

# Promising Cancer Vaccines

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A customized vaccine using the same mRNA technology as COVID-19 vaccines may help treat people with cancer. To create personalized vaccines, scientists sequence a sample from a patient's tumor and identify which neoantigens (abnormal proteins) are most likely to elicit an immune response. In the KEYNOTE-942 trial, people with advanced melanoma who received nine doses of Moderna's experimental cancer vaccine (mRNA-4157/V940) plus Merck's checkpoint inhibitor Keytruda (pembrolizumab) after surgery had a 44% lower likelihood of disease recurrence or death than those who got Keytruda alone.

Unlike custom-made vaccines, those that target common cancer antigens could be available off the shelf—for example, an experimental DNA vaccine that trains the immune system to recognize HER2 proteins on breast tumors. In a Phase I study, women with locally advanced or metastatic breast cancer who received the optimal dose of the vaccine produced HER-2-specific cancer-fighting T cells, and they fared better than expected: 80% were still alive 10 years later. A Phase II trial is underway. "I have high hopes that we're close to having a vaccine that can effectively treat patients with breast cancer," says study investigator Mary Disis, MD, of the University of Washington.

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