

Industrial Technology Research Department

This department carries out research and development on industrial technologies and food processing, and provides technical support, including technical consulting and temporary guidance based on its findings, thus promoting the commercialization and practical application of these technologies by Hokkaido companies.

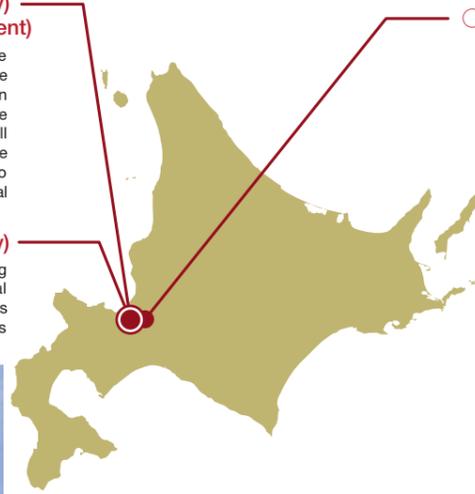
Organizational structure

Industrial Research Institute (Sapporo City) (Industrial Technology Research Department)

Besides planning and coordination services as the Industrial Technology Research Department, this institute conducts research in various fields, such as information and communications, electronics and mechatronics, the environment and energy, materials and products, as well as production-related technologies. In recent years, we have been focusing on research concerning ways to enhance the productivity of primary industries via industrial technologies.

Technology Support Center (Sapporo City)

To contribute to the development of manufacturing industries in Hokkaido, this center provides technical consultations and information, and with its open access to testing facilities and equipment, it also conducts on-demand testing and analysis.



Food Processing Research Center (Ebetsu City)

While conducting research to improve food processing-related technologies and create products with high added value, this center also provides technical support for corporation-directed product development. In FY 2015, with the aim of effectively promoting food-related research and smoothly transferring technologies in the HRO, trial product testing facilities that meet facility standards based on the Food Sanitation Act were established.



Major current research and development

- Development of the life prolonging technology for mold of car components by using laser processing (Industrial Research Institute) [priority research: 2018 - 2020]
- Development of highly advanced processing technology to promote the processing and utilization of yellow tail captured in Hokkaido offshore (Food Processing Research Center, Abashiri Fisheries Research Institute) [priority research: 2018 - 2020]
- Development of processing/heat-treated processing technology for manufacturing practical metal products through metal 3D molding (Industrial Research Institute) (priority research: 2016 - 2018)
- Development of environmentally compatible washing technology for the maintenance of large industrial machine components (Industrial Research Institute) [priority research: 2017 - 2019]
- Research on characteristics of anaerobic spore forming bacteria to extend the shelf life of chilled food (Food Processing Research Center) [ordinary research: 2018 - 2019]
- Research on technology to obtain big data in primary industry and technology for its use and analysis (Industrial Research Institute, Central Fisheries Research Institute) [ordinary research: 2016 - 2018]
- Development of wine fermentation technology using yeasts isolated in Hokkaido that contribute to characteristic flavor (Food Processing Research Center) [ordinary research: 2016 - 2018]
- Development of application technology to adjust the flavor of dairy products using originally isolated lactic acid bacteria (Food Processing Research Center) [ordinary research: 2017 - 2018]
- Development of a silage compacting system through the cooperative work of a manned vehicle and an automatic traveling vehicle (Industrial Research Institute) [open-type research: 2017 - 2019]
- Research on heat exchanging structures for magnetic heat pumps (Industrial Research Institute) [open-type research: 2014 - 2020]

Major recent achievements

Information system field



Development of assistive devices for people with speech disorders

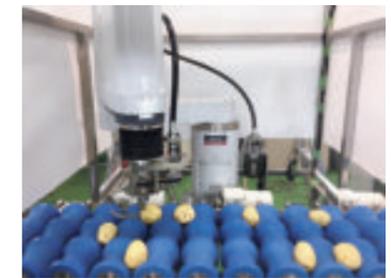
We have developed assistive devices such as Electrolarynx and Speech Synthesis Application Software for those who have trouble speaking due to disease or other disorders.

Product technology field



Development of a passive power-assist suit

We have developed a passive power-assist suit to reduce the burden on the lumbar during stooped work such as kelp-drying and vegetable-harvesting.



Development of a potato eye-removing device

We have developed a device to remove automatically detected eyes of potatoes using a robot.

Environmental energy field



Development of weeding robots for orchards

We developed a weeding robot for the undergrowth between the roots of grapevines in vineyards. The robot can effectively weed only the undergrowth with its stereo-vision sensor that can recognize grapevines and its four-wheel steering mechanism that is excellent in mobility.



Development of chondroitin sulfate oligosaccharides using a micro chemical process

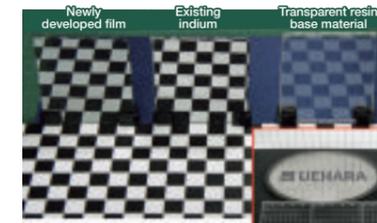
Using a micro chemical process, a next-generation environmentally friendly technology, we have developed a low-cost mass production method for chondroitin sulfate oligosaccharides, which are attracting attention as a new food material/pharmaceutical raw material.



Development of a small biomass boiler

We have developed a burner with an output of 50 to 300 kW. Biomass with a wide range of properties can be burnt, and heat can be recovered as hot water or hot air. Demonstration experiments have been conducted at warm-bathing facilities, ornamental plant cultivation facilities and greenhouses.

Material technology field



Highly functional film for car emblems made using sputtering

A millimeter-wave radar is mounted on cars with automatic operation function. Without using expensive metal, we have developed a low-cost metallic film that enables millimeter wave transparency made using sputtering.



Development of a new housing material using the unused mill ends of paper friction material

The main raw material is the unused mill ends of paper friction material that is generated in the manufacturing process of auto parts, such as clutches. It is used for the spacer of exterior wall siding.

Food processing field



Development of processed marine products, even the bones of which are eatable

A bother of removing bones from fish discourage young and elderly people from eating. We have thus developed processing technology to soften fishbone by retort heating so that fish can be eaten and to prevent fish meat from hardening. This technology was applied to

herring, which has many ribs and is not easy to eat, and commercialized. Other types of fish are also used for product development.



Isolation and characterization of a lactic acid bacterium and its application to processed food

Lactobacillus plantarum, a lactic acid bacterium from a vegetable pickle made in Hokkaido have been isolated and characterized. It is expected to have health benefits such as regulation of the function of intestine and named "strain Hokkaido". Yogurt using this lactic acid bacterium "strain Hokkaido" has been commercialized.



Development of adzuki bean flour

We developed the adzuki bean flour which we could utilize with confectioneries and bread. The confectioneries such as rolls using adzuki bean flour are on the market now.