



National Institute of Advanced Industrial Science and Technology

Department of Life Science and Biotechnology

2024

Mission & Strategy of Dept. of Life Science & Biotechnology

Creating innovation to contribute to solution of social problems including aging society, economic growth, and strengthening of industrial competitiveness

Development of medical equipment

Screening & evaluation of drug candidates

Healthcare science

Diagnostic technologies for stratified medicine

Next-generation medical science

for affluent and healthy lifestyle

Advanced bio-analysis

for bio-data-driven society by instituting technologies for innovation

Advanced utilization of bioresources

for expanding the bioeconomy

Construction of bioresource circulation

Technologies for drug production

Advanced bioproduction

Bioresource discovery

https://www.aist.go.jp/aist_e/dept/en_dlsbt.html

Executives



Director General

Dr. TAMURA Tomohiro



Deputy Director General

Dr. CHIBA Yasunori



Assistant Director General

Dr. KOMATSU Yasuo



Director, Research Planning Office

Dr. SHICHIRI Mototada



Director, Collaboration Promotion Office

Dr. KIM Hyonchol

Greetings from Dr. Tamura

Due to development of globalization, population, environmental and food problems are recognized issues to work on global scale. Furthermore, for achieving a sustainable society with high quality of life, the importance of advanced technologies and innovation based on them is increasing.

In the Department of Life Science and Biotechnology (LS-BT), AIST, we have been engaging in introducing solutions to the declining birthrate and aging society, bio-economy and circular-economy etc. Then, since 2020fy, in 5th mid-term plan, three priority strategies were established.

1. With the aim of settling social issues, development of high quality, functional and fine medical and diagnostic technologies improving quality of life.
2. With the aim of reinforcing economy and industry competitiveness, development of bio-resource application technologies and advanced medical fundamental technologies.
3. With the aim of providing infrastructure for innovation, development of bio-manufacturing process and advanced bio-measuring technologies.

In LS-BT, AIST, not only research based on needs in industry and society but also fundamental studies for creating new seeds are performed. Furthermore, it is also engaging in human resources development for technology translation. We have been also collaborating with other departments, universities, and other institutions for performing research. For international collaboration with India and Thailand, we aim to further the collaboration on human resources development and studies on regional indigenous biological resources.

We have been performing world highest level research and development to create new seeds to contribute to various industries.

We would appreciate if you could support and cooperate with us.

Research Institutes



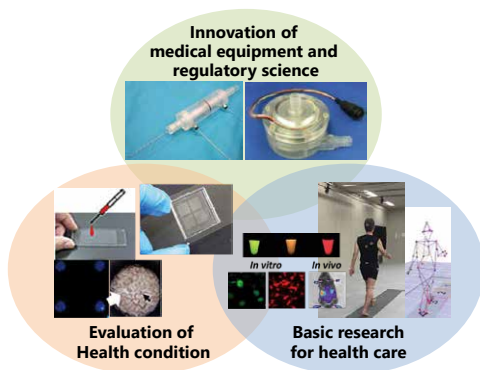
Health and Medical Research Institute

Location; Shikoku and Tsukuba

We promote research agendas that are set by backcasting from social issues such as the declining birthrate, aging population, economic growth, and enhancement of industrial competitiveness. In addition to focusing on industry-academia collaboration for social implementation, we concentrate on the promotion of regional innovation by strengthening the Shikoku Center's research base, creating research seeds, and strengthening research capabilities to build bridges with industry.



Director
Dr. OISHI Isao



<https://unit.aist.go.jp/hmri/en/index.html>



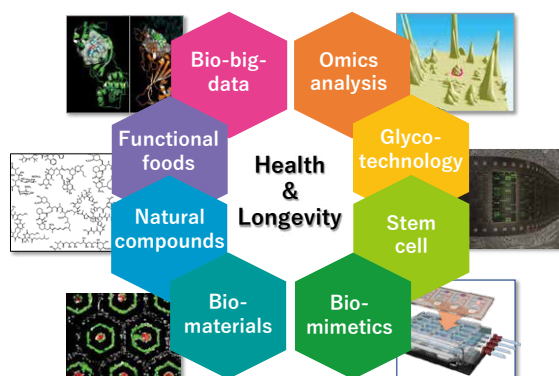
Cellular and Molecular Biotechnology Research Institute

Location; Tokyo Waterfront and Tsukuba

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
Dr. DOI Motomichi



https://unit.aist.go.jp/cmb5/index_en.html



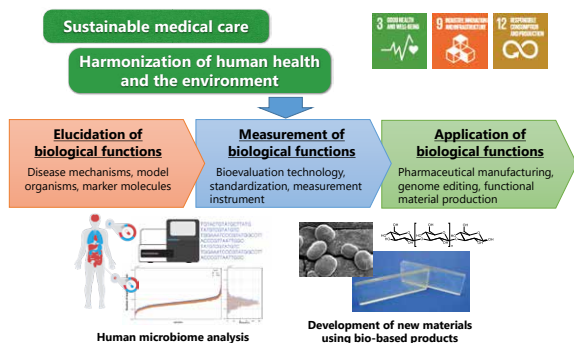
Biomedical Research Institute

Location; Kansai and Tsukuba

With the aim of contributing to the realization of 'sustainable medical care' and 'harmonization of human health and the environment' as well as to economic growth and enhancement of industrial competitiveness, we vision and develop technologies, especially related to elucidation, measurement, and functional application of biological functions. We actively collaborate and cooperate with a wide range of industries to promote joint product development, based on the outcomes of our knowledge- and technology-building projects.



Director
Dr. HAGIHARA Yoshihisa



<https://unit.aist.go.jp/bmd/en/>



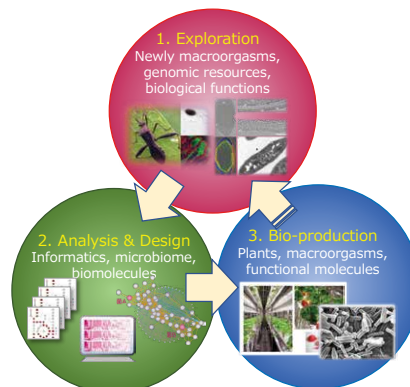
Bioproduction Research Institute

Location; Hokkaido and Tsukuba

We explore new biological and genetic resources and utilize them to establish technologies for (i) efficient production of bio-based chemicals, fuels, functional materials and food by plants and microorganisms, and (ii) efficient treatment and reuse of wastewater. In collaboration with private sector and others, we aim to contribute to the bioeconomy development through the practical application of the bioproducts and biotechnologies.



Director
Dr. ABURATANI Sachiyo



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Laboratories



AIST-Waseda University Computational Bio Big-Data OIL

Location; Waseda Univ.

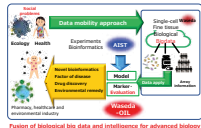
Owing to advancement of evaluation technology, exhausting measurements in various scales of biology induced large scale data. For achievements of next generation biology, jewel picking up process will be dominated from biological big data acquired by exhausting measurements.

In this OIL, for creating novel biological-IT technologies, two factor technologies were combined. Namely, multi-scaled biological big-data measurement techniques: single-cell analysis technologies, meta-genome analysis and fine tissue analysis (Waseda). And, bioinformatics (AIST) techniques and mathematical intelligent analysis technologies (Waseda).

Based on the biological big data obtained by advanced biotechnology measurements and advanced informatics analysis, an open research access laboratory bridging to industry for pharmacy, food and chemicals was established.



Director
Dr. TAKEYAMA Haruko



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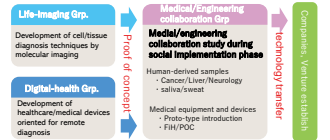


AIST-Osaka University Advanced Photonics and Biosensing OIL

Location; Osaka Univ.

During period 2 (since 2022) of this OIL, need-pull and back casting type researches were promoting based on the achievement of photonics and biosensing technologies established during period 1 (2017~2022). For achievement of the aim of this OIL, "Establishment of Enjoyable Society without any Health Problems", we engage three topics:

- Developing of cell/tissue diagnosis techniques based on advanced spectroscopic imaging
- Developing of advanced healthcare and medical equipment for remote diagnosis
- Promoting of medical-engineering collaboration studies under social implementation phases.



Director
Dr. TAMIYA Eiichi

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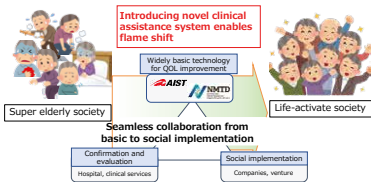
Next-Generation Medical Treatment and Diagnosis Research Laboratory

Location; Tsukuba, Kansai, Kashiwa, Shikoku, Kyushu

For introducing solutions about declining birthrate and aging populations, Next-Generation Medical Treatment and Diagnosis Research Laboratory, a virtual laboratory, was established on not only biotechnology department researchers but also including other five departments of AIST. The aim of this laboratory is also achieving active life society whoever, whenever and wherever could access high quality medical and nursing services, "Universal medical access society".



Director
Dr. MARUYAMA Osamu



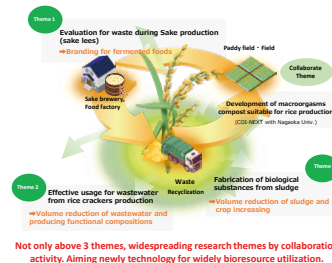
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Nagaoka-AIST Bioresource Circulation Bridge Innovation Laboratory

Location; Tsukuba, Hokkaido

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 newly industries by commercialization support, regional economic revitalization and solving local community social issues based on research bridging process.



Project Manager
Dr. MIYAFUSA Takamitsu

Research bases and their priority fields

AIST-Osaka University
Advanced Photonics and
Biosensing Open Innovation
Laboratory (PhotoBIO-OIL)

AIST Kansai

Biomed. Res. Inst.
Application of diverse host functions,
Development of biological materials

AIST Shikoku

Health Med. Res. Inst.
Biometrics, healthcare, frailty
analysis

AIST-Waseda University
Computational Bio Big-Data
Open Innovation Laboratory (CBBDOIL)

AIST hokkaido

Bioprod. Res. Inst.
Bio-manufacturing (production of useful substances
by microorganisms and plants)

AIST Tsukuba

Health Med. Res. Inst.
Medical devices, biometrics
Cell. Mol. Biotechnol. Res. Inst.
Glycan analysis,
stem cell manipulation
Biomed. Res. Inst.
Standardization, microbiome
analysis, bioimaging

Bioprod. Res. Inst.
Bio-manufacturing
(exploration of new microbial
and genetic resources)
NMTD Res. Lab.
Therapeutic/diagnostic
devices,
medical materials

AIST Tokyo Waterfront

Cell. Mol. Biotechnol. Res. Inst.
Natural product libraries, biodata analysis

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