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Korea opens door to B cell-based personalised cancer vaccinesÃ¢â?¬â?[1]

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With a new AI model to predict neoantigens, a core element of personalised cancer vaccine development



Researchers from the Department of Bio and Brain Engineering at Korea Advanced Institute of Science and Technology (KAIST), in collaboration with Neogen Logic Co., have developed a new artificial intelligence (AI) model to predict neoantigens—a core element of personalised cancer vaccine development—and clarified the importance of B cells in cancer immunotherapy.

Neoantigens are unique markers that distinguish only cancer cells. By adding B cell reactivity, cancer vaccines can move beyond one-time attacks and short-term memory to become a long-term immunity that "remembers" cancer, effectively preventing recurrence.

The research team's new AI model overcomes existing limitations by learning the structural binding characteristics between mutant proteins and B cell receptors (BCR) to predict B cell reactivity. In particular, an analysis of cancer vaccine clinical trial data confirmed that integrating B cell responses can significantly enhance anti-tumor immune effects in actual clinical settings.

Professor Jung Kyoon Choi stated, "Together with Neogen Logic Co., which is currently commercialising neoantigen AI technology, we are conducting pre-clinical development of a personalised cancer vaccine platform and are preparing to submit an FDA IND with the goal of entering clinical trials in 2027." He added, "We will enhance the scientific completeness of cancer vaccine development based on our proprietary AI technology and push forward the transition to the clinical stage step-by-step."