



AI (Artificial Intelligence) -Based Nutrition (AI Nutrition) Technology for Future Food Development

By developing technologies to utilize limited global capital effectively, we hope to build a new food supply industry that will both conserve the global environment and increase and improve the quantity and quality of food, followed by spreading a “natural capital (earth supremacy)-oriented society” that supports such an industrial structure for the benefit of future generations.

Project Manager (PM): TAKAHASHI Shin-Ichiro
Professor, Graduate School of Agricultural and Life Science, The University of Tokyo

Creation of Next-Generation Food Supply Industrial Chains for a Natural Capitalism Society [FS]

Keywords: unused biological resources, AI nutrition, futuristic food, natural capitalism

Background

Cultivating Consumers' Awareness about Future-Oriented Foods with Reduction of Food Loss and Health Consideration

We have heavily utilized the various biological resources of the Earth since the beginning of human history. Because we placed a high priority on economic efficiency in industrial development, our irreplaceable Earth has been terribly damaged, resulting in environmental destruction and global warming, etc.

In order to create sustainable food supply industry chains by 2050, we plan to (1) market and distribute unutilized biological resources that are currently being discarded as food and food products, (2) reduce food loss and optimize the distribution of food in the world through next-generation food preservation technology using bacteriophages instead of antibiotics, and (3) develop “future food” that contributes to the improvement of food quality and the extension of healthy life expectancy through the collaboration of medical and food sciences.

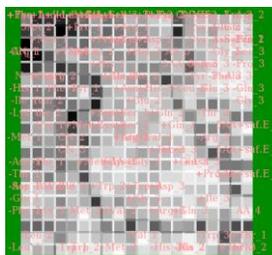
On the other hand, the food supply industry, which is formed by the demands of consumers, will work to transform the consciousness of consumers from the current economic-oriented capitalism to “natural capitalism”. “One Earth Guardians Fostering Program,” promoted by the University of Tokyo Graduate School of Agricultural and Life Sciences, will join this activity.

Research Contents

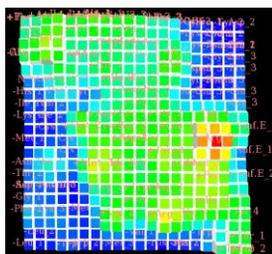
Establishing AI Nutrition technology using the example of anchovy, an underutilized fish

In this project, by December 2021, we will develop innovative extraction and preservation technologies for unused biological resources (anchovy, an unused fish), and conduct research to develop new sales channels for useful food and feed. In addition, we will establish basic technologies for AI Nutrition, which comprehensively understands the effects of nutrients and other components of food and feed on individual organisms and designs biological information to suit the purpose through medical-food co-creation. This will pave the way for the realization of “future food” that can extend healthy life expectancy based on scientific evidence.

Through the development of these technologies, we hope to reduce food loss and contribute to the creation of a society where fresh food can be delivered to any location. In addition, a rapid method for evaluating nutritional functionality based on the academic establishment of AI Nutrition will be a new technology that will have a great impact on the bioeconomy society.

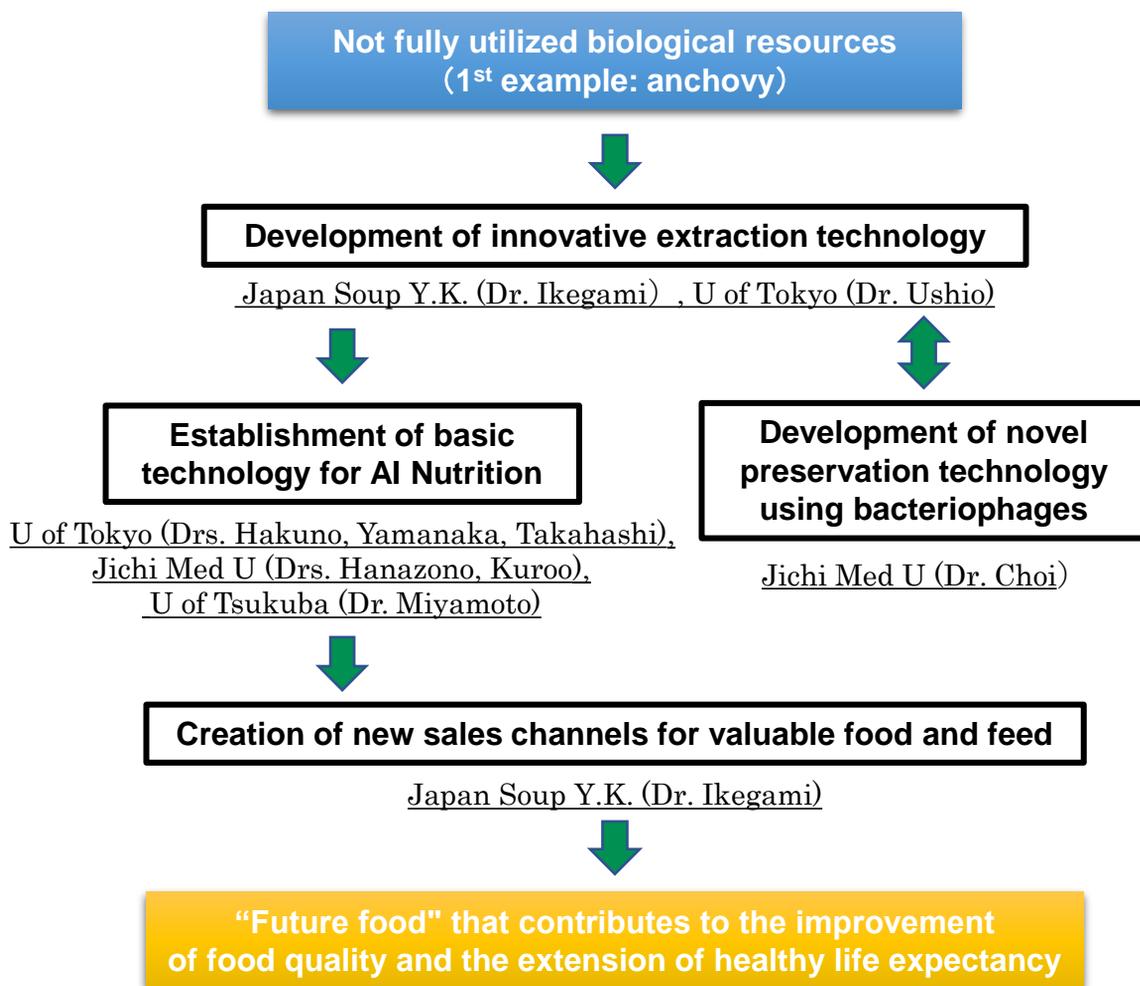


We classified data using 20 plasma amino acid concentration data in each sample by SOM.



Liver TG level was shown as a heat map.

Nutritional evaluation of food materials by AI and/or Mathematical methods.



Targets by 2030

By 2030, we will elucidate the effects of diet and intestinal microflora on blood nutrient dynamics and the impact of their control on health, resulting in the supply of completely new futuristic foods through the development of AI Nutrition technology.

Joint Research Institute

The University of Tokyo, Japan Soup Corporation, Jichi Medical University, University of Tsukuba, National University Corporation