program like cultural exchange and lab work. Now there are too many choices to narrow down them now. However, one thing I can clearly say is that my motivation for my future has become more intense. Before this program, my dream was just to work as a medical technician in a hospital. However, I'd like to challenge many things rather than narrow my horizons right now. To participate in this program was the very first step for me. I hope that I can find a way to combine my wide interests in the future.



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