

Working to Create a Society of Health and Longevity



The guiding philosophy of TMDU that informs our efforts to become a world-renowned medical sciences institution is “Cultivating Professionals with Knowledge and Humanity, thereby Contributing to People’s Well-being.” With the rapid aging of Japan, it is essential if we are to maintain our society’s vitality to extend average healthy life expectancy by preventing the onset of disease and making every effort to detect and treat it as early as possible. At TMDU, we are tackling these issues through a range of initiatives that build on our strengths and distinctive characteristics.

First, we established the Center for Personalized Medicine for Healthy Aging in 2015. This new graduate school of preventive medicine will further develop our strengths in this area. Lifestyle conditions such as cancer, diabetes and heart disease continue to pose serious challenges to medicine and society. The Center will be the first medical institution in Japan to apply approaches we have developed in-house to the analysis of individual genetic information with the aim of preventing the onset of lifestyle diseases to which that person is likely to be prone. To boost early detection rates of gastric and bowel cancer, both of which have an extremely high prevalence in Japan, the Center is equipped with private rooms with toilet facilities for individual patients to stay before they receive examination using the latest endoscopy equipment. In dentistry, another specialist area for TMDU, we have installed private rooms with specialist equipment to perform high-quality dental examinations. Anyone that is diagnosed based on these examinations can be treated at our Medical Hospital or Dental Hospital.

What distinguishes the services provided at the Center from standard medical check-ups is that we provide lifestyle guidance and health checks based on an individual’s genetic pro-

file through an in-house program that attempts to elicit specific health management implications from genomic information. Using this approach, the Center seeks not only to prevent the onset of disease through the adoption of better lifestyle habits based on an individual’s genetic make-up, but at the same time to contribute to the development of personalized medicine and preventive medicine through early disease detection and intervention. Going forward, besides providing healthcare services, we will focus on human resources development and research to help us realize new preventive medicine and related treatments.

Second, to build on the activities of the Center for Personalized Medicine for Healthy Aging, the Bioresource Research Center, and other TMDU initiatives, we are working on the construction of a new medical framework that goes beyond existing medical practices to utilize the Internet of Things (IoT), artificial intelligence (AI) and medical Big Data. By promoting a new research concept of personalized preemptive medicine that seeks to provide people with the necessary treatments and preventive approaches based on their individual condition while at the same time developing related human resources at an international level, we hope to contribute to the realization of a “super-smart society” where people enjoy health and longevity. In April 2018, as part of this goal, we reorganized our graduate schools to make TMDU an educational and research center that promotes integrative sciences for preemptive medicine.

At TMDU, we are proposing a new academic concept called “integrative sciences for preemptive medicine,” in which IoT, ICT and AI are applied to the integrated collection, management and analysis of patient data to devise personalized preemptive medicine. The data include not only genomic and epi-

genetic information as well as electronic patient records, but also information on lifestyle habits and environmental factors (suitably supplemented with real-time data). Developing the integrative sciences for preemptive medicine will require educational research to combine medical and dental sciences with disciplines such as life science and engineering. To this end, we have combined the Track of Biomedical Laboratory Sciences of the Graduate School of Health Care Sciences with the Graduate School of Medical and Dental Sciences to create a new master’s program and two new doctoral programs within the Graduate School of Medical and Dental Sciences.

As a development center for the integrative sciences for preemptive medicine, the reborn Graduate School of Medical and Dental Sciences includes a master’s program (Medical Sciences Program for Preemptive Medicine) and doctoral programs (Integrative Biomedical Sciences Programs for Preemptive Medicine). One of the notable features of the doctoral programs is that they overlap with the Medical and Dental Sciences (doctoral program) and the Biomedical Sciences and Engineering (doctoral program). The advantages of this structure are that (1) students can gain a top-down understanding of the complex field of preemptive medicine, (2) the programs specifically encourage academic interchange between students from the varied specialties that make up the integrative sciences for preemptive medicine, and (3) the programs help to build each of these specialties as well.

In fiscal 2017, in a separate move that will help to accelerate progress in our development of preemptive medicine, TMDU was selected by the Ministry of Education, Culture, Sports, Science and Technology to take part in a data science-related human resources development program. We are privileged to be one of only four universities selected by the government

for this initiative. Under the program, the Consortium for Data Sciences in Medical Care and Drug Discovery has been established by academia, research institutions and the private sector to develop new data science education programs and to organize international research conferences to exchange information in this area. Another aim of the program is to improve Japan’s international competitiveness in the area by developing new data science methodologies based on AI approaches from bio-related fields such as medicine, drug development and healthcare.

To ensure the human resources development program is attractive, a panel of lecturers has been invited from among specialists working in research in universities and research institutions. Program participants will also undergo training in highly advanced environments, making use of the databases owned by Japan’s leading state-owned research centers and universities. In tandem with our reorganization of the graduate schools, this move will help create the ideal conditions for cultivating the next generation of leaders to propel Japan into the future.

These various initiatives will help TMDU to contribute to the realization of a society of health and longevity through preemptive medicine. At the same time, achievements on the international stage by people trained at TMDU will help us to achieve our broader aim of “Cultivating Professionals with Knowledge and Humanity, thereby Contributing to People’s Well-being.”

Yasuyuki Yoshizawa, President