

Japanese firms focus on developing cancer vaccines utilising whole-genome information

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Three companies aim to contribute to overcoming significant social and medical challenges of cancer



The Japanese Foundation for Cancer Research (JFCR), NEC Corporation, and Taiho Pharmaceutical Co. have signed a three-party joint research agreement aimed at developing new cancer vaccines through the utilisation of whole-genome information.

This Joint Research project will be carried out as part of the Japan Agency for Medical Research and Development (AMED)'s 'Action Plan for Whole-Genome Analysis for Cancer and Rare/Intractable Diseases', within the research initiative "Demonstration of the Clinical Utility of Cancer Whole-Genome Analysis and Research on Establishing Systems for Patient Benefit."

JFCR, NEC, and Taiho will design and develop shared neoantigen cancer vaccines that target newly identified cancer-specific antigens (neoantigens) shared among multiple patients with cancer. The initiative aims to demonstrate the therapeutic efficacy of vaccines for a wide range of cancer patients and to be quickly available.

The Joint Research will utilise the unique research information, AI-based drug discovery technologies, and experimental materials held by the three parties. Specifically, JFCR's high quality whole-genome information linked to clinical information for various cancer types with high unmet medical needs, common cancer antigens across patients identified with NEC's proprietary predictive AI technology, and immunological evaluations of the those cancer antigens conducted using Taiho's proprietary evaluation models, will be used to narrow down highly reliable cancer antigens based on experimental data to design shared neoantigen cancer vaccine candidates suitable for clinical trials.

This approach will identify novel cancer-specific antigens shared among multiple patients, including cryptic antigens which are derived from the dark genome, in addition to conventional neoantigens, advancing drug discovery research for shared neoantigen cancer vaccines.

Cancer vaccines induce immune responses against cancer cells, which differ from conventional chemotherapeutic agents. They hold the potential to become innovative treatments for cancers where unmet medical needs remain. Particularly, there is current expectation for the use of cancer vaccines in preventing postoperative recurrence and early-stage settings.