

mRNA Vaccines for Cancer Treatment

Companies announced the start of a Phase III trial that will enroll more than 1,000 people with high-risk melanoma.

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A customized vaccine using the same messenger RNA (mRNA) technology as COVID-19 vaccines may help people fight cancer. To create personalized vaccines, scientists sequence a sample from a patient's tumor and identify neoantigens (abnormal proteins) that are most likely to elicit an immune response.

In a Phase II trial, people with advanced melanoma who received Moderna's experimental cancer vaccine V940 (mRNA-4157) plus Merck's checkpoint inhibitor Keytruda (pembrolizumab) after surgery had a 44% lower likelihood of disease recurrence or death and a 65% lower risk of metastasis or death than those who took Keytruda alone. In July, the companies announced the start of a Phase III trial that will enroll more than 1,000 people with high-risk melanoma.

BioNTech, Pfizer's COVID vaccine partner, is also working on cancer vaccines. In a Phase I trial, 16 people received Roche's checkpoint inhibitor Tecentriq (atezolizumab), a vaccine dubbed autogene cevumeran (BNT122) and chemotherapy after surgery for pancreatic cancer. Half had strong T-cell immune responses against tumor neoantigens, and these responders showed no signs of cancer recurrence during 18 months of follow-up. A randomized Phase II study is now underway, according to the companies.

"It's exciting to see that a personalized vaccine could enlist the immune system to fight pancreatic cancer—which urgently needs better treatments," said senior investigator Vinod Balachandran, MD, of Memorial Sloan Kettering Cancer Center.
