Technologies for smart bio-industry and agriculture

Realization of productivity revolution, health enhancing society, and sustainable growing society by data-driven approach

In expectation of global expansion and intensifying competition of bioeconomy, we aim at productivity revolution and enhancing competitiveness of agriculture, forestry and fisheries etc., realization of health-enhancing society by food, and realization of sustainable growing society by manufacturing using biological function by integration of biotechnology and digital and utilization of diverse and enormous data.

Program Director

Noriaki Kobayashi

Kirin Holdings Co. Ltd.

Senior Executive Officer

Profile

Mr. Kobayashi graduated from Mie University in 1983. He joined Kirin Brewery Company in the same year. He was named General Manager, Production Department, Logistics Division, Kirin Beverage Company, Ltd. In 2010, and named Executive Officer, General Manager, Technology Management Department, Research & Development Division, Kirin Company, Ltd. In 2014. He has served in his present post since 2017. He was appointed the Program Director for the SIP "Technologies for smart bio-industry and agriculture" in 2018.

Research and Development Topics

(1) Development of smart food chain system

- Development of a system that can supply or export agricultural, forestry and fishery products responding needs immediately by construction of big data by automatically collecting various data from production to consumption, optimizing food chain using AI and such, and developing smart production technologies or systems to make machines intelligent.
- Development of crop varieties that provide new value to consumers etc. by data-driven breeding that conduct breed improvement using big data and biotechnology.

(2) Establishment of new health system through 'food'

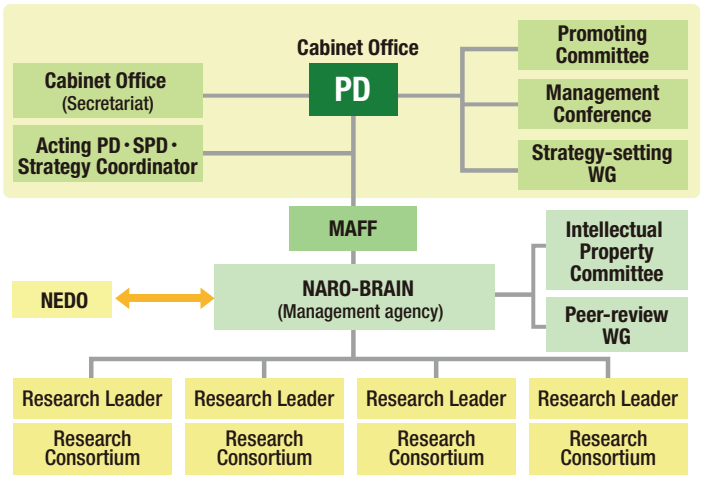
- Development of a system that evaluates health-enhancing effects by agricultural, forestry and fishery products and foods (development of a system for judging mild physical condition change such as sleep quality and disorder of autonomic nerves and an integrated health information database etc.)

(3) Manufacturing utilizing biological function

- Development of production technologies for innovative bio-materials and advanced functional materials based on the design of biological function.
- Development of technologies to eliminate bottlenecks in supply chain of bio-materials (such as a system that provides steady supply of affordable basic compounds)

Implementation Structure

We conduct research by constructing a consortium consisting of universities, national research institutes, and enterprises etc. for each research theme, so that we can tackle research and development from basic to practical use. Each research consortium promotes research, so that synergistic effects can be exerted by closely coordinating between members and consortium, under guidance and advice of PD or Sub-PD etc.



Exit strategies

Collaboration with other relevant SIP programs

-Regarding “Smart food chain system”, we collaborate with SIP “Smart Logistics Service” and SIP “Big-data and AI-enabled Cyberspace Technologies”, and relevant programs of PRISM and tackle it so that synergistic effects can be demonstrated.

Organizations that put research achievements into practical use

-Regarding research achievements of which products or services will be introduced to the market as exit, participating companies of each research consortium or companies that got a license of intellectual property from universities or national research and development agencies will put them into practice.

-Regarding platform-type research achievements to be used widely by public and private sectors such as the smart food chain system, they will be put into practice by attracting new business ideas widely for example from participating companies of each research consortium.

To which extent we develop technologies (TRL, etc.) in the SIP and then transfer them to private sectors

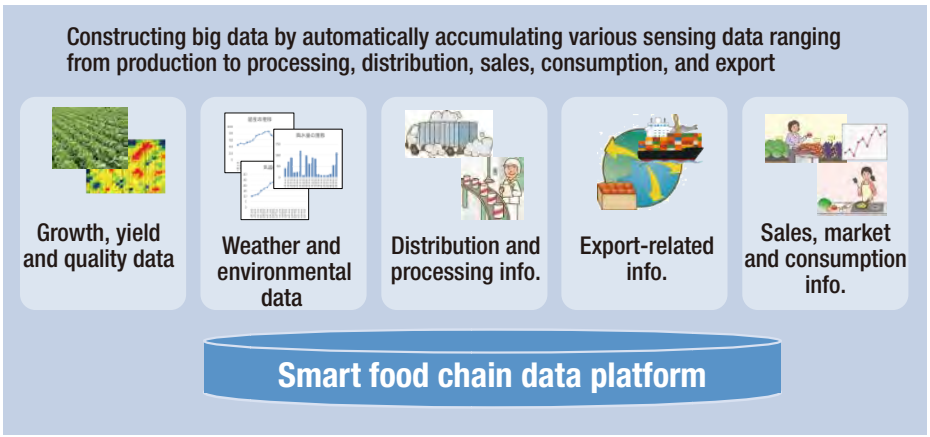
-Regarding research themes of which achievements will be put into practical use or commercialized, we will develop prototypes in the SIP and then private companies will take charge of practical application including mass production.

-Regarding platform-type research achievements to be used widely by public and private sectors such as the smart food chain system, we will conduct confirmation of the effectiveness in the use case in the SIP, and then the participating companies of consortium and others will mainly perform operation and maintenance of them.

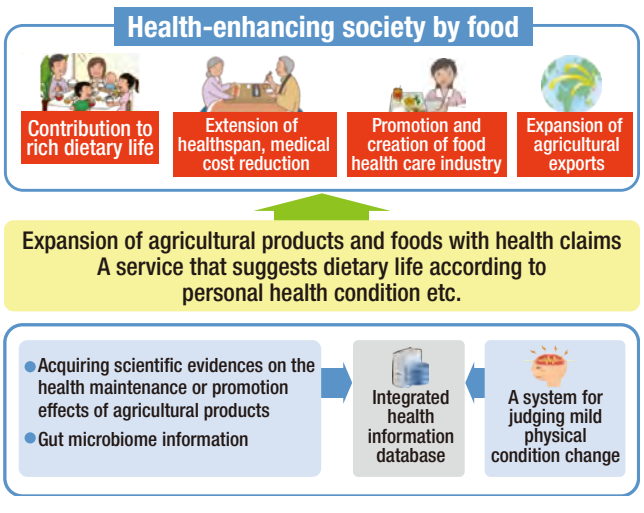
Society aiming to realize and vision

- Realization of Society 5.0 and creation and expansion of bioeconomy market in our country through innovation by integration with digital technology
- Contribution to achieving SDGs (stable global food supply, sustainable economy and society, and extension of healthspan (suppression of increasing medical expenses), etc)

1. Development of smart food chain system etc.



2. Establishment of new health system through ‘food’



3. Manufacturing utilizing biological function