



**LIFE SCIENCE &
BIOTECHNOLOGY**

Mission & Strategy of Dept. of Life Science & Biotechnology

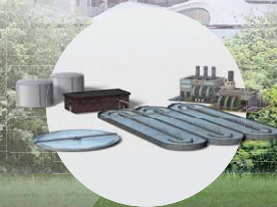
Creation of innovations that contribute to solving social issues such as an aging society and realization of a bioeconomy society, and social implementation utilizing our comprehensive strengths



Biomanufacturing



Medical and healthcare



Bioresource circulation



Advanced plant utilization

High functional plants

Next-generation medical devices

Wastewater treatment

Smart bacterial cells

Alternative models to animal testing

Biomarker

Microbiome

Single cell measurement using droplets



Visualization of health status



Bio - AI synergies

Fundamental and underlying technology



Microbial and genetic resource exploration



Biomaterials engineering and evaluation



Measurement and utilization of molecular function



Measurement and analysis of physical function



Cell engineering and evaluation

Executives



Director General
CHIBA Yasunori, Ph.D.



Deputy Director General
DOI Motomichi, Ph.D.



Director, Research Planning Office
MITSUDA Nobutaka, Ph.D.



Director, Collaboration Promotion Office
KIM Hyonchol, Ph.D.

Greetings from Dr. Chiba

The formation of a bioeconomy society utilizing biotechnology and biomass is expected to solve environmental, food, health, and other issues, as well as to realize a circular economy and sustainable economic growth. In this context, there is a need to transition away from fossil fuels and realize a resource independent economy through biomanufacturing, health maintenance using complex biopharmaceuticals, and healthcare utilizing medical information. It is crucial to create innovation based on science and technology to support these efforts.

AIST began its 6th Mid- to Long-Term Plans in April 2025. The objective of this plan is to create the world-class research and development results for steady social implementation, and to strengthen the innovation infrastructure by collaborating with the initiatives of companies, universities and other organizations. In our Department of Life Science and Biotechnology (LS-BT), we are committed to creating innovations that contribute to solving social issues such as an aging society and the realization of a bioeconomy society, and to implement these innovations in society by demonstrating our comprehensive strengths.

We will address the following priority issues.

1. Development of biomanufacturing technologies using microorganisms or plants and pioneering advanced fundamental technologies to accelerate biomanufacturing.
2. Development of innovative diagnostic and therapeutic technologies that contribute to the prevention and cure of serious diseases and creation of innovative technology seeds that contribute to coping with a declining population and an aging society.
3. Development of self-care technologies through integration of personal health data for extending healthy life expectancy, centered on the Integrated Research Center for Self-Care Technology.

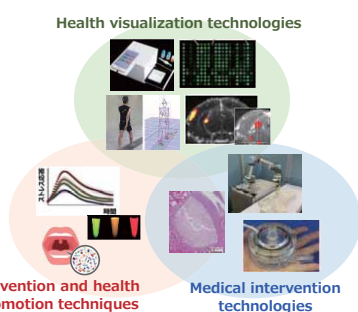
To promote the development of these technologies, we will build a research system that is aware of mutual collaboration among AIST researchers across institutes, centers, and even across departments. In addition, to serve as the core of an innovation ecosystem, AIST and the AIST Solutions Co., one of the AIST group members, will work as one, and will create the future society with all the stakeholders. Please look at the information on our researchers and technologies in LS-BT, and feel free to contact us.

We look forward to collaborating with you as your partner.

Health and Medical Research Institute



Our mission is to develop advanced medical and healthcare technologies to predict and provide solutions to diversifying health problems. In particular, we aim to realize a sustainable healthy society despite the declining birthrate and aging population by promoting the development of (1) technology for visualization of health conditions, (2) technology for prevention and health promotion, and (3) medical intervention technology and its practical application.



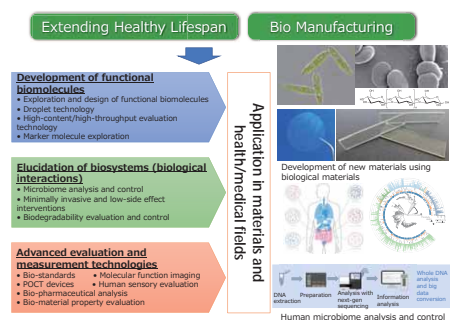
Director
OISHI
Isao, Ph.D.

Location: Shikoku and Tsukuba
<https://unit.aist.go.jp/hmri/en/index.html>

Molecular Biosystems Research Institute



The Molecular Biosystems Research Institute focuses on “development and evaluation of functional biomolecules and their implementation in society” as the unit mission. We also focus on research themes which are backcasted by social issues, aiming to create innovations that will contribute to enhancing Japan’s economic growth and industrial competitiveness.



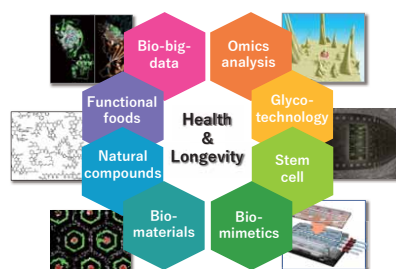
Director
MITANI
Yasuo, Ph.D.

Location: Tsukuba and Kansai
<https://unit.aist.go.jp/molbis/en/>

Cellular and Molecular Biotechnology Research Institute



We promote the development of fundamental technologies that support drug discovery and functional material development. In order to support a society with healthy longevity, we bridge technologies with industries in area of healthcare, biopharmaceutics, regenerative medicine, and gene therapy that enable us to promote social implementation of our research findings and to provide scientific evidence to the molecular mechanisms in cellular systems.



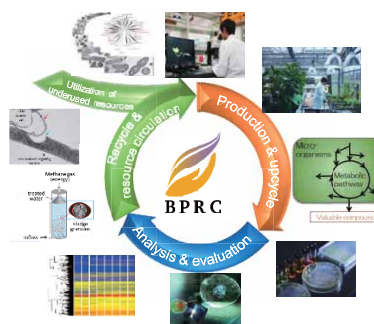
Director
KOMATSU
Yasuo, Ph.D.

Location: Tsukuba and Tokyo Waterfront
https://unit.aist.go.jp/cmb5/index_en.html

Bio manufacturing Process Research Center



Our R&D efforts focus on realizing a circular bioeconomy. We are engaged in discovering new biological resources to make use of underutilized resources and developing technologies for the efficient production of functional substances, raw materials, and fuels using microorganisms, plants, and bioinformatics. In addition, we are working on technologies for the effective treatment and reuse of wastewater and waste to promote resource circulation. The technologies developed are disseminated through academic publications and intellectual property and implemented in society in collaboration with companies. These efforts contribute to revitalizing the domestic bio-manufacturing industry and realizing a bioeconomy-based society.



Director
ABURATANI
Sachiyo, Ph.D.

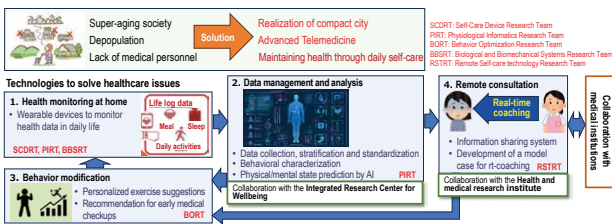
Location: Hokkaido and Tsukuba
<https://bprc.aist.go.jp/en>

Integrated Research Center for Self-Care Technology

Due to the super-aging society, depopulation, and lack of medical personnel, there is concern that the elderly and other local residents may not receive adequate medical care. This project aims to develop and test the basic technology for "self-care" as a system that integrates medical data at home, daily life data, and living environment data to build an appropriate health evaluation model using AI and to provide coaching that maximizes effectiveness.



Director
MARUYAMA Osamu, Ph.D.



Location: Tsukuba, Kashiwa, Tokyo Waterfront, Shikoku

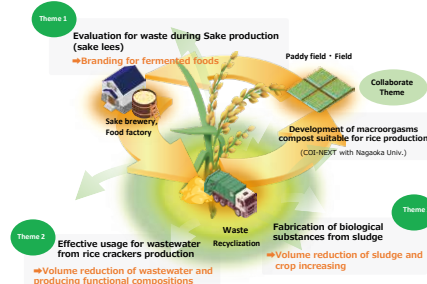
NAGAOKA-AIST Bridge Innovation Laboratory



NAGAOKA-AIST BIL is established on the collaboration to Nagaoka City and Nagaoka University of Technology, as performing research and development of recycling process of organic waste involved rice production and manufacturing. The aims of NAGAOKA-AIST BIL are creation of new industries by commercialization support, regional economic revitalization and solving local community social issues based on research bridging process.



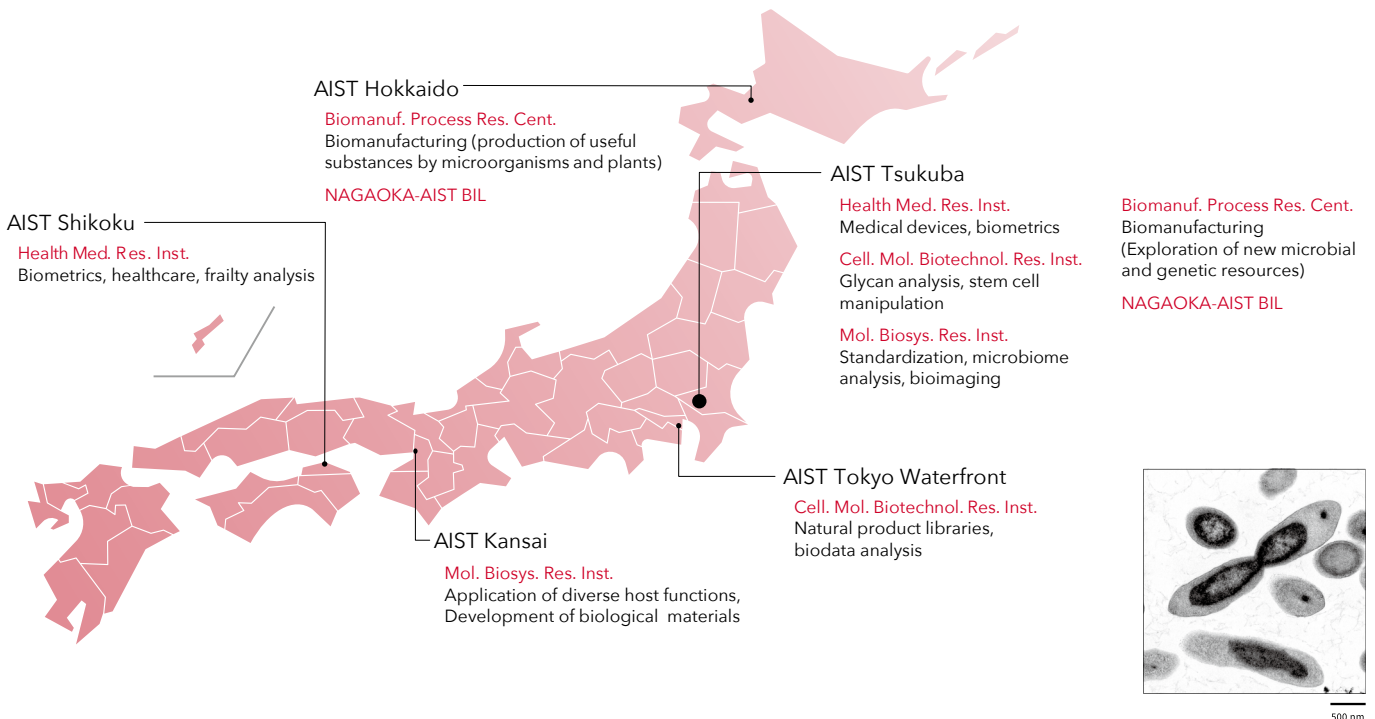
Project Manager
MIYAFUSA Takamitsu, Ph.D.



Not only above 3 themes, widespreading research themes by collaboration activity. Aiming newly technology for widely bioresource utilization.

Location: Tsukuba and Hokkaido

Research bases and their priority fields



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The cover image features a newly discovered and isolated microbe at the phylum level, far beyond the species level. This is an extremophilic microbes with unique membrane structure enclosing nucleotide.

