**BBC**

**Vaccine hope for prostate cancer sufferers**

By James Gallagher Health reporter, BBC News

**Date = 19 June 2011 Last updated at 18:13**

**Word Count = 467 (470).**

**Sentence Count = 23 (including title and “mobilising defences” subheading).**

A new approach to developing cancer vaccines has been used to treat prostate tumours, an international team of scientists has said.

DNA from healthy cells was used to create a vaccine which cured 80% of mice, [Nature Medicine reports](http://dx.doi.org/10.1038/nm.2390).

The researchers believe the principle could be applied to other cancers and have begun studies on melanoma.

Cancer Research UK said it was a significant development, but human trials would be needed.

Cancer vaccines are not new. Unlike traditional vaccines which protect against infection, these work by making the immune system attack tumours already in the body.

Specifically they target markers on the surface of cancerous cells, known as antigens.

Professor Alan Melcher, of the University of Leeds, said: "The biggest challenge in immunology is developing antigens that can target the tumour without causing harm elsewhere."

**Mobilising defences:**

Researchers in Leeds and at the Mayo Clinic, in the US, broke up chunks of DNA from healthy prostate cells and inserted them into a virus.

The mice were then repeatedly infected with the virus.

The prostate DNA made the virus produce a wide range of prostate antigens, so when the immune system battled the virus it learned to attack the cancerous prostate cells.

Crucially, healthy prostate cells and other parts of the body were not affected.

In the lab, a course of nine injections with the virus cured 80% of mice with prostate tumours.

Professor Melcher said human trials were years rather than months away.

"We have reason to be quite excited. It's not out-of-the-blue research, but based on immunotherpay and virus treatments which are looking very promising and that is what is really exciting," he added

Doctors recently claimed that the drug Ipilimumab, which stimulates the immune system to fight cancer, could [increase life expectancy](http://www.bbc.co.uk/news/13677381).

Researchers say using healthy DNA is a "proof of principle" which could have implications for vaccines for other cancers. They are trialing the same technique in mice with skin cancer.

Professor Peter Johnson, Cancer Research UK's chief clinician, said: "This is an interesting and significant study which could really broaden out the field of immunotherapy research.

"Although the vaccine didn't trigger the immune system to overreact and cause serious side effects in mice, it will need to be further developed and tested in humans before we can tell whether this technique could one day be used to treat cancer patients."

Dr Kate Holmes, research manager at the Prostate Cancer Charity, said the study provided "new hope".

"Although we are hopeful that the results of this study could help to form the basis of a new cancer vaccine in future, it is important to remember that the researchers have only investigated the potential of their vaccine in mice.

"Further research looking at its effect in men is needed. We look forward to the outcome."

DAILY MAIL (London)

June 20, 2011 Monday

**THE PROSTATE CANCER JAB WITH '80% SUCCESS RATE'**

**BYLINE:** BY DAVID DERBYSHIRE

**LENGTH:** 500 words

A **VACCINE** that destroys prostate **cancer** tumours while leaving healthy tissue untouched has been developed.

In tests, the jab wiped out the **cancer** in 80 per cent of mice suffering from the disease, with no serious side effects.

Its creators call the gene therapy behind it a 'completely new approach', and say human trials could start within a few years.

ProfessorÊAlan **Melcher** of the University of **Leeds**, who co-led the research, said that although the jab had only been tested on prostate tumours, the technique could work on a range of other deadly **cancers** including breast, lung and pancreatic.

Progress has already been made on a similar treatment for melanoma, the most dangerous form of skin **cancer.**

'So far it looks safe, and if it continues to look safe there's nothing we would rule out,' Prof **Melcher** said.

**Vaccines** work by stimulating the body's immune system to recognise antigens Ð proteins that are found on the surfaces of cells.

Most are designed to teach the body to seek out and destroy viruses or bacteria, but scientists are developing others that provoke a response to **cancer** cells.

Unlike a conventional **vaccine** given to prevent infection, this treatment could be used after someone has contracted **cancer.**

Researchers collected thousands of randomly-selected snippets of genetic code taken from a healthy prostate, and inserted them into a virus.

The modified virus was then cultured in a laboratory and injected into the bloodstreams of a small number of mice with prostate **cancer**.

The mice's immune systems produced an array of antibodies Ð each one geared up to recognise a different antigen on the surface of a prostate **cancer** cell.

Professor Richard Vile of the Mayo Clinic in Rochester, Minnesota, which also took part in the study, explained: 'The immune system thinks it is being invaded by the viruses, which are expressing **cancer**-related antigens that should be eliminated.'

The researchers used two versions of the **vaccine**: one based on human prostate tissue, and the other using mouse tissue.

Both worked, although the human version was more effective, eradicating the **cancer** in 80 per cent of the mice it was tested on, the teams report in the journal Nature Medicine.

Past attempts at gene therapy **cancer vaccines** often used just one gene from a tumour cell to stimulate the immune system.

But finding the right gene has been difficult, and scientists feared using two or more would prompt an immune response too strong for the patient to handle.

However, injecting the **vaccine** into the blood, rather than the tumour itself, appeared to prevent the immune system from going into overdrive and attacking healthy tissue.

Professor Peter Johnson, chief clinician at **Cancer** Research UK, which funded the **Leeds** team, said the **vaccine** 'will need to be further developed and tested in humans before we can tell whether this technique could one day be used to treat **cancer** patients'.

Each year, around 35,000 men in the UK are diagnosed with prostate **cancer** and 10,000 die from the disease.

**LOAD-DATE:** June 19, 2011

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**LOAD-DATE:** June 19, 2011

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**PUBLICATION-TYPE:** Papers

2 of 7 DOCUMENTS

The Express

June 20, 2011 Monday

Edition 3;

National Edition

**Doctors hail miracle jab which can 'seek and destroy' tumours**

**BYLINE:** Willey

**SECTION:** NEWS; Pg. 5

**LENGTH:** 496 words

A **CANCER** jab that can wipe out tumours has been hailed as a major step forward in tackling the disease.

The revolutionary treatment stimulates the immune system so that it seeks out and destroys **cancer** cells.

The **vaccine** will not fully cure **cancer** but researchers believe it will help make the disease more like a chronic illness than a merciless killer.

**Cancer** victims given the jab should be able to live much longer with the disease under control.

Scientists from **Cancer** Research UK and the University of **Leeds** discovered a DNA-based way to activate the immune system to kill tumours without any side-effects.

Attacked

Normally the immune system does not recognise **cancer** as a threat and therefore ignores it. The new treatment fools the system into thinking the **cancer** is a virus and must be attacked.

Along with experts at the Mayo Clinic in the US, they injected doses of the new **vaccine** into the bloodstream of cancerous mice.

The immune system of the mice reacted and attacked tumours but left healthy cells intact.

Importantly, although the method "woke up" the immune system, it did not send it into overdrive.

The research was done on prostate **cancer** but the technique is also showing promise in treating melanoma, say the researchers, whose work is published in Nature Medicine. The experts say it is also a candidate for treating many of the more aggressive **cancers,** such as lung, brain and pancreatic **cancer.**

Professor Alan **Melcher,** author of the study based at the **Cancer** Research UK Centre at the University of **Leeds**, said: "The biggest challenge in immunology is developing antigens (immune system triggers) that can target the tumour without causing harm elsewhere.

By using DNA from the same part of the body as the tumour, inserted into a virus, we may be able to solve that problem.

"This may not be a cure but it will get the **cancer** under control meaning people will live longer with it under control. **Cancer** will become more of a chronic illness than a death sentence."

It is hoped clinical trials could begin in as little as two or three years. If shown to be as successful in humans, it could help people to live tumour-free with fewer sideeffects than those experienced from current therapies.

Professor Peter Johnson, **Cancer** Research UK's chief clinician, said: "This is an interesting and signifi-cant study which could really broaden out the field of immunotherapy research."

Dr Richard Vile, an immunologist at the Mayo Clinic and a lead author of the study, said: "We are hopeful that this will overcome some of the major hurdles which we have seen with immunotherapy **cancer** research."

Dr Kate Holmes, research manager at The Prostate **Cancer** Charity, said: "Significantly, the **vaccine** developed in this study has shown to not cause any damage to normal, healthy cells in mice whilst helping to kill the prostate tumour.

"Further research looking at its effect in men is needed before we can be sure of the usefulness of this **vaccine**. We look forward to the outcome."

**LOAD-DATE:** June 20, 2011

**LANGUAGE:** ENGLISH

**GRAPHIC:** Injection could mean **cancer** patients live much longer and have a much better quality of life, says research team

**PUBLICATION-TYPE:** Newspaper

**JOURNAL-CODE:** DXP

The Mirror

June 20, 2011 Monday

3 Star Edition

**VIRUS KEY TO CANCER**

**BYLINE:** MIKE SWAIN

**SECTION:** NEWS; Pg. 24

**LENGTH:** 214 words

**CANCER vaccines** could become the next generation of therapy after a new method of treatment was discovered.

Scientists have had problems targeting tumours with jabs without causing side effects.

But they have now taken a "library of DNA" from the same organ as a tumour and inserted it into a virus to attack **cancers.** This wakes up the immune system, which often ignores **cancers,** and gets the patient's body to fight back against any growths.

**Cancer** Research UK scientists made "exciting progress" by producing doses of a **vaccine** made from a cattle virus.

They used the DNA injections to successfully treat mice with prostate **cancer** and hope to use it alongside chemotherapy to kill a range of tumours.

Human trials using different viruses, such as herpes, are already being carried out. The **vaccine** has the advantage of being injected into blood. Previously they had to be injected directly into tumours, which is difficult.

Prof Alan **Melcher** led the University of **Leeds** study, published in the journal Nature Medicine. He said: "The biggest challenge is developing antigens that can target the tumour without causing harm elsewhere. By using DNA from the same part of the body, we may solve it.

"We are hoping this is the next generation of **vaccines** and it is looking exciting and promising."

**LOAD-DATE:** June 20, 2011

**LANGUAGE:** ENGLISH

**GRAPHIC:** HOPE **Cancer vaccine**

**PUBLICATION-TYPE:** Newspaper

The Times (London)

June 20, 2011 Monday

Edition 1;

National Edition

**Hope on prostate cancer after vaccine cures disease in mice**

**BYLINE:** Chris Smyth

**SECTION:** NEWS; Pg. 18

**LENGTH:** 373 words

**Cancer** sufferers have been given hope of a revolutionary therapy after scientists developed a **vaccine** that cured prostate **cancer** in mice.

The jab stimulated the mice's immune system to destroy the tumour, with no side-effects and without the need for any other treatment. Scientists believe that the **vaccine** could work in humans, and hope to begin trials in about two years.

Researchers at the University of **Leeds** and the Mayo Clinic in Rochester, Minnesota created a **vaccine** using multiple fractions of genes from healthy human prostate tissue. These were inserted into a virus and injected into the bloodstream.

Once in the body, the genes created an array of antigens - proteins which sparked the body's immune system to create antibodies to attack them.

The immune system often does not recognise the antigens on **cancer** cells as a target, but by delivering many of them at the same time in a virus, the body is stimulated to see them as an enemy.

Crucially, the researchers found that while antibodies attacked the **cancer,** healthy tissue was left alone. "Because the **cancer** also makes these antigens, when the immune system is stimulated in this way, it attacks the tumour," said Professor Alan **Melcher** of the University of **Leeds**, co-author of the study, published in the journal Nature Medicine.

"The biggest challenge in immunology is developing antigens that can target the tumour without causing harm elsewhere. By using DNA from the same part of the body as the tumour, inserted into a virus, we may be able to solve that problem."

"It is very early days in terms of applying this to patients. What we can say is that viruses similar to the one that we used here have been used in [**vaccine**] trials and are looking quite promising, the platform is there and appears safe and deliverable."

Each year 35,000 men in the UK are diagnosed with prostate **cancer** and 10,000 die from the disease. Scientists believe that the same approach could be used on other **cancers,** including some of the deadliest types affecting the lung, brain and pancreas.

Kate Holmes, research manager at The Prostate **Cancer** Charity, said: "The **vaccine** developed in this study has been shown to not damage healthy cells in mice while helping to kill the prostate tumour."

**LOAD-DATE:** June 20, 2011

**LANGUAGE:** ENGLISH

**PUBLICATION-TYPE:** Newspaper

**JOURNAL-CODE:** TIM

**REUTERS**

**Scientists develop new approach for cancer vaccine**

By Kate Kelland

**Date = Sun Jun 19, 2011 4:18pm EDT**

**Word Count = 533 (round to 530).**

**Sentence Count = 22 (including title and “cells” subheading).**

LONDON (Reuters) - Scientists have developed a technique that uses a library of DNA taken from organs in which tumors can form and harnesses the body's immune response to create a vaccine designed to treat cancer.

In a study published in the journal Nature Medicine on Sunday, researchers from Britain and the United States said that in early tests in mice with prostate cancer, their experimental vaccine was able to shrink tumors, suggesting it could be developed in future into a treatment for cancer patients.

"Using the immune system to treat cancer is a very exciting area at the moment," Alan Melcher of Leeds University, who co-led the study, said in an interview.

"What we've done is to develop a new approach which builds on a promising foundation."

He said the method could potentially be used against other forms of cancer such as skin or breast cancer, but added that the research was at an early stage and it would be several years before a vaccine could be developed for testing in humans.

Immunotherapy treatments -- medicines that enlist the help of the body's immune system to fight disease -- are a relatively new form of potential cancer treatment.

An immunotherapy drug called ipilimumab, or Yervoy, made by Bristol-Myers Squibb, was approved by the U.S. Food and Drug Administration (FDA) in March as the first drug to help advanced melanoma patients live longer.

And last April, the FDA approved Dendreon Corp's Provenge, a therapeutic vaccine designed to stimulate the immune system to attack prostate cancer.

**CELLS**

Unlike traditional vaccines, therapeutic vaccines are not designed to prevent disease, but to treat it.

They contain genes to stimulate the immune system to produce proteins called antigens, which activate the immune system to kill cancer cells.

Several drugmakers are trying to develop cancer vaccines but the work is proving difficult because each tumor has specific proteins and identifying the right antigens is tricky.

There are also concerns that if more genes are used to increase the chances of producing successful antigens, this might trigger an immune response that is too strong for the body to handle.

Working with scientists from the Mayo Clinic in Rochester in the United States, Melcher's team made a vaccine made from a virus which they genetically engineered to contain a "library" of DNA including multiple fragments of genes -- and therefore many possible antigens.

They found that this approach did not send the immune system into overdrive.

Instead, the range of DNA meant the vaccine was able to target the tumor through many routes, they said.

Importantly, the DNA library was harvested from the same organ as the tumor, Melcher explained.

This meant that the immune system "self-selected" the cancer antigens to respond to and did not react against other healthy parts of the body.

"The biggest challenge in immunology is developing antigens that can target the tumor without causing harm elsewhere," he said.

"By using DNA from the same part of the body as the tumor ... we may be able to solve that problem."

Melcher said his team now planned to develop the technique further and have an experimental vaccine ready for testing in humans within a few years.

(Editing by Alison Williams)

[Health](http://www.reuters.com/news/health)