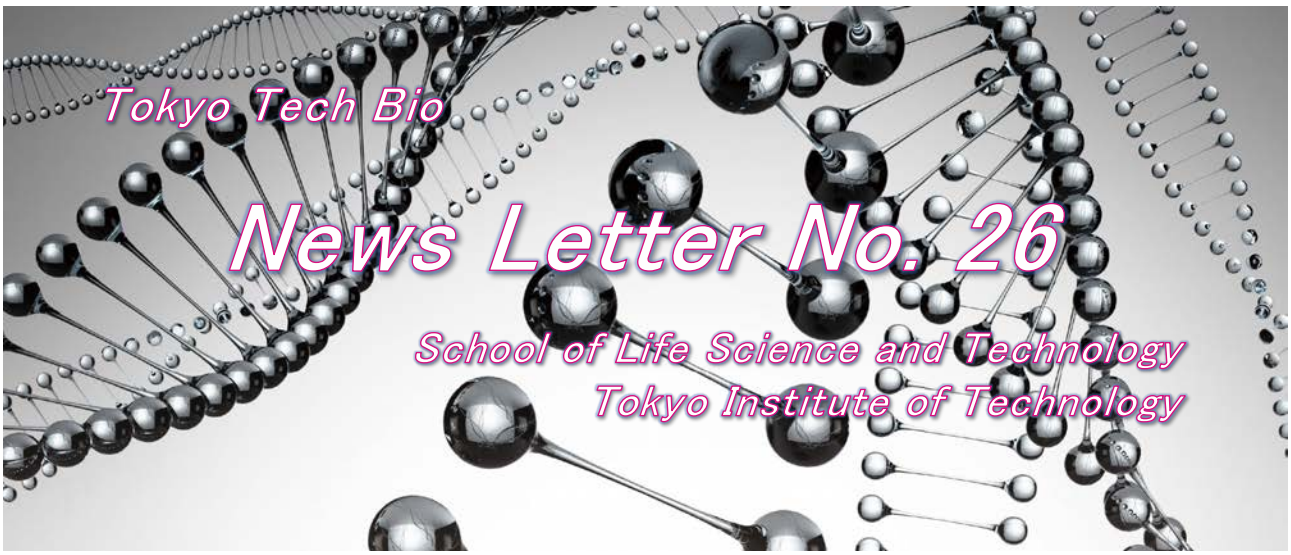


Contents

Message from the Dean

Prof. and Dean of the School of Life Science and Technology
Susumu KAJIWARA

Hello everyone.

On October 1 of this year, Tokyo Institute of Technology (Tokyo Tech) merged with Tokyo Medical and Dental University (TMDU) to form Institute of Science Tokyo. This new university is truly a science and technology university, which has not only science and technology but also medicine, dentistry, and nursing science. The School of Life Science and Technology will continue to promote education and research in various fields of life science and technology, and will also develop cutting-edge education and research by integrating medicine, dentistry, science, and technology. As a first step, in April 2025, we will launch the “Science nad Technology for Health Care and Medicine Course,” a composite graduate course curriculum centered on the School of Life Science and Technology. In this course, faculty members of the former Tokyo Tech and the former TMDU will conduct graduate school education together.

We look forward to your continued support of the ever-growing Institute of Science Tokyo and the School of Life Science and Technology.

From New Staff

Prof. Ryuji IGARASHI

I am Ryuji Igarashi, and I have been appointed as a professor at the Institute of Life Science and Technology since April 2024. I also serve as a team leader at the Institute of Quantum Life Sciences, which is part of the National Institutes for Quantum Sicence and Technology (QST). I am deeply grateful to Dean Susumu Kajiwara, Director General Yoshinobu Baba, and both organizations for their support in providing me with this valuable opportunity.

During my student days under the influence of Professor Masahiro Shirakawa at Kyoto University, I became interested in understanding phenomena within cells in a straightforward physical and chemical manner. Magnetic resonance techniques like NMR spectroscopy allow for the quantitative acquisition of various physical and chemical parameters; however, due to the need for ensemble averaging, specific information about individual cells is often lost. In contrast, single-cell analysis methods,

including fluorescence imaging, enable the detailed understanding of individual cells but face difficulties in quantifying physical and chemical parameters. To overcome these challenges, I have devoted over 15 years to developing nanometer-sized sensor probes using quantum sensing techniques. Known as "nanoscale quantum sensors," these tools are now used in various biological environments from cells to the brains of small animals, and are growing into useful tools for measuring a wide range of parameters, including the microenvironments inside cells and the concentrations of minute biomolecules.

At QST, I am advancing research and development aimed at applying this technology to medicine and industry for societal benefit. Envisioning and working towards an ideal future is a crucial mission for national research institutions. At the Institute of Life Science and Technology, in line with the university's ultimate mission of "advancing knowledge," I aim to pursue the exploration of life at the nano level together with students and young researchers.

Prof. Kumi KURODA

My name is Kumi Kuroda, and I have been appointed as a professor at the School of Life Science and Technology from April 2023. After graduating from Osaka University School of Medicine, I worked at RIKEN for about 20 years, including my post-doctoral fellowship, where I conducted research on the neural mechanisms underlying the parent-child relationship. I would like to express my sincere gratitude to all the supports that have kindly provided during the start of my laboratory.

Tokyo Institute of Technology is home to a wide range of cutting-edge laboratories in various engineering fields, and I was able to conduct joint research with Professor Natsue Yoshimura of the School of Computing soon after my arrival. As a member of this wonderful research and educational environment, I will make every effort to contribute in any way I can. If there is anything I can do, please do not hesitate to contact me. Thank you for your continued support and cooperation.

Prof. Takao YASUI

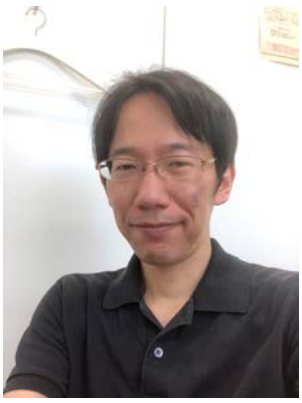
My name is Takao Yasui, and I joined the Department of Life Science and Technology as a professor in May 2023. I would like to

express my sincere gratitude to the many professors and staff who have greatly assisted me in establishing my laboratory. I would like to take this opportunity to thank you once again.

I have fabricated nanodevices using engineering techniques, analyzed the interaction between nanodevices and biomolecules from a scientific perspective, and developed novel methods for analyzing biomolecules. I have learned that this department has achieved a high level of integration across various fields of life science and technology. I am grateful for the opportunity to conduct my research in such an environment and am eager to collaborate closely with professors in the department to advance our work.

Lastly, I will be committed to contributing to the further development of the Department of Life Science and Technology. I eagerly anticipate your continued guidance and encouragement in the future.

Assoc. Prof. Koichiro URIU

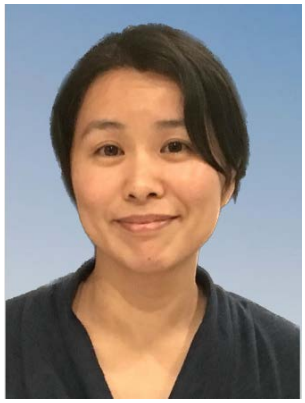


My name is Koichiro Uriu. I joined the School of Life Science and Technology as an Associate Professor on July 1, 2023. After I obtained PhD in Kyushu University, I did my first post-doc in Dresden, Germany for about 2.5 years. After returning to Japan, I have been engaged in research and education at RIKEN institute and Kanazawa University.

I am a mathematical biologist. I use mathematics and simulations to study biological phenomena. I have been working on biological clocks, including developmental clock and circadian clock. In the study of developmental clock, I have been interested in the effects of cell movement and tissue elongation, which are unique to development, on gene expression rhythms in cells. In the study of circadian clock, I have investigated each of three important properties: (1) autonomous oscillation, (2) temperature compensation, and (3) entrainment to light or temperature cycles. I would like to challenge new themes at the School of Life Science and Technology. I am also looking forward to the opportunity of collaborations.

I will make my best efforts to contribute to School of Life Science and Technology in education, research and management. I am looking forward to working with you.

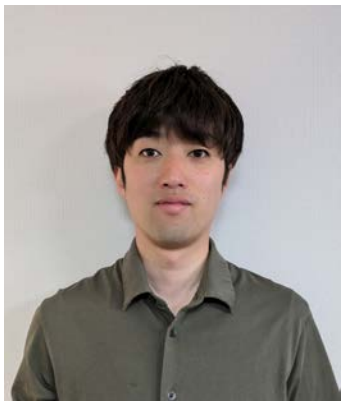
Assoc. Prof. Taiko TO



My name is Taiko To and I have been appointed as an associate professor at Tokyo Institute of Technology from April 2023. I would like to thank the many professors and administrative staff who helped me a lot when I set up my laboratory. Thanks to your help, the research environment has been set up, students have been assigned and we can finally start our research in earnest. I would like to take this opportunity to thank you from the bottom of my heart. Although there are still many things I have yet to achieve, I would like to continue to grow and develop in order to achieve even better research results.

My research explores ‘epigenetics’, the fundamental mechanism of life, using plants as materials. Epigenetics is a mechanism that regulates gene function without changes in DNA sequence, and the core of this regulation is conserved in many eukaryotes and is involved in various processes such as reproduction, development and environmental responses. So far, we have been engaged in basic research on DNA methylation in plants, combining molecular genetics and genomics, and we will now expand our focus on developing applied research. We will make every effort to contribute to the further development of the Japanese scientific community.

Asst. Prof. Taiga AJIRI



I have assumed the position of Assistant Professor at Yasui Laboratory since March 2024. My name is Taiga Ajiri. I am grateful for the opportunity to engage in research and education as a faculty member at Tokyo Institute of Technology. It is a motivating experience to start afresh in this new environment.

I obtained my degree under the guidance of Professor Manabu Tokeshi at the Graduate School of Chemical Sciences and Engineering at Hokkaido University in 2019. Subsequently, I worked as a corporate researcher at Sysmex Corporation, a diagnostics manufacturer, for approximately five years. My expertise lies in micro-nano fluidics. During my student years, I was involved in the development of novel analytical methods using micro-nano fluidic devices, and during my tenure at Sysmex, I contributed to the development of cell manipulation techniques. I aim to leverage the experiences gained in the corporate sector as my strength and aspire to challenge myself in various endeavors. While I anticipate facing challenges in adapting to this new environment, I would greatly appreciate your guidance should such situations arise. Thank you in advance for

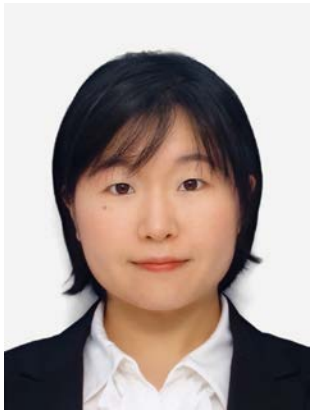
your support. I look forward to working with you.

Asst. Prof. Natsuki OSAKA

My name is Natsuki Osaka, and I have been appointed as an assistant professor in Tanaka & Yoshida Laboratory, Institute of Chemical and Life Sciences, Institute for the Creation of Science and Technology, as of April 2023. I obtained my PhD (Bioscience) from the Graduate School of Agriculture, Tokyo University of Agriculture in 2020. After that, I have been working as a research scientist at the Institute for Advanced Biosciences, Keio University. I'm grateful for the opportunity to be hired as a faculty member of this university and to be involved in research and education.

I'm interested in how cells regulate their metabolism and proliferation in response to environmental changes and stress. I have been studying the regulation of guanosine triphosphate (GTP) synthesis, which is used as an energy currency for various cellular activities, in relation to nutrient starvation responses in bacteria and cancer cell proliferation. My current research being carried out in the Tanaka-Yoshida Laboratory is the relationship between ribosome biosynthesis and metabolism in the cell growth cycle in Bacillus subtilis, Escherichia coli, and yeast. Through comparing each research subject, I want to clarify the system that links cell metabolism and proliferation, which is universal to all living organisms. I will make every effort to contribute to the development of the University through my research and educational activities.

Asst. Prof. Ai KOHATA



I am Ai Kohata, and joined the Kinbara laboratory as an assistant professor in July 2023. I received my Ph.D. degree in March 2022 from the Department of Chemistry and Biotechnology, Graduate School of Engineering, the University of Tokyo. Then, I worked as a project-appointed assistant professor in the same department until June 2023.

With a background in organic chemistry, supramolecular chemistry, and fluoroorganic chemistry, I have developed chemically modified biomacromolecules such as nucleic acids and proteins, to control the biological functions. From now on, in the school of life science and technology, I would like to challenge myself creating unique materials that

move and function just like life to deepen our understanding toward it. I will put my best effort to research and education. Thank you very much for your kind support, and I look forward to working with you.

Asst. Prof. Yohei KONDO

My name is Yohei Kondo. I have been appointed Assistant Professor in the Kawai group of the School of Life Science and Technology since September 2023. After receiving the degree of PhD from the University of Tokyo in March 2022, I worked in the private sector for a year and a half before returning to academia. I would like to express my sincere gratitude to the Tokyo Institute of Technology for employing me as a faculty member and giving me the opportunity to engage in research and education.

My research field is chemical biology. I have been working on the development of nuclear magnetic resonance molecular probes for the early diagnosis of diseases, using hyperpolarization techniques that dramatically improve the sensitivity of nuclear magnetic resonance. I hope to utilize fluorescence as the detection modality and develop unique molecular designs and approaches for chemical biology.

Through my daily research and educational activities, I will do my best to contribute to the development of the Tokyo Institute of Technology and the Institute of Science Tokyo. I look forward to your guidance and encouragement.

Asst. Prof. Hiroyuki TANAKA

I was appointed as an Assistant Professor of Takehiko Itoh's laboratory at the School of Life Science and Technology in February 2024. Before taking this position, I worked as a postdoctoral research fellow in Takehiko Itoh's lab, engaged in whole-genome analysis of various eukaryotes, mainly plants, using bioinformatics. The genome, the blueprint of life, provides information to help uncover the complete mystery of the genes coded within it. However, only a small amount of the information about the basis of life buried inside the genome has been revealed. I hope to contribute to the development of biology and agriculture by promoting plant genome analysis.

Asst. Prof. Shouta NONOYAMA

I am Shouta Nonoyama, and I am honored to join the Masuda Laboratory at the School of Life Science and Technology as an Assistant Professor starting in November 2023. After receiving my PhD in Life Sciences from Tohoku University, I continued as a postdoctoral researcher at Tohoku University and later at Tokyo Institute of Technology. I am very grateful for the chance to conduct research and provide education at Tokyo Institute of Technology.

My specialty is molecular microbiology, where I mainly study how bacteria's cell systems work. I have focused my research on the genus Burkholderia as a model, which uniquely adapts to various environments including human bodies, soil, and plants. I analyzed the iron homeostasis mechanisms closely associated with the environmental adaptation and pathogenicity of these bacteria, with a particular focus on transcriptional regulation. Looking ahead, I plan to combine my microbiology expertise with the plant physiology knowledge at the Masuda Laboratory. In particular, I want to focus on the role of the genus Burkholderia as a plant pathogenic bacterium and understand how it infects plants and how it interacts with them.

I am excited to start my new role at the Tokyo Institute of Technology and look forward to working together.

Asst. Prof. Hiroyoshi FUJIOKA

My name is Hiroyoshi Fujioka, and I have been appointed as an Assistant Professor in the Kamiya Laboratory of the School of Life Science and Technology since April 2023. I joined directly from being a student without going through a postdoctoral period, and initially felt disoriented. However, with the support of the professors around me and the life science administration staff, I have been able to successfully start my career, for which I am deeply grateful. I specialize in chemical biology, an area of research that combines chemistry and the life sciences, and I find the School of Life Science and Technology to be a very stimulating environment with experts in a wide range of life science-related fields. I am committed to contributing to the further advancement of the institute and will strive diligently towards this goal. I sincerely appreciate your guidance and

support, and I look forward to your continued mentorship in the future. Thank you very much.

Asst. Prof. Kseniia PROKOFEVA

My name is Kseniia Prokofeva, and I have been appointed as an Assistant Professor in Kuroda Laboratory at the School of Life Science and Technology as of October 2023.

I obtained my Ph.D. degree in September 2023 from the University of Tsukuba, where I was studying in Sakurai/Hirano Laboratory at the International Institute for Integrative Sleep Medicine. I am grateful to my supervisors for their guidance and support during my student years.

My research field is behavioral neuroscience. During my Ph.D. study, I was working on deciphering of intrahypothalamic neuronal circuits regulating sleep and wakefulness and identified a novel neuronal circuit that induces wakefulness in mice. In Kuroda Laboratory at the Tokyo Institute of Technology, I am going to focus on elucidation and dissection of neuronal circuits that are crucial for maternal and prosocial behaviors.

I am honored to become a member of the Tokyo Institute of Technology and I will make every effort to contribute to the development of the School of Life Science and Technology in research, education, and strengthening of international relations. I am looking forward to working with you.

Asst. Prof. Kyohei MUGURUMA

My name is Kyohei Muguruma, and I was appointed as an Assistant Professor in the Nishiyama-Miura Laboratory in March 2024. I received my Ph.D. degree in Tokyo University of Pharmacy and Life Sciences in 2018. Subsequently, I worked as a postdoctoral researcher at Tokyo Institute of Technology and RIKEN. I am grateful for the opportunity to contribute to research and education as a faculty member at Tokyo Institute of Technology.

My research interests are molecules that change the function within the body, and I have mainly conducted the chemical synthesis and evaluation of prodrugs and antibody-drug conjugates. In Nishiyama-Miura Laboratory, I would like to develop drug delivery systems based on new chemical structures. I look forward to your continued guidance and encouragement in the future.

Asst. Prof. Takumi MURAKAMI

My name is Takumi Murakami, an assistant professor in the Hongoh Laboratory since August 2023. I entered Tokyo Institute of Technology in 2008 as an undergraduate student, and received my PhD degree in 2017. Following graduation, I worked as a postdoctoral researcher at National Institute of Genetics. It is a great pleasure and an honor to become a member of Toyo Institute of Technology once again.

I have conducted research on ecology and diversity of microorganisms living in environments by leveraging metagenomic approaches. In particular, I have dedicated my efforts to studying microbial ecosystems in glacier environments in order to understand the impact of changing glacier conditions on microbial community dynamics.

I am really looking forward to working with you. I would also sincerely appreciate your support and encouragement.

From Transferred Staff

Prof. Hitoshi NAKATOGAWA

I moved to the position of professor at the Cell Biology Center, Institute of Innovative Research on April 1 in 2023. I have spent almost 9 years as an associate professor at the School of Life Science and Technology since June 2014. I would like to take this opportunity to thank everyone at the school again. In the previous position, I started my lab on the 3rd floor of the S2 bldg. at Suzukakedai Campus, and then moved to the 9th floor of the B2 bldg.. And now, my new lab is on the 3rd floor of the S2 bldg....I came back like a boomerang. Anyway, I am enjoying my research with students of the School of Life Science and Technology at this old and new place. I would like to thank the people at the school for their continued support.

Prof. Shinji MASUDA

In April 2023, I was appointed as a professor of the department. I joined as an assistant professor of the Takamiya-Ota Lab of the department December 2003, and subsequently served as an associate professor at the Center for Biological Resources & Informatics, leading up to the present. This means I have spent ~20 years at the campus. Since then, I have studied molecular mechanisms of photosynthesis regulation, and it took a decade to complete each research project. This suggests that I may only have one or two more themes to start and conclude research on. I aim to embark on new research and will advance into unexplored territories alongside students. Thank you for your continued support.

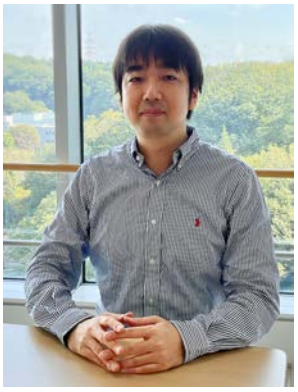
Assoc. Prof. Tetsuya KADONOSONO

My name is Tetsuya Kadonosono and I have been appointed as an Associate Professor since April 2023. I Joined the Tokyo Tech (Kondoh Shinae Lab) as an Assistant Professor in 2010, and have been engaged in research and education as a supervisory assistant professor since 2017.

In my research, I am working on drug discovery research for cancer-targeted biologics. In particular, I combine protein engineering and synthetic biology methods with computational and informatics research methods to develop design systems for high-performance biologics and their application to the development of cancer diagnostic probes. I will further promote collaborative research with professors and pursue drug discovery research that can only be realized at Tokyo Tech.

I will make every effort to contribute to the further development of our School.

Assoc. Prof. Yoshiaki MASAKI



I am Yoshiaki Masaki, an associate professor at TokyoTech since September 2023. We are conducting research primarily focused on organic chemistry to explore new possibilities in nucleic acid therapeutics. Nucleic acids are polymers with just four different nucleobases, yet they exhibit diverse functions ranging from genetic information storage and processing to catalytic activity. By interacting with molecules such as proteins, nucleic acids form complex regulatory networks. By utilizing chemistry, we can introduce new functions to nucleic acids. For example, it is possible to restrict the interaction site with

specific proteins by fixing sugar conformation. By changing the position of the phosphate group, unintended protein-nucleic acid interactions can be selectively suppressed. We believe chemical intervention can contribute to improving safety and efficacy in nucleic acid therapeutics.

Although we are still working to establish the research environment, we have gradually become able to conduct experiments. Enjoying research together with the lab staff and students, we will pursue novel insights into nucleic acid therapeutics. Thank you for your continued support.

From Leaving Staff

Asst. Prof. Satoshi ABE

In April 2024, I moved to the Graduate School of Life and Environmental Sciences, Kyoto Prefectural University. Since being appointed as an assistant professor in the Ueno Laboratory in May 2012, I have spent fruitful and stimulating days in the excellent research environment at the School of Life Science and Technology. I would like to express my gratitude to all the professors and staff in the administrative office for their generous support.

At Kyoto Prefectural University, a new department has been established due to reorganization, I will be running my own laboratory as an independent associate professor. As a public university, Kyoto Prefectural University has a critical mission to contribute to the local community. I am determined to devote myself to education and research to the best of my ability, use what I have learned at Tokyo Tech while enjoying research and education different from those at national universities, and revitalize the new department. I look forward to your continued guidance and encouragement.

Other Profs. Left ~ thank you very much

Prof. Masaaki FUJII
Prof. Hisakazu MIHARA
Prof. Naoyuki YAMAMOTO
Assoc. Prof. Hiroyuki AKAMA
Assoc. Prof. Keiko NONOMURA
Asst. Prof. Yuma ITO

Events

Tokyo Tech Open Campus 2023

Assoc. Prof. Shun-ichiro OGURA

The 2023 school/graduate school entrance exam information session and Suzukakedai Open Campus for university/graduate school applicants will be held on May 14th (Sunday) at the Suzukakedai Campus, and the university-wide Open Campus for high school/graduate school applicants will be held at Ookayama on August 10th (Thursday). Since the new coronavirus infection has subsided, they were held on campus.

The open campus in May was held at the same time as Suzukake Science Day, and a total of nearly 400 people visited School of Life Science and Technology. We held an information session for graduate school entrance exams in the morning, and an information session for university entrance exams in the afternoon, and at the same time, over 30 laboratories were able to open their labs to the public. Despite the poor weather on the day, the event was a great success with a large number of highly motivated students and parents in attendance. We would like to thank all the teachers who provided explanations and everyone who cooperated with the open campus.

The open campus in August was held for high school students, technical college students, and prospective students. Although the meeting was held in extremely hot weather, it was a great success without any noticeable disruptions. The School of Life Science and Technology held a “School Information Session”, “School Individual Consultation Session”, “Mock Lecture”, and “Open Laboratory”. At the school briefing session, more than 200 participants were introduced to the attractiveness of research at the School of Life Science and Technology and the characteristics of the educational curriculum from Dean Susumu Kajiwara and Department Chair Takehiko Ito. At the individual information sessions, six faculty members carefully answered questions from students and parents face-to-face. Mock lectures were held, including Professor Yuriko Osakabe's “Changing gene function through genome editing” and Associate Professor Tetsuya Kadonosono's “Treat cancer with antibodies!!”, with a total of over 400 participants. The content of the research, from the basics to the cutting edge, was explained in an easy-to-understand manner. Six laboratories on the Ookayama campus agreed to open their labs to the public, and a total of 300 participants enjoyed the opportunity to experience actual research. All of the projects were a success, and the content was very well received in the questionnaire. Each faculty member answered a variety of questions from the participating students and was able to convey the fun of research. We would like to express our gratitude to all the teachers involved, including the LST office, for their full support in holding the open campus.

Unfortunately, the university-wide open campus in 2023 will be held with a cap on the number of attendees. We believe that we can expect further development in 2024. We are currently making earnest preparations led by the

2024 committee chair, Professor Mako Kamiya, and we ask for your continued support.

The 12th Tokyo Tech International Symposium on Life Science and Technology

Prof. Mako KAMIYA
Assoc. Prof. Keiko NONOMURA
Lecturer Toru KONDO

The 12th Tokyo Tech International Symposium on Life Science and Technology was held on January 24, 2024. We invited special seven speakers applying a variety of light measurement techniques to life science, chemistry, and medical research. Two speakers from overseas (including one Japanese) and five from domestic institutions gave presentations. While connecting with the overseas speakers online, we were able to hold the symposium in-person at the Suzukake Hall, facilitating lively discussions.

Dr. Gabriela Schlau-Cohen from the Massachusetts Institute of Technology gave a talk about single-molecule spectroscopic analysis of the structural dynamics of signal transduction proteins. Dr. Hidehiko Inagaki from the Max Planck Florida Institute for Neuroscience introduced the latest topics in neural network analysis. Dr. Yutaka Shibata from Tohoku University talked about spectroscopic imaging of photosynthetic tissues using cryogenic microscopy. We had an intriguing discussion with Dr. Misako Okumura from Hiroshima University regarding the light recognition mechanism that causes changes in the shape of nematode mouths under light stress conditions. Dr. Mikako Ogawa from Hokkaido University presented on the analysis of photoreaction mechanisms for the light therapy using infrared and x-ray lights. From within the Tokyo tech., Dr. Yoshimitsu Sagara from the Department of Materials Science and Engineering discussed the mechano-sensing material whose optical properties vary in response to mechanical external forces. Additionally, Dr. Kiyohiko Kawai in the Department of Life Science and Technology lectured a bio-molecular analysis utilizing the fluorescence blinking observed by single-molecule spectroscopy.

While considering the COVID-19, we made preparations for both online and in-person symposium. Given the improving situation, we were able to hold it in-person this time, with a significant turnout of up to 170 participants. The breakdown of participants is as follows: 31% undergraduate students; 24% master's students; 16% doctoral students; 26% faculty and staff; and 3% others. We consider it a great success that many students participated. As a unique initiative, we organized lab tours for the speakers the day after the symposium. With the cooperation of Masuda’s, Tanaka & Yoshida’s, Kawai’s, Kadonosono’s, Nonomura’s, and Tachibana’s labs, we introduced ongoing projects in our department to foster interdisciplinary research. Moreover, we hosted a luncheon networking event between the speakers and students. In addition to discussions on research topics, attendees had the opportunity

to hear about career paths and the behind-the-scenes of academic activities not often discussed in general conferences and seminars, providing a lot of inspiration for students considering their future careers.

Preparations for the 12th symposium were mainly led by Dr. Nonomura and Dr. Kamiya with supports from other working group members. Additionally, students from the Nonomura's and Kamiya's labs and Dr. Fujioka supported venue preparation, cleanup, on-site guidance, and microphone duties on the day of the event. Furthermore, we extend our heartfelt gratitude to administrative staffs in our department for their powerful assistances.

Under the guidance of the next chair and vice-chairs, we will continue to work closely with the working group members to ensure the success of the upcoming 13th symposium.

ASEAN-Japan International Research Symposium for Life Science and Technology

Exchanges between Japan and the Association of Southeast Asian Nations (ASEAN) were established in 1973, and 2023 will mark the 50th anniversary of the start of exchanges. The "ASEAN-Japan International Research Symposium for Life Science and Technology" was held on November 16-17, 2023, as a joint symposium between Tokyo Institute of Technology's School of Life Science and Technology and Chulalongkorn University's Faculty of Science. The countries of origin of the participants were the Republic of Indonesia, Malaysia, the Republic of the Philippines, the Kingdom of Thailand, and the Socialist Republic of Vietnam, with participants from Japan including administrative officials, business people, researchers, and students. We were able to hold a successful symposium with 60 attendees.

Awards

2023FY HFSP Research Grant

Prof. Tomoaki MATSUURA

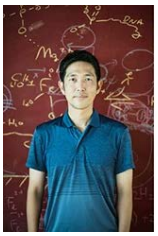
Assoc. Prof. Kosuke FUJISIMA

HFSP, an international research support program, is provided by the International Human Frontier Science Program Organization (HFSPO), headquartered in Strasbourg, France. It was established with the purpose of promoting cross-disciplinary research collaboration among researchers across continents in cutting-edge interdisciplinary

research focused on the life sciences. In the 2023 recruitment, 9 young research grants and 25 program grants were selected from a total of 596 proposals.

Professor Matsuura received this award for his joint research with Dr. Dieter Braun (LUM Munich) and Dr. Kerstin Göpfrich (U Heidelberg) entitled 'Autonomous evolution of synthetic cells under non-equilibrium conditions'.

Associate Professor Fujishima received this award for his joint research with Dr. Stephen Freeland (University of Maryland), Dr. Stephen Fried (Johns Hopkins University), and Dr. Klara Hlouchova (Charles University) entitled 'Exploration of the structure-function space of prebiotic to biological proteins'



2023 Tokyo Tech Challenging Research Award

Assoc. Prof. Satoshi OKADA
Asst. Prof. Takashi KANAMORI

The 22nd Tokyo Tech Challenging Research Awards went to ten researchers each of whom will receive a research grant. The Suematsu Challenging Research Award was given to the three highest qualified researchers among the Challenging Research Award winners. The award ceremony was held on August 31.

The grant was established with the aim of encouraging young faculty members at the Institute to engage in challenging research. It recognizes creative, up-and-coming researchers who boldly pursue the promotion of the most advanced research in the world, pioneering of new fields of study, innovative development of new research, and important issues that are difficult to solve.

The Suematsu Challenging Research Award is given to the highest qualified researchers among the Challenging Research Award winners. This award was established by the "Suematsu Fund", which was created based on the desire of former President Yasuharu Suematsu to support young researchers. When Professor Yasuharu Suematsu received the Japan Prize in 2014, he donated a portion of the prize money to Tokyo Tech, which established the Suematsu Fund to encourage young researchers. The Fund supports mainly young researchers to encourage their research activities to predict and study the development of unexplored scientific and technological systems in diverse fields and to bring the potential future to real society.

Assoc. Prof. Satoshi OKADA (The Suematsu Challenging Research Award);
Development of Magnetic Probes for Molecular Whole-Brain Neuroimaging
Asst. Prof. Takashi KANAMORI;
Development of genome photo-oxidation method and understanding of epigenetics with oxidatively damaged bases

Commemorative photo of the ceremony

2023FY Shimadzu Research Promotion Award

Prof. Mako KAMIYA

The Shimadzu Encouragement Award is an award established to promote science and technology in Japan. This award is given to researchers under the age of 45 who have achieved original results in basic, applied, and practical research in areas primarily related to scientific measurement. In 2023, Professor Mako Kamiya received this award for her research on the development of high-precision chemical probes that enable innovative bioimaging.

Highly Cited Researcher designations by Clarivate in 2023

Prof. Yuriko OSAKABE

Professor Yuriko Osakabe has been selected as Clarivate's Highly Cited Researchers 2023. Clarivate announced on November 15th.

2023 HPCI Excellent Achievement Award

Assis. Prof. Duy Phuoc TRAN

Dr. TRAN Phuoc Duy, Assistant Professor of School of Life Science and Technology, received HPCI Excellent Achievement Award at The Tenth Project Report Meeting HPCI System Including Fugaku. The innovative High-Performance Computing Infrastructure (HPCI) is a shared computational environment that connects major supercomputers as well as storages of universities and research institutions in Japan via high-speed networks. HPCI Excellent Achievement Award is given to projects selected by the program committee for its particularly outstanding results among the General Researchers Projects, Junior Researchers projects, and Industrial Access Projects that were conducted and completed in FY2022. This time, eight projects from various fields received awards, and Assistant Professor TRAN's project "How viral protein interfere the

interactions of p53 protein with DNA" (hp220107, "Fugaku" Young Scientist Proposal) was the only one from Biotechnology and Life field and from Tokyo Institute of Technology to receive the award.

Seiichi Tejima Research Awards

The Seiichi Teshima Memorial Research Award was established to honor the achievements of Seiichi Teshima, the principal of Tokyo Technical School and Tokyo Higher Technical School, the predecessor of Tokyo Institute of Technology, who retired in 1917 after more than 25 years of dedicated service to industrial education and made significant contributions to the advancement of industrial education in Japan. The fund was established by a group of prominent figures from the political, business, and educational worlds at the time to honor his achievements. Since its establishment, the award has encouraged research by Tokyo Tech personnel and Tokyo Tech graduate students, and has honored many outstanding achievements.

The 2023 Research Paper Award was given to "Efficient Microfluidic Screening Method Using a Fluorescent Immunosensor for Recombinant Protein Secretions" which was published in the journal *Small*. The authors are as follows;

Yoshihiro ITO

(Ph.D. student in Bioscience and Biotechnology, School of Bioscience and Biotechnology; Senior Researcher, Bioscience and Fine Chemicals Research Laboratories, Ajinomoto Co.)

Sayaka ASARI, Senior Researcher, Research Institute for Bioscience Products and Fine Chemicals Ajinomoto Co.

Asst. Prof. Takanobu YASUDA

(Laboratory for Chemistry and Life Science, Institute of Innovative Research)

Prof. Hiroshi UEDA

(Laboratory for Chemistry and Life Science, Institute of Innovative Research)

Assoc. Prof. Tetsuya KITAGUCHI

(Laboratory for Chemistry and Life Science, Institute of Innovative Research)

Students' Achievement

Graduate School Students Won Ohsumi Journal Award

The excellent students whose research papers were published in high-impact journals have been commended by "Yoshinori Ohsumi Memorial Fund" established in 2017. In 2023, six graduate school students won Ohsumi Journal Award.

The 22nd Award (2023/7/26)

Mr. Wancheng ZHANG

(D3 Maruyama Lab)

"2D-3D-Convertible, pH-Responsive Lipid Nanosheets"

Small

Mr. Kai NISHIMURA

(D2 Nakamura-Okada Lab)

"Efficient neutron capture therapy of glioblastoma with pteroyl-closo-dodecaborate-conjugated 4-(p-iodophenyl)butyric acid (PBC-IP)"

Journal of Controlled Release

The 23rd Award (2023/9/21)

Mr. Shun OUCHI

(D3 Itoh Lab)

"Green Hill: a de novo chromosome-level scaffolding and phasing tool using Hi-C"

Genome Biology

Ms. Mingxin HU

(D3 Kobatake-Mie Lab)

"Polysarcosine-Coated liposomes attenuating immune response induction and prolonging blood circulation"

Journal of Colloid and Interface Science

The 24th Award (2023/11/1)

Mr. Kazuki TAKAHASHI

(D3 Hongoh Lab)

"Emergence of putative energy parasites within Clostridia revealed by genome analysis of a novel endosymbiotic clade"

The ISME Journal

The 25th Award (2024/2/28)

Mr. Masato TSUDA

(D3 Nakamura-Okada Lab)

"Methylene Insertion into Nitrogen-Heteroatom Single Bonds of 1,2-Azoles via a Zinc Carbenoid: An Alternative Tool for Skeletal Editing"

Advanced Science

Graduate School Students Won Chorafas Award

The excellent students in the fields of biotechnology and related sciences have been commended by "Dimitris N. Chorafas Foundation" since 1992. In 2023, two graduate school students won Chorafas Award.

Dr. Fumiya UEFUNE

(2022.09 completed Kume and Shiraki Lab)

"The regulation of mouse beta-cell function mediated by dopamine D1-D2 heteromer"

Dr. Haochen GUO

(2023.09 completed Nishiyama and Miura Lab)

"Investigation of labile iro Benin-modulation in tumor microenvironment using polymeric iron chelators and its utility for cancer therapies"

Seiichi Tejima Research Award for International Students

Two PhD students from the School of Life Science and Technology were selected as recipients of the International Student Research Award.

Dr. Beni LESTARI

(PhD, School of Life Science and Technology; Postdoctoral Researcher, Department Pharmacology and Therapy, Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada, Indonesia)

"Placental Mammals Acquired Functional Sequences in NRK for Regulating Cell Proliferation and Apoptosis in Placenta"

Dr. Jun WANG

(PhD, School of Life Science and Technology)

"Cationic copolymer for augmentation of dynamic DNA circuits"

Presentation Awards in Symposium

Mr. Tomoya MARUYAMA

(D2 Takinoue Lab)

The 29th International Conference on DNA Computing and Molecular Programming (DNA29)

Best student/postdoc poster award

"Controlled division of DNA droplet-based artificial cells coupled with enzymatic time delay circuit"

Ms. Minami IMAMOTO

(D2 Nikaido Lab)

The 25th Annual Meeting, Society of Evolutionary Studies, Japan

The best student oral presentation award

"The genomic basis for trophic adaptation of East African egg-eating cichlids"

Ms. Yuri OKU

(M1 Matsuda Lab)

The 23rd Symposium of the Society of Biocatalysis Japan

The excellent poster presentation award 3rd place & ChemBioChem Best Poster Award

Ms. Lan Huong Viet LE

(D3　Matsuda Lab)

The 23rd Symposium of the Society of Biocatalysis Japan

The excellent poster presentation award 2nd place & ChemBioChem Best Poster Award

Ms. Miori OZAWA

(M2 Ichinose Lab)

The 75th Conference of the Vitamin Society of Japan

The excellent student oral presentation award

Mr. Ryohei OGAWA

(M2 Ichinose Lab)

The 25th Workshop on Active Amine

The excellent oral presentation award

Mr. Ogawa（Left）

Mr. Kosuke KIKUCHI

(D2 Ueno Lab)

103rd Chemical Society of Japan Annual Meeting held at Tokyo University of Science

CSJ Student Presentation Award 2023

“Developing protein-cellulose nanocrystal hybrid films for structural coloration”

Ms. Mariko KOJIMA

(D3 Ueno Lab)

103rd Chemical Society of Japan Annual Meeting held at Tokyo University of Science

CSJ Student Presentation Award 2023

“In-cell protein crystal engineering for structure determination of intrinsically disordered protein”

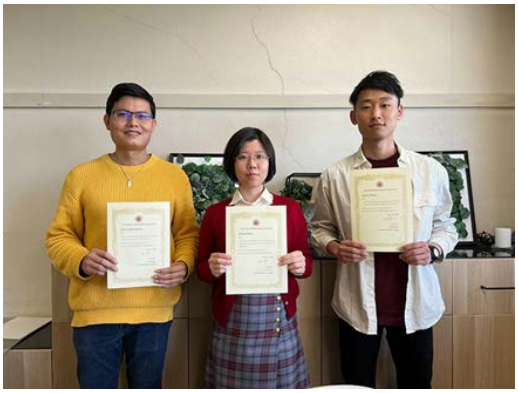
Mr. Thuc Toan PHAM

(M2 Ueno Lab)

103rd Chemical Society of Japan Annual Meeting held at Tokyo University of Science

CSJ Student Presentation Award 2023

“Accumulation of Protein Cage into in-cell Protein Crystal”



From left: Thuc Toan PHAM, Mariko Kojima and Kosuke Kikuchi

Mr. Suwandi ONGGONO

(M2 Kadonosono Lab)

The 55th Summer Workshop for Young Peptide Scientists

The excellent oral presentation award

Ms. Moe YAMAKAWA

(M1 Kadonosono Lab)

The 55th Summer Workshop for Young Peptide Scientists

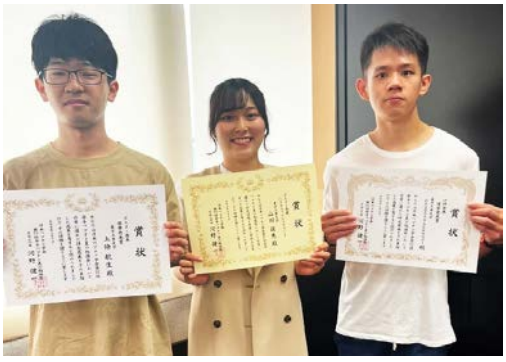
The best failed award for poster presentation

Mr. Koki KAMIJO

(B4 Kadonosono Lab)

The 55th Summer Workshop for Young Peptide Scientists

The excellent poster presentation award



From left: Mr. Kamijo, Ms. Yamakawa and Mr. Onggono

Ms. Ai SUNOUCHI

(M2 Wachi Lab)

The 75th Annual Meeting of the Society for Biotechnology, Japan

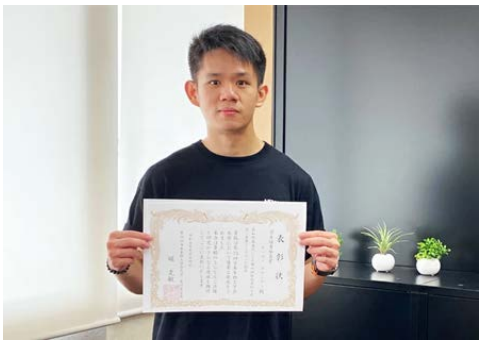
The Student Best Presentation Award

Mr. Suwandi ONGGONO

(M2 Kadonosono Lab)

The 75th Annual Meeting of the Society for Biotechnology, Japan

The Student Excellent Presentation Award



Other Awards

2023 Tokyo Tech Award for Student Leadership

Mr. Yoshihito HASEGAWA (B4)

Tokyo Institute of Technology awards students with leadership qualities such as intelligence, creativity, humanity, and vitality, with the aim of fostering international leadership among students. Mr. Hasegawa won the award for his leadership as the Student Survey

representative. He led a group of students who worked together to submit the Student Survey 2022 proposal to the Tokyo Tech president. Amidst major institutional changes such as the upcoming merger with Tokyo Medical and Dental University and the introduction of special quotas for Japanese-speaking prospective female students applying to the Tokyo Tech's bachelor's degree programs, took a leading role in the creation of survey questions, data tabulation and analysis, and the creation of recommendations and additional survey questions, while ensuring fairness and respecting the opinions and needs of individual student staff members.

Award-winning students with President Masu, other Tokyo Tech executives and faculty

Five of six 2023 Tokyo Tech Award for Student Leadership winners (Mr. Hasegawa: 2nd from right)

Team Tokyo Tech wins Bronze Project Award at BIOMOD 2023

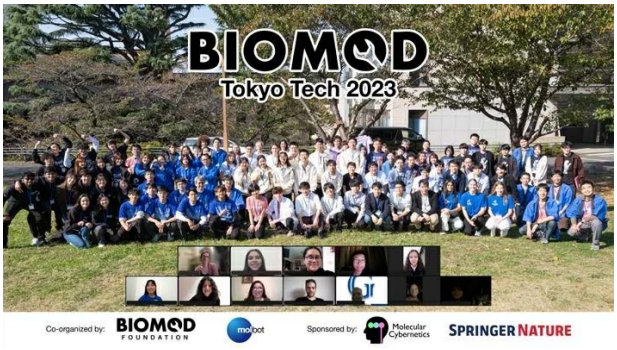
Team Tokyo Tech has won the Bronze Project Award at the 2023 Biomolecular Design Competition (BIOMOD). This year, the BIOMOD Jamboree, an annual conference at which all BIOMOD teams convene to present their team projects, was held from November 4 to 5 on Ookayama Campus.

BIOMOD, often referred to as the Robocon of biomolecules, is an international inter-university competition for undergraduates in molecular robotics and molecular computing. Each team designs and builds its own molecular devices and robots using biomolecules such as DNA, RNA, lipids, and proteins. The teams compete by presenting the results of their research via webpages, YouTube videos, and live conference-style presentations at the Jamboree.

The competition, first hosted by Harvard University in 2011 and held at the University of California, San Francisco since then, resumed its international format this year. Tokyo Tech was chosen as the first institution to host the contest outside the United States. The selection of Tokyo Tech, the birthplace of the Robocon International Design Contest, as the first non-US host of BIOMOD marks a significant milestone for the Institute.

Of the sixteen teams from eight countries and regions that registered for this year's competition, fourteen teams completed all the requirements and gave their presentations at the Jamboree held at Tokyo Tech. Team Tokyo Tech presented a "Micro Invader Game" consisting of artificial cells and DNA motors, which earned the team the Bronze Project Award. Unfazed by the fact that they were all

1st-year students, Team Tokyo Tech confidently gave their presentation and answered questions in front of participants from around the world. Their achievement speaks to the collaborative spirit of the team and the dedication of each individual member. Team Tokyo Tech is already planning its BIOMOD activities for next year, and with the support of the Institute behind it, further exciting results can be expected.



Team Tokyo Tech members

Tsuyoshi IJIMA, 1st year, School of Life Science and Technology

Fusuke KODAMA, 1st year, School of Life Science and Technology

Ryusei SHINKAI, 1st year, School of Life Science and Technology

Yumi NAKAMURA, 1st year, School of Life Science and Technology

Ayaka BANNO, 1st year, School of Life Science and Technology

Kakeru MATSUZAKI, 1st year, School of Life Science and Technology

Rio MURAMATSU, 1st year, School of Life Science and Technology

Tokyo Tech's Meister fourth at 2023 Japan International Birdman Rally

Meister, an official Tokyo Tech student club, has finished fourth in the 2023 Japan International Birdman Rally, held at Lake Biwa in Hikone, Shiga Prefecture in late July. The annual contest — the 45th of its kind — was broadcast on Japanese television by Yomiuri Telecasting Corporation on August 30.

Tokyo Tech was one of thirteen teams participating in the Human-Powered Propeller Plane category, in which planes and pilots are pushed by teammates before launching off a platform above the surface of the lake. The aim is to fly as far as possible via two designated checkpoints, and ideally, return to the platform. Meister's pilot and plane flew 3,851.83 m before touching down on the surface of the lake.

To mark their comeback from a series of recent struggles, which included a suspension of activities due to COVID-19, a shortage of club members, and a crash just after take-off during a test flight, Meister named their latest aircraft REVIVAL. For a year, the team worked together to design and fabricate their plane, dreaming of the moment when REVIVAL would take to the skies.

The summer heat and a tricky headwind made the competition tough for the pilots. Meister flew smoothly over Lake Biwa for some 17 minutes but fell short of a podium position. This was, however, Tokyo Tech's best result in the contest since 2015. The team also won the SUPPORTER Award for their efforts in supporting the pilot.

MEISTER members of Life Science and Technology and their roles during the contest:

Subaru KAWAMI, pilot and Propeller Group member (B4)

Ichiru ANDO, Wings Group head （B3）

Manato ISHIDA, Propeller Group head （B4）

Meister's aircraft and pilot just after take-off

From International Student

Agnia VIBRIANI

Coming to Japan to pursue graduate studies has never been a mistake. The science environment in Japan is very well established. I never thought I would find a scientific graph showing the changing of taste in every bite of ice cream on its package. When it comes to education, Japan offers plenty of opportunities to excel our scientific knowledge and become a competent researcher. Humbly, I am very grateful to Ministry of Education, Culture, Sports, Science, and Technology of Japan for awarding me a scholarship to study in Japan since I was in master degree.

Currently, I am in my third year of doctoral degree under the supervision of Prof. Kanami Orihara and Prof. Susumu Kajiwara. Our laboratory has diverse research interest, including circadian rhythm, inflammatory diseases, food allergy, host-pathogen interaction, antimicrobial resistance mechanism, and development of microbial fuel cells. Upon joining this lab, I developed an interest in the circadian rhythm research project. The circadian rhythm is an internal 24-hr rhythm that tells our body when to do things, such as sleep and wake cycle. Keeping our body in sync with the natural 24-hour day is important in maintaining a good health. For example, the skin shows a maximum repair mechanism at nighttime, when environmental stress levels (UV light) are minimized. Dysregulation of the circadian rhythm happens when the internal time is misaligned with the day-night cycle. Prolonged circadian disruption contributes to poor health outcomes. In my research, I am studying the circadian rhythm regulation in blue light induced skin photoaging. Particularly, I am looking at the skin barrier performance, an

important function of the skin as an interface between the body and the environment. There is growing concern regarding the long-term effects of blue light exposure on the skin. Especially during the COVID19 lockdown where everyone is staying at home and spending more time with electronic devices. Therefore, through my research, I aim to understand how the skin's circadian clock responds to the environmental stimulus which can help the skin stay healthy and young.

Living alone in Japan can be challenging, but luckily, Tokyo Tech has a lot of programs for international student to make the adaptation easier. To learn more about Japan, I have taken Japanese classes and joined a cultural activity such as homestay and Japanese festivals. In addition, Kajiwara-Orihara laboratory also has a diverse lab member which helps me less lonely as a foreigner. I am also grateful for the support and encouragement provided by my supervisors in my career development. Thanks to their guidance, I have had the opportunity to present my research at conferences and joined a workshop at national institute. At the moment, I am enjoying my student life here in Japan so much that I can say that Japan feels like my second home. After my graduation, I wish to continue my career as a researcher and contribute to knowledge exchange between Japan and Indonesia.

Editor's Note

In FY2023, as we get used to our new system in post-COVID-19, we welcomed many new PIs. We are pleased to have further expanded the scope of the School of Bioscience and Biotechnology, which brings together a wide variety of researchers with a focus on life phenomena.

The name of the new university, Institute of Science Tokyo, has been officially decided, and the Human Centered Science and Biomedical Engineering Course will be changed to the Human Medical Science and Technology Course. As Science Tokyo begins, I believe that we should create an environment for easy collaboration through frequent communication and mutual understanding among faculty members, including the new PIs.

I would like to express my deepest gratitude to those who have contributed to this newsletter this year. We are honored to present your activities and those of the School in this issue. We may continue to report on the activities of the School of Life Science and Technology in future issues of this newsletter. We look forward to your continued support and cooperation.

(Kanami ORIHARA, editor-in-chief)