

## **Science Media Centre**

where science meets the headlines



#### Sources of Scientific Information

Q1 Through which sources of information, if any, do you get most of your information about science issues or scientific research and its social and ethical implications?

Media			90%
Television		82%	
Newspapers	63%		
Radio	43%		
Internet	18%		
Science press	8%		

Base: All adults aged 15+ in Great Britain (1,987)



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The Observer 18 January 2004

Uproar at news conference as US fertility maverick drops genetic b

### **Scientists** pour scorn on doctor's human clone boast

by Jo Revill Health Editor

A US fertility specialist flew into Britain vesterday to announce that he had transferred the first cloned embryo into a woman - but he refused to give a shred of evidence to

back up his astonishing boast. With theatrical flair, Dr. Panos Zavos, an IVF expert from Kentucky, told a packed ress conference in London that he had created the first journalists persisted in ask loned pregnancy. He said that he had taken a skin cell had previously claimed to m a man and fused it with the egg of a 35-year-old the egg of a 55-year-old woman and that in two weeks' time they would know whether a full pregnancy was safely established.

greeted with laughter and disbelief. A scientist compared it to recent claims by the alienloving Raelian sect, who say they have created cloned

No details were given to rroborate Zavos's claim. All would say is that it hap---- doutside Europe and the within the last fortnight.

The press conference descended into farce when he splitting, a technique where criticised the highly respected one embryo is divided into medical journals Nature and two. One part is implanted Science, saying he wouldn't into the womb of the woman want his work to be reviewed and is born as normal, and the or published in them because they did not have enough use in 'spare parts' surgery in

Cloning is illegal in Britain

but not in many other parts of the world, including the Middle East. Zavos defended using the technique, saying: 1 am simply doing this to belo my patients and to give them

once Zavos presented pic tures of himself as an astronaut walking on the Moon to convey his point that much was achievable in the future He became annoyed when ing questions about why he have created cloned human embryos without ever providing scientific evidence that this is the case.

all that people can't accept it they really ought to."

Supported by another fertility specialist, Dr Paul Rains bury, Zavos also announced plans to offer couples embryoother is frozen and stored for

the child that they long for ' During the press confer

Zavos is no stranger to controversy. He claimed back in His approuncement was 2002 that he had created the world's first cloned embryo. saying he was sure he would oversee its birth by the end of last year. He said at the time: This is all about creating healthy children for childless people. It doesn't bother me at

> ease or deficiencies.' He had to admit, however, that no one has ever successfully performed this on a human embryo, although it has been achieved in animal experiments, 'But all intentions are that we will,' he stated. He claimed that other scientists were 'bad mechan ics' who had failed to use the case the twin should fall ill right techniques to achieve later in life Zavos tried to justhe result they wanted.

tify the action yesterday, saying: Families in the future will be looking for possibilities of ensuring the general health status of their baby that is born by having another embryo that is simi-

Kentucky fertility expert Dr Panos Zavos makes his announcement in Lon

A chorus of voices was raised against Zavos. Robin Lovell Badge, professor of genetics at the National Institute for Medical Research. said: He is merely preying on people's fears. Firstly he preys on the fears of infertile lar. If the baby becomes ill, or couples that they will never develops any genetic abnorhave children. Secondly, he malities or deformities or injuries, then they can use preys on the fears of those who do conceive that their that embryo to create stem children will have health cells to treat the haby's disproblems that could be solved by the splitting of embryos -

> 'I am simply doing this to give my patients the children they long for

### Outcry at doctor's cloned baby claim

By Michael Knapp

AN American doctor who claimed that a woman may be about to conceive the world's first cloned baby sparked angry protests yesterday.

The patient was implanted with an embryo grown from skin cells from her husband, announced Dr Panos Zavos.

But there was only a 30 per cent of it developing into a

#### **Scientist** attacks hype over clone

research

Alok Jha Science correspondent

A leading fertility researcher has warned that the media storm surrounding an American doctor's claims to have produced a cloned embevo will only serve to paint a heavily distorted picture of work in this field.

Far from suddenly becoming a tantalising possibility for childless couples, reproductive cloning would take several decades of dedicated research to perfect, according to scien

course, that it was actually possible - and ethically approved - in the first place.

Simon Fishel, a pioneer of the IVF technique in the 1970s. and now director of the Centre for Assisted Reproduction in Nottingham, told the Guardian that the weekend coverage of fertility specialist Panos Zavos's work might give the impression that there was serious debate among scientists over the use of human

cloning for reproduction. In reality, he said, any fertility researcher with credibility was firmly against the idea of using cloning techniques for anything other than research

And it is not only for ethical reasons: techniques of reproductive cloning are far from being safe for use in humans,



Cambridge, said: "Absolutely nothing has changed in rela tion to the difficulties associated with reproductive cloning. In every single experiment, 99% of clones die in the womb and the re have problems. Therefore i remains as irresponsible as before to do it in a buman." Peter Braude, a fertility re

searcher at King's College London, said there was little scien tific merit in Dr Zavos's work. "Zavos does not represent mainstream science and what he and his colleagues are doing is seeking publicity rather than advancing science."

Scientists have called for Dr Zavos to publish his work so independent teams can study his methods. Prof Fishel said that without publication, the work could not be regarded a-



clone a child in the UK. The Government has already acted to stop this happening.

"We are one of the few countries in the world who have passed legislation to ban this possibility. There will be no cloned babies in the UK while I am Secretary of State for Health.

"This Government shares the widespread public repugnance that human cloning could be attempted and views this as a gross misuse of genetic science. "We made a

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0 Apr 03 | Science/Nature cientists 'clone' monkey 4 Jan 00 | Sci/Tech octors defiant on cloning 9 Mar 01 | Sci/Tech

8 Dec 02 | Sci/Tech





# one doc

By STEPHEN WHITE

AN American doctor who claims to be creating the world's first cloned baby has been accused of s exploiting those desperate for children.

Dr Panos Zavos says he has transferred an embryo into an infertile woman, 35, and is waiting to see if she falls pregnant. But his work has been condemned by scientists.

9 Mar 01 | Sci/Tech Cloning expert Wolff Reik loning humans: Can it really be said: "He is exploiting the emotional pressure of people desperate to have children.

"In experiments 99 per cent of clones die in the womb and the others have problems. Therefore it remains as irvesponsible as before to do it in a human."

A spokesman for pressure group Life said Dr Zavos had exposed the woman's vulnerability "to almost incredible risk

The doctor, a passionate advocate of cloning, refused to give details about the woman, or the date of the implantation but said it was not done in Europe. America or Britain.



### The Daily 12th July 2004iBbeiused GIV vaccines gainst rabies and Aids, scientists have and "Plants are to be used by grow vaccines against rabies and Aids, scientists have and "Plants Bre inevented in the control of the

BRITISH scientists are to lead an £8million biotech project, using genetically-modified crops to cultivate vaccines for a host of deadly diseases, it emerged yesterday.

Professor Julian Ma of St George's Hospital Medical School in London will lead a consortium of 39 research groups from 12 nations, aiming to trial pharmaceutical products produced through the manipulation of plants.

Experts believe such work could hold the key to meeting demand for potentially life-saving drugs for HIV. rabies, tuberculosis and diabetes.

But project leaders admit that such products will prove controversial. given widespread public opposition to GM food technology in Britain and Europe.

A location for the trial has not been chosen, but the projects leaders did not rule out the UK. They admitted they would have to consider the risk of environmentalists opposed t

creating to destroy tria were gishnat this is contentechnology, said Prof Ma, the scient co-ordinator of the five-year stuc

GM opponents warned that th posals have the potential to human health and the environm

'This research could have spread negative impacts. A cle of criteria must be establish ensure that human health an environment are protected,' Clare Oxborrow, Friends of Earth's GM campaigner.

The EU-funded project, the first kind in Europe, would involve it fying genes effective in vaccin against or treating a disease and ducing them into plants. The c (28.6m) to a pan-nuropean conwhich could include maize and to develop the technology for plants, would be cultivated until for harvest. The vaccine would th removed and packaged as a drug

because of fears over crop vandalism in Britain.

The

The GM crop could dramatically reduce the cost of producing vaccines - scientists estimate they can be made at between a tenth and a hundredth of the price of conventional immunisations.

Dubbed "pharming" by its opponents, this is the latest step in technology which allows medicines to be grown in plants. Although this project is concerned with injectable vaccines. other trials under consideration involve extending the research to oral vaccines which might be grown in edible raw food such as bananas.

Concerns about direct action by environmentalists opposed to GM crops has led scientists behind the project to collaborate with a South African research institute which has offered to grow the first crop there.

The EU has awarded £12m growing GM plants that can be turned into vaccines against a range of common diseases in the developing world.

Professor Julian Ma of St George's Hospital Medical School in London, the scientific co-ordinator of the project, said that it will take about two years to develop the technique before the first crop is scheduled to be grown in 2006

Clinical trials of the first vaccine derived from GM plants are planned to take place in 2009.

of drugs or vaccine at low cost,' Professor Ma said.

"The current methods used to generate these types of treatments are labour intensive, ex pensive and often only produce relatively small amounts of pharmaceuticals " he said

It is likely the first pharma ceuticals crop will be GM maize or GM tobacco that will be engineered with a set of genes for making prototype vaccines against either HIV or rabies. By purifying the proteins from the harvested crop scientists hope to mass-produce vaccines at a fraction of the current cost.

South Africa's Council for Scientific and Industrial Research is participating in the research and is particularly interested in potential vaccines against HIV, the Aids virus. The Friends of the Earth

GM campaigner Clare Oxborrow said: "Growing medicines in plants has serious implications for human health and the environment. We recognise the need for affordable medicines to be made available to people with life-threatening illnesses but this research could have widespread negative impacts.

Professor Ma said that 3.3 million people a year die from preventable diseases such as tuberculosis and diphtheria, vet there is not the industrial capacity or funds to produce enough vaccines for everyone. "The cost of doing nothing is measured in millions of people who will die from preventable diseases," he said

place to grow them he result the said his plans were not feelings to one had it with the biotechnology it is said his plans were not freed with the biotechnology it is said his plans were not freed with the biotechnology.

### **Medical crops Coming soon**

#### Human trials of GM drugs could be five years away

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Science correspondent

Human trials of vaccines produced by genetically modified plants could begin within five years, so yesterday. scientists claimed

The researchers outlined proposals to grow fields of crops that have been genetically modified to produce vaccines and other pharmaceuticals to treat HIV, rabies, diabetes and TB.

They said field trials of medicine-producing crops were likely to begin in 2006. with safety trials in humans beginning three years later at St George's hospital in London. Although the team will con-

sider carrying out trials on plots of a hectare (2.5 acres) in Britain, the unfavourable cli-mate and risk of sabotage mean that field studies, and ultimately full-scale growing the production technology chain. of the plants, is most likely to happen in South Africa or southern Europe.

Scientists have long known that GM technology can be used to trick a plant's molecular machinery into making a range of medically useful com-pounds. Instead of using expensive pharmaceutical factories, advocates envisage fields of GM crops being harvested to reap new medicines cheaply, a process known as

According to Julian Ma of St George's Hospital Medical School in London, the leader of the £8m project, the

primary aim is to provide plants is low tech," Prof Ma medicines for the developing world. "The major burden of transferred to countries where disease is in the developing world, but these are the countries that do not have access to vaccines," Prof Ma said.

The number of people dying each year from the six major diseases for which vaccines exist is around 3.3 million

The scientists have already identified genes that can be put into plants to make them produce antibodies or other compounds that can help treat crucial factor," he said, "There's rabies TB and diabetes

While no vaccine yet exists antibodies capable of destroying the virus have been discovered.

A cream containing the antibodies could help reduce the risk of HIV being transmitted process them, so that the med during sexual intercourse, but cannot easily be scaled up.

"Using traditional techniques, you just cannot pro duce enough," said Prof Ma. Prof Ma believes GM plants

probably tobacco or maize offer a cheap way to make vast quantities of vaccines and other drugs, "It looks like the cost of plant-derived products will be 10- to 100-fold less than conventionally derived products," he said.

If the technique is proved, it may be adopted by developing than simply lining the pockets countries beloing to breaking their reliance upon pharmaceutical multinationals

"Growing and harvesting

they can start up their own industry at a low start-up cost and produce the amounts they

ehabilitate

echnology

Philip Dale, an expert in GM safety issues at the John Innes Centre in Norwich, is advising on possible risks of contami nation, where genes from the GM plants get into others.

"The ability to be able to iso late these from other crops is a possibility of mixing with other crops and that's the basic for HIV, genes that produce challenge we have to wrestle

Land used to grow the grons will need to be remote from other crops and dedicated machinery will be needed to icine cannot enter the food

Sue Mayer of the lobby group GeneWatch said the researchers should pledge to make their technology free to all, to prevent it being claimed

by pharmaceutical companies Friends of the Earth's CM campaigner, Clare Oxborrow said: "A clear set of criteria must be established to ensure that human health and the environment are protected. Any benefits must genuinely reach of the biotech and pharmaceutical industry."



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