November 28, 2025
Japanese Foundation for Cancer Research
NEC Corporation
Taiho Pharmaceutical Co., Ltd.

JFCR, NEC, and Taiho to Develop Cancer Vaccines Utilizing Whole-Genome Information

~ Development of Shared Neoantigen Cancer Vaccines~

The Japanese Foundation for Cancer Research (JFCR), NEC Corporation (NEC), and Taiho Pharmaceutical Co., Ltd. (Taiho) have signed a three-party joint research (Joint Research) agreement aimed at developing new cancer vaccines through the utilization 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 utilize 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[*1] for various cancer types with high unmet medical needs[*2], 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[*3], 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[*4]. Through this Joint Research, the three parties aim to contribute to overcoming the significant social and medical challenges of cancer.

Tetsuo Noda, M.D., Ph.D., Advisor, Atsushi Ohtsu, M.D., Ph.D., Research Director at JFCR, stated: “We are delighted to launch this new collaborative initiative with NEC and Taiho to develop novel cancer vaccines by leveraging whole-genome data, under the AMED research program based on *the Action Plan for Whole-Genome Analysis 2022* (Ministry of Health, Labour and Welfare). Within this joint research, we will advance the development of shared neoantigen vaccines that integrate both conventional neoantigens and diverse cancer-restricted cryptic antigens derived from the dark genome, identified through AI-driven analysis and immunological validation. Through these efforts, we aspire to realize the next generation of cancer immunotherapy.”

Motoo Nishihara, Executive Officer, Corporate EVP and CTO at NEC, commented: "We are honored to commence this pioneering collaborative research with JFCR and Taiho to create novel cancer vaccines utilizing whole-genome information. In this Joint Research promoted by AMED, we will combine NEC's proprietary AI-based genome analysis technology with insights into dark genome and neoantigens. This will enable us to address diverse HLA types and achieve highly accurate cancer antigen prediction, which will contribute to creating a future where optimal medical care is delivered to a wider range of patients."

Takeshi Sagara, Executive Director, Clinical Development and Medical Affairs, Discovery & Preclinical Research at Taiho, stated: "We believe that future anticancer drug discovery focusing on research and development, not only for advanced cancer, but also for early-stage recurrent cancer, with an eye on the patient journey, will lead to long-term survival and ultimately the overcoming of cancer. We are very pleased to begin this new initiative together with JFCR and NEC toward creating novel cancer vaccines. Utilizing our proprietary patented evaluation models, we will play a key role in evaluating target cancer antigens and identifying clinical trial candidates continuing our challenge in tackling intractable cancers."

About the "Comprehensive Genome Analysis Program for Cancer and Intractable Diseases" and the "Research on Verifying the Clinical Utility of Cancer Genome Analysis and Establishing Systems for Patient Benefit"

The genome analysis program is a national initiative developed under the *Action Plan for Whole-Genome Analysis 2022*. It is implemented through collaboration between Practical Research for Innovative Cancer Control and the Practical Research Project for Rare/Intractable Diseases within AMED’s Genome and Data Platform Project. The program aims to achieve future advances in overcoming cancer and rare diseases by strategically accumulating high-quality genomic data and promoting research, drug discovery, and other applications that leverage these data to deliver high-quality healthcare to the public. One of the research groups within this program, titled “Demonstration of the Clinical Utility of Cancer Whole-Genome Analysis and Research on Establishing Systems for Patient Benefit,” is conducting studies to evaluate the clinical utility of whole-genome analysis. This research group is also pursuing efforts toward the development of novel therapies, including personalized cancer immunotherapy.

About the Japanese Foundation for Cancer Research
The Japanese Foundation for Cancer Research (JFCR) was founded in 1908 as the first organization in Japan specialized for study and control of cancer. JFCR has been playing a leading role in cancer research and treatment for a long time. We have three research centers and a hospital, which are “Cancer Institute” for basic cancer research, “Cancer Chemotherapy Center” for drug development, “Cancer Precision Medicine Center” (CPM Center) and “Cancer Institute Hospital of JFCR” for development of novel cancer treatments. These centers and hospital are working together to achieve our common goal which is cancer control.

About NEC Corporation
NEC Corporation has established itself as a leader in the integration of IT and network technologies while promoting the brand statement of “Orchestrating a brighter world.” NEC enables businesses and communities to adapt to rapid changes taking place in both society and the market as it provides for the social values of safety, security, fairness and efficiency to promote a more sustainable world where everyone has the chance to reach their full potential. For more information, visit NEC at https://www.nec.com.

About Taiho Pharmaceutical Co., Ltd.
Taiho Pharmaceutical, a subsidiary of Otsuka Holdings Co., Ltd. (https://www.otsuka.com/en/), is an R&D-driven specialty pharma focusing on the fields of oncology and immune-related diseases. Its corporate philosophy takes the form of a pledge: “We strive to improve human health and contribute to a society enriched by smiles.” In the field of oncology, in particular, Taiho Pharmaceutical is known as a leading company in Japan for developing innovative medicines for the treatment of cancer, a reputation that is rapidly expanding through their extensive global R&D efforts. In areas other than oncology, as well, the company creates and markets quality products that effectively treat medical conditions and can help improve people’s quality of life. Always putting customers first, Taiho Pharmaceutical also aims to offer consumer healthcare products that support people’s efforts to lead fulfilling and rewarding lives. For more information about Taiho Pharmaceutical, please visit https://www.taiho.co.jp/en/

*1 Whole-genome information derived from Fresh Frozen-processed tumor tissue and corresponding normal controls (peripheral blood), along with RNA analysis data from the tumor tissue.
*2 Refers to unmet medical needs for which no effective treatment currently exists.
*3 Regions within the genome sequence whose function or role has not yet been clarified.
*4 Zaidi, N., Jaffee, E. M. & Yarchoan, M. Recent advances in therapeutic cancer vaccines. *Nature Reviews Cancer*, 25, 517–533 (2025). https://doi.org/10.1038/s41568-025-00820-z