

A CANCER VACCINE AGAINST MELANOMA

Many newspapers are currently talking about the cancer vaccine. It's worth understanding a bit better how it actually works.

To create intismeran (the name given to this personalized vaccine), a sample of a person's tumour is sequenced to identify mutations that have developed in their cancer cells. These mutations mean that a cancer cell expresses abnormal proteins called neoantigens, which act like flags on its surface that the immune system attacks. An mRNA vaccine is developed according to each person's cancer neoantigens, and once injected, it instructs the body to make the neoantigens, priming the body to recognize the threat.

Crucially, intismeran isn't given alone: it's administered together with pembrolizumab, an immunotherapy drug that blocks a checkpoint tumours use to evade immune attack. The vaccine trains T cells to recognize the patient's specific tumour antigens, while pembrolizumab releases the brake that would otherwise stop those T cells from attacking. It's this combination, not the vaccine on its own, that reduced recurrence in the trial. It's also a therapeutic/adjuvant vaccine, given after surgical removal of the tumour, rather than a preventive one.

The main practical obstacles lie in scaling this up. Production is slow: because each vaccine is custom-built from an individual patient's tumour sequence, manufacturing can take several months, a delay some patients with fast-progressing advanced cancers may not survive. Costs are likely to be another major hurdle: because each dose is manufactured individually rather than produced at scale, personalized cancer vaccines are expected to be considerably more expensive than conventional, off-the-shelf therapies (though the article itself doesn't give specific figures).

More broadly, this trial provides proof of principle that personalized cancer vaccines work, opening the way for the same approach to be developed against other tumour types beyond melanoma.

<https://www.nature.com/articles/d41586-026-02612-3>