

Researchers investigate cancer genomic landscape of Japan

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To establish comprehensive genomic profiles of highly prevalent cancers within the Japanese population



Tokyo Medical and Dental University (TMDU), ACT Genomics (Taipei, Taiwan), and ACTmed (Japan) launched a joint clinical research collaboration aimed to establish comprehensive genomic profiles of highly prevalent cancers within the Japanese population. This retrospective study utilizes next-generation sequencing (NGS) technology to investigate biomarkers associated with solid tumours collected from 2,000 cancer patients in TMDU Biobank Project. The study is expected to lead to the future development of safer and more effective drugs as well as new methods for diagnosis.

The study will interrogate genomic alterations of 440 genes involved in cancer development, treatment response, drug resistance, as well as the immune system using ACT Genomics' flagship cancer gene panellist, ACTOnc^{®+}, to perform comprehensive genomic analyses. TMDU Bioresource Research Center (BRC, Director, Dr. Johji Inazawa) provides formalin-fixed paraffin-embedded (FFPE) samples and clinical information. A CAP-accredited laboratory in ACT Genomics and ACTmed (applying for CAP-accreditation) are responsible for sequencing and bioinformatics analysis. Genomic mutation patterns including mutation, copy number variation (CNV), microsatellite instability (MSI), and tumor mutation burden (TMB) will be integrated with clinicopathological information. The obtained data will be utilized to identify potential biomarkers for prognosis and predict treatment response.

TMDU Medical Hospital and Dental Hospital are large hospitals that more than 500,000 patients visit a year. TMDU BRC was established in 2013 across the university to recruit and store biospecimens and clinical data from consented patients of TMDU Hospitals. Comprehensive informed consent has been obtained from 6,500 patients, and over 15,000 high-quality biospecimens, including genomic DNA from peripheral blood or saliva, serum, fresh frozen tissue samples and FFPE tissue samples, have been stored as of September 2019. The detailed clinical information of those bioresources on BRC server is safely managed and regularly updated from the Electronic Medical Record System. A sample search system has also been organized, and the samples are available for distribution for research purposes to both internal and external researchers with appropriate approval from the Institutional Review Board (IRB). This three-way collaboration will accelerate not only local precision medicine services but also facilitate multinational collaborations