



Keio University

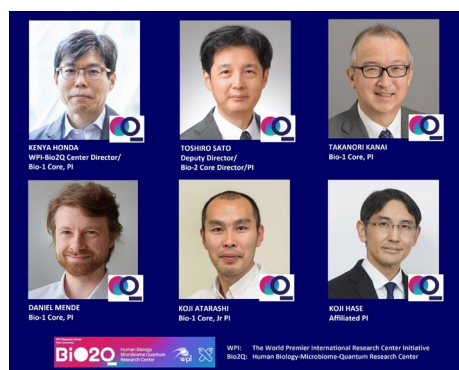
Human Biology-Microbiome-Quantum Research Center (Bio2Q)

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## SIX WPI-Bio2Q RESEARCHERS RECOGNIZED AS “HIGHLY CITED RESEARCHERS 2025”



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The awardees include Prof. Kenya Honda (Immunology), Prof. Daniel Mende (Biology and Biochemistry), and Profs. Koji Atarashi, Koji Hase, Takanori Kanai, and Toshiro Sato (Cross-Field). Notably, Director Honda has reached the milestone of 12 consecutive years on this list. This recognition underscores the significant global impact of their research and Keio University and Bio2Q's commitment to scientific excellence. We extend our heartfelt congratulations to our Bio2Q colleagues and to all awardees worldwide who continue to open new scientific horizons.

<https://bio2q.keio.ac.jp/news/highly-cited-researchers2025/>

<https://www.keio.ac.jp/en/news/2025/Dec/11/48-171225/>

## THE 4TH KEIO UNIVERSITY WPI-Bio2Q INTERNATIONAL SYMPOSIUM HELD SUCCESSFULLY

The 4th Keio University WPI-Bio2Q International Symposium, titled “Integration of Biology, Microbiome, and Metabolomics for Healthy Longevity,” took place on December 2–3, 2025 at the Shiba-Kyoritsu campus, with all sessions held fully on-site. Over the two days, twelve leading international researchers in the fields of biology, microbiome, and metabolomics shared their latest findings and engaged in active scientific discussions with 255 participants.

A poster session featuring fifteen young researchers closed the first day, showcasing emerging ideas and fostering productive exchanges with attendees. On the second day, three presenters were selected for Best Poster Awards in recognition of their outstanding contributions.

WPI-Bio2Q: Human Biology-Microbiome-Quantum Research Center will continue advancing its mission to disseminate scientific insights gained through this symposium and further contribute to global progress in life and health sciences.

Please see ‘News’ on our web-site for the symposium agenda and more photos.



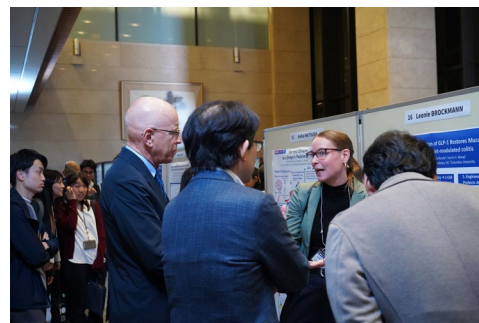
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Attending the 4th WPI-Bio2Q International Symposium (December 2–3, 2025; Shiba-Kyoritsu Campus, Keio University, Japan) was highly inspiring and provided valuable insight for my research within Bio2Q. Many presentations emphasized the need to move beyond metabolomics-based correlations toward deeper mechanistic understanding. This aligns closely with my goal of generating authentic standards to confirm the identity of “dark-matter” metabolites and exploring microbiome-derived small molecules as potential therapeutic leads.

Talks from experts in metabolomics and microbiome biology highlighted numerous candidate metabolites linked to disease and tissue-specific functions. These hits provide promising starting points for synthetic development, including stable isotope-labeled analogs for quantification and metabolic tracing. Additionally, discussions on structural biology and metabolite-receptor interactions showed clear opportunities for AI-guided modeling to prioritize targets before synthesis.

Overall, the symposium helped me clarify a research strategy that combines synthetic chemistry with advanced computational tools to accelerate biological validation and uncover how specific metabolites influence health and longevity.

(Joaquim Caner, Postdoc)



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I'm a doctoral student in organic chemistry in the Graduate School of Pharmaceutical Sciences.

Our bodies are composed of cluster of organic compounds, and biological reactions are deeply intertwined with the principles of organic chemistry. Organic chemistry is the fundamental of developing medicine. However, drug discovery research cannot be accomplished by organic chemistry alone; it is essential to identify biological target through elucidating the behavior of biomolecules in multidisciplinary fields.

In this symposium, I had the opportunity to listen to the research that I do not usually encounter in my daily research activities. Getting a chance to learn such diverse fields leads to gain new significance into my own research. The integration of distinct research fields to analyze the causal relationships between biomolecules and diseases represents one of the true best parts of scientific research. Witnessing this process through the symposium led me a profound impression.

(Ayami Takeda, WPI-RA (STaMP))



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# INTRODUCTION TO Bio2Q RESEARCH

Series #10:  
**Dr. Nadinath Nillegoda**

PI, Bio-1 Core

Our group has launched an exciting new research direction exploring how protein quality control (PQC) pathways responsible for repairing damaged proteins and clearing toxic aggregates support regeneration of the primate gut epithelium.

These PQC pathways are emerging as key “protectors” against cellular oxidative stress. By inducing protein misfolding, aggregation, and associated cytotoxicity, oxidative stress compromises epithelial barrier function, increasing gut permeability and contributing to the development of chronic inflammatory conditions such as inflammatory bowel disease. The gut also experiences heightened oxidative damage during dysbiosis, a condition arising from an imbalance in the gut microbiota.

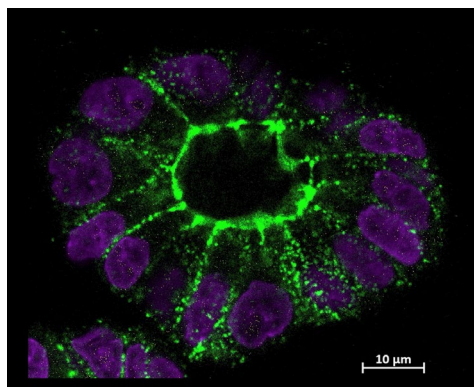


Image of a human gut organoid (taken by Vinodh, Postdoc)

Building on our discovery of a largely primate-specific protein disaggregase assembly system, we are developing a pharmacological strategy to enhance toxic aggregate clearance and promote epithelial repair. Our preliminary work shows that this system responds rapidly to oxidative damage induced by gut microbiota-derived metabolites. Future studies will examine how the gut microbiome shapes the cellular proteostasis network, a system increasingly recognized as central to tissue health, disease resilience, and the aging process.

## Bio2Q'S SUCCESSFUL OUTREACH AT KEIO TECHNO-MALL 2025 DRAWS LARGE CROWD

Bio2Q successfully participated in the KEIO TECHNO-MALL 2025 (KTM 2025) at the Tokyo International Forum on December 12.

Our presence was a crucial part of our outreach campaign to promote the current activities and fundraising initiatives of the Bio2Q center, specifically connecting with Keio University Faculty of Science and Technology members.



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Our booth attracted over 100 visitors, generating significant interest in our cutting-edge research. We held two well-received presentations during the day. The lunchtime Short Presentation was so popular that it was standing room only, highlighting the strong audience interest. Our second presentation, held in the evening, served as the final event of the entire Techno-Mall. Both sessions, featuring insights from Dr. Oltea Sampetean, Dr. Shigeki Ishikawa, Dr. Kunimichi Suzuki, and Dr. Yasumichi Arai, drew approximately 80 participants collectively, who listened intently.



Key members of the Bio2Q team who presented at KTM 2025 (Clockwise from top left) : Dr. Arai, Dr. Ishikawa, Dr. Sampetean (bottom right), and Dr. Suzuki (bottom left).

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KTM 2025 provided an invaluable platform for Bio2Q to connect with the academic and industrial communities, reinforcing our commitment to advancing scientific knowledge and collaboration. We thank everyone who visited our booth and attended the presentation.



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## RESEARCH INTERNSHIP PROGRAM 2026 (Period 2)

Bio2Q is now offering a research internship opportunity as part of STaMP, a joint cross-disciplinary graduate English program for students interested in entering one of Keio's master's or doctoral programs in a Bio2Q-related field, and invites applications for research internship students.



## UPCOMING EVENTS

January 7 (Wed) 17:00-18:00  
WPI-Bio2Q Open Seminar  
by Dr. Masahiro Kanai (Broad Institute of MIT and Harvard, USA) @Shinanomachi

January 27(Tue) 9:30-17:00  
The Cryo-EM Workshop @OIST

### Science Meeting Series

January 21 (Wed) 14:00-15:00  
#35: Juntaro Matsuzaki, Affiliated PI  
@Shinanomachi and Zoom (Hybrid)

January 28 (Wed) 14:00-15:00  
#36: Shigeki Ishikawa, PI  
@Shinanomachi and Zoom (Hybrid)

February 25 (Wed) 14:00-15:00  
#37: Takahiko Koyama, PI  
@Shinanomachi and Zoom (Hybrid)

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The next “Bio2Q Connect” will be issued on January 29, 2026

