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Biomedical Platform with Multidisciplinary Cooperation between Government, Industry, and Academia

The Innovative Research Center for Preventive Medical Engineering (PME) was established in 2010 to "provide easy access to excellent doctors and major hospitals." The purpose of this center is to effectively prevent disease by carefully monitoring the daily lives of individuals. We can provide the optimal treatment at an early stage regardless of the patient's location, releasing relevant medical histories to medical institutions as needed. This would allow us to establish a "seamless healthcare system that covers all stages from perfect health to serious disease." Thus, with collaboration between medical and engineering sciences, and cooperation between the government, industry, and academia, the route to a myriad of projects. For example, we have thus far achieved the development of a highly-accurate diagnostic tool for childhood food allergies and developed a consecutive blood pressure estimation technique that allows blood pressure measurements while driving a car. Although the concept of cloud computing had not yet been widely known when the center was established, we had been working to develop a wearable device that records an individual's health and medical information, making great strides in adopting truly cutting-edge technology I feel as if the times have finally caught up with us.

Our activities drew high acclaim, and the center became a multidisciplinary center in 2015, with headquarters within the National Innovation Complex*1 in Higashiyama Campus. As we strengthen ties between the Graduate School of Medicine, the Graduate School of Engineering, the Research Institute of Environmental Medicine, and the Graduate School of Pharmaceutical Sciences, we also aim to establish cooperative opportunities with the Graduate School of Bioagricultural Sciences and the Graduate School of Science. In the future, we hope our biomedical platform provides opportunities for collaboration among many diverse fields and cooperation among

government, industry, and academia.

Our Goal: To Provide Personalized Disease Preventive Schemes Founded on Health Information and Gene Analysis

PME, a multidisciplinary center open to all will promote its endeavors for personalized disease prevention towards the goal of "extending a healthy life-span." Some individuals are more sensitive to drugs, and there are many different types of breast cancer, so more hospitals are introducing personalized medical care, which aims to cater to the needs of individual patients. However, personalization has yet to be achieved in disease prevention. Personalized prevention is also vital in decreasing medical costs. Thus, we hope to provide individualized advice on disease prevention by combining the results of monitoring diet, sleep, and blood pressure changes with personal health and medical information, such as the medical history, and results of gene analyses as they pertain to individual disease risks and characteristics. We are currently monitoring retirees in collaboration with Toyota City and Toyota Motor Corporation, to prevent life style diseases in this population, and we look forward to sharing some real-life success stories about personalized disease prevention in the near future.

We plan to use seeds developed at Nagoya University and combine them with the experience of industries to fight locomotive syndrome, dementia, and cancer. It is our hope to eventually succeed in building a scheme to produce significant breakthroughs such as the development of robot caregivers and functional foods.

Although Nagoya University is home to many outstanding researchers, until now, there was no framework for collaborative research in bioscience. However, from here forth, PME will provide a platform for a melding of talent from a myriad of specialties, allowing us to achieve great things.



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Personalized Preventive Medicine to Maximize Long, Healthy Lives



*1 / National Innovation Complex (NIC)
A research facility where government, industry, and academia collaborate under one roof for joint development towards a new future.