Please contact us »» uraoffice.adm@tmd.ac.jp

Executives discuss TMDU's evolution as a research facility – An interview

Mamoru Watanabe
Executive Director / Executive Vice President, Innovative Research and Collaboration
Akinori Kimura
Executive Senior Vice President of Research, Accreditation and Evaluation

TMDU is in the midst of revising its organization in order to enhance its research potential. Two executives answer questions about current developments and the future at TMDU.

– What are the outstanding features of TMDU?

Watanabe: Tokyo Medical and Dental University is an institution with a dual focus on medicine and dentistry: The medical department is highly esteemed and the dental department ranks third in the UK's QS World University Rankings. TMDU has research-specific labs, among them the Medical Research Institute, which pursues the biological research concerning etiopathology of intractable diseases including cancer, and the Institute of Biomaterials and Bioengineering, which is tasked to develop materials and devices for use in treating patients.

In April 2017, the Institute of Research was inaugurated to realize a vision for integration across all TMDU research areas. By coordinating projects from different groups on our campus, we are tackling challenges in ways that otherwise would be impossible, and thereby discovering how to impact future therapies. (Some of these challenges are introduced later in this booklet.)

TMDU is proud of its affiliated hospitals. The Medical Hospital boasts the largest number of applications for receiving clinical training in Japan. With many of its faculty members involved in clinical duties and basic research at the same time -- a system not widely seen in Europe and the United States -- the staff can find new research themes while treating patients at the hospital, conduct basic research targeting those themes, and address clinical problems.

The hospital includes diagnostic centers focused on refractory cases, including inflammatory bowel diseases, connective tissue diseases and rare neurological disorders. Registered patients come from across the country, a phenomenon that helps us collect a sufficiently large volume of clinical data and samples so as to forward our research effectively.

The Dental Hospital has the largest number of patients in Japan. It has long played a vital role in extracting research themes in both medical and dental fields, uncovering, for example, a relationship between oral bacteria and dementia.

Kimura: Among other facilities that strengthen its research capability, TMDU has the Research Core, which employs the latest lines of analytical and imaging equipment, the Center for Experimental Animals, and the Bioresource Research Center, which collects and analyzes the genome information of clinical samples from our hospitals.

TMDU enjoys a high faculty-to-student ratio, which allows faculty members to spend enough time carrying out their own research while also ensuring intensive lessons and interactions for students.

No less important is that the campus has been opened to foreign students. Currently, about 13 percent of our graduate students come from abroad, one of the highest ratios at any post-graduate course in Japan.

Dr. Kimura

– How are research profits being returned to society?

Watanabe: We're building a system with the aim of shortening the continuous process of growing "seeds," found in labs, into new drugs or therapies. Especially, we are focusing on establishing venture capital arrangements to promote successful alliances between academia and industry, ensuring that research leads to products and services. TMDU has already enjoyed a growth spurt and was named by Reuters as one of the Asia-Pacific region's Most Innovative Universities in 2017, as measured by patent revenue, number of material transfer agreements, and so on.

We see it as another important mission of the university to help Japan continue to develop smoothly as a truly healthy aging society. In fact, TMDU has undertaken diverse social programs, including one to provide genome information we think is necessary to maintain people's health.

– Which research is particularly important to TMDU?

Watanabe: TMDU has scored solid results in regenerative medicine, genome research, and immunology and inflammation. To bolster research skills in these fields, we are restructuring our organization. Part of that effort calls for enlisting top foreign scientists as advisory board members or invited researchers.

Kimura: Among the latest topics of research drawing our special attention is big data in biomedicine, an approach where genome and clinical data are analyzed in an integrated manner for use in preemptive medicine. Precision medicine, which uses genome information, is another field of interest as it promises the most suitable, or customized, therapy for each individual patient.

In addition, as part of medical (dental) engineering, development is accelerating in the area of devices that collect data from breath, sweat and tears in order to examine a patient's condition. The data collected will also support our big data medicine. (For details, see the following pages.)

Watanabe: In 2018, we will launch an ambitious system for training up-and-coming researchers to work in untapped fields, beyond the three domains just mentioned. This new system will enroll about 20 members via competition each year, and they will conduct research at 'Gaia Laboratory', a new research facility. The lab will invite top-flight researchers from abroad to guide the young researchers.

– What about cooperation with overseas institutes?

Watanabe: TMDU has expanded its international joint-degree program, with research hubs previously opened in Ghana, Chile and Thailand. Also, our faculty members frequently visit and teach at overseas universities.

The next step is to expand collaboration with European and U.S. universities in both research and education. We already send many young researchers to leading institutions for about three years to strengthen these relationships.

– Any message for the readers of this booklet?

Watanabe: Are there TMDU faculty members among the Japanese medical researchers or dentists you are aware of? If so, you'll soon be impressed by their record as scientists. If they are from the same field as yours, why not consider joining hands with such researchers?

Kimura: TMDU holds its doors wide open for students and collaborative researchers from around the world. If you want to know more about our education or research system, please contact the URA Office at the address given at the top of this page. TMDU will spare no effort to explore the possibility of building close relations with you.

Dr. Watanabe

Promising young researcher joins new division

In September 2017, TMDU established the Division of Advanced Multidisciplinary Research. In this division, the Consortium for Neogenetic Medicine was launched to pursue research in the field of regenerative medicine. TMDU invited Dr. Takanori Takebe to join as professor in the Consortium. In 2013, Dr. Takebe generated a vascularized and functional human liver in a mouse by transplantation of liver buds created from human induced pluripotent stem cells, receiving remarkable attention. He will continue to develop his research at TMDU.