# LARGE-SCALE PROJECTS

# Academia-Industry Collaborative Projects

When the statistics on academia-industry collaborative research by Japanese universities was published in 2011, Kyoto University occupied the number one position, reflecting the university's pro-active approach to working with the industrial sector. The figures for 2012, indicated a further increase in the number of collaborative research undertakings. In this issue, we introduce a selection of recently initiated large-scale academia-industry collaborative projects.



# Daikin-Kyoto University Innovation Program (DK Program)

A comprehensive academia-industry collaboration project between Daikin Industries and KU

> WEB www.kyoto-u.ac.jp/ja/news\_data/h/h1/news7/2013/130621\_1.htm www.daikin.co.jp/press/2013/130621\_k/index.html

On June 21, 2013, Kyoto University and Daikin Industries, Ltd. concluded a collaboration agreement to implement a university- and company-wide project for fundamental research, the development of new products, and the pursuit of innovation. Under the agreement, the Daikin-Kyoto University Innovation Program (DK Program) was launched.

The project enables both parties to mutually utilize their intellectual resources, facilities, equipment, and human resources such as teaching staff, researchers, engineers, and students to achieve the following goals in three years.



President Hiroshi Matsumoto of Kyoto University (left) and Mr. Noriyuki Inoue, President and CEO of Daikin Industries, Ltd. (right)

1. Create new themes focusing on social values (drawing on the knowledge of humanities fields)

- 2. Build a global technology network (including participation by Kyoto University's partner universities)
- 3. Develop technology management methods (to continuously foster innovation)

It is anticipated that these initiatives will lead to the creation of new academic fields, the formation of multidisciplinary research units, and the fostering of human resources who can contribute to society.



To manage the project, Kyoto University and Daikin Industries will form a committee, and establish up the DK Innovation Program Promotion Office on Kyoto University's campus. The office will be staffed by employees of Daikin Industries and Kyoto University faculty members.

MCR Kyoto univ - DSP

# LARGE-SCALE PROJECTS

Director: Dr. Shuh Narumiya Professor, Graduate School of Medicine WEB www.mic.med.kyoto-u.ac.jp/english/index.html

The Kvoto University Medical

**Innovation Center (MIC)** Drug Discovery Opportunities and Innovation

The Kyoto University Medical Innovation Center (MIC) aims to identify drug targets that are truly useful in clinical practice by using various technology platforms to analyze the highly accurate patient information and clinical samples available through the university's medical school and university hospital, and linking the clarification of the basic structure and mechanism of living organisms-a tradition at the Kyoto University Medical School-with the analysis of human disease mechanisms. Under one-to-one institution-level collaborations with pharmaceutical companies, the MIC assigns appropriate professors of our Medical School as project leaders, recruits young distinguished scientists

worldwide, and provides a laboratory where basic medical scientists, company scientists, and clinicians work together by sharing clinical samples and information and drug discovery technology. Each project is managed as an equal partnership between the university and the partner company, and scientific input, output, knowledge, and intellectual property are shared by both parties. In addition to the ongoing Astellas-Kyoto University Project (AK Project), covered in the previous edition of Research Activities, the MIC has four other projects: the Takeda-Kyoto University Project (TK Project), the Dainippon Sumitomo-Kyoto University Project (DSK Project), the Mitsubishi Tanabe-Kyoto University Project (TMK Project), and the Shionogi-Kyoto University Project (SK Project). The MIC welcomes proposals of new collaboration from pharmaceutical companies.

### TK Project Takeda-Kyoto University Project

The Kyoto University Medical Innovation Cente

The Basic and Clinical Research Project for Central Nervous System (CNS) Drugs,

Nakao, Kenji Kangawa and Akira Sawa, over forty researchers are investigating ways to cure patients utilizing the capabilities and assets of Kyoto University and Takeda. This open innovation laboratory gives young researchers an exciting opportunity for academia-industry collaboration. Please visit the web page (http://www.tk.med.kyoto-u.ac.jp/) to learn more about the project's mission, vision, and research PHOTO: K

H. Odaka

K. Kangawa

(Obesity)

(Project sub-Lead



The Laboratory for Malignancy Control Research, a collaborative project with Dainippon Sumitomo Pharma Co. Ltd. (DSP), aims to discover innovative anticancer drugs. Under the leadership of Professors Makoto Noda and Masakazu Toi, seven principal investigators and their teams, together with the satellite team from DSP, are taking diverse approaches to achieve

Matsuo -

T. Murai 🖚 A. Sawa

(Schizophrenia)

a collaborative project with Takeda Pharmaceutical Co. Ltd., focuses on discovering

innovative drugs and biomarkers to treat obesity and schizophrenia. Under the leadership of Professors Kazuwa activities.

K. Nakao

K. Nakao

(Obesity

(Project Leader)









Medical Innovation Center

mini

mmm

Core Researcher

Therapeutic

Area Leader Principal Investigator Team Leader that goal. Their efforts focus on several promising areas (e.g. angiogenesis, invasion/metastasis, hypoxia-response, epigenetic regulations, alternative splicing, and bioinformatics) to elucidate the essential features and molecular bases of malignant phenotypes, and to rapidly translate their discoveries into clinical use for the benefit of cancer patients.



## **TMK Project** Tanabe Mitsubishi-Kyoto University Project

The Basic and Clinical Research Project for Discovering Innovative Treatments for Chronic Kidney Disease(CKD), a collaborative project with Mitsubishi Tanabe Pharma Corporation, aims to overcome chronic kidney disease and coexisting diseases.



The project consists of three research groups including 17 investigatores, who are mutually interacting to maximize respective expertise under supervision and direction by Prof. Dr. Motoko

Yanagita, chaired at Department of Nephrology, Graduate School of Medicine, Kyoto University. Our research goal is to clarify the pathologic mechanisms of CKD and figure out new ways of the disease-treatment. This leads to remission and regression of the disease.



### **Basic and Clinical Research Project on Chronic Kidney Disease**



### SK Project Shionogi-Kyoto University Project

The drug discovery and medical research for the regeneration of synapses and neuronal function, a collaborative project with Shionogi & Co. Ltd., aims to create innovative medicines for the treatment of Alzheimer's disease and other central nervous system disorders. The SK project consists of five research groups, and these groups are mutually interacting to maximize respective expertise and are actively challenging to achieve the project goal. Under the project leader, Prof. Ayae Kinoshita at Kyoto University Graduate School of Medicine, the project conducts basic

and clinical research to identify new drug targets and novel medicines based on regeneration of synapses and neurological function.







# The Wireless Power Transfer Consortium for Practical Applications (WiPoT)

Focusing on Microwave Power Transmission



WiPoT general chair: Dr. Naoki Shinohara Professor, Research Institute for Sustainable Humanosphere, Kyoto University WEB www.wipot.jp/english/index.html

Kyoto University's researchers have been engaged in research into wireless power transmission (WPT) technologies since the 1980s, playing leading roles in many research projects. The research of Dr. Naoki Shinohara and his colleagues focuses on microwave power transmission (MPT), a WPT technology which can be applied to battery-less sensor networks, wireless charging of mobile phones, wireless charging of electric vehicles while driving or parked, and solar power satellites (SPS). Recently, the worldwide WPT market is growing, and some WPT technologies, such as coupling technologies other than MPT, are being put into commercial use. This is a rapid and globalscale development. Unfortunately, however, global standardization of WPT has not been given due consideration in Japanese research activities. To remedy that situation and respond to world trends in WPT usage, the Wireless Power Transfer Consortium for Practical Applications (WiPoT) was established on April 1, 2013. The objectives of the consortium are: 1) matching new ideas and solutions to society's needs regarding WPT technologies, particularly with regards to MPT, and 2) accelerating the development of practical applications of WPT. To achieve these objectives, the WiPoT shares information about not only technology, but also standardization, safety, and user needs. The consortium also advertises WPT technologies, including MPT, throughout the world. Twenty-seven companies, thirty universities, and two institutes have joined the WiPoT to work towards the same goals. The activities of the WiPoT are as follows;

- Members will compile a portfolio of their WPT technologies and make it available to the public.
- Members can attend the closed symposium for business matching, which is held three times per year. The symposium provides members with opportunities to introduce their technologies and share their needs, as well as ask questions about WPT.
- Members can participate in discussions about WPT with government officials.
- Members can join the consortium's working group activities.
- Members can obtain up-to-date technical information about WPT throughout the world via the symposia or through the consortium's e-mail newsletters.
- Members can have technical discussions about both the needs of industry and society and new technologies and solutions, and give feedback to domestic and international authorities engaged in the standardization of WPT.

The WiPoT's working groups (WG) are one of its most important activities. Four WGs have been established: 1) Energy-Harvesting and Power-Saving Remote Power Supply WG, 2) Electric Vehicle WPT WG, 3) Living and Industrial Space

WPT WG, and 4) Space Application WG. In the working groups, members actively discuss the practical application of WPT.

The WiPoT is not the only WPT consortium. There are other WPT consortia or forums in Japan and other countries. The WiPoT collaborates with other Japanese WPT consortia to accelerate the development of practical applications of WPT, and endeavors to represent Japan's point of view in establishing international technical standards for WPT. The WiPoT welcomes communication from individuals or organizations with an interest in WPT. The company membership fee is 250,000 yen per year. Please refer to the WiPoT website for more details.

