NEWSLETTER

Tsukuba Digital-Bio International center Newsletter

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On the occasion of publication

University of Tsukuba Institute of Medicine
Professor
JST COI-NEXT "Tsukuba Digital-Bio International Center Project "
Hiroyuki Nishiyama project leader

The rapid progress of information technology is driving the transition to a super-smart society (Society 5.0), even in the field of biotechnology. In Japan, we believe it is important to view the issues of declining population and aging society with fewer children as a strategic opportunity to co-create a digital bioeconomy through industry-academia-government collaboration to enable all people to live in a state of wellbeing (good physical, mental and social health and happiness). Therefore, this project aims to become an international center by realizing SDG Goal 9 "Foundation for Industry and Technological Innovation" and SDG Goal 3 "Health and Welfare for All" based on the concept of "Digital Biotechnology". The Tsukuba region continues to develop through the concentration of Tsukuba University, national research institutes, and companies, fostering the soil for the creation of digital biotechnology. Our vision is "to realize a society that supports the wellbeing of all generations of people through interdisciplinary research using bioresources and digital technology centered in Tsukuba," and we aim to create a society in which each and every citizen can lead a healthy and happy life. Through this newsletter, we hope to provide a forum for the exchange of information on the research capabilities, needs, and seeds of the participating institutions and companies.

For more information on COI-NEXT, click here. → https://www.jst.go.jp/pf/platform/outline.html

Introduction of Participating Researchers

University of Tsukuba
Institute of Medicine
Endocrinology, Metabolism and Diabetes transborder Medical Research Center
Takafumi Miyamoto
associate professor

We are conducting various reductionist and constructivist studies to understand the multimodal information created by the vast diversity of lipid molecules in an integrated manner as a "LIPID CODE". Based on the results of this research, we consider the process from normal to the onset of various diseases (obesity-related diseases, cranial nerve diseases, cancer, etc.) as "disruption of normal signal transduction systems due to reorganization of LIPID CODE" and define a group of keystone factors that can improve this disruption as "pathological signatures" to clarify pathological mechanisms and develop novel therapeutic methods in various diseases. In Research and Development Project 8, this international center promotes lipid research using mathematical analysis, visualization technology, machine learning, etc. (The photo below shows the members of Assistant Professor Miyamoto's laboratory).

University of Tsukuba Institute of Medicine
Ohsuke Migita associate professor

Treatment and response to genetic disorders is increasing. In research that deals with a wide range of genetic information, it is becoming inevitable that specimen donors who cooperate with the research will also be analyzed as participants in the research. We are conducting analyses that integrate genetic and environmental information for the development of genetic medicine, as well as holding a genomic board consisting of various experts with the latest analytical technology to evaluate genetic risk and report and study useful analyses for medical treatment. In order to improve medical care, we promote the continuation of research to find new treatments and responses based on a deeper understanding of the disease and analysis of the factors that cause it, as participants gain a deeper understanding of the research and move toward early diagnosis and response.

Introduction of Participating Companies

S&B FOODS INC
Development and Production Group
Executive Officer　Yoshiaki Satake
Director, Central Research Laboratory

As a leading manufacturer of spices in Japan, we offer a variety of products that add color to the dining table, such as spices, curry, wasabi, and fresh herbs, and we possess the processing technology, raw material procurement, cultivation technology, etc. to develop and manufacture these products. In recent years, we have also been conducting research and development on the health functions of spices, and in the future we would like to collaborate with the participants in the Tsukuba International Research and Development Center for Digital Biotechnology to realize a one-stop product development process. Since time immemorial, spices have been an essential source of vitality in human life and a cornerstone of modern medicine. We will contribute to people's well being by exploring the health functions of spices, providing products and proposing lifestyles centered on meals.

MathDesign Co.,Ltd.
CEO　Tetsuya Sakurai

MathDesign was established as a university-launched venture with the aim of accelerating industrial technology innovation by utilizing the results of cutting-edge mathematical science research developed at the University of Tsukuba. We specialize in the advancement of machine learning, data science, and scientific and technical computing, and provide solutions utilizing a wide range of knowledge and technology covering everything from fundamental mathematical theory to high-performance implementation. Tetsuya Sakurai, Deputy Project Leader of the Tsukuba International Center for Digital Bio, serves as President and will contribute by supporting the creation of digital biotechnology with mathematical technology through close collaboration with this center.

TOPICS

JETRO desk has been set up in the base office.

An article on the Comprehensive Collaborative Agreement between the University of Tsukuba and the Japan External Trade Organization (JETRO, headquartered in Minato-ku, Tokyo) was published in the University of Tsukuba Newspaper on November 5, 2021. (https://www.tsukuba.ac.jp/about/public-newspaper/pdf/366.pdf) A JETRO desk has been set up in the main office of this center, and a representative from JETRO Ibaraki visits the campus every Tuesday to begin collaboration.

Primate Medical Science Forum held at the National Institute of Biomedical Innovation (NIBIO)

The 17th Primate Medical Science Forum was held on November 12, 2021, hosted by the Primate Medical Science Research Center of the National Institute of Biomedical Innovation (NIBIO), one of the participating institutions of the Center, and co-hosted by the Center. An open lecture for the public was held in the morning, and a forum was held in the afternoon. Exhibit booths of cooperating companies and posters introducing the institute were displayed (the photo shows a lecture by Director Yasuhiro Yasutomi).

Toward full-scale transition to COI-NEXT

In the Support Program for the Formation of Places for Co-Creation Policy Focus Area/Biotechnology, the review for transition to full-fledged support will be conducted from December 2021 to May 2022. Currently, the results are being compiled for the first stage evaluation (tentative transition). Within the center, there is a lively exchange of ideas across agencies in anticipation of proposal submissions and hearings.

A Visit to Tohoku Medical Megabank

On December 6, 2021, Deputy Project Leader Sakurai and Associate Professor Ugeta visited Tohoku Medical Megabank, a participating institution, and had a meeting with Professor Ogishima and Lecturer Nagaya at Tohoku University. In addition, a tour of the megabank facilities and proposals for holding joint workshops in the following years and beyond were also discussed in a meaningful exchange of opinions.

Lecture by Mr. Koichi Murashita

Dr. Koichi Murashita, who has achieved great results at Hirosaki University COI, will give a lecture on Tuesday, December 14, 2021, at 18:00.

The 2nd General Meeting of Greater Tokyo Biocommunity (GTB) Council will be held

The second general meeting of the GTB Council will be held on Monday, February 21, 2022. This center will be linked with the global bio-community, GTB, playing various roles in the global bio-community. For more information about GTB, click here.→

https://note.com/gtb_com