

CHALLENGES

Target and Research and Development Topics

To achieve our center vision, we have established three targets representing the society we aim to realize by 2030. Furthermore, we have named the foundational function enabling these targets the "All-in-One Platform" and are developing it as our fourth target.

Target1	Target2	Target3
Co-Creating a Preemptive Medicine Society with Industry, Academia, Government, and Citizens	Building a Resilient Society Against Infectious Diseases	A Society Where Everyone Stays Healthy Through Food, Medicine, and Interventions
Target 4 Building a Digital-Bio Research Platform		
A Seamless Platform for Co-Creating Products Throughout the Development Process	Bio-resource Supply Services for the Society 5.0 Era	
	Digital Bio Application Technology	
	Empirical Research Field	

1. R&D on Multifactorial Disease Mechanisms and Prediction Using Integrated Future-Oriented Medical Data (Including Genomic Information)



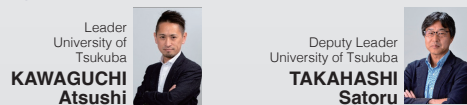
2. Technology Development to Extend Healthy Life Expectancy in Older Adults Using Insights from the Happiness Life Study



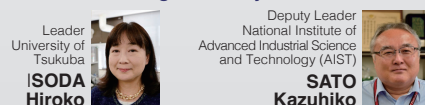
3. Creating Next-Generation Food and Living Environments



4. Reinforcing Research and Development Foundations for a Resilient Society Against Infectious Diseases



5. Establishing Innovative Supply Chains Based on Food- and Pharma-related Seeds for Drug Discovery



Bioresources and Research Platforms



• National Research and Development Corporation

University of Tsukuba	Tohoku University
National Institutes of Biomedical Innovation, Health and Nutrition, Tsukuba Primate Research Center	National Agriculture and Food Research Organization (NARO)
National Institute for Environmental Studies	Institute of Physical and Chemical Research (Riken) BioResource Research Center
National Institute of Advanced Industrial Science and Technology	National Center for Child Health and Development

• Participating Companies

Ajinomoto AGF, Inc.	NOF CORPORATION.
Astellas Pharma, Inc.	Nichirei Foods, Inc.
ADEKA CORPORATION	The Nissin Oil&O Group, Ltd.
Atlas Olive Oils	NIPPON CORPORATION
Abbott Diagnostics Medical Co., Ltd.	NIPPOH CO.,LTD
Internet Initiative Japan, Inc.	IBM Japan, Ltd.
Alma, Inc.	Zeon Corporation
EP Trading Co., Ltd.	Nutrition Act Co., Ltd.
Integrity Healthcare Co., Ltd.	VARYTEX, Inc.
ExaWizards, Inc.	Hitachi High-Tech Analysis Corporation
S&B FOODS, INC.	FonesLife Corporation
NTT DATA Japan Corporation	Fujitsu Japan, Ltd.
Ogawa & Co., Ltd.	PLIMES, Inc.
Order-Made Medical Research, Inc.	Precision System Science Co., Ltd.
Crecon Genomics, Inc.	Honda R&D Co., Ltd.
Cocokara Fine Healthcare, Inc.	MathDesign Co., Ltd
CYBERDYNE, INC.	MARUZEN CO., LTD.
SANWA KAGAKU KENKYUSHO CO., LTD.	MITANI SANGYO Co., Ltd.
JMDC, Inc.	mitsubishi GAS CHEMICAL COMPANY, INC.
Sysmex Corporation	Mitsubishi Corporation Life Sciences, Ltd.
SHIMADZU CORPORATION	Mitsubishi Electric Software Corporation
THE JACKSON LABORATORY JAPAN, INC.	MED R&D Corporation
Johnson & Johnson(China)Investment, Ltd.	MORINAGA MILK INDUSTRY CO., LTD.
S'UIMIN, Inc.	LEBER, Inc.
Daiichi Sankyo Healthcare Company, Ltd.	Ricoh Technologies Company, Ltd.
Taisho Pharmaceutical Co., Ltd.	RENATECH Co., Ltd.
TANITA CORPORATION	Roche Diagnostics K.K.
CHUGAI PHARMACEUTICAL CO.,LTD.	Robotic Biology Institute, Inc.
CHIYODA Corporation	Sotera Digital Health, Inc.
DIC Corporation	
Telix Pharmaceuticals Japan K.K.	Overseas research institutions, etc.
Denka Company, Ltd.	National Taiwan University
Tokyo Electric Power Company Holdings, Inc.	University of Oxford
DOJINDO LABORATORIES	Université Montpellier
TOYOBO CO., LTD.	Tsukuba City
Toray Industries, Inc.	Japan External Trade Organization (JETRO), Ibaraki

Tsukuba Digital-Bio International Center

Contact : digitalbioeco@md.tsukuba.ac.jp



HP
<https://tsukubadigitalbio.jp/>

Center Overview Video
https://youtu.be/_YQK2_zFDQU



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Stay updated and connect with the Tsukuba Digital-Bio International Center!



Tsukuba Digital-Bio International Center

Through interdisciplinary research centered on Tsukuba that leverages bioresources and digital technology, we aim to realize a society that supports the well-being of all generations of citizens

In Japan, where population decline and aging are accelerating, health-related challenges are increasing. Going forward, society must strive not just for longevity, but for everyone to live healthily, happily, and true to themselves.

Tsukuba is a city that leverages science and technology for its citizens, having developed by harnessing its strengths of abundant biological resources and cutting-edge research, with a concentration of universities, national research institutions, and companies. Building on this advantageous environment and under the above vision, this hub will combine digital and bio-technologies to create a "digital bioeconomy society" that supports well-being by utilizing information on lifestyle habits, genetic information, diet, and living environments.

Building on the new technologies and services born from this process, the collaborative framework among industry, government, academia, citizens, and our human resources, we will develop the Tsukuba Science City into an internationally open bio-community hub.

CATALYST A Global Hub Accelerating R&D Through Co-Creation

By participating in the Tsukuba Digital Bio International Hub, we can advance the development of **products and services that contribute to the realization of well-being** using the "Tsukuba-style integrated research platform," which enables collaboration among universities, research institutions, and government agencies. With this platform, you can receive the following three types of support:

1. Provision of biological resources necessary for research
2. Medical and bio-data analysis using cutting-edge AI technology
3. Demonstration of products and services utilizing the Tsukuba Special Zone, plus evidence building

Leveraging these resources enables us to provide comprehensive support from research theme exploration to societal implementation, a major strength of our hub that facilitates the rapid creation of innovations aligned with societal needs.

MESSAGE Message from the Center Director

Tsukuba has developed by leveraging its strengths in abundant biological resources and cutting-edge research, with its concentration of universities, national research institutions, and companies. Building on this environment, we aim to create a future society where every citizen can live a healthy and happy life.

In particular, Tsukuba's unique strengths lie in its accumulation of one of the world's largest bio-resource collections and its ability to integrate and analyze dispersed data using cutting-edge digital analysis technologies. Furthermore, through close collaboration with the national research institutions concentrated in the region, a framework is in place enabling industry, academia, and government to advance research and development as a unified force.

We aim to leverage this strength and build an international hub that collaborates globally to create new value. To achieve this vision, active co-creation with businesses and research institutions, along with the warm understanding and cooperation of our citizens, is essential. As a hub where industry, academia, government, and citizens come together to co-create new industries and services, we will broadcast the future of a healthy society from Tsukuba to the world.



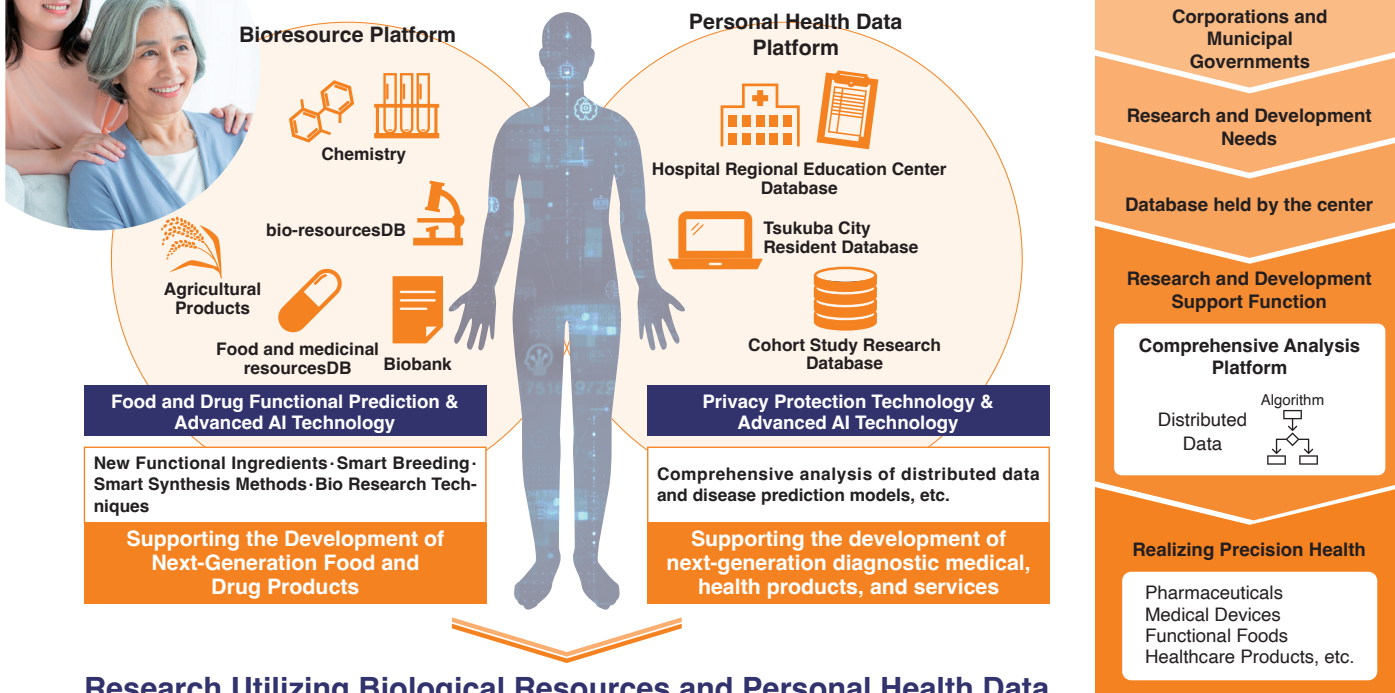
R&D Project Leader
NISHIYAMA
Hiroyuki
Professor,
Institute of Medicine,
University of Tsukuba



A collaborative space for research institutions and industry in the Tsukuba area



Through interdisciplinary research centered on Tsukuba that leverages bioresources and digital technology, we aim to realize a society that supports the well-being of all generations of citizens.



Research Utilizing Biological Resources and Personal Health Data

Tsukuba Happiness Life Study

Using the Tsukuba Cohort, starting in July 2022

Goal Aiming to extend healthy life expectancy through lifestyle, environmental, and dietary improvements (optimization)

I Mail survey (1st survey)

- "Health and Living Survey for Tsukuba Citizens"
- Accumulation of Health and Lifestyle Data for Tsukuba Citizens
- Health status, social activities, environment, and others

II Tsukuba Happiness Life HealthCheckup (2nd Survey)

- Conducted annually at the University of Tsukuba Hospital
- Digital Biometric Data
- Accumulation of (health examination data and biobank specimens)
- Longitudinal Study of Individuals at High Health Risk

- ▶ **Profiling analysis of social, living, and environmental factors for high-risk individuals**
- ▶ **Development of Disease Early Detection (Prediction) Methods**
- ▶ **Verification of the Effects of Interventions Such as Exercise, Diet, and Dietary Supplements**

For details on Happiness Life research initiatives, outcomes, and secondary data utilization, please see here. ▶