

Creating advanced medical industries based on regenerative medicine and other innovative medical technologies

Overview

In the Kobe area, the Foundation for Biomedical Research and Innovation serves as the core of the cluster, which involves a broad range of local universities, research institutions, and private companies. We are systematically and comprehensively involved in the practical application of advanced medical technologies, including regenerative medicine using stem cells. We are also working as an entire organization to promote new business creation from technological "seeds" research, and to stimulate translational research (the transfer of basic research results to clinical applications). We are also linked with SAITO (Northern Part of Osaka Prefecture), as the "Kansai Wide Area Cluster," and we are further working in close cooperation with neighboring biomedical-related clusters. Our goal is to form a "Biomedical Super Cluster."

Cluster Headquarters

- Advisor Masaaki Terada (Chairman, Food Safety Commission)
- President Hiroo Imura (Chairman, Foundation for Biomedical Research and Innovation / Chairman, Kobe Medical Industry Development Project Study Group)
- Vice President and Chief Scientist (CS) Shin-ichi Nishikawa (Deputy Director, Center for Developmental Biology, RIKEN)
- Deputy Chief Scientist and Science and Technology Coordinator Ryoji Yano
- Science and Technology Coordinator Kunhiro Tanaka

Core Organization

Foundation for Biomedical Research and Innovation

Participating Research Organizations

(Bold: Core Research Organization)

Industry···Stem Cell Sciences K.K., Sumitomo Pharmaceuticals Co. Ltd., and others
 Academia···**Kyoto Univ., Osaka Univ., Kobe Univ.,** Kyoto Prefectural University of Medicine
 Government···**Institute of Biomedical Research and Innovation (IBRI);**
Center for Developmental Biology (CDB), RIKEN; Kobe City General Hospital;
 Research Institute of Cell Engineering(RICE, National Institute of Advanced Science and Technology), National Cardiovascular Center



President

Hiroo Imura, M.D.

Promoting State-of-the-Art Medical Industry to Ensure that Citizens Have Healthy, Fulfilling Lives

In Kobe, we already have a variety of core facilities that are working towards the goal of creating a medical industry-based city. From now on, we need to effectively utilize these existing solid resources, and to add so-called "software," so that the entire organization will serve as a complete system.

One could say that this is the stage where we "breathe spirit into the statue (of Buddha)." We have great expectations that our Knowledge Cluster Initiative will play a central role in achieving this goal.

In creating the Knowledge Cluster, our aim has been the realization of regenerative medicine and the development of a broad spectrum of clinical technologies. Now we have performed research on a number of diseases, including Parkinson's disease, myocardial infarction, and diabetes. The results of these individual researches have led to joint research, which has fostered patent applications, pharmaceutical-manufacturing business, etc.

From fiscal year 2003, we have selected practical research subjects that are getting closer to their application stage.

To make sure that there is substantial support for these researches, we plan to strengthen our collaboration with SAITO (Northern Part of Osaka Prefecture) in the form of a "Kansai Wide Area Cluster." At the same time, we will also become linked with other nearby biomedical-related clusters, including those of Tokushima, Takamatsu, and further with Kansai Science City (KSC). In this way, we seek the creation of a "Biomedical Super Cluster."

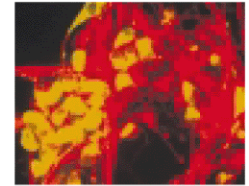
By promoting research and development in our Cluster, we can realize healthy lives for our citizens, and, at the same time, create new businesses that will further support such healthy lives.

Hiroo Imura successively served as chancellor of Kyoto University, president of Kobe City General Hospital, and executive member of the Council for Science and Technology Policy of the Cabinet Office.

Outline of the Joint Research by Industry, Academia and Government

On the basis of stem cell research in the Kansai region by universities and research institutions, we aim to develop treatments for intractable illnesses, including cerebral and nervous disorders, such as Parkinson's disease and heart infarctions. In order to realize medical treatments for these diseases, it is necessary to develop technologies for cell/tissue culture and cell/tissue sorters. These needs are expected to foster a novel industry. Furthermore, using the results from the recently completed sequencing of the human genome, we are trying to develop effective treatments for diabetes.

- By using embryonic stem (ES) cells, which have the ability to differentiate into various types of cells, including neurons (nerve cells), we are developing treatments for intractable nervous diseases such as Parkinson's disease.
- On the basis of cell chip and new microscope technologies using the most advanced engineering, we are developing quality control of tissue culture and cell culture for use in regenerative medicine and novel drug development.
- Using human blood vessel (hematopoietic) stem cells that exist even in mature adulthood and myocardial (heart muscle) stem cells, we are developing treatments for cardiovascular diseases, such as cardiac infarctions and vascular occlusions, etc.
- Using the most advanced genetic analysis technologies, we are searching for genes related to so-called "lifestyle-related diseases" such as diabetes, high blood pressure, and hyperlipidemia (a high cholesterol level-related disease), and in turn, treatments for these diseases will be developed.



Nerve cells that have been differentiated from monkey ES cells within a test tube (yellow: dopamine cells, red: other nerve cells).

