

Tokushima

 (Fiscal Year 2003-2007)

Creating new healthcare industries in Tokushima based on technologies to analyze disease-linked proteins and genes; focusing on the prediction and prevention of lifestyle-related diseases such as diabetes

Core Organization Tokushima Industrial Promotion Organization

Participating Research Organizations (Bold: Core Research Organization)

Industry···Aloka Co., Ltd.; Awa Engineering Co., Ltd.; Medical & Biological Laboratories Co., Ltd.; Itano Co., Ltd.; Ichioka Seika Co., Ltd.; Oji Paper Co., Ltd.; Otsuka Pharmaceutical Co., Ltd.; Sapporo Bio Kobo Co., Ltd.; Shikoku Kakoh Co., Ltd.; SHOFU INC; Taiho Pharmaceutical Co., Ltd.; NODA HONEY FOOD CO., LTD.; Bayer HealthCare; Hitachi High-Tech Fielding Corporation; Fukae Kasei Co., Ltd.; Fujifilm Corporation; Hokkaido System Science Co., Ltd.; HONKE MATSUURA BREWERY CO.,LTD.; Maruasaen Corporation; Mitsubishi Chemical Corporation; J. Morita Mfg. Corp.; and Morioku Holdings Co., Ltd.

Academia···**The University of Tokushima**, Tokushima Bunri University, Hokkaido University, Shiga University of Medical Science, Osaka University of Pharmaceutical Sciences, Ehime University, and Kumamoto University

Government···Tokushima Prefectural Industrial Technology Center, and National Institute of Advanced Industrial Science and Technology

Project Overview

Aiming to develop technologies to analyze disease-linked proteins and genes, two lines of research were conducted at the University of Tokushima. Proteomics research was mainly run by the Institute for Enzyme Research, and genomics research was jointly conducted by the Institute for Genome Research and the School of Engineering. Data required for the discovery of pharmaceuticals, and the development of diagnostics and analysis tools such as biochips were also explored.

Among research laboratories in the Tokushima area, we also conducted collaborative research on diabetes and other lifestyle-related diseases focusing on diagnosis and therapeutic drug discovery. Furthermore, we have made headway with an obesity research project; a technology to collect, analyze and evaluate human visceral fat cells was studied, while foodstuffs from Tokushima were screened for active ingredients applicable to functional foods.

- 1. Development of basic proteomics and genomics technologies and their application to the analysis of diseases**
"Development and application to medical research of the next-generation diamond coating high-density integrated DNA chip"
- 2. Obesity research: An obesity-related factor released from human fat cells and its medical significance**
"Development of a cell-collecting system applicable to the study"
- 3. Studies on oral food intake**
"Development of a system to help evaluate the masticatory function"
- 4. Studies on the prevention of diabetes and other lifestyle-related diseases**
"Discovery of new serum markers for diabetes and their clinical significances"

Tokushima has been the prefecture with the highest mortality rate due to diabetes in Japan for 14 consecutive years. To overcome this health concern, the prefectural government has been collaborating extensively with the University of Tokushima, medical institutions, and industries in the area with the slogan of "No more high mortality rate due to diabetes." The Knowledge Cluster Initiative played a significant role in research on diabetes and the development of products applicable to the diagnosis and treatment of the disease.

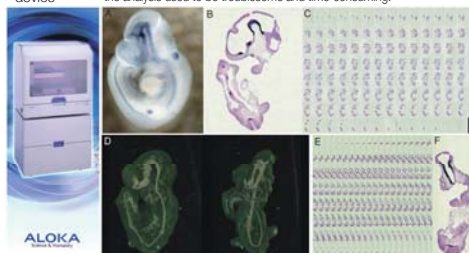
Main Results

1. Efforts to achieve Tokushima's goals, "Establishment of business clusters" and "Saving Tokushima people from diabetes (regional subject)"

In this project, a researcher was invited from overseas to establish the "Clinical Research Center for Diabetes" at the University of Tokushima Hospital in September 2007. This hospital is to provide advanced treatment for diabetes and conduct clinical studies, including those of epidemiology. After completion of this project, the University of Tokushima is going further to establish the "R&D Center for Diabetes," a division conducting experimental and clinical research into diabetes and its complications. Its comprehensive activities also include the clinical practice for diabetic patients, as well as the development of new diagnostics/therapeutics based on research findings, foods and pharmaceutical materials. More researchers from relevant fields are now being recruited.

We also established the "Prefectural Committee to Fight Diabetes for Tokushima People" (25 executive members), in which citizens and various private sector groups in Tokushima participate. This is making all-out efforts to control diabetes in Tokushima and will continue to pursue its missions even after the project is completed.

Automatic processing device Contract analysis of in situ hybridization and immunostaining at OurGenic Co. Ltd. (a venture business launched from the knowledge Cluster project); the analysis used to be troublesome and time-consuming.



2. Commercialization of an automatic in situ hybridization (ISH) processing device for whole-mount and tissue sections, and founding of a venture company for contract gene analysis using the technology

We developed and commercialized an automatic ISH device that analyzes gene expression on whole-mount or tissue section preparations. This is a labor-saving device, and the analytical results are both reproducible and reliable. In addition, we launched a university venture company, "OurGenic Co. Ltd."

(<http://www.ourgenic.com/index.html>), in January 2008 to run a business for contract gene analysis using this technology.

3. Commercialization of an FMD (Flow-mediated Dilatation) test device

This commercialized device, originated from this project, is a world first device developed for this specific purpose, and features originality only a venture company could demonstrate as well as operational simplicity. The Anti-Aging Medical Center of the University of Tokushima Hospital has already installed this device into its practice to diagnose metabolic syndrome. The usefulness of the device encourages its broader use in Japan. In future, we will develop portable devices to facilitate even wider use.

