Bio2Q Connect / Vol. 2, Issue 6 [2025.5.29]

WPI-Bio2Q NEWSLETTER

Bio2Q Connect

Title photo taken by Oltea Sampetrean. Used with permission.

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MESSAGE FROM ADMINISTRATIVE DIRECTOR

Building Momentum for a Transformative Year

This year brings fresh momentum to Bio2Q as we build on remarkable achievements and chart our path forward. Our bimonthly Science Meeting Series has doubled in participation, transforming into a vibrant forum where knowledge unites disciplines. Through our strengthened partnership with the Keio University School of Medicine Center for Supercentenarian Medical Research, we are tackling compelling questions at the intersection of human biology, microbiome, and longevity research. Meanwhile, our newly launched YouTube channel extends our discoveries to audiences far beyond our walls.

The year ahead holds both promise and ambition. We are committed to dismantling barriers—scientific and administrative alike—through innovative thinking and bold action. As we welcome new voices to our community, we also aim to reimagine our research environment, strengthening support systems and cultivating a culture where creativity and scientific excellence flourish side by side.

We enter this chapter with renewed purpose and shared determination. Thank you for being part of this journey.

Oltea Sampetrean,
Administrative Director, PI

At Lunch Time, Bio2Q Social Program, on July 2, 2024
Bio2Q 2025, Original Photo.

WELCOME ON BOARD!

In this issue, we are delighted to introduce four new members who joined Bio2Q in April and May.

DR. YUTARO KUWASHIMA, BIO-1 CORE, BIO-2 CORE POSTDOC

Y. Kuwashima
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My name is Yutaro Kuwashima, and I'm delighted to be a Bio2Q team member under the guidance of Professor Makoto Arita and Professor Toshiro Sato. I completed my PhD at Keio University, where I studied the spatiotemporal dynamics of lipid-protein interactions in the plasma membrane. My current research focuses on microbial lipid metabolites and their roles in regulating host physiology. I use human intestinal organoids and mass spectrometry to investigate how these metabolites influence intestinal functions.

DR. KEIKO MATSUDA, BIO-1 CORE JR. PI

Keiko Matsuda
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I am very pleased to join Bio2Q as a new member, and I look forward to working together with all of you toward our shared mission. My research so far has focused on elucidating the molecular mechanisms of synapse formation in the central nervous system. However, much remains unknown about the molecular basis by which sensory and afferent autonomic nerves transmit signals from peripheral organs to the central nervous system, and how efferent autonomic nerves regulate organ function in response. To address this fundamental issue, I aim to clarify, at the molecular level, how synapses—the sites of information transmission—are formed and functionally regulated. Through this research, I hope to deepen our understanding of how the nervous system mediates communication between organs. Just as neurons form complex networks, I hope to build strong connections with everyone as a member of Bio2Q and make meaningful contributions. I look forward to working with all of you.

DR. WATARU SHIHOYA, BIO-1 CORE JR. PI

Wataru Shihoya
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Hello everyone, my name is Wataru Shihoya, and I am honored to join the Bio2Q structural analysis team. I was trained in structural biology and pharmacology at the University of Tokyo, where I focused on the structural determination of G protein-coupled receptors (GPCRs) using cryo-electron microscopy (cryo-EM). Over the past decade, I have investigated the molecular mechanisms of GPCR signaling and drug recognition, contributing to the understanding of receptor activation and ligand selectivity. At Bio2Q, I am excited to extend my research into the development of high-throughput GPCRome assays by integrating next-generation sequencing and RNA-based detection technologies. My goal is to comprehensively evaluate the GPCR-activating potential of endogenous metabolites, approved drugs, and microbiota-derived compounds, thereby uncovering hidden pharmacological interactions and identifying novel therapeutic targets. I look forward to contributing to the Bio2Q mission through the fusion of structural biology, chemical biology, and data science.

DR. SHOHEI KOJIMA, BIO-1 CORE JR. PI

Shohei Kojima
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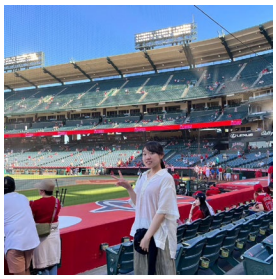
Hello everyone, I am Shohei Kojima. Please feel free to call me Koji; my friends are used to calling me either Koji or Kojima. I study human genetics and virology – I studied virology when I was a PhD student in Kyoto University and then studied human genetics as a postdoc in RIKEN. I am fascinated by the concept that a "human" is made up of the human and microbiomes around us. I believe that by analyzing the human variations using bioinformatics, we can uncover the interesting links between humans and the microbiomes. I am looking forward to doing exciting research with the Bio2Q members!

STaMP - A JOINT CROSS-DISCIPLINARY GRADUATE ENGLISH PROGRAM

In FY2025, WP-Bio2Q welcomed 12 new doctoral students as WPI RAs, for a total of 20 in the STaMP program, with 8 of them continuing from FY2024. 9 of these STaMP students are from Keio University Graduate School of Medicine, 1 from Graduate School of Science and Technology, and 10 from Graduate School of Pharmaceutical Sciences. They are very busy participating in the Introduction Part of the AI/Quantum Workshop conducted by our "AI/Quantum Ambassadors." Hopefully, this workshop will help these young scientists become better acquainted with AI/Quantum technology and ready for the upcoming WPI-Bio2Q retreat to be held in June!

For more information about STaMP, please visit the URL in our website, https://bio2q.keio.ac.jp/#education

Here is a testimonial for the STaMP program from Ms. Sugiyama, a second-year WPI-RA.



Hinata Sugiyama
Used with permission.

"As a Bio2Q STaMP student, I've had a valuable experience through the WPI-Bio2Q program. At the retreat, I had meaningful discussions with researchers from diverse fields and WPI staff, giving me a broader view of collaboration beyond my expertise. In the lab, I study intestinal macrophage differentiation. Presenting a poster at the site visit and international symposium allowed me to receive insightful feedback from top immunologists and others, helping refine my research direction. Moving forward, I hope to deepen my knowledge, especially in AI and quantum science, to expand the scope of my research." (Hinata Sugiyama, Keio University Graduate School of Pharmaceutical Sciences)

THE 2ND WPI-Bio2Q RETREAT

June 5 (Thursday) - June 6 (Friday)
① Purpose: To establish a Bio2Q network of researchers to achieve the interdisciplinary scientific goal of Bio2Q.
② Theme of discussion: "Interdisciplinary Problems and Solutions"
③ Schedule: Day 1 Group discussion (7 researchers per group), Day 2 Center discussion

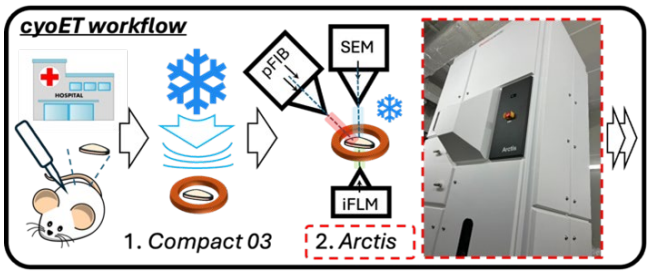
Source: Bio2Q 2024 Retreat. Original Photo

We are happy to welcome the Bio2Q members to the 2025 Bio2Q retreat which will focus on "Interdisciplinary Problems and Solutions" and will take place at the Laforet Resort Shuzenji in Izu, Shizuoka. This year, the retreat organizing committee consists of Huizhuo Pan, Yutaro Kuwashima, Minami Hosoya, Yukari Sato, Junta Komamura and myself. Ashish Joshi and Haowei Li have supported the team by designing a scientific quiz. There will be ample opportunity for meeting, discussing, and networking with the overarching Bio2Q goals in mind to forge new collaborative projects. Only minimal preparation will be required, as we merely ask all participants to summarize their research focus as well as their current biggest challenge in 2 sentences. These will be used in group projects which should result in group presentations held on the second day of the retreat. Another highlight of the scientific program will be a presentation by one of the newest Bio2Q members. (Daniel Richard Mende, PI)

【NEW INSTRUMENT】

Cryo Plasma FIB-SEM-iFLM, Arctis

In the previous Bio2Q newsletter, a High Pressure Freezer, ***Compact 03*** was introduced as a newly installed instrument in Bio2Q Structural Analysis Unit, which makes successful freezing of thick tissue samples, the first critical step for the in situ structural biology by cryo-electron tomography (*cryoET*). Here, we introduce another new instrument, Cryo Plasma FIB-SEM-iFLM, ***Arctis***, which was installed this year and will work for the second step of the cryoET workflow to fabricate the frozen thick tissues into thin sections (*lamellae*). To visualize the cellular structure at high resolution by the cryo-transmission electron microscope (*cryoTEM*), the sample should be thin enough (50-300 nm) to allow electron to pass through. Arctis is a cutting-edge equipment from three aspects: 1) plasma focused ion beam (*pFIB*) with Ar, Xe or O to efficiently remove the materials from thick tissues, 2) integrative scanning electron microscope (*SEM*) and fluorescent microscope (*iFLM*) to identify the target for the pFIB milling, 3) autoloader system to mill multiple samples (~12 grids) and perfectly align the grid for the following cryoTEM imaging, and we Bio2Q installed Arctis for the first time in Japan. Structural Analysis Unit will provide the novel and solid pipeline of in situ structural analysis for our Bio2Q research. (Kunimichi Suzuki, Jr. PI)



pFIB-SEM-iFLM, Arctis. Bio2Q 2024. Original Photo

FROM NEW EDITING STAFF

Hello! My name is Miyuki Ogino. I started working at Bio2Q on April 21. I am in charge of public relations, planning and management, including the Science Meeting Series. I like to be outside, camping and barbecuing, and I also like to take pictures of food. I will do my best as a member of Bio2Q team!

At a campsite in Tokyo. Photo: Ogino

UPCOMING EVENTS

June 5 (Thu) WPI-Bio2Q 2nd Retreat @Laforet Resort Shuzenji, Izu, Shizuoka, affiliated by Keio University Insurance Association

June 25 (Wed) 14:00-16:00 WPI-Bio2Q Open Seminar by Dr. Daniel Mucida (Rockefeller) & Dr. Carolina Lucas (Yale) @JKiC 1F

July 24 (Thu) 17:00-18:30 WPI-Bio2Q Open Seminar by Dr. Harris Wang (Columbia University) @Center for Integrated Medical Research 1F Lounge

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Science Meeting Series

June 11 (Wed) 14:00-15:00 #28:
Dr. Makoto Suematsu, PI @JKiC and Zoom (Hybrid)

July 23 (Wed) 14:00-15:00 #29:
Dr. Tomoyoshi Soga, PI (Online)

WPI-Bio2Q Members (as of Apr. 1)

Position	F	M	Total
PI	4	17	21
Jr. PI	1	7	8
Postdoc	2	5	7
Int'l Collaborator	5	9	14
Affiliated PI	1	9	10
WPI RA	8	12	20
Technical Staff	1	1	2
Advisor (Research)	0	4	4
Advisor (Admin.)	0	2	2
Admin. Staff	9	2	11
Total	**31**	**68**	**99**

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The next "Bio2Q Connect" will be issued on June 30, 2025