

AIDS: Are the wilderness years over for vaccine research?

October 21 2009, by Richard Ingham

Scientists looking for a vaccine against the AIDS virus can be forgiven for wondering at times whether they made the right career decision.

For more than a quarter-century, their quest has been littered with setbacks while colleagues who work on [HIV](#) treatment have been showered with success.

Promising avenues have led to dead ends and long, costly trials of prototypes have ended in failure, saddling the vaccine field with a reputation for lucklessness.

But two pieces of good news have suddenly boosted morale.

Even though a vaccine still lies over the horizon, at least a path has now emerged for getting there, say experts interviewed at the AIDS Vaccine 2009 conference, ending in Paris on Thursday.

On September 3, researchers in the United States discovered two potent antibodies -- the frontline troops in the immune system -- that expose what may prove to be a viral Achilles' heel.

On September 24, US and Thai researchers unveiled the results of the biggest [vaccine trial](#) ever.

Tested among more than 16,000 Thais, shots of ALVAC and AIDSVAX vaccines offered 31.2-percent protection against the risk of infection by

the [human immunodeficiency virus](#) (HIV).

This is far too weak to make it a vaccine for public use.

And nagging questions arise: why does the vaccine's effect seem to wane over time? Why does it seem to be less effective among people who are most at risk from [HIV infection](#)? And could it work in Africa, epicentre of a [pandemic](#) that has claimed 25 million lives and left some 33 million others infected?

Even so, the trial is scientific gold.

It proved at last that the immune system can be taught to recognise and devise a shield, even partially, against a notorious shape-shifting foe.

"We now have a proof of concept. It's the first time we've been able to show that," said Anthony Fauci, director of the US National Institute of Allergy and Infectious Diseases (NIAID).

"ALVAC/AIDSVAX is not in itself the answer. It's a start on the road to a vaccine, whereas, before, we didn't even know where the road was."

"The Thai tests have provided a vital pick-me-up," agreed Jean-Francois Delfraissy, director of France's National Agency for AIDS Research (ANRS).

Seth Berkley, head of the International [AIDS Vaccine](#) Initiative (IAVI), said the research pipeline, which previously wheezed out tiny drips, was now becoming a small but steady flow.

"There's a lot of excitement," he said. "You've got the first data about protection. You've also got extremely potent antibodies that are showing new targets and there's a lot more of that coming, that field's exploding

right now."

Berkley also noted that the two vaccines in the Thai trial were designed some 15 years ago. Smarter vaccines have since emerged, using different viral parts to prime the immune system and novel methods to deliver them.

Berkley pointed at progress -- among lab monkeys, not humans -- on so-called cell-mediated vaccines, in which immune cells are primed to clear out the [AIDS](#) virus after infection.

"What is happening now has sort of revitalised optimism," said Muhammad Bakari of the Muhimbili University College of Health and Allied Sciences in Tanzania.

"If you borrow the example from antiretrovirals, people thought it would take many, many years to get these drugs but the speed was much, much faster than what was thought initially. So I think we should be optimistic."

Bakari's team reported very encouraging results from an early trial, gathering 60 Tanzanian policeman, who were given either a Swedish candidate vaccine called DNA/MVA, or a placebo.

All those who were given the primer and booster showed a very strong immune response, "as high as any" in previous vaccine trials, he said.

At this early stage, the vaccine is tested for safety, not for efficacy, and delivery and dosage may have to be modified, but the results should warrant arguing for a wider trial, he said.

French scientist Françoise Barre-Sinoussi, who co-won the 2008 Nobel Prize for Medicine, cautioned that a [vaccine](#) breakthrough still depended

on answering fundamental questions about HIV and the pathways of infection.

With vaccines, "you are only looking for a single piece of the jigsaw puzzle. A single piece never gives you the whole picture. It's all the pieces of the puzzle put together that give the answer."

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