



NEWSLETTER

Tsukuba Digital-Bio International center

2022.05.17 vol.3. 2022 Early Summer

Salutation

Professor Hiroko Isoda

- **University of Tsukuba Institute of Faculty of Life and Environmental Sciences**
- **JST COI-NEXT "Tsukuba Digital-Bio International Center Project"**
- **Principal Investigator "Research and Development Project 5 : Development and functional evaluation of innovative food and drug resource function evaluation systems"**

Biotechnology Strategy 2020 (market area measures) as an issue:

Environmental improvements to promote research and innovation, such as data linkages that will better facilitate collaboration between non-medical fields (e.g., healthcare and medical fields).

The need to accumulate scientific knowledge to realize new labeling will lead to further healthy expansion of the market for functional foods. Using the functional evaluation technologies accumulated through various bioassays as a starting point, a unique database of 900 dietary medicines and a library of 100 functional compounds can be exploited to construct a one-stop functional research and development platform. This will support the development of dietary medicinal materials for social implementation in collaboration with AIST, NARI, RIKEN, the University of Tsukuba's Department of Medicine and Physical Education, and other organizations. We will contribute to product development through rapid and multifaceted functional evaluation by developing an artificial intelligence (AI)-based function prediction system that utilizes the vast amount of genome information provided by food and drug ingredients. We will also develop functional evaluation technologies that meet social



needs for lifestyle-related disease prevention, nerve function regulation, and skin homeostasis maintenance that are effective in preventing and improving various disease states while proposing well-being that maintains and promotes health through food and drugs.

Introduction of Participating Researchers

Associate Professor Shinya Takahashi

- **University of Tsukuba Institute of Faculty of Life and Environmental Sciences**



Plants produce a variety of compounds. The color of flowers and fruits is due to the type and amount of flavonoids, especially red anthocyanins. By producing these compounds, plants protect themselves from external stresses such as drought, UV rays, and food damage. We benefit from

the functional properties of various compounds produced by plants to improve our health. In this joint research with the National Institute of Agrobiological Sciences, we are trying to extract components contained in crops with potential functionality. By studying their function in human cultured cells, we are trying to clarify which molecular mechanisms are responsible for their functionality in improving, for example, minor ailments. We hope that this project will lead to the development of novel functional food materials.

Deputy Director Kenichi Tominaga

- **National Institute of Advanced Industrial Science and Technology Food and Drug Resource Engineering (FoodMed-OIL)**

Research on the functions of dietary and medicinal resources has often evaluated extracted mixtures and there is still much that remains unknown about the functions of individual molecules. Many of these



functional molecules are difficult to obtain, but we are applying the biomass conversion reaction technology we have developed to synthesize these functional molecules from natural products that are readily available. As an example, we have developed a one-step reaction to synthesize oleacein, a type of polyphenol that is not commercially available, from oleuropein, a molecule abundant in olive leaves. We have synthesized and are able to provide more than 20 types of functional dietary molecules. We welcome your inquiry.

Participating Companies

Team Manager Satoshi Fukumitsu

- **NIPPON, INC. Functional Materials Team, Innovation Center, Central Research Laboratory**

We are diversifying our business from flour milling to pasta, cold food, healthcare, etc., aiming to become a diversified integrated food company. In particular, for the healthcare business, we are focusing on research and development of functional food materials derived from plants and are accumulating evidence of functional foods for sarcopenia with the cooperation of Professor Isoda and Professor Ohkura of the University of Tsukuba under the "COI STREAM, a program for innovative innovation creation by the Ministry of Education, Culture, Sports, Science and Technology of Japan." With the help of everyone at the Tsukuba Digital-Bio International Center, we hope to develop new ideas for food materials.

TOPICS

R&D Project 5 Leader, Professor Isoda of the University of Tsukuba, has established a venture company (MED R&D Co., Ltd.).

Project leader and Research and Development Project 5 Leader, Professor Hiroko Isoda (University of Tsukuba, Mediterranean and North Africa Research Center), established a venture company (MED R&D Co., Ltd.) on April 9, 2021 to conduct functional evaluation of food and drug resources and to develop products for social implementation on the functional analysis platform for food and drug resources that the project is aiming to establish. A venture company (MED R&D Co., Ltd.) was established on April 9, 2021 to conduct functional evaluation of food and drug resources and to commercialize them for social implementation.

Click here for company website→<https://www.med-rnd.com/>

Our project has been adopted by the Japan Agency for Medical Research and Development (AMED)

The following project, led by Associate Professor Seiya Mizuno of the University of Tsukuba, has been selected by the Japan Agency for Medical Research and Development (AMED) for the FY2022 Research Project for the Promotion of Innovative Drug Development for Emerging and Re-emerging Infectious Diseases and is entitled "Creation of a basic technology for producing genetically humanized mice capable of expressing the pathogenesis of infectious diseases." This project is a part of the project to create a new mouse model of infectious diseases similar to humans, which is led by Professor Atsushi Kawaguchi of the University of Tsukuba, and is being carried out in collaboration with the group led by Professor Satoshi Takahashi of the University of Tsukuba and Dr. Jun Yoshiki, Director of the Laboratory Animal Development Office of RIKEN's BRC.

For more information, click here.→ https://www.amed.go.jp/koubo/11/02/1102C_00040.html

Greater Tokyo Biocommunity (GTB) was certified as a Global Biocommunity by the Cabinet Office

Greater Tokyo Biocommunity (GTB), an affiliated organization of the Center, has received the "Global Biocommunity" accreditation from the national Cabinet Office after a review by the Biocommunity Promotion Committee. In conjunction with this, a transition evaluation (second-stage evaluation) for full-scale support will be conducted at this center.

Learn more about GTB accreditation→

https://www8.cao.go.jp/cstp/stmain/20220422g_biocom.html

Associate Professor Naoya Yahagi of the University of Tsukuba and Oishii Kenko Co., Ltd. have jointly launched an exploratory study on "Dietary therapy using a smartphone application for patients with type 2 diabetes.

Associate Professor Naoya Yahagi of the University of Tsukuba (Department of Endocrinology, Metabolism, and Diabetes, University of Tsukuba Hospital), in collaboration with the participating company, Oishii Kenko, has started an exploratory study on dietary therapy using a smartphone application for type 2 diabetes patients. Proper diet is important in the treatment of patients with type 2 diabetes. A research study will be conducted to analyze and improve eating behavior and measure the effect of suppressing elevated blood glucose levels by providing type 2 diabetes patients with "Delicious Health," a smartphone application equipped with AI menu and nutrition management functions.

For more information, click here.→

<https://prtimes.jp/main/html/rd/p/000000061.000043855.html>

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