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OIST-KEIO SHOWCASE & CRYO-EM WORKSHOP REPORT

We present highlights from the 9th OIST-Keio Showcase and a participant report on the successful 3D imaging of extracellular vesicles via cryo-EM.



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OIST-Keio Showcase Talk Series Vol. 9 “Proteins in Focus: Cryo-EM and Structural Frontiers” was held in OIST on 27-Jan 2026, followed by BINDS cryo-EM workshop on 28-30 Jan. This time the Showcase Talk was co-organized with the University of Osaka, and total 8 researchers (including 3 researchers, Drs. Sasaki, Yokoo and Suzuki from Bio2Q) had a presentation and discussed the structural life science and infrastructure using the technology of structural biology. Following cryo-EM workshop was structured with lectures and hands-on practical sessions providing the valuable opportunity to experience the cryo-EM workflow. 10 people from Bio2Q joined these two events on site and learned the power of the structural biology as well as the basics of cryo-EM. It was a great opportunity especially for the cryo-EM beginners to see how to use cryo-EM and how it is applied to the research, and also to make social network with the structural biologists. Bio2Q will organize the cryo-EM workshop in the future and hopefully more researchers join it and apply this technology to their research.

(Kunimichi Suzuki, Jr. PI)

Over three days, participants followed live demonstrations and hands-on training covering each step of the cryo-EM workflow from sample preparation to data acquisition and processing. This gave us a

thorough understanding of how cryo-EM experiments are planned, carried out and what should be considered from the very beginning to achieve good results. One of the most valuable lessons was the discussion on realistic timelines. Hearing how long even experienced researchers take to obtain usable data helped us understand the level of planning required. Moving forwards, this will guide us in setting realistic timelines and achievable goals when proposing future cryo-EM projects.

The workshop introduced us to many concepts that are difficult to grasp without guidance from an expert. One such example was ‘The Forgotten Wisdom of Cryo-EM’ by Dr. Toshio Moriya. He demonstrated in simple terms how to interpret Fourier Shell Correlation (FSC) and other key analysis parameters, giving us a much clearer understanding of how to assess data quality and resolution after analysis.

Beyond the technical content of the course, the small group setting of this course encouraged open discussion. The instructors were very approachable, willing to share their experiences, and answer questions. That kind of access to experts in the field is very valuable.

Following the workshop, with the kind support of Dr. Suzuki and his colleagues, our team successfully captured clear three-dimensional images of extracellular vesicles roughly 100 nm in diameter. We highly recommend all researchers at Bio2Q and Keio University to look into how powerful cryo-EM is and get in touch with the facility.

(Nandani Balloo, Research Assistant, Keio University Faculty of Pharmacy)

(Yuzhi Tan, Ph.D. Student, Keio University Faculty of Pharmacy)



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INTRODUCTION TO Bio2Q RESEARCH

Series #12:
DR. YUTARO KUWASHIMA

POSTDOC, BIO-1 CORE, BIO-2 CORE

Our health is supported by complex interactions between the gut microbiota and the host. My research focuses on uncovering novel gut microbiota-derived metabolites that regulate intestinal epithelial function by combining cutting-edge analytical and biological approaches. We use mass spectrometry to analyze the diverse chemical structures of microbiota-derived metabolites, including previously uncharacterized molecules. At the same time, we recapitulate key features of the intestinal epithelium in a dish (known as “Organoids”) and create a platform to explore how gut microbial metabolites influence epithelial functions, such as barrier integrity, nutrient absorption, and hormone secretion. More recently, we have been attempting to capture functional outputs of intestinal epithelial cells at the molecular level by using mass spectrometry. Through the lens of metabolites, I hope to illuminate the dialogue between the gut microbiome and the host, and to reveal new molecular mechanisms that maintain human health.



Yutaro Kuwashima. Used with permission.

WELCOME ON BOARD!

We are delighted to introduce two new members who joined Bio2Q in March.

DR. LEONARD DUBOIS BIO-1 CORE POSTDOC



Leonard Dubois
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Hello, I am joining Bio2Q as a bioinformatics postdoctoral researcher to help with all kinds of biological data analysis, integration and interpretation.

During my PhD at the University of Trento supervised by Pr. Nicola Segata and Dr. Mireia Valles-Colomer, I delved into strain-level computational metagenomics. We tracked conspecific strains across samples to unravel the dynamics of mother-infant strain transmission, persistence and functional diversity, particularly with regards to perinatal factors (mode of delivery, breastfeeding...). In brief, microbiome data analysis can provide enough detail to make each and every bacterial strain truly unique.

I pursued a post-doctoral experience in the lab of Pr. Harry Sokol where I connected the computational approaches to medical applications by analyzing samples of patients with inflammatory bowel diseases. I am looking forward to bringing my computational expertise to the exciting Bio2Q projects!

DR. JUNG HYUN IM BIO-1 CORE POSTDOC



Jung Hyun Im
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Hello, everyone. My name is Jung Hyun Im, and I am very pleased to join Bio2Q as a postdoctoral researcher. I completed my master's degree in stem cell research in Korea, and I received Ph.D. in innate immunity from Kyoto University, Japan,

where I studied the unique mechanisms of viral dsRNA recognition by viral RNA sensing proteins. After earning my doctoral degree, I worked in the Laboratory of Environmental Infection Control, Louis-Pasteur Center of Medical Research as a research Scientist, investigating effective disinfection methods using hypochlorite water. With this diverse research background, I am eager to explore primate-specific proteostasis mechanisms. I look forward to expanding our research horizons together by sharing and exchanging scientific inspiration at Bio2Q.

FUTURE SCIENTISTS EXPLORE BIO2Q: HIGH SCHOOL FIELD TRIP

On February 5, 2026, twenty-five students from Tokyo Gakugei University Senior High School visited WPI-Bio2Q. They explored five cutting-edge laboratories, learning about synapses, organoids, and cryo-electron microscopy. This immersive experience introduced the next generation to the frontiers of interdisciplinary life science, fostering a deeper understanding of future medical innovations.



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UNVEILING THE FUTURE: SUCCESSFUL CONCLUSION OF THE BIO2Q SCIENCE MEETING SERIES

We have successfully concluded the 2025 Science Meeting Series! Across 11 sessions, average attendance hit a record 40.6—up from 30.8 in 2024 and 17.6 in 2023. This consistent growth highlights our community's strengthening collaboration and passion. Thank you for an incredible year! We look forward to even more vibrant discussions in 2026. Join us next year to be part of the momentum!



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SUCCESSFUL CONCLUSION OF THE BIO2Q LECTURE SERIES

WPI-Bio2Q recently completed a successful three-part online lecture series with Knowledge Capital. Professors Yuzaki, Koyama, and Suzuki explored synapses, AI-quantum computing, and 3D cell imaging. With enthusiastic audience participation, these sessions highlighted transformative advancements in life science. You can now catch up on these insightful discussions via our YouTube archives.

Prof. Yuzaki



Prof. Koyama



Associate Prof.
Kunimichi Suzuki



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UPCOMING EVENTS

◆ WPI-Bio2Q Open Seminar
April 3(Fri) 17:00-18:00
[Damian Rafal Plichta](#) (Broad Institute of MIT and Harvard, USA)@Shinanomachi

April 7(Tue) 17:00-18:00
[Augustinas Silale](#) (Newcastle University, UK)@JKiC, Shinanomachi

April 27(Mon) 11:00-12:00
[Soumya Raychaudhuri](#) (Harvard Medical School, USA)@Shinanomachi

May 14(Thu) 10:00-11:00
[Oleg Sitsel](#) (OIST, Japan)@Shinanomachi, invited by Suzuki)

◆ Bio2Q Retreat 2026
May 28(Thu)-29(Fri)@[Resol no mori](#), Chiba

◆ Science Meeting Series
@Shinanomachi and Zoom(Hybrid)
April 8(Wed) 14:00-15:00
#38: Airi Jo-Watanabe, Affiliated PI

April 22(Wed) 14:00-15:00
#39: Kazuno Negishi, Affiliated PI

May 27(Wed) 14:00-15:00
#40: Ho Namkoong, Affiliated PI

