

A cancer cure in just one jab? British scientists say they have found the disease's 'Achilles heel' paving the way for 'revolutionary' new treatments

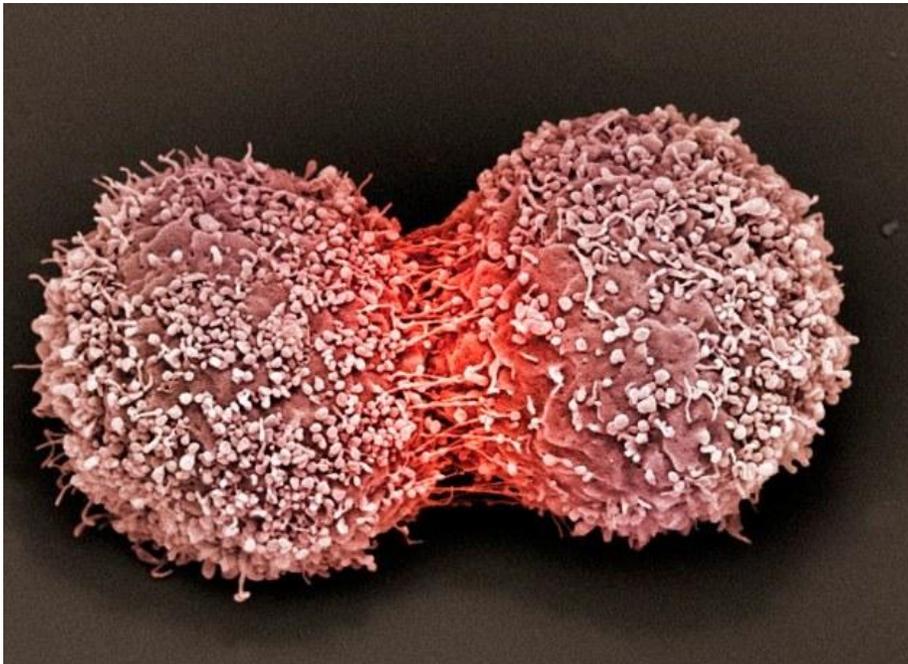
By Fiona Macrae Science Editor For The Daily Mail,
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Cancer's Achilles' heel has been pinpointed by British scientists, raising hopes of a revolution in treatment – and even a cure.

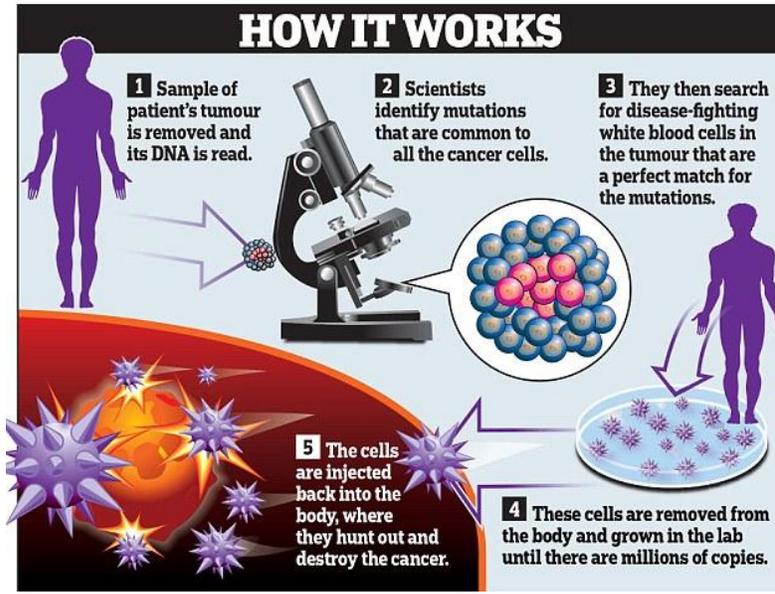
In future, patients could be given bespoke therapies that hunt out and destroy every single cancer cell, wherever it is in their body.

The first people could be treated in as little as two years and, eventually, everyone from those in the early stages of cancer, to those who are riddled with the disease could benefit.

A spokesman for Cancer Research UK, which funded the landmark study, said that if it lives up to its promise, 'it could prove a revolutionary way to treat or even cure cancer'.



Hope: The breakthrough announced today means patients could be given bespoke therapies that hunt out and destroy every single cancer cell, wherever it is in their body



Despite advances in medicine, cancer claims more than millions of lives worldwide each year - and even so-called 'wonder drugs' only give patients an extra few weeks of life, on average.

The study, led by experts from University College London, gets to the heart of why existing treatments are often of limited benefit.

Although we think of a tumour as being a lump of identical cells, it grows and mutates over time.

Existing drugs typically zero in on one type of cell and, if the cancer changes too much, a medicine that seemed to help will stop working.

And even if the drug seems to wipe out the cancer, some highly-mutated cells may still be lurking and the disease returns.

However, some hardy mutations are found on every single cancer cell in a tumour and the UCL researchers have found a way of identifying them.

They have also shown that some lung cancer patients have disease-fighting white blood cells that are a perfect match for these common mutations.

In future, these white blood cells could be removed from the patient, grown up in the lab and then put back into their body to kill their cancer.

In theory, they should wipe out every cell.

Another option is use the information on the mutations to create a vaccine – a drug that tells the immune system to fight the cancer.

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Study co-author, Professor Charles Swanton

The approach is likely to be particularly successful in lung and skin cancer. But it is hoped that people with other forms of the disease, including breast and prostate cancer will also benefit.

And while the treatment could be given at any stage of the disease, it is likely to be of particular use to whose cancer is so advanced that they have run out of

options.

Study co-author, Professor Charles Swanton said: 'It offers the hope we might just be able to turn the tide against advanced cancer – something we desperately want for our patients.'

Some immunotherapies, treatments that use the immune system and its white blood cells to beat cancer, are already available, and producing stunning results. In some cases, people thought to have only a few months to live have been able to return to work and live normal lives once more.

However, despite their promise they don't work for everyone.



Understanding: The study, led by experts from University College London, gets to the heart of why existing treatments such as chemotherapy

Photo by: pictured

Professor Swanton said: 'We think this approach will be very important for the treatment of cancer.

'In a few years' time, we will be using immunotherapy for cancer just as much as chemotherapy today.'

He cautioned that that the research is still at an early stage and so hasn't been used to treat any patients.

But while the history of cancer research is littered with failures, he hopes this has finally identified an Achilles' heel.

HOW THE TREATMENT WORKS

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The professor said: 'This is really fascinating and takes personalised medicine to its absolute limit, where each patient would have a unique, bespoke treatment.'

'I will be disappointed if we haven't treated a patient within two years.'

'Do we think it's going to work? I hope this is going to result in improvements in survival outcomes.'

'If this doesn't work I'll probably hang my up hat and do something else.'

Professor Swanton, whose work was part-funded by the medical research charity the Rosetrees Trust, acknowledged that the bespoke nature of the treatment will make it very expensive.

However, existing drugs are already costly.

New cancer medicines typically cost £70,000 but only extend life by just over two months.

In contrast, a therapy that wipes out a patient's cancer would allow them to return to work and contribute to the economy again.

Professor Peter Johnson, Cancer Research UK's chief clinician, said: 'This fascinating research gives us vital clues about how to specifically tailor treatment for a patient using their immune system.'

He added that the 'very exciting piece of fundamental cancer science will impinge in a huge way on way we treat cancer in the future.'

Dr Alan Worsley, also of Cancer Research UK, said: 'Thanks to the ingenuity of our cancer researchers we may have found the tools necessary to give immunotherapy the precision guidance that patients so desperately need.'

Dr Marco Gerlinger, an immunotherapy expert at the Institute of Cancer Research, London, said the work was 'intriguing' but at too early a stage to be sure it will help patients.

He added: 'The new study adds to the evidence showing how the ability to change and evolve enables cancers to relentlessly get their way, and shows that finding ways to stop cancers from evolving is likely to be key to defeating cancer.'