

# Invitation to **AIST Hokkaido**



# Aims of AIST Hokkaido

The Hokkaido Center of National Institute of Advanced Industrial Science and Technology (AIST Hokkaido) aims to contribute to society as a research and development center in Hokkaido. We at AIST Hokkaido are working to enhance our research and development capabilities in collaboration with industry, academia, and government.

Our two research laboratories, the Bioproduction Research Institute and the Methane Hydrate Project Unit, are responsible for research and development functions in AIST Hokkaido. The Bioproduction Research Institute is advancing the development of bio-processes to produce value-added organic materials. The Methane Hydrate Project Unit is conducting research on methane hydrate and developing technology for producing natural gas as a future energy resource.

In order to work together with industry, academia, and government, AIST Hokkaido provides a collaborative research space called the Open Space Laboratory. In addition, a technical site opened in Sapporo (Odori site) is providing technical information and support throughout Hokkaido in

cooperation with the Hokkaido Intelligent Network Terminal (HiNT), of which many major organizations in Hokkaido are members.

Furthermore, to offer support of AIST's entire network of research laboratories, AIST Hokkaido is actively working to dispatch AIST technology seeds, and also to find and understand the technological needs of the local area. AIST activities cover a wide variety of research areas: Energy and Environment, Life Science and Biotechnology, Information Technology and Human Factors, Materials and Chemistry, Electronics and Manufacturing, Geological Survey, Metrology Standards. The variety of research activities in AIST is sure to bring progress to many technical issues in these industries.

AIST Hokkaido will function as a substantial research center capable of world-class research achievement. We will make a continuing effort to contribute to society, both regionally and globally, as a core research institute of AIST in Hokkaido. We hope that collaboration with AIST Hokkaido will bring many advantages to you.

## AIST Hokkaido

### "Biomanufacturing" to build a new industrial infrastructure

Innovation Hub



Department of Life Science and Biology

Bioproduction Research Institute  
(31 researchers, 21 technical staff)

Tsukuba

Department of Energy and Environment

Methane Hydrate Project Unit  
(4 researchers, 13 technical staff)

Tsukuba

Collaboration Affairs Office

General Affairs Office

(2018.10.1)

# As Cutting-edge Research Center

## World Leading Research & Development

### State-of-the-art Technologies for Production of Pharmaceuticals in Transgenic Plants

Development of Large-scale Material Production Technologies Utilizing Transgenic Plants

Closed-type transgenic plant production system

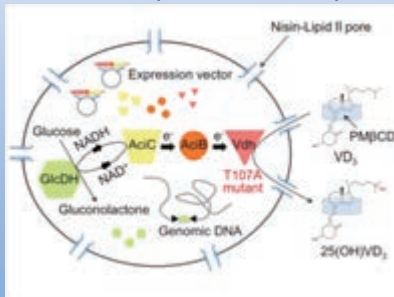


Plants cultivated in fully-controlled environment

Large-scale production of a pharmaceutical to prevent canine periodontal disease in transgenic strawberry

### Bioproduction of hydroxyvitamin D3 by nisin-treated *Rhodococcus erythropolis* cells

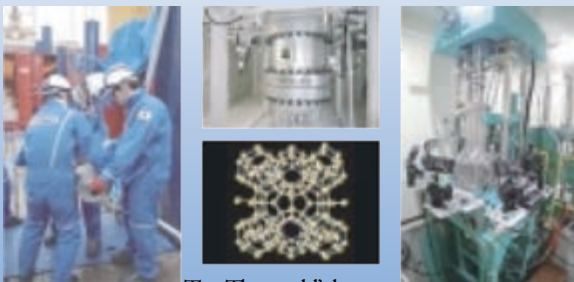
Highly efficient hydroxylated Vitamin D3 production system



Nisin-treated *Rhodococcus erythropolis* cells expressing the highly active Vdh mutant

### Development of New Natural Gas Resources

Technologies to Produce Natural Gas



Taking natural core samples on deep-sea survey vessel "Chikyū"

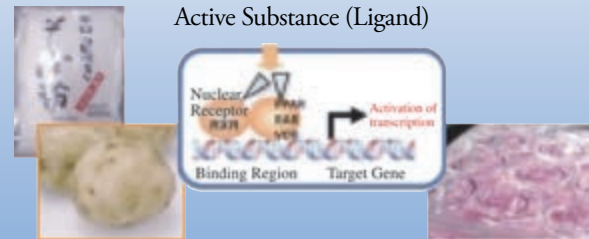
Top: The world's largest production and testing apparatus, Bottom: Crystal structure model of methane hydrate

The world's first visualizing pres-surized core 3-D testing apparatus

## Responding to Regional Needs

### Cooperation with Hokkaido Food Complex

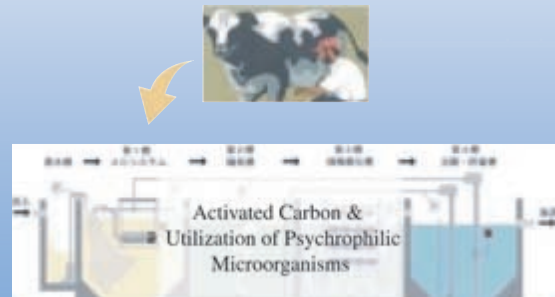
Evaluating Biological Function of Hokkaido Agricultural Products and Processed Foods



Test food products to determine if substances that interact with nuclear receptors are present in those samples. We perform commissioned analysis of various food samples in collaboration with NOASTEC Foundation

### Microorganisms-based Systems Tailored to Regional Environments

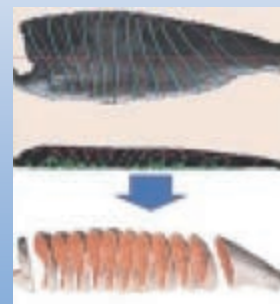
Development of Technologies Utilizing Biomass such as Agricultural Products and Agricultural Waste Materials



Development of water treatment technologies for agricultural waste in Hokkaido

### Initiatives with Other AIST Research Bases

Whole-Perimeter 3-D Shape Measurement Systems for Farm and Marine Product Processing

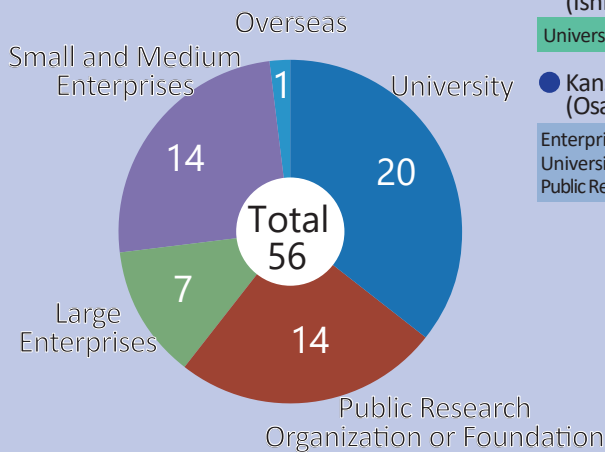


This technology was developed in collaboration with Intelligent System Research Institute and AIST Kansai.

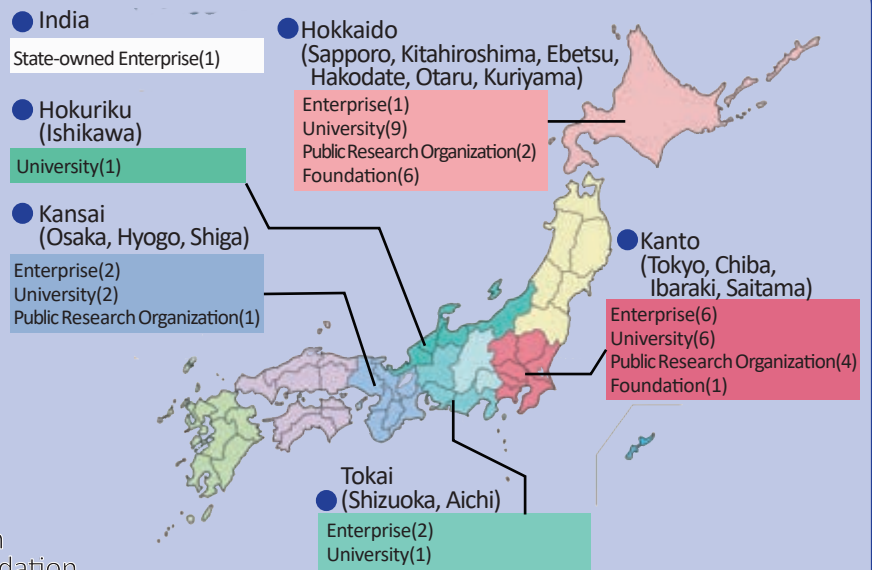
# AIST Hokkaido's Industry-Academia-Government Collaboration Initiatives

## Nationwide Joint Research

Number of Joint Research Topics (2016)



Joint Research within Hokkaido Region: 50%



Numbers of Joint Research Project with AIST Hokkaido (Current as of April 1, 2016)

## Hub for Regional Collaboration

Enhanced effectiveness as a regional research hub through the partnership between Odori Site and R&B Park Sapporo Odori Satellite (HiNT)

- HiNT annual visitors: 2,817
- HiNT annual consultations: 174
- We conduct a series of seminars "AIST Hokkaido Lectures" for introducing technologies to regional companies and institutes.

(in 2017)

Construction of Open Innovation Hub to Support Hokkaido "Biomanufacturing" Industries



## Partnership with Universities / Human Resource Development

- Collaborative Graduate School in Hokkaido University (in 2017)
  - Graduate School of Agriculture 4 guest professors, 4 guest associate professors
  - Graduate School of Life Science 2 guest professors, 2 guest associate professors
- In 2017fy, 40 people accepted (including 13 vocational students)
- Technical training for vocational school students, "Biotechnician Development Program", has been carried out in cooperation with a research unit.

# Industry-Academia-Government Collaboration Capabilities in AIST Hokkaido

## ● Collaboration Affairs Office

- 1 Technical Consultation**  
We provide consultations to solve specific technological challenges.
- 2 Commissioned Research**  
We accept contracts for commissioned research with corporations, groups, and public research organizations.
- 3 Joint Research**  
We cooperate with corporations, groups, and public research organizations in research on common topics.
- 4 AIST Start-ups**  
We support to create startup companies through our "Support System for AIST Start-ups" when they intend to commercialize products by using AIST technology or joint research with AIST.
- 5 Use of Intellectual Property**  
We facilitate the transfer of our intellectual property to commercialize AIST-developed technologies.
- 6 Laboratory Tours**  
Laboratory tours are available 09:00- 17:00 weekdays, by reservation only.

## ● Hokkaido OSL

### Hokkaido Open Space Laboratory

Research base for joint research and AIST Start-ups in AIST Hokkaido



## ● Consultation Office

### Sapporo Odori Site

- Office operated in the partnership between AIST and R&B Park Sapporo Odori Satellite (HiNT)
- Our site provides comprehensive access to information on all AIST, as well as variety of organizations throughout Hokkaido
- We provide consultations of various topics

[HiNT Member Organizations]

5 Universities, 4 technical colleges, 3 public research organizations, 7 various types of foundations and economic organizations, 3 government organizations (a total of 22 organizations; current as of Oct. 1, 2018)

AIST Hokkaido  
Odori Site



Partnership

R&BP Sapporo Odori Satellite  
(HiNT)



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**[For Enquiry Regarding Laboratory Tours]**

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**<http://www.aist.go.jp/hokkaido/>**

**We also accept enquiries through our website**



**[For Enquiry Regarding Technological Consultation,**  
**Commissioned Research, Joint Research,**  
**AIST Start-ups, Use of Intellectual Property, etc]**

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