

# Immune-boosting drug shows promise against lung cancer

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Cancer has one less place to hide. A drug that stops tumours camouflaging themselves from the immune system appears to significantly boost survival rates in people with a form of lung cancer that is almost incurable unless removed surgically before it spreads. Some people who received the drug have seen their tumours disappear completely.

Lung cancer is the world's most deadly cancer, [killing over 4000](#) people a day worldwide. Only 15 per cent of those diagnosed survive for five years or more, compared with 89 per cent of those with breast cancer.

Many common cancers evade detection by silencing part of the immune system. Rather than targeting tumours by destroying them through radiation or chemotherapy, it might be possible to treat them by finding ways to reactivate the immune system so it will destroy cancer cells itself.

A drug designed to do this, nivolumab, has now been tested in 129 people for whom other treatments had already failed. The group had non-small cell lung cancer (NSCLC) – the most common form of the disease, accounting for 85 per cent of all cases. Participants received either 1, 3, or 10 milligrams of nivolumab per kilogram of bodyweight daily for up to 96 months.

## Waking the immune system

One way that cancer cells evade the immune system is by interacting with a molecule on the surface of white blood cells called PD-1. Nivolumab blocks PD-1 so tumour cells can't interact with it. This reawakens the immune system, allowing it to attack the cancer.

The two-year survival rate of the group on nivolumab was more than double that in a group given standard therapies. "We found 1 in 4 patients alive at two years, compared with 1 in 10 for conventional chemotherapy," says Michael Giordano, head of oncology development at [Bristol-Myers Squibb](#), the company behind nivolumab.

The results were released this week ahead of the [annual meeting of the American Society of Clinical Oncology](#), which opens in Chicago at the end of May. A larger trial of 500 people is now being organised.

A separate trial involving 20 people hinted at why some with lung cancer respond better to nivolumab than others. Those who had a molecule called PD-L1 present in their tumour were significantly more likely to respond than those without it. "This is an important finding, because there's a significant enrichment in the likelihood of a response if patients are PD-L1 positive," says Giordano.

## Melanoma

Last year, nivolumab was reported to produce [dramatic improvements in people with advanced malignant melanoma](#). The Chicago meeting will hear of new, encouraging results from melanoma trials: of 107 people treated with nivolumab at least three years ago as a last resort, 48 per cent were alive at 2 years, with 41 per cent still alive after three years. "We've gone from zero survival at three years to 40 per cent," says Giordano. "That's very clear evidence of the value of immune-based therapies."

A combination of nivolumab with another immunotherapy drug, called ipilimumab, also developed by Bristol-Myers Squibb, is also working well in kidney cancer that has spread to other organs.

Nivolumab is not the only PD-1 inhibitor being tested against lung cancer. At the Chicago meeting, the drug company Merck [will be presenting new results](#) of tests of its drug codenamed MK-347, and Roche will be [releasing trial data](#) on how a similar immunotherapy agent, MPDL3280A, has performed in a trial of people with bladder cancer.

"The data from these studies offer additional evidence that [immunotherapy](#) may play an increasingly important role in cancer treatment options," says Maggie Callaghan of the Memorial Sloan Kettering Cancer Center in New York, who was not involved in the research.

"The results add to a growing body of evidence that throwing switches of the immune system can have a profound effect on cancer," says [Peter Johnson](#), chief clinician at Cancer Research UK. He points out that cancer cells can out-evolve and defy drugs targeted at particular mutations, but the immune system can co-evolve and keep pace with the cancer. "If your immune system is working properly, it will follow the tumour round the room," he says.