●Development Stage

(Fiscal Year 2005-2007)

# Shizuoka Central Area

Creation of food science business for overcoming lifestyle-related diseases caused by physical/mental stress

Life Sciences
IT
Environment
Nanotech Materials
Others

Shizuoka Organization for Creation of Industries
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## Project Promotion

Project Director··· ·····Reiziro Senbongi
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Science and Technology Coordinators···Masayoshi Motosugi
Masayasu Takeuchi

## Core Research Organizations

University of Shizuoka, Shizuoka University, Tokai University ,
Shizuoka Industrial Research Institute of Shizuoka Prefecture

## Major Participating Research Organizations

Industry···AJINOMOTO CO., INC., Kaneka Corporation, Biologica Co. Ltd.,
Prima Meat Packers. Ltd., Hamamatsu Photonics K.K., ULVAC Inc.,
KAGOME Co., Ltd., Mitsui Norin Co., Ltd., YAMASA CORPORATION,
YASUMA Co., Ltd., Pokka Corporation, KUMIAI CHEMICAL INDUSTRY CO., LTD.,
Yaizu Suisankagaku Industry Co. ,Ltd., Suzuyosouken. CO.,
Pharma Foods International co., Ltd., Photo-Agri Corporation,
POLA Chemical Industries Inc., Fujicco Co., Ltd., INABA FOODS Co., Ltd.,
Maruhachi Muramatsu,Inc., Fuji Nihon Seito Corporation,
Aloe Pharmaceutical Co., Ltd., CHANSON COSMETICS Co., Ltd.,
Tamaru-ya Honten Co., BANJO FOODS Co., Ltd.,
Nihon Preventive Medical Laboratory. Co., Ltd, Yagisho Co., Ltd.,
J-OIL MILLS, Inc., Tokai Aquanauts Inc.,
Fuyo Ocean Development Engineering Co., SAPPORO BREWERIES LTD.
Academia···University of Shizuoka, Shizuoka University, Tokai University
Government···Shizuoka Industrial Research Institute of Shizuoka Prefecture,
Shizuoka Swine & Poultry Experiment Station

## Aim of research and development

The measurement reagent of physical and mental stress and the measuring device are developed by using an optical related technique that has accumulated in the western area of Shizuoka prefecture and high research potential such as the functional foods possessed by life science-related universities including School of Food and Nutritional Sciences and School of Pharmaceutical Sciences of University of Shizuoka, the Shizuoka University Bio-Industry Promotion, the biological located in the central area of Shizuoka. Food constituent to which was confirmed of its new function in animal experiment will be then applied to human for clarification and commercialization. In the future, the health-related industry is created in the central area of Shizuoka Prefecture by developing the functional food and the evaluation equipment related to the prevention of lifestyle-related diseases through the reduction of physical/mental and oxidative stress, and it contributes to the achievement of a long life healthy society.
The western district in Shizuoka Prefecture is a center of the optics industry(Photon valley) and the medical industry (Pharma Valley) is in the eastern district. These clusters and Shizuoka central area (Foods Science Hills) create a network (Triangle Research Cluster) approach foods science businesses.

## Contents of research

1. Development of human living body analysis, evaluation, and advanced functional technology and approach to business
   A new method for evaluating the anti-stress function of food by finding a new marker which reflects the state of the stress specifically in blood.
2. Non-invasive analysis of stress by using optics and approach to business
   The ultra-weak chemiluminescence measuring device and making the kit for human saliva are developed to create a convenient, prompt and inexpensive stress evaluation system. Moreover, the candidate probe of the cell of making to malignant selection for diagnostic PET is synthesized to aim at the development of the diagnostic reagent that improves the accuracy of cancer diagnosis and the achievement of the visualization of the pharmacologic effect.
3. Development of technologies of advanced functional material and enzymatic industrial technique and approach to business
   The aims is to make a large amount of flavor components from citrus fruits and the rose with the effect of the relaxation. The effect of the anxiety relief and active ingredients contained flavonoids by controlling the plant cell. The application of the virus adsorption with the sugar chain is also aimed.
4. Development of anti-stress foods and chemical materials, analysis of expression mechanism, and progressing to the applied products
   The materials mainly from the Shizuoka Prefecture are developed for anti stress and anti lifestyle-related diseases. About the material from which the effect is confirmed in animal experiment, they take clinical trials for commercialization.

## The main study results

1. Development of biochemical analysis, its evaluation and advanced functional technology, and approach to business
   A new protein which shows increase and decrease the content loading stress was found in blood. Moreover, the object attached to the development of the amino acid preparation that reduces the stress of the renal failure patient who was doing hemodialysis.

2. Non-invasive analysis by optics and approach to business
   Since it was confirmed to measure the stress by measurement of ultra-weak chemiluminescence in saliva, the research for practical use such as miniaturizing and making of a machine is advanced. Moreover, the effectiveness of the diagnostic reagent of cancer in PET was confirmed.

3. Development of advanced functional materials by using enzymatic technologies and approach to business
   The clue to make smells such as wild oranges and roses in the plant and the microorganism in large quantities by using recombinant DNA techniques is now obtained. Moreover, the polypeptide with the sialyloligosaccharide with strong adsorption ability to influenza virus was synthesized

4. Development of anti-stress foods and chemical materials and analyses of the expression mechanism, and progressing to the applied products
   GABA enriched chocolate showing sedative effect went into the market, and FY2005 sales reached to four billion yen. The research on functionality of the inulin, lemon aromas and skipjack ovary oil extract,etc. have been conducted.