# Breakthrough discovery could lead to ‘one-size-fits-all’ cancer treatment

New type of T-Cells can recognise and kill most types of cancer

A newly discovered type of killer immune cell has raised the prospect of a “universal” [cancer](https://www.independent.co.uk/topic/Cancer) therapy, scientists say.

Researchers at Cardiff University suggest the new [T-cell](https://www.independent.co.uk/topic/t-cell-cancer-therapy) offers hope of a “one-size-fits-all” cancer therapy.

T-cell therapies for cancer — where immune cells are removed, modified and returned to the patient's blood to seek and destroy cancer cells — are the [latest](https://www.independent.co.uk/voices/immunotherapy-the-secret-of-teaching-the-body-s-immune-system-to-attack-cancer-cells-a6875991.html) paradigm in cancer treatments.

The most widely used is known as CAR-T and is personalised to each patient.

However, it only targets a limited number of cancers and has not been successful for solid tumours, which make up the majority of cancers.

But scientists have now discovered T-cells equipped with a new type of T-cell receptor (TCR), which recognises and kills most human cancer types while ignoring healthy cells.

**Health news in pictures**

It recognises a molecule present on the surface of a wide range of cancer cells, and normal cells, and is able to distinguish between healthy and cancerous cells — killing only the latter.

Professor Andrew Sewell, lead author on the study from [Cardiff University's](https://www.independent.co.uk/topic/cardiff-university?CMP=ILC-refresh) School of Medicine, said it was “highly unusual” to find a TCR with such broad cancer specificity and this raised the prospect of “universal” cancer therapy.

He added: “We hope this new TCR may provide us with a different route to target and destroy a wide range of cancers in all individuals.

“Current TCR-based therapies can only be used in a minority of patients with a minority of cancers.

---“Cancer-targeting via MR1-restricted T-cells is an exciting new frontier — it raises the prospect of a 'one-size-fits-all' cancer treatment; a single type of T-cell that could be capable of destroying many different types of cancers across the population.

“Previously, nobody believed this could be possible.”

Conventional T-cells scan the surface of other cells to find anomalies and eliminate cancerous cells, but ignore cells that contain only “normal” proteins.

The scanning recognises small parts of cellular proteins that are bound to cell-surface molecules called human leukocyte antigen (HLA), allowing killer T-cells to see what is occurring inside cells by scanning their surface.

But the study, published in Nature Immunology, describes a unique TCR that can recognise many types of cancers via a single HLA-like molecule called MR1.

Unlike HLA, MR1 does not vary in the human population, meaning it is a hugely attractive new target for immunotherapies.

In the lab, T-cells equipped with the new TCR were shown to kill lung, skin, blood, colon, breast, bone, prostate, ovarian, kidney and cervical cancer cells, while ignoring healthy cells.

To test the therapeutic potential of these cells in living subjects, the researchers injected T-cells able to recognise MR1 into mice bearing human cancer and with a human immune system.

Scientists say this showed encouraging cancer-clearing, comparable to the now NHS-approved CAR-T therapy in a similar animal model.

They were also able to demonstrate that T-cells of [melanoma](https://www.independent.co.uk/topic/melanoma) patients modified to express this new TCR could destroy not only the patient's own cancer cells, but also other patients' cancer cells in the laboratory, regardless of the patient's HLA type.

The researchers are now experimenting to determine the precise molecular mechanism by which the new TCR distinguishes between healthy cells and cancer.

They hope to trial the new approach in patients towards the end of the year.

Professor Awen Gallimore, of the University's division of infection and immunity, and cancer [immunology](https://www.independent.co.uk/topic/immunotherapy) lead for the Wales Cancer Research Centre, said: “If this transformative new finding holds up, it will lay the foundation for a universal T-cell medicine, mitigating against the tremendous costs associated with the identification, generation and manufacture of personalised T-cells.

“This is truly exciting and potentially a great step forward for the accessibility of [cancer](https://www.independent.co.uk/topic/Cancer) immunotherapy.”

第二篇

# New cancer drugs could be made available faster following clinical trial reform

‘We owe it to our patients to bring potentially more effective novel treatments into the clinic as quickly as possible’

New drugs to help treat cancer patients could be made available faster under reforms to the way medicines are tested.

Traditionally new medications go through a series of [clinical trials](https://www.independent.co.uk/topic/clinical-trials) testing the drugs for how effective and safe they are for use in humans.

But a group of experts have called for reforms to this model with new drugs tested for multiple issues at the same time.

The Medicines and Healthcare Products Regulatory Agency (MHRA), which oversees and approves new medicines in the UK, has said it supports the idea and recommendations which have been published in the British Journal of Cancer.

The proposals come as the government revealed plans in the Queen’s Speech for new legislation on medicines to help improve access to drugs post-Brexit.

Under the new trials, called complex innovative design (CID) trials, the amount of time it takes to get new treatments approved could be significantly reduced, meaning patients getting access faster.

The CID approach allows researchers to carry out more complex trials that address multiple clinical questions at once.

This would mean a drug being simultaneously evaluated for safety and effectiveness with different cancer types, which can change as the trial progresses.

But CIDs are more complicated to run and there are currently no practical guidelines on how to do this across Europe.

The experts, funded by [Cancer Research UK](https://www.independent.co.uk/topic/CancerResearchUk), the National Institute for Health Research and the health departments in Scotland and Wales, have called on regulators, the [pharmaceutical industry](https://www.independent.co.uk/topic/pharmaceutical-industry) and clinicians to now back their proposals.

Professor Pam Kearns, director of the Cancer Research UK clinical trials unit at the University of Birmingham and co-author of the paper, said: “We owe it to our patients to bring potentially more effective novel treatments into the clinic as quickly as possible, and these recommendations will ensure we have good quality CID trials in place to deliver this promise.”

The group, called the Experimental Cancer Medicine Centre network, includes academics, funders, regulators, pharmaceutical industry representatives and patients.

They have set out 10 new recommendations, which include early involvement with regulators, better planning of trials and more involvement of patients as well as better statistical analysis, leadership and training for staff to deliver the trials.

Dr Kirsty Wydenbach, from the MHRA, said the work was of “huge value”, adding: “We support CID trials and acknowledgement of the challenges of planning and conducting such trials is key. Understanding of the regulatory aspect is important for researchers, but this paper has also been important for MHRA to be able to appreciate the complete process and wider recommendations that can now be considered in our work moving forward.”

Dr Ali Hansford, head of regulatory strategy policy at the Association of the British Pharmaceutical Industry and co-author of the recommendations, said: “Doing more of this type of research in the UK would be a win for patients, industry and the NHS.”

第三篇

# Cervical cancer 'could be eliminated' by vaccine and improved screening

NHS completes rollout of new testing method for human papilloma virus

[Cervical cancer](https://www.independent.co.uk/topic/cervical-cancer) has the potential to be eliminated thanks to upgraded screening and jabs for children, [NHS](https://www.independent.co.uk/topic/NHS) experts say.

The health service has completed its rollout of a new screening method which sees cervical samples first checked for the human papilloma virus ([HPV](https://www.independent.co.uk/topic/hpv)).

HPV causes almost all cases of cervical [cancer](https://www.independent.co.uk/topic/Cancer) and can also cause cancers in other genital areas, such as the vagina, vulva, penis and anus. The infection spreads through close skin-to-skin contact, usually during sex or oral sex.

Until now, cervical screening samples have been examined and those that showed possible cell changes were then tested for HPV.

But this has now being switched around, with cells first tested for HPV infection, and only those that have the virus examined for abnormal cells.

This means any sign of infection can be spotted at an earlier stage before cancer goes on to develop.

Research has also shown that the new method picks up far more cases of pre-cancerous lesions than the old one.

There are 2,500 new cases of cervical cancer in England every year and a quarter of these could be prevented with the new method of testing.

Alongside the new screening, all 12-and-13-year-olds in school years eight are offered a vaccine to protect against HPV.

Currently, the national NHS HPV [vaccination](https://www.independent.co.uk/topic/vaccination) programme uses the vaccine Gardasil, which protects against four types of HPV that cause most cases of cancer.

Last year, researchers said cervical cancer could be effectively eliminated in most countries around the world by the end of the 21st century thanks to the jab and improved screening.

Professor Peter Johnson, the NHS’ national clinical director for cancer, said the new HPV cervical screening test “will save lives”.

He added: “It is vitally important that all eligible people attend for their screening appointments, to keep themselves safe.

“Combined with the success of the HPV vaccine for both boys and girls, we hope that cervical cancer can be eliminated altogether by the NHS in England.

“The chances of surviving cancer are at a record high, but there is always more we can do, as we continue to deliver our Long Term Plan.”

Prof Johnson added that cervical cancer often causes no symptoms during the early stages of the disease, which is why it is “especially important that people attend their tests and that those who are eligible get vaccinated against HPV.”

Robert Music, chief executive of Jo’s Cervical Cancer Trust, said: “It is exciting that we are seeing advances in cervical cancer prevention and must continue to look to the future to make sure our cervical screening programme continues to adapt and evolve.

“The day that cervical cancer is a disease of the past is one we should be aiming to get to as soon as possible.

“Cervical screening is such an important test, but there are many reasons it can be difficult to attend.

“We must continue to understand and tackle these to ensure as many women benefit from this far more sensitive test and we save as many cancers diagnoses and lives as possible.”

In 2018/19, 71.9 per cent of eligible women aged 25 to 64 were screened for cervical cancer, with experts expressing concern about low uptake among young women.

When it came to the jab, 83.8 per cent of girls completed the two-dose HPV vaccination course in 2017/18, up from 83.1 per cent the previous year.

Data on boys is not yet available.