

# Research & Development Centers

## Algae Biomass and Energy System R&D Center

The world's first comprehensive R&D Center  
of Algae Biomass Energy System



PMC

Research and  
Development Center for  
Precision Medicine



## R&D Center for Precision Medicine

With the aim of the first 1000 dollar genome analysis base  
in Japan



## R&D Center for Strategic Frontiers Social Planning

Center for sustainable social infrastructure of future community

## R&D Center for Sports Innovation

Japan's first social experiment base of the national university  
Athletic Department (AD)



## R&D Center for Health Services

Japan's first center of specializing in the discipline  
of services that bring health & happiness



## R&D Center for Tailor-Made QOL

Development of 'Tailor-Made QOL programs' aimed at promoting health



## R&D Center for Working Persons' Psychological Support

Research activities and building social contribution infrastructure  
related to psychological support for working persons



## R&D Center for Innovative Material Characterization

Toward innovative measurement and evaluation technologies



## R&D Center for Innovative Drug Discovery

100 years of vitality with new drugs and new technologies



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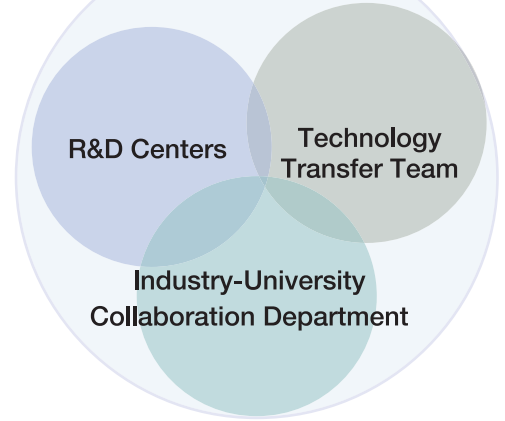
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## Organization

of  
Headquarters for International Industry-University Collaboration



## About the R&D Centers

Since July 1, 2015, the R&D centers have been sequentially founded under the Headquarters for International Industry-University Collaboration. They are founded for promoting joint research and development in academic fields of high social demands, and organizing a cooperative research system. Their operation cost only comes from an external fund such as a collaborative or sponsored research with private sectors. As the mission of a national university, we are responsible for education, research and social contribution. And the R&D centers are the new body which undertake a role of social contribution.

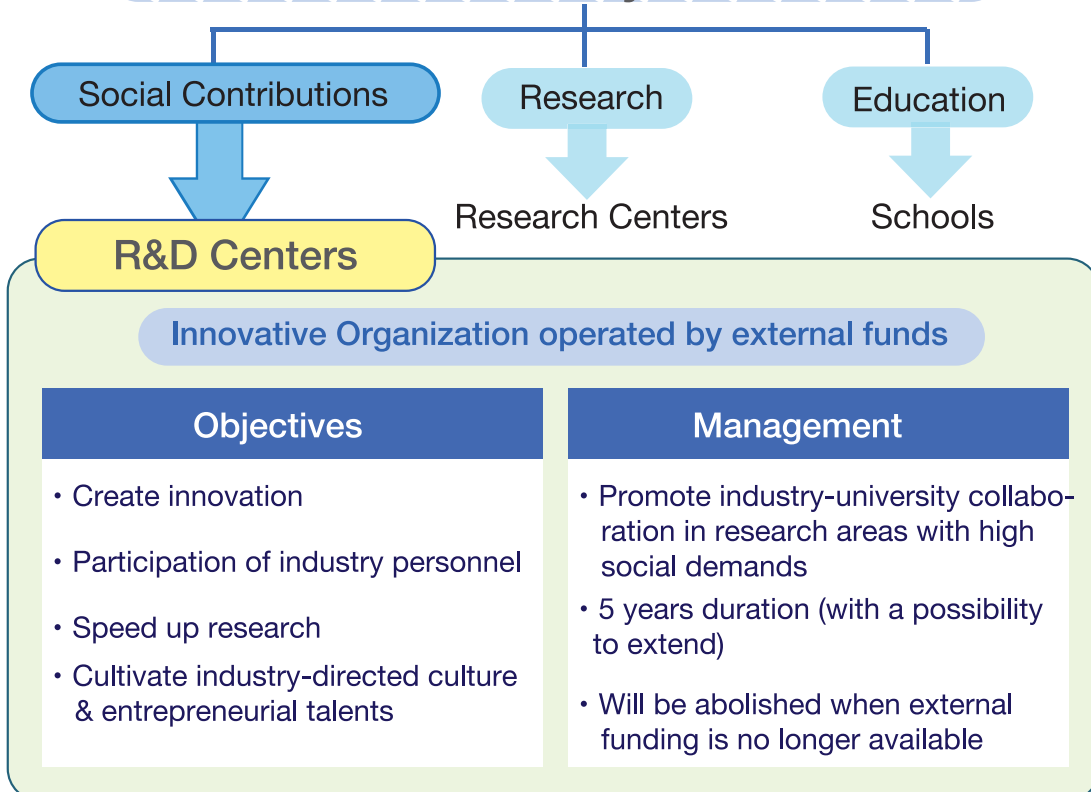
We are continuously supporting their centers and developing more R&D centers of other fields in the future.



**Yasunori Kanaho**

*Director General of Headquarters for International Industry-University Collaboration and Vice President (Industry-University Collaboration), University of Tsukuba*

## Mission of University of Tsukuba



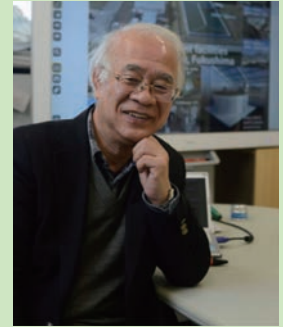


# Algae Biomass and Energy System R&D Center

Since July 1st, 2015

## World's first Comprehensive R&D Center of Algae Biomass Energy System

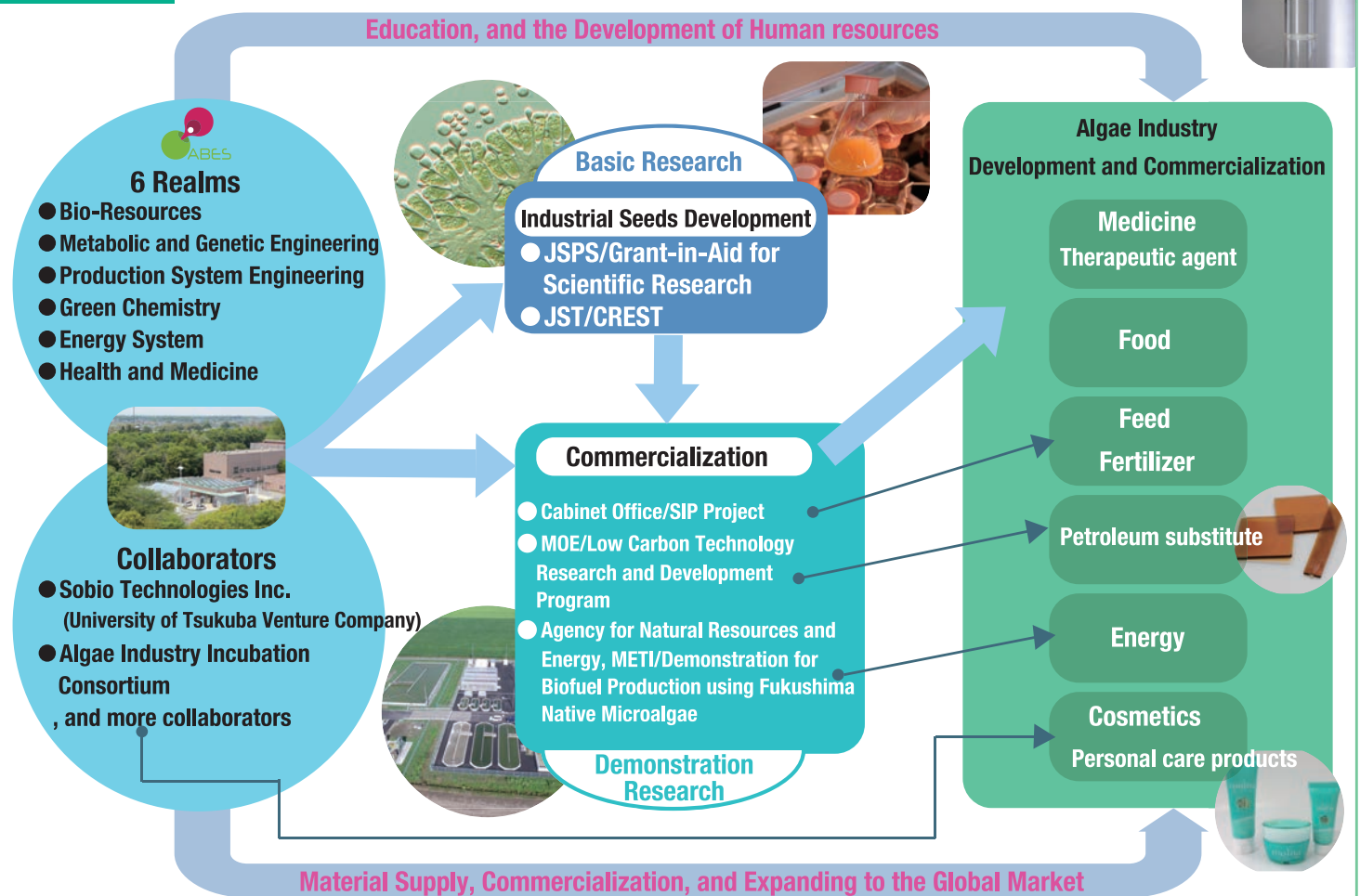
Algae Biomass and Energy System R&D Center (ABES) was established in July 2015 as the first R&D Center in the University of Tsukuba. The center consists 6 realms (Bioresources, Metabolic and Genetic Engineering, Production System Engineering, Green Chemistry, Energy System, and Health and Medicine) with participants of more than 50 researchers. Taking advantage of this multidisciplinary research fields and promoting various collaborations, (4C : Academic Collaboration, Industry-University Collaboration, Social Collaboration, International Collaboration), we are developing worldwide algae industries.



**Makoto Watanabe, Ph.D.**

Director, R&D Center for ABES

### Mission



Address: Algae Biomass and Energy System R&D Center, University of Tsukuba, 1-1-1 Tennodai, Tsukuba, Ibaraki, 305-8572, Japan

E-mail [info\\_abes@un.tsukuba.ac.jp](mailto:info_abes@un.tsukuba.ac.jp) URL <http://www.abes.tsukuba.ac.jp>

# R&D Center for Precision Medicine

Since January 1st, 2017

With the aim of the first 1000 dollar genome analysis for Japan

The Research and Development Center for Precision Medicine (PMC) was established as Japan's first omics analysis center aiming to develop a \$1000 genome sequencing technology. Using state-of-the-art technologies in genome sequencing and mass spectrometry, the Center aims to provide analytic and translational approaches to provide precise diagnosis of cancers and various diseases in a data-driven/evidence-based approach. The Center has been working with the Tsukuba Preventive Medicine Research Center, which offers a comprehensive medical examination utilizing the function of initiative prevention of medical research. In order to promote collaborations with leading domestic and international research institutions, the PMC is also active in cross-border multidisciplinary networking. The Center aims to establish a research infrastructure for the implementation and realization of Precision Medicine, to improve/determine the best course of treatment for each individual.



**Taka-Aki Sato, Ph.D.**

Director, R&D Center for Precision Medicine

## Mission

**Introduce the next-generation high-throughput human whole-genome sequencing system in the University of Tsukuba.**  
**Form a platform for Precision Medicine by building partnerships across industry, academia, and government.**

### 7 Core Laboratories

- Medical Genomics
- Cancer Genomics and Epigenomics
- Congenital Metabolic Diseases
- Neurological and Immunological Diseases
- Food and Healthcare
- Agri Bio (Agricultural Biotechnology)
- Large-Scale Data Analysis



Next Generation High-Throughput Human Whole-Genome Sequencing

- Special Collaboration
- Human Resource Development and Communication

National and International Project

University of Tsukuba Venture Company  
**iLAC Co., Ltd.**  
<http://www.i-lac.co.jp/>

- Research Institutions**
- National universities
  - National research institutions
  - Public interest incorporated foundations

Human Resource Development and Communication



- Private Corporations**
- Pharmaceutical companies
  - Diagnostic companies
  - Precision device industry
  - Clinical trial industry
  - IT industry

- National Medical Agencies**
- National Research and Development Agency
  - Public Interest Incorporated Foundations
  - General Incorporated Foundations
  - Private medical corporations

- Collaboration with other countries**
- Privately owned bio-venture companies
  - University research institutions in Europe and the US
  - National research Institutions in Europe and the US
  - Privately owned medical institutions in Europe and the US

Address: Innovative Medical Research Institute, University of Tsukuba, 1-2 Kasuga, Tsukuba, Ibaraki, 305-8550, Japan

E-mail [pmc-info@ilc.tsukuba.ac.jp](mailto:pmc-info@ilc.tsukuba.ac.jp) URL <https://rdcpm.tsukuba.ac.jp>



# R&D Center for Strategic Frontiers Social Planning

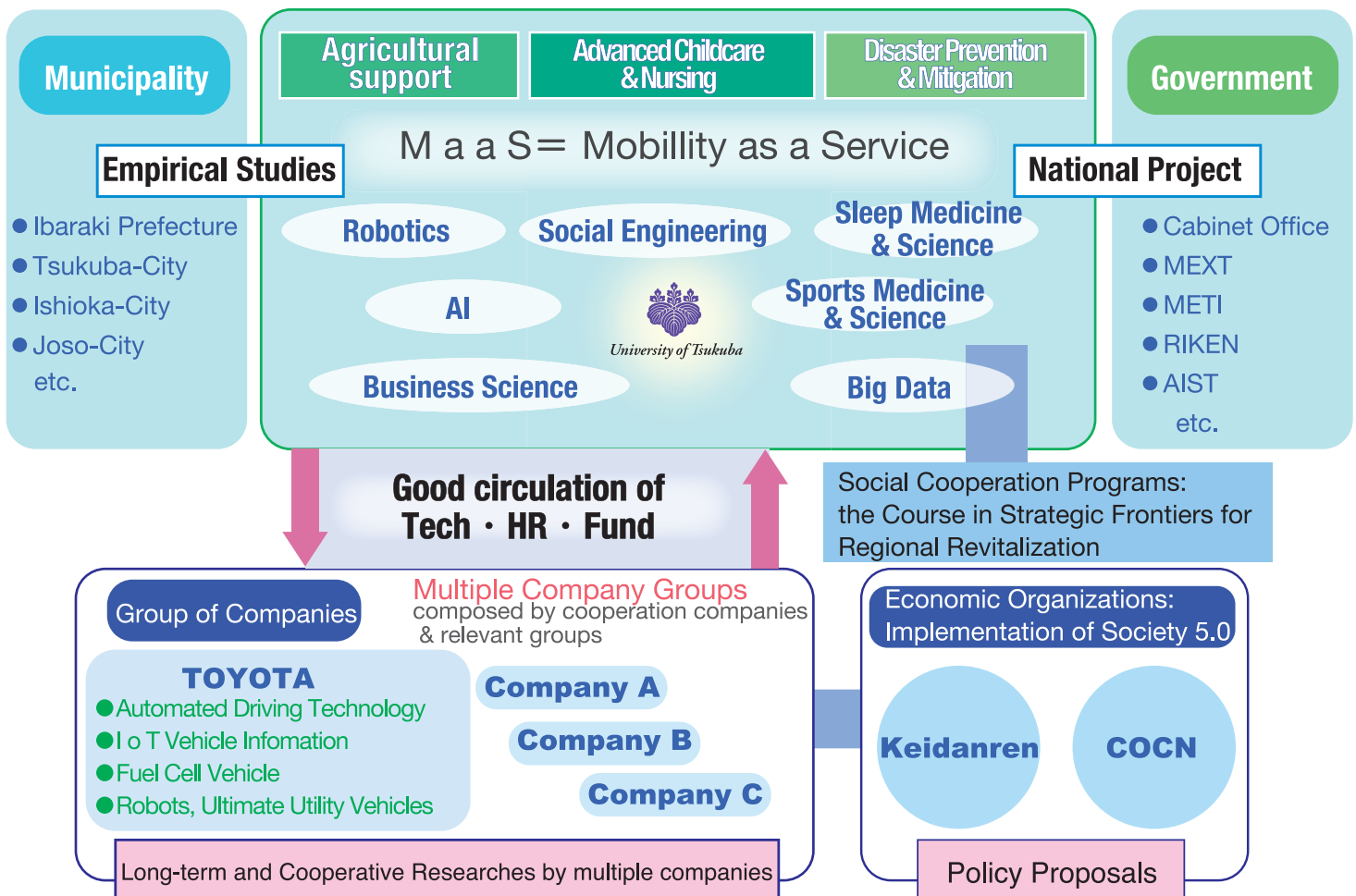
Since April 1st, 2017

## Creating sustainable social infrastructure of regional future

R&D Center for Strategic Frontiers Social Planning (as known as F-MIRAI) is a base for research and development into social infrastructure for communities of the future, and organizes open laboratory system with industry-University collaboration. Based on social engineering, academic ability of the University of Tsukuba and advanced technology by multiple companies and local governments. We will promote theoretical policy recommendations and social implementation to solve regional economic and social problems through demonstration experiments. One such experiment explores the social image of the regional future, where symbiosis of people, society and nature coexist and all regions shares different strategic methodologies. The most pivotal research to be undertaken analyses next-generation vehicle development and its service platform that allows people to move without implications to individual differences and realize a lively life. As a center for research, we are convinced that a proactively advance cooperation among Industry-University and several local governments will produce groundbreaking efforts in the area of social engineering.

### Mission

Aim for creating sustainable social infrastructure of regional future, construct technology services for next generation vehicles.





# R&D Center for Sports Innovation

Since April 1st, 2017

## Aim for establishment of AD (Athletic Department)

R&D Center for Sport Innovation aims to establish and promote Athletic Department (AD) within the University of Tsukuba. To accomplish our mission, it is essential for us to designate the philosophy of Athletic Department, clarify the roles and the job descriptions between athletic director and sports administrator, and cultivate human resources that is still uncommon in Japan.

Furthermore, we need to have a discussion in order to strengthen the relationship between university and community. Meanwhile, we will prepare for the establishment of the Japanese version of NCAA in cooperation with other universities. Therefore, we are sure it leads to fulfill student support, enhance collaboration with the community and improve the value of the University.



Hideki Takagi, Ph.D.

Director, R&D Center for Sports Innovation

AD: Department of the governance of students' sports activities under the direct supervision of the President

### Mission

#### Research

Study the achievements and improvements of AD establishment and lead the college sports in Japan

#### HR development

Training world-class sports administrators

#### International Interaction

Provide various educational research opportunities through collaborative research and education with American universities

#### Cooperation with business enterprises

Promote reforms on the sports industry in collaboration with companies with a common philosophy



#### University Branding

- Increasing a royalty towards the University
- Promote positive impressions to donators and prospective students

- Sports as an entrance to the Univ.
- "Watch" "Play" "Support" College Sports
- Sales for goods and tickets

#### Commercialization of College Sports

- Strong bonds of royalties and pride towards Univ.
- More research funds, and securing talented athletes

#### Activation and Growth of the University

#### Promotion of Sports

- Strengthen facilities, sports trainers, and PR
- Better performance and enjoyable community
- Customer Experience

#### Community Development

- University Sports as an entertainment
- Contribute to community
- Strengthen collaboration between university and community



Address: 4th floor of Global Sports Innovation Building, University of Tsukuba, 1-1-1 Tennodai, Tsukuba, Ibaraki, 305-8574, Japan

Tel 029-853-5779



# R&D Center for Health Services

Since July 1st, 2017

## Towards health services in harmony with life

Health Services Research & Development Center was established on July 1, 2017. The center is specialized in a health services research (HSR) which is Japan's first academic research field. Through the data analysis of nationwide or district region, we investigate and research considering "how to effectively deliver care services that bring the health and well-being to people who need them". By focusing on its continuity of the services from preventive care to nursing care, the outcome improves the quality of the sequence of the healthcare services at each stage in our society. We hope this newly created center would follow the openness to society that our university, the University of Tsukuba, represents, so that we could imagine the future together.



**Nanako Tamiya, Ph.D.**  
Director, R&D Center for Health Services

### Mission

To research how we can effectively contribute to provide services that bring good health & happiness to people in the declining birthrate and aging of the population society.

### Cooperation with Government

Policy proposal  
Clinical Evidence

Gov't

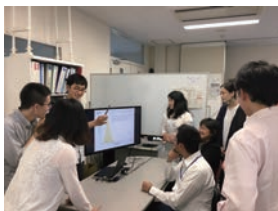
Public Fund

### R&D Ctr. For Health Services

Promote academic research and social contribution by making effective use of 2D data.



Medicine  
Hospital  
Health and Sport Sciences  
Human Sciences



Dept. of Secondary Data Infrastructure  
Dept. of Regional inclusive care research/implementation  
Dept. of Local Preventive Medicine  
Dept. of Clinical Medicine  
Dept. of Global Aging  
Dept. of Comprehensive Family Policy

Academic Cooperation

International Cooperation

**Without using taxes, we support an aging society!**

### Cooperation with Industries

#### Medical Providers



Acute Care Hospital

Sompo Holdings, Inc.

Japan Medical Data Center Co., Ltd.

Institute of Global Medical and Sports Science, Ltd.

SMS Co., LTD.

Convalescent Hospital

#### Care Service Providers



Nursing Home Health Ctr. for elderly

Home care Services

### Cooperation with community

#### Municipals

- Senior Club
- Resident's Association
- Volunteers
- N.P.O., etc.

Life Support

Nursing Prevention

Address: Room 861 Institute of Medicine, University of Tsukuba, 1-1-1 Tennodai, Tsukuba, Ibaraki, 305-8575, Japan

E-mail [hsr@md.tsukuba.ac.jp](mailto:hsr@md.tsukuba.ac.jp)

Tel 029-853-3482



# R&D Center for Tailor-Made QOL

Since February 1st, 2019

## Development of 'Tailor-Made QOL programs' aimed at promoting health

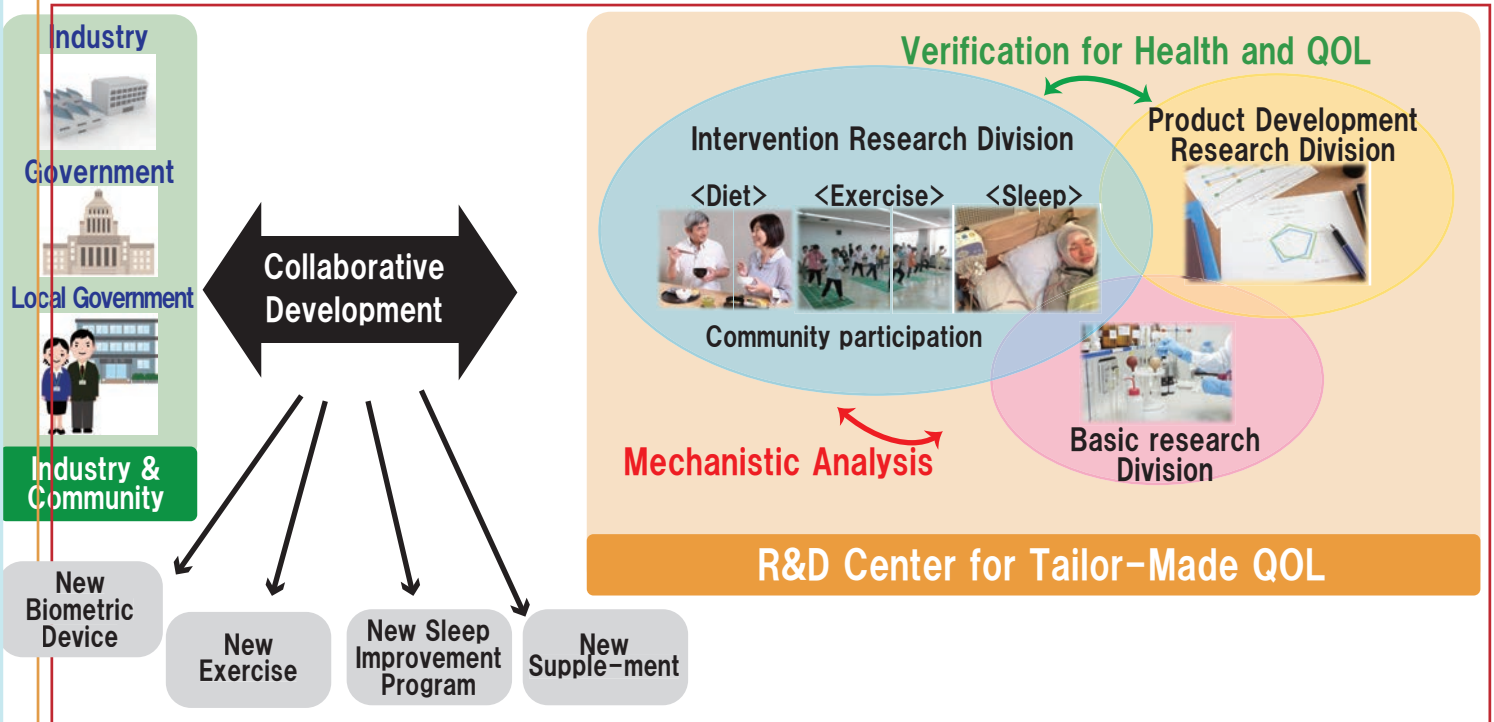
R&D Center for Tailor-Made QOL has been established to disseminate an innovative 'Tailor-Made QOL Program' aimed at promoting health and preventing functional decline to people all over Japan and the world. Reducing the burden of health care cost has become an urgent issue; therefore, the national policy is shifting focus from 'treatment/care' to 'prevention and improvement'. It has become necessary to develop effective programs to improve the QOL and extend healthy life span that enable people to age with dignity, thereby overcoming the current situation where people remain bedridden for long periods of time at the end of their life. Not only will this lead to a significant reduction in medical expenses, but this will also change the image of the elderly people and contribute to the accumulation and utilization of human and intellectual capital in the society.



Hiroko Isoda, Ph.D.  
Director, R&D Center for Tailor-Made QOL

R&D Center for Tailor-Made QOL

### Mission



## Development of Tailor-Made QOL Program (Integration of Diet, Exercise and Sleep)

Achieve QOL Improvement for Each Resident



## International Expansion

Address : Innovation Medical Research Institute, University of Tsukuba, 1-2 Kasuga, Tsukuba, Ibaraki, 305-8550, Japan

Tel 029-859-1593





# R&D Center for Working Persons' Psychological Support

Since April 1st, 2019

Research activities and building social contribution infrastructure related to psychological support for working persons

Research & Development Center for Working Persons' Psychological Support was established on April 1, 2019. The purpose is to provide a one-stop service for psychological support to working persons from both research and social contribution. We promote our activities based on the principle that "Pursuit lifelong development, with us." to support working persons, families and organizations that support those working persons.

The center covers various areas of life-long development perspectives (transitions from school to work, middle-aged, elderly people, pregnant women, childbirth, childcare, nursing care, etc.), various areas of target (family, welfare, school, education, industry, society, etc.), and various areas of research (psycho-clinical, social behaviors, career development, mental health, disaster stress, addictions, etc.), and is characterized by it.

We will promote practical research in line with social needs and will provide high quality psychological support services to working persons. In addition, it contributes to the qualitative improvement of psychological practitioners and human resources, and the training of leaders.



Masaki Okada, Ph.D.

Director, R&D Center for Working Persons' Psychological Support

## Mission

### 「Pursuit lifelong development, with us.」

Now that working places are facing various environmental changes, the need for "psychologically understanding people" is rapidly increasing. We believe that human can develop regardless ages and would like to support both life and work. Here highly skilled practitioners who are also researchers eager to support them and gathered.

#### Research dept.

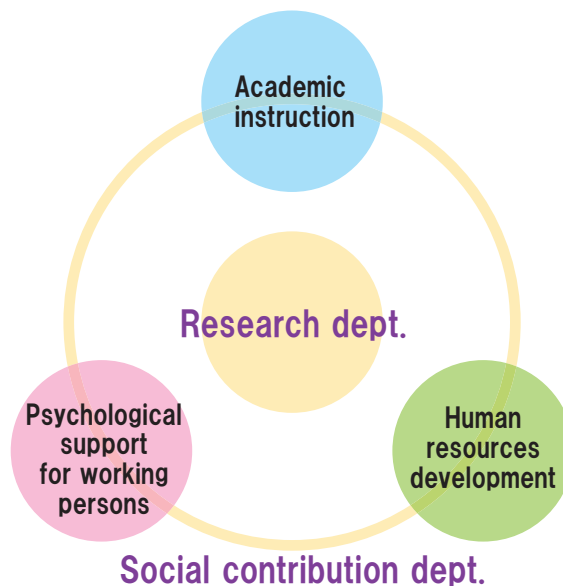
Promote and expand research on psychological support for working persons



#### Social contribution dept.

- [Academic instructions]  
Consulting, survey & analysis using psychological statistics, tools development, etc.
- [Human resources development]  
Development and implementation of training programs, education effectiveness evaluations, Providing a training places
- [Psychological support for working persons]  
Counseling room, Supervision, Supervisor training

#### T-One Lab



\*T-One Lab  
Center nickname. Bringing together the wisdom of the University of Tsukuba, we will be one team and provide one-stop services.



# R&D Center for Innovative Material Characterization

Since October 1st, 2019

— Toward innovative measurement and evaluation technologies —

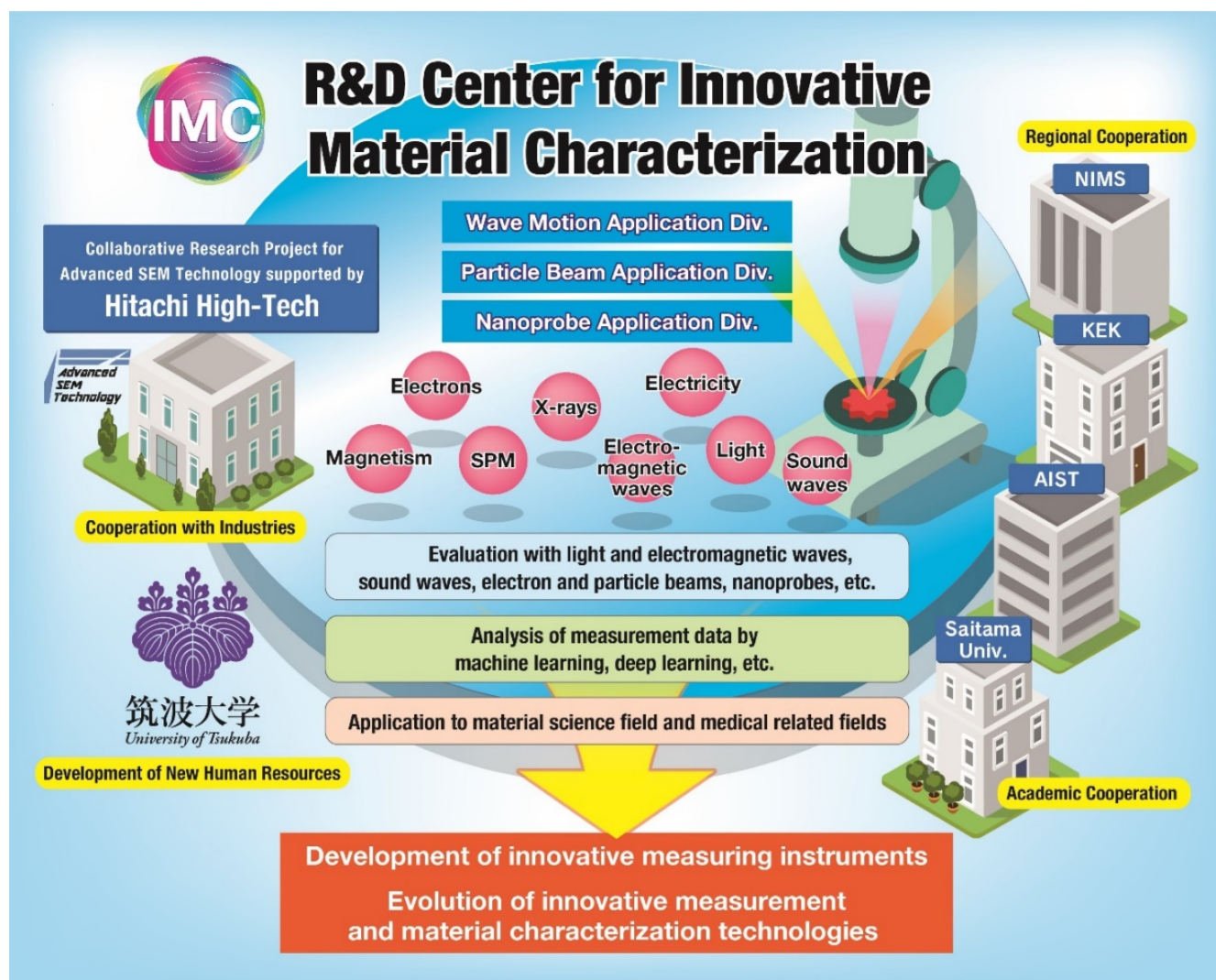
The world is making rapid progress with the aim of creating a sustainable society utilizing IoT and AI. Measurement and evaluation techniques are becoming increasingly important. In this center, we promote the research and development of new measurement and evaluation technologies by making full use of evaluation methods with light and electromagnetic waves, sound waves, electron and particle beams, nanoprobe, etc. and applying the technologies such as machine learning, deep learning, etc. to them. Their application fields are generally classified into two fields: the material science field such as nanotechnologies including semiconductors, functional devices, etc. and the medical related field such as pathological diagnosis, drug discovery, etc. Measurement and evaluation technologies are indispensable to them and form the core of Japan's industry. Further development of those technologies bears the future of Japan. Taking advantage of the accumulated expertise in Tsukuba, we will continue to strive toward achieving innovative material characterization with high accuracy and quality.



Masahide Ito, Ph.D.

Director, R&D Center for Innovative Material Characterization

## Mission



Address : #101, Project & Research Bldg., University of Tsukuba, 1-1-1 Tennodai, Tsukuba, Ibaraki, 305-8575 Japan

Tel 029-853-8802 e-mail rd-center-imc@un.tsukuba.ac.jp URL <https://imc.bk.tsukuba.ac.jp>

# R&D Center for Innovative Drug Discovery

Since October 1st, 2019

100 years of vitality with new drugs and new technologies

In Japan, a super-aging society with a declining birthrate is progressing and the disease structure is changing along with increasing lifestyle and aging-associated chronic intractable diseases such as cancer and circulatory, musculoskeletal, psychiatric and neurological, metabolic, and immune diseases. In such a situation, it is desired to create a society where all people can live alive with vitality, safety and peace mind at their respective life stages toward the era of 100 years of life.

In recent years, there has been great interest and expectations for technological innovations that will support medicine, such as regenerative medicine, genomic medicine, artificial intelligence, and the use of big data. This center promotes basic and developmental researches for drug discovery / diagnostic technology to respond to medical needs in a society with a declining birthrate.



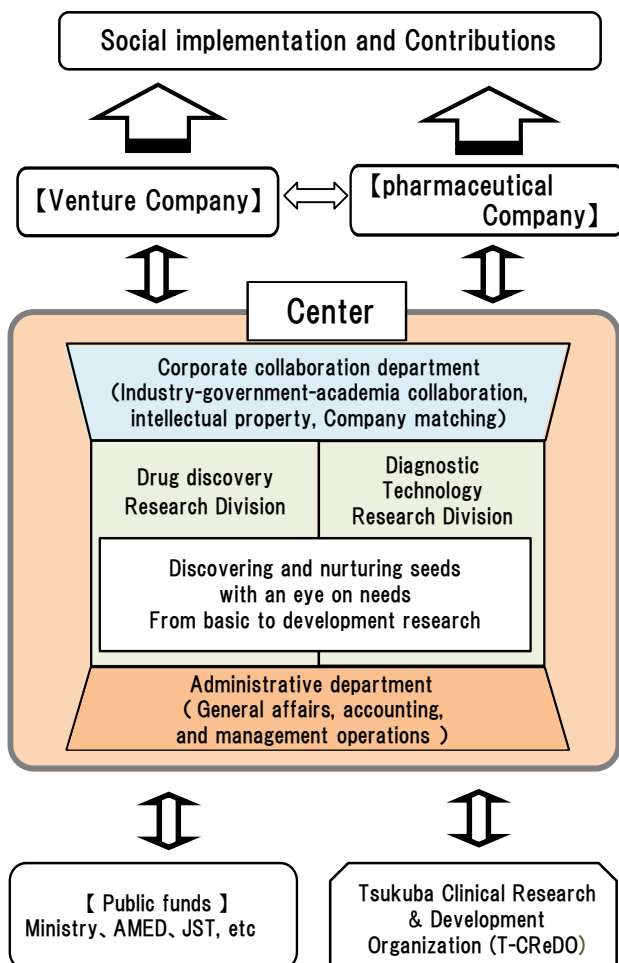
Akira Shibuya, Ph.D

Director, R&D Center for Innovative Drug Discovery

## Mission

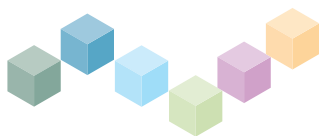
### Overview the Center

### Expected results



- Creation of a lively and healthy society
- Revitalizing the medical industry
- Revitalizing young human resource development
- Promotion of industry-academia collaboration





Headquarters for International Industry-University Collaboration,  
University of Tsukuba