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Vaccine for bilharzia

12.3.87
An experimental vaccine, developed by groups working under Prof Andre Capron at the Institut Pasteur in Lille and Dr Jean-Pierre Lacocq of Transgene in Strasbourg has produced protection against the schistosome parasite, which causes bilharzia, in trials on experimental animals.

If the team manages to develop a successful human vaccine, it could help prevent the spread of the disease, which kills 800,000 people a year, and causes warting and death in cattle.

US system

13.3.87
Roger Highfield, Technology Correspondent writes, Sizewell B is a souped up version of PWR design used for two American plants, Callaway and Wolf Creek, called 'Snupps', (Standardised Nuclear Unit Power Plant System).

The pressurised water reactor is cooled by water held under pressure while the current alternative British AGR design is cooled by gas.

In common with all other power stations, nuclear plants produce steam which can be used to drive turbines.

In PWR stations a primary circuit, containing pressurised water, extracts heat from nuclear fuel. This heated pressurised water is then put to work in steam generators. Water in a secondary circuit is converted into steam which can be used to drive the turbines.

The American Snupps plants have performed well, as shown by their capacity factors, the amount of electricity they produce compared with the amount they were designed to produce.

Callaway, which became fully operational three months before the end of the Sizewell inquiry, had a capacity factor of 82 per cent for 1985. Britain's AGRs, have a 50 per cent average.

Sticky tape 'will save plane fuel'

16.3.87
By Roger Highfield
Technology Correspondent

STICKY tape could save the world's airlines billions of dollars a year, say Nasa scientists. It is the key to a method of cutting the amount of drag on aircraft by up to eight per cent.

That reduction may not sound much, but it could, for instance, cut the annual fuel bill for the United States commercial airlines by £400 million a year.

"The airlines are very excited about it," said Mr John Anders of the National Aeronautics and Space Administration's Langley Research Centre in Virginia, who has been developing the technology with Mr Michael Walsh since the mid-1970s.

The sticky tape is covered with riblets—grooves a few thousandths of an inch wide running in the direction of the air flow. They, in effect, push the turbulent air flow off the surface of the aeroplane, cutting drag at the same time. A similar effect occurs in water.

Cup race test

The Nasa team has had a great deal of interest in this drag reduction technique since the adhesive film, made by the company 3M was used in the America's Cup race in Australia. It gave the Stars and Stripes a few valuable seconds' advantage over the course.

Tests on a business jet and a Boeing commercial trainer showed that these microscopic wrinkles provided the same drag reduction as found in wind tunnel tests, saving about one per cent of fuel for each per cent of drag. More riblet tests are planned on a Boeing 757.

Similar systems are being developed by Rolls-Royce, Cambridge University and the Cranfield Institute of Technology in Britain. However the Nasa system is the most advanced, said Mr Anders.

Boeing are now considering whether it should use the adhesive film on its next generation of high-efficiency aircraft, depending on remaining tests on its durability.

Mr Anders has no doubt riblet technology will be in demand. "We will see it on commercial aircraft in the next two to three years".

Ships and submarines could also benefit. A test is planned soon on a torpedo which, if successful, will enable it to travel further and faster.

Mr Anders is developing another system to reduce drag by a further eight per cent by using streamlined rings twisted around the body of an airliner, which reduce eddy currents on the fuselage.

These Lebus (large eddy breakup devices) cut skin friction for up to 50 feet along the length of the fuselage, so several would be needed for each plane. Boeing plans to test Lebus on one of its 737s in the next few months.

First human test of Aids vaccine is encouraging

By Roger Highfield
Technology Correspondent

THE first human trial of an Aids vaccine has begun with encouraging results—a milestone in the development of an effective vaccine.

In the best medical tradition, the researcher who led the team which developed the experimental vaccine, Dr Daniel Zagury, injected himself with it.

"We are very, very encouraged by the results," Dr Zagury said at the Universite Pierre et Marie Curie in Paris yesterday.

But he added that until full-scale clinical tests were successfully completed, "we will not be ready to put our arms up in the air and shout victory."

"Let's be serious and not give false hope to people," he said. "I think that with this approach we may overcome the pitfalls presented by the diversity of the Aids virus."

Asked when a tested Aids vaccine would be widely available, he said: "Ask God that."

Two responses

The vaccine used by Dr Zagury last November consisted of a live harmless virus (the vaccinia virus, used for the smallpox vaccine), which had been genetically engineered to make an "envelope" protein found on the surface of the Aids virus, called gp160.

When introduced in the body, according to an account of the experiment in the current issue of *Nature*, the engineered vaccinia virus makes the Aids protein. It is hoped that this will arm the body's defence mechanism by teaching it to recognise the Aids virus.

Dr Zagury showed that the body immune response had been readied by the vaccine to deal with the virus, though it is not clear how effective, if at all, the vaccine will be.

Two types of immune response resulted during the experiment in the absence of any side effects.

The first was that antibodies against the protein of the virus that causes Aids (Human Immunodeficiency Virus) appeared in Dr Zagury's blood.

The second was that cells of his immune system were able to recognise cells which had been infected with the Aids virus—"the response we are looking for," said Dr Zagury.

An important feature of the experiment is that the vaccine also shows potential for dealing

with the various strains of the Aids virus.

Researchers from the Universite Pierre et Marie Curie and Institut Jean Godiot in Paris and Cliniques Universitaires de Kinshasa in Zaire showed that the genetically engineered virus prepared from the New York strain of Aids virus can, "to a lesser degree," trigger an immune response against the very different Haitian strain.

Fears have been expressed about using the vaccinia virus. It is thought that new strains of smallpox, which has been eradicated, could emerge; the virus could kill patients who have a depressed immune system; and the Aids protein made by the vaccinia virus could itself depress the body's immune system.

Since Dr Zagury's first vaccination, he has had a booster injection and the vaccine has been tried on ten other volunteers in Zaire. Results of this trial are expected in three months.

Tests have meanwhile started on another vaccine, based on cells with Aids proteins buried in their surface

New varsity research grants axed

19/3/87
By Roger Highfield
Technology Correspondent

ALL new university research projects were cancelled yesterday by the Science and Engineering Research Council.

The council said it saw "no alternative" to the move following an £8 million shortfall in Government funding. Discussions were continuing with the Government on "how to deal with this serious situation" which is set to deteriorate next year, when a shortfall of more than £10 million is expected.

The shortfall was caused because no new money was made available by the Government to cover an increase in salaries it had awarded to university lecturers.

The pay rises made to prevent the brain drain, will have the opposite effect as a result, said Dr John Mulvey, of Oxford University and secretary of the executive committee of Save British Science. "What is really driving people away is the quite inadequate funding for equipment and facilities."

Cancelling the grant applications will save the council about £5 million.

The Medical Research Council is in a similar position, with a £5 million shortfall, and has already had to instruct its grant committees not to fund any new projects unless vital.