

Prospectus

Our Mission

Through life science research, we aim to realize a society grounded in well-being.

Our mission is to pioneer a new interdisciplinary field that will lead to transformative progress in elucidating the regulatory mechanisms that sustain human health. In the long term, our mission is to develop new prophylactic and therapeutic approaches to promote healthy longevity.

Research Plan and Distinctive Features

Bio2Q will develop novel research methodologies to unravel the complex interactions between multiple organs and the microbiome, while also advancing the application of quantum computing in human biology.

Our institute brings together world leaders in microbiome research, organoid technology, metabolic analysis, neural circuit analysis, AI, and quantum computing, and we are committed to becoming a globally competitive hub that attracts a diverse team of researchers.

Bio2Q's Core Identity

- 1. Fusion of Advanced Technologies:** Integration of the center's three research cores— the Multidimensional Data Analysis Core, the Homeodynamics Mechanistic Analysis Core, and the Quantum Computing Core—to facilitate truly interdisciplinary research
- 2. Next-Generation Technologies:** Application of AI and quantum computing to deepen our understanding of human biology
- 3. Comprehensive Clinical Data Resources:** Comprehensive, longitudinal clinical samples across a wide spectrum of conditions: cancer, diabetes, obesity, neuropsychiatric and developmental disorders, immune disorders, aging, and centenarians
- 4. Cross-Disciplinary Graduate Education:** A joint English-language graduate program developed in collaboration with the Graduate School of Medicine, Graduate School of Pharmaceutical Sciences, and Graduate School of Science and Technology.

Research Goals

- Accumulate multiomics data from human subjects and model organisms to construct a comprehensive, multidimensional database
- Elucidate the molecular structure and biological functions of microbiome-derived metabolites
- Enhance imaging metabolomics and structural biology to enable *in situ* functional analysis of metabolites in organs and cells
- Develop quantum computing-based algorithms and pipelines to study inter-organ and host-microbiome interactions
- Advance organoid technologies and humanized models to investigate how environmental stimuli are transduced into biological signals
- Apply connectomics and structural biology to explore dynamic organ-to-organ communication, including gut-brain interactions

Organizational Structure

Decision-Making Bodies

- **Steering Committee:** Advisory Board to the Center Director, facilitating communication, coordination, and center management in collaboration with related departments
- **Executive Committee:** Responsible for implementation of Center policies and activities

Donation Center

- **Oltea Sampetean** (Bio2Q Administrative Director / PI, Project Professor, Keio University)
- **Junta Komamura** (Bio2Q Research Manager, Planning & Coordination, Office of Research Development and Sponsored Projects, Shinanomachi Campus, Keio University)
- Administrative staff

Funding Plans and Use of Donations

Annual operating expenses: 700 million yen

Your support allows us to:

- Promote interdisciplinary research activities
- Develop research talent
- Contribute to society by sharing research findings and related activities worldwide
- Maintain our research environment
- Manage and operate our research center
- Other purposes

Tax Benefits

Donations made to Keio University are considered contributions to specified public interest promotion organizations. This means they qualify for preferential treatment under the Income Tax Act (for individuals) and the Corporation Tax Act (for corporations) in the form of donation deductions or tax deductions. For donations from overseas, please contact us at bio2q@info.keio.ac.jp

[For individual donations:](#) [For corporate donations:](#) [For donations from the U.S.](#) [For recipient-designated donations:](#)

Notes on donation application

Persons who are prohibited from donating under the Public Offices Election Law or other laws and regulations, and underage persons are not eligible to apply for the program.

Donor Benefits

- Regular updates on Bio2Q activities
- Reports on the status and results of donation utilization
- Participation in various Bio2Q events (planned)

About Keio University and Bio2Q

Established in 1858 by Yukichi Fukuzawa as a small school of Western learning, Keio has the distinction of being Japan's first private institution of higher learning. Over 160 years since its founding, Keio continues to thrive under its founder's motto of **jitsugaku**, or empirical science, contributing to Japan's development as a modern nation through education, research, and medicine.

Jitsugaku is a method of learning rooted in reason, observation, and verification. It arose from Fukuzawa's desire to break free from the Confucian ideals that dominated 19th-century Japanese scholarship. **Jitsugaku** represents science in the truest sense—a powerful tool in Keio's enduring mission to find practical solutions to real-world problems.

Established in 2022, **Bio2Q** is the first private university research institute selected by the Ministry of Education, Culture, Sports, Science, and Technology (MEXT) for its "World Premier Research Center Program." As Japan's first microbiome-focused research center, Bio2Q leverages both conventional bioanalytical methods and quantum computing technology to elucidate the complex interactions between the microbiome and the human body at the molecular level, contributing to the realization of a society centered on healthy longevity.

To promote Bio2Q's research activities, we sincerely ask for your kind support in advancing medical research for the future of humankind.