

Japan to design personalized cancer vaccine

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TG4050 is being evaluated in two Phase 1 clinical trials



Transgene, a biotech company in Tokyo that designs and develops virus-based immunotherapies for the treatment of cancer, and NEC Corporation, a leader in IT and network technologies, announced on 15 May 2020 that they will present data demonstrating that the prediction algorithm used to customize TG4050 for each patient is accurate at identifying immunogenic cancer mutations even among a large set of candidate mutations.

These data were jointly generated by the Transgene, NEC and NEC Laboratories Europe GmbH teams and will be presented at the upcoming meeting of the American Association for Cancer Research (AACR) Annual Meeting 2020 (AACR Virtual Annual Meeting II).

TG4050 is an individualized therapeutic vaccine based on Transgene's myvac technology. It is powered by NEC's cutting-edge AI capabilities. Two Phase 1 trials with TG4050 are ongoing in Europe and in the USA.

TG4050 is an individualized immunotherapy being developed for solid tumors that is based on Transgene's myvac technology and powered by NEC's longstanding artificial intelligence (AI) expertise. This virus-based therapeutic vaccine encodes neoantigens (patient-specific mutations) identified and selected by NEC's Neoantigen Prediction System. TG4050 is designed to stimulate the immune system of patients in order to induce a T-cell response that is able to recognize and destroy tumor cells based on their own neoantigens. This individualized immunotherapy is developed for each patient and can be produced in a very short time frame.

myvac is a viral vector (MVA) based, individualized immunotherapy platform that has been developed by Transgene to target solid tumors. myvac-derived products are designed to stimulate the patient's immune system to recognize and destroy tumors using the patient's own cancer-specific genetic mutations.

TG4050 has been designed to target up to 30 patient-specific neoantigens (cancer cell mutations) which are selected using NEC's Neoantigen Prediction System, an advanced AI technology that has already been applied in the field of oncology. The prediction system is based on more than two decades of expertise in AI and has been trained on proprietary immune data,

allowing it to accurately prioritize and select the most immunogenic sequences.

To evaluate the accuracy of the prediction, samples from cancer patients were collected. Healthy and tumor tissue were sequenced, and mutations were identified and ranked using the algorithm. These were then evaluated by measuring the frequency of T cells against the predicted antigens. Although preliminary, the results generated to-date suggest that the system can identify rare immunogenic mutation among a large list of candidates identified in the patients.

Transgene uses its expertise in viral vectorization to incorporate the selected neoantigen sequences in the genome of the Modified Vaccinia virus Ankara (MVA) viral vector. The Company has set up a unique in-house good manufacturing practice (GMP) unit dedicated to manufacturing the individualized batches of TG4050 needed for the clinical development of this novel individualized therapeutic vaccine.

This best-in-class candidate is being evaluated in two Phase 1 clinical trials for patients with ovarian cancers (NCT03839524) and HPV-negative head and neck cancers (NCT04183166).