

SAITO (Northern Part of Osaka Prefecture)

Bio Medical Cluster In SAITO (Northern Part of Osaka Prefecture)

Outline of the Project

A lot of prominent institutes such as Osaka University and the National Cardiovascular Center as well as several of Japan's leading pharmaceutical companies concentrate in northern part of Osaka Prefecture. Taking advantage of the potential of the region, this plan aims to build a "Bio Medical Cluster" that results from worldwide research and industrial competition on a global level by promoting advanced research that contributes to the development of molecular medicine and by supporting technology transfer and the creation of bio ventures.

Members of the Headquarters

- President..... KISHIMOTO Tadamitsu (President, Osaka Univ.)
- Project Director..... FUJINO Masahiko
- Research Director..... YAMANISHI Koichi (Dean, Osaka Univ. Graduate School of Medicine)
- Science and Technology Coordinator..... KAGEYAMA Bunji

Central Project Organization Senri Life Science Foundation

Core Institute(s) Osaka Univ.

Participants

Industry...AnGes MG, Inc., Cardio,Inc., Kringle pharma Co.,Ltd., Nitto Denko Corporation, JEOLLtd, SIGMA KOKI CO., LTD., etc.

Institute...Osaka Univ., The Research Foundation for Microbial Diseases of Osaka Univ. Kyoto Institute of Technology

Government... National Cardiovascular Center
Osaka Medical Center for Cancer and Cardiovascular Diseases

Main Researchers

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MASUHARA Hiroshi (Prof., Graduate School of Engineering, Osaka Univ.)

Outline of Researches

(Concept:Basic research and development of molecular medicine)

●Drug Discovery for Future Medicine - Development of Cell Engineering Technology for Treating Heart and Brain Diseases and Cancers

The HVJ envelope vector system is very effective for high throughput screening of genome libraries. Using this technology, therapeutic genes will be isolated against intractable human diseases such as ischemic heart and brain diseases and cancers, which are the primary causes of death in Japan. New more effective genes to treat such diseases will be created based on the genome and protein information. Furthermore, a targeting vector system for delivering those therapeutic genes to specific target tissues will be developed by modifying the HVJ envelope vector system. These technologies that regulate diseased cells will greatly help both save human lives and increase the quality of human life.

[Osaka Univ., AnGes MG, Inc., Cardio, Inc., Kringle pharma Co.,Ltd.]

●New Strategy of Drugs Against Infectious Agents-Joint Action with Immunity-Development of New Drugs Against Infectious Agents by Utilizing Interaction of Medicine and Immune System

The chemotherapy combined with antibiotics is used against infectious agents, but drug-resistant microorganisms on which medicine has no effect have begun to appear. In addition, because of the existence of various kinds of infectious agents that medicine does not act on, new methods of medical treatment are needed. This research aims to establish new methods of medical treatment against infectious agents by combining chemotherapy with the immune effect of living body. The outcomes of this research would develop the medical treatment which keeps off the generation of drug-resistant infectious agents and the vaccine which makes it easy to obtain effect of chemotherapy medicine by softening symptoms.

[Osaka Univ., Osaka Medical Center for Cancer and Cardiovascular Diseases, Nitto Denko Corporation]

●Creation of Photonic Intervention Processes for the Discovery and Development of New Therapeutics

We need to find out the key molecule of disease and restore its right activity for a cure. Proteins and other organic molecules which constitute our body have the specific resonant wavelength of lights. The resonant wavelength selectively excites the specific protein that could accelerate proteomics research based on mass spectrometry. Photonic excitation of the resonant light regulates structure and function of a biological molecule for therapeutics via photo-catalytic effect. This project aims to develop novel technologies to analyze dynamics of bio-molecules and to develop molecular interventional photonic devices.

[Osaka Univ., JEOL. Ltd., SIGMA KOKI CO.,Ltd.]

Expected Results

- Development of epoch-making technologies for cell engineering toward new medicine against malignant diseases such as heart and brain diseases and cancers
- Development of effective method of medical treatment against infectious agents which usual chemotherapy has no effect on
- Creation of advanced proteomics and design of photo-catalytic drug