

TMDU establishes Medical Innovation Consortium

Tokyo Medical and Dental University (TMDU) has developed the Life Course Consortium Concept, which identifies important research to be promoted and supports medical and dental studies that cover many aspects of human life. After establishing the 'Organ and Tissue Neogenesis' Consortium in 2017, the 'Medical Innovation' Consortium was launched in 2018.

Medical research that utilizes genomic information, including cancer genomic medicine, is one of the research fields in which the university excels, in both basic and clinical aspects. In April 2020, the M&D Data Science Center will be established as a research and education center for data science in the medical and dental fields. Data science is expected to further support genomic medical research.

TMDU has strengths not only in genomic medical research and data science, but also in cell-structure physiology research using cryo-electron microscopy, drug discovery fields such as oligonucleotide and mRNA medicine, and efficient genome-editing technology. The 'Medical Innovation' Consortium has a mission to bring together

these technological capabilities of the university and implement future medical technologies in society. A kick-off symposium was held on December 9, 2019.

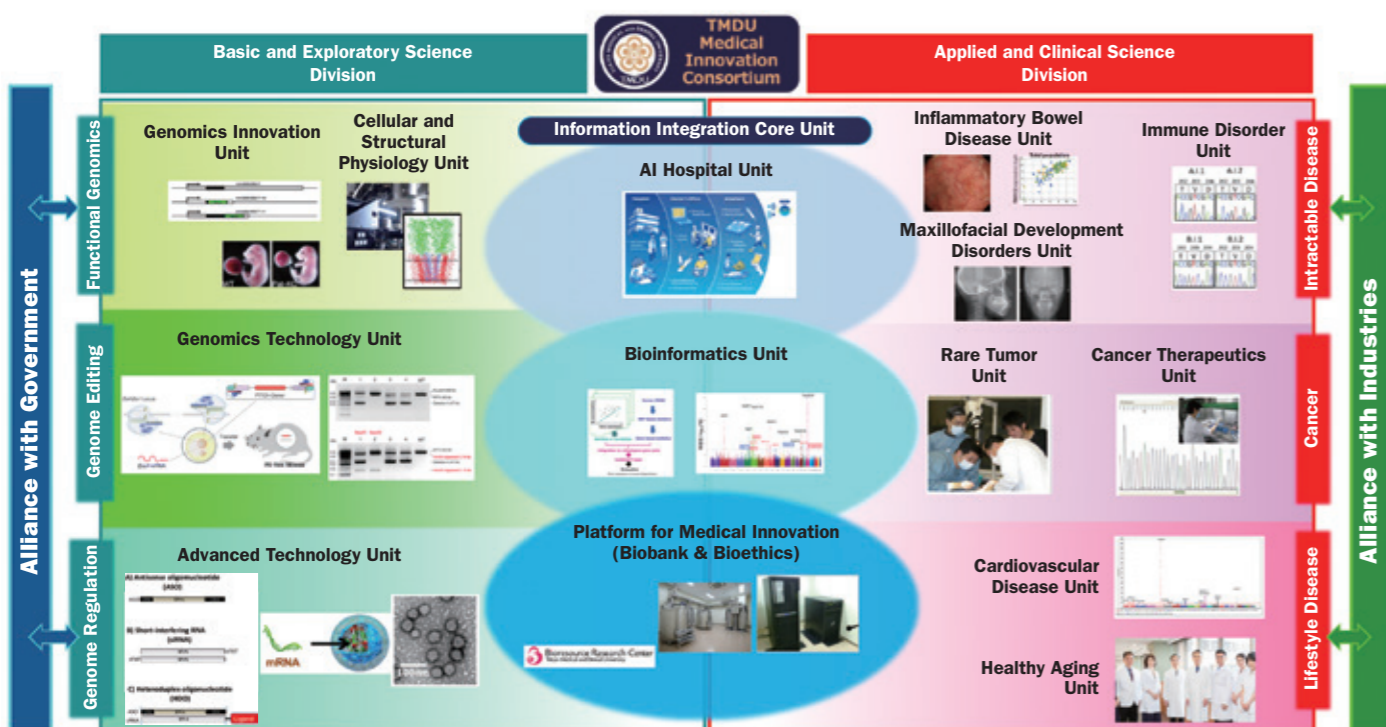
The Medical Innovation Consortium consists of three organizations:

- 1 The Basic and Exploratory Science Division searches for undiscovered genome functions and develops new knowledge and technology.
- 2 The Applied and Clinical Science Division develops therapeutics for refractory diseases, cancer and lifestyle-related diseases.
- 3 The Information Integration Core Unit brings together multi-layered information for future medicine. It provides big-data analysis technology and processes high-quality biological samples and clinical information collected by the Bio Research Center. It also provides support on bio-ethical issues and acts as a bridge between the two other organizations in the Life Course Consortium.



Toshihiro Tanaka

Director, Medical Innovation Consortium



Introducing the Units (Photos: Unit Leaders)

Basic and Exploratory Science Division

Genomics Innovation Unit



Fumitoshi Ishino

Professor, Department of Epigenetics

Contributing to future medicine through elucidation of human genome functions and discovery of disease-related genes

Cellular and Structural Physiology Unit



Yoshinori Fujiyoshi

Distinguished Professor, Cellular and Structural Physiology Laboratory (CeSPL), TMDU Advanced Research Institute (TMDU-ARIS)

Utilizing cryo-electron microscopy, structural and physiological studies available for future medicine

Genomics Technology Unit



Kohichi Tanaka

Professor, Department of Molecular Neuroscience

Promoting the development of genome-editing technology to support pathology elucidation and drug discovery

Advanced Technology Unit



Takanori Yokota

Professor, Department of Neurology and Neurological Science

Promoting the development of highly safe and practical drug discovery by heteroduplex oligonucleotide (HDO)/mRNA drugs

Applied and Clinical Science Division

Inflammatory Bowel Disease Unit



Mamoru Watanabe

Distinguished Professor, TMDU Advanced Research Institute (TMDU-ARIS)

Providing models of human healthy and diseased bowels by organoid, aiming for clinical application of innovative disease treatments

Immune Disorder Unit



Tomohiro Morio

Professor, Department of Pediatrics and Developmental Biology

Pioneering advanced research and personalized medicine in immune diseases by analyzing big data and establishing disease models

Maxillofacial Developmental Disorders Unit



Keiji Moriyama

Professor, Department of Maxillofacial Orthognathics

Analyzing genetic information on rare diseases that occur in the oral and maxillofacial regions to elucidate pathophysiology and develop new treatments

Rare Tumor Unit



Hiroyuki Harada

Professor, Department of Oral and Maxillofacial Surgery

Developing prophylaxis and new treatments for head and neck cancers based on a proven track record in medical and dental fields

Cancer Therapeutics Unit



Sadakatsu Ikeda

Associate Professor, Precision Cancer Medicine, Medical Hospital

Developing a foundation for creating real-world evidence, and contributing to the advancement of data science

Cardiovascular Disease Unit



Toshihiro Tanaka

Professor, Bioresource Research Center

Developing precision medicine of cardiovascular diseases for a healthier super-aging society

Healthy Aging Unit



Kinya Ishikawa

Director, Professor, Center for Personalized Medicine for Healthy Aging

Analyzing genomic, lifestyle, environmental factors, etc., to provide total medical care that contributes to a longevity healthy society

Information Integration Core Unit

AI Hospital Unit



Yoshikazu Nakajima

Professor, Department of Biomedical Information

Advanced integration and analysis of medical information using multidisciplinary artificial-intelligence collaboration

Bioinformatics Unit



Tatsuhiko Tsunoda

Professor, Department of Medical Science Mathematics

Contributing to future medicine by exploring disease-related genes and constructing prediction algorithms for precision medicine

Platform for Medical Innovation (Biobank & Bioethics)



Johji Inazawa

Professor, Department of Molecular Cytogenetics Director, Bioresource Research Center

Contributing to future medical research through construction of the TMDU Biobank infrastructure