

Personalised cancer jabs guard against relapses

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Patients with aggressive skin cancer have been protected from relapses after receiving the first personalised anti-tumour vaccines.

The injections, which are matched to the molecular fingerprint of each individual's cancer, appeared to help the body fight the disease as it spread through some patients' bodies and to safeguard others who were in remission after their cancer had come back several times.

Scientists said the therapy could be adapted to any kind of cancer. Unlike other treatments, it can also be custom-

ised when the cancer mutates, meaning that doctors could use it to attack the malignancy with every relapse.

Researchers have been trying for at least five decades to develop a vaccine that makes the immune system wipe out cancers much as it would target the influenza virus after a flu jab. The attempts have largely foundered, in part because cancers vary widely from one individual to another and present an ever-changing target to the body's immune defences.

Two teams of scientists, one at Biontech, a German biotechnology company, and the other at the Dana-Farber Cancer Institute in the US, may have

solved this problem by designing vaccines based on up to 20 distinctive chemicals found on the surface of each patient's cancer cells. The two pilot studies, which between them involved 19 patients with advanced melanoma and were published side by side in the journal *Nature*, suggest that these personal formulae galvanised the immune system to shrink tumours and police the body against their return.

Biontech is planning further trials of its vaccine, which is built from RNA — the genetic messenger molecule — using a semi-automated system that analyses the genetic signature of a patient's cancer. "The beauty of this

vaccine is that it is universal," Ugur Sahin, the company's founder who led the study, said. "It is agnostic for the indication or type of cancer... It could become the common denominator that accompanies a recurrent patient in each line of their treatment."

Independent experts said that the two approaches looked promising but that their efficacy needed to be supported by larger studies.

Kevin Harrington, professor of biological cancer therapies at the Institute of Cancer Research in London, which is working on similar treatments, said that the findings were "tantalising" but not yet conclusive. "Generating a vac-

cine by analysing a patient's tumour is a sensible approach, which could yield a smarter, kinder way to treat someone's disease by targeting it specifically," he said. "These results provide very tantalising circumstantial evidence that personalised vaccines can be used to boost the immune system to fight cancer.

"While encouraging, we cannot yet be sure from these results that the vaccine is directly driving the outcomes seen in the patients. Nevertheless there is good reason to be convinced that the vaccine is priming the immune system to attack the cancer or boosting the performance of existing approved immunotherapy drugs."