Feature

M&D Data Science Center Opens

Fostering “super medical scientists” equally at home in medicine and data science

The M&D Data Science Center, TMDU’s new base for fostering data scientists in the medical field, will open in April 2020. Center director Dr. Satoru Miyano discusses how the ongoing integration of medicine and data science is opening up exciting new prospects for healthcare services.

Data science for navigating TMDU’s big data

There is a great need for consummate professionals capable of unlocking the tremendous potential of preemptive medicine in Society 5.0 by utilizing massive and complicated medical big data. TMDU is establishing the M&D Data Science Center to foster such people.

Dr. Satoru Miyano will serve as the director of the M&D Data Science Center. Having served as director of the Human Genome Center of The Institute of Medical Science at The University of Tokyo, Professor Miyano is an authority on the application of supercomputing to genome analysis.

The center will consist of three fields—M&D Data Science Platform, M&D Data Science Implementation, and M&D Data Science Outcome—and seven departments. The 29 faculty and staff, of whom 10 are being newly recruited, include researchers in fields with an important bearing on medical data science, namely, information science, statistical science, computational science, and ethical, legal and social issues (ELSI).

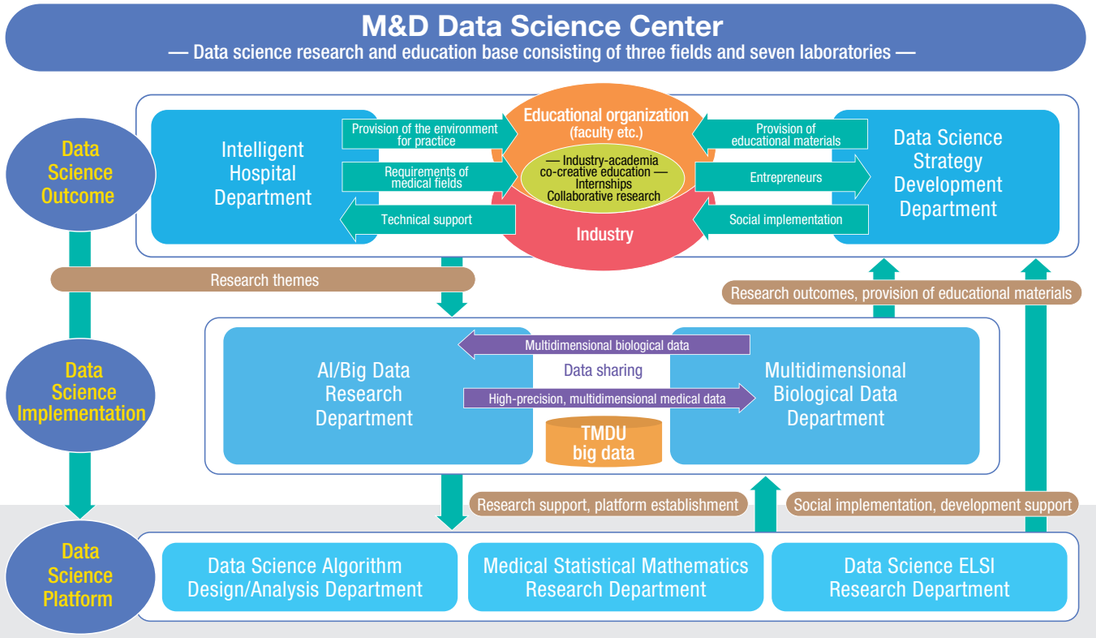
Dr. Miyano explains why TMDU is establishing this base for data science. “TMDU is a top-tier educational institution of global reputation focusing on medicine and dentistry. The university hospitals and the Bioresource Research Center already have a huge quantity of clinical data and biological samples. Mindful that expertise in data science is indispensable for navigating medical big data, we intend to foster ‘super medical scientists’ who are consummate professionals equally at home in the worlds of medicine and data science. As a center of excellence, we envisage collaborating with third parties as a pacesetter in medical data science in Japan.”

Immensity and diversity of medical big data

The new center is TMDU’s response to the two defining characteristics of medical big data, namely, immensity and diversity. In terms of its conception and operation, the center will be at the forefront of the global medical big data trend.

“Compared with big data in other industrial and commercial sectors, the sheer scale, diversity and complexity of medical big data are particularly challenging. Electronic medical records, lifestyle information, real-time lifelogs, and various other factors are interrelated. Moreover, such data are personal information to be treated with due care, necessitating the establishment of an appropriate management system and the provision of training for the people who handle the data. Analysis of such massive quantities of data is beyond the capacity of humans unaided by big data analytics.”

It is becoming indispensable to foster data scientists whose ability to perform AI-based analysis is complemented by a sure grasp of medicine.



Satoru Miyano
Director, M&D Data Science Center

Master of Science, Department of Mathematics, Kyushu University, 1979. Doctor of Science, Kyushu University, 1984. Having served as Professor of the Human Genome Center, Institute of Medical Science, The University of Tokyo, he became a Designated Professor of TMDU in 2019. Director of the M&D Data Science Center from April 2020. Specializing in computational biology, bioinformatics and cancer genomics

Fostering leaders for next-generation medicine

TMDU has been pursuing initiatives to foster consummate professionals in the burgeoning field of medical data science step by step, including establishment of the Medical Sciences Program for Preemptive Medicine and the Integrative Biomedical Sciences Programs for Preemptive Medicine within the graduate school as well as the launch of a Doctoral program for Data-Related Innovation Expert and the Consortium for Data Sciences in Medical Care and Drug Discovery.

As the next step, TMDU intends to establish an educational environment in which students have opportunities to begin acquiring expertise in the fundamentals of data science as soon as they begin their medical studies.

“As soon as they join the university, when their thinking is flexible and they are eager to encounter new ideas, we want students to get on track to become ‘super medical scientists,’ rather than waiting until they are in graduate school. Researchers at the M&D Data Science Center will prepare the ground by identifying the practical issues and applying their specialties to resolve them.”

By pursuing an integrated interdisciplinary approach attuned to the needs of Society 5.0, TMDU aims to position the M&D Data Science Center as a trailblazer in research encompassing the medical and dental sciences, medicine, and education. In this regard, Dr. Miyano views development of next-generation human resources as a crucially important task for the new center.

“The M&D Data Science Center will play the principal role in cultivating professionals capable of fulfilling leadership roles in the future of medicine.”