

Scientists trick body's viral response to combat cancer

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German researchers on Wednesday presented a Trojan horse method of attacking cancer, sneaking virus impersonators into the human body to unleash an anti-tumour immune offensive.

Tested in only three people so far, the treatment claims to be the latest

advance in immunotherapy, which aims to rouse the body's own immune army against disease.

Made in the lab, this Trojan horse is composed of nanoparticles containing [cancer](#) RNA—a form of genetic coding—enclosed by a fatty acid membrane.

The particles are injected into patients to simulate a virus invasion, and infiltrate specialised [immune cells](#).

These so-called dendritic cells decode the RNA imbedded in the nanoparticles—triggering, in turn, the production of cancer antigens.

The antigens then activate cancer-fighting T cells, and thus prime the body for an all-out, anti-tumour assault.

Following experiments in mice, three people with advanced skin cancer were given low doses of the treatment, in the first step of the long and cautious process to test new drugs on humans.

All developed a "strong" immune response, the team reported in the journal *Nature*.

If further trials find the therapy works, they added, the method could help pave the way to the highly-sought "universal" treatment against all cancer types.

The new treatment is called an RNA vaccine—it works just like a preventive vaccine by mimicking an infectious agent and training the body to respond to it.

"Impressively, immune responses were observed" in the three cancer patients, expert commentators Jolanda de Vries and Carl Figdor of the

Radboud University Medical Center in Nijmegen in the Netherlands wrote in an analysis, also published by *Nature*.

But they cautioned "it is still early days, and a larger, randomised trial will be needed to validate these findings."

Immunotherapy is already used in treating some forms of cancer, but there is as yet no universal vaccine—the holy grail of cancer therapy.

Unlike viruses, bacteria or fungi which can be targeted with drugs, cancer cells are not intruders but our own cells gone haywire due to DNA damage.

This explains why they mostly circulate undisturbed by the body's immune system.

Finding drugs that can kill diseased cells without harming healthy ones has proven very difficult.

Chemotherapy, for example, targets fast-dividing cells—good and bad alike.

Immunotherapy seeks to activate the body's own immune response without killing healthy [cells](#).

"Although the research is very interesting, it is still some way away from being of proven benefit to patients," immunotherapy professor Alan Melcher of The Institute of Cancer Research in London, told the Science Media Centre.

One outstanding issue was "the practical challenge of manufacturing nanoparticles for widespread clinical application."

More information: *Nature*,
[nature.com/articles/doi:10.1038/nature18300](https://doi.org/10.1038/nature18300)

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