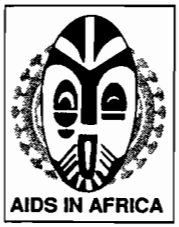
AIDS vaccine 'may not work' in Africa



Phyllida Brown, Kinshasa

SOME of the most promising candidates for an AIDS vaccine could be useless outside the West, researchers warned last week. Evidence is growing that many of the strains of HIV found in Africa are different from the strain on which most research has focused. The differences could make many of today's potential vaccines and therapies ineffective against the African strains.

Scientists at the Fifth International Conference on AIDS in Africa, called for research into African strains of the virus. Only then could appropriate vaccines be developed, they said. The call came the week before Zaire's leading AIDS researchers met Dan Hoth, from the National Institutes of Health in the US, to discuss possible trials of a vaccine in Zaire.

The trials would be the first of their kind: they would test not simply whether the virus was safe, but whether it worked in preventing the spread of HIV or slowing the progress of the disease. "If the vaccine can be prepared with a type of Zairean HIV, we can agree," said Nzilambi Nzila, of Kinshasa's AIDS project, Projet SIDA.

Details of the trials were to be discussed this week as *New Scientist* went to press. It is not certain whether the people to receive a vaccine would be pregnant women infected with the virus, prostitutes or couples where one partner is infected. For the pregnant woman, the aim would be to prevent transmission of the virus to the infant. Zaire's ethics committee has still to approve the trial.

Bila Kapita, the chair of the ethics committee, and chair of the conference, from Mama Yemo Hospital in Kinshasa, said there was no question of the trials being conducted without full openness and counselling for those involved. Vaccine trials have become controversial in Zaire after Daniel Zagury, a French researcher, inoculated himself and a group of Zairean volunteers with a vaccine based on a modified vaccinia virus. Secrecy has surrounded these trials and Zairean researchers are loath to comment on them.

New research presented at the conference shows that more and more differences are emerging between the strain of HIV isolated by Robert Gallo and Luc Montagnier, and strains of HIV-1 from Africa. An Ethiopian team said they had sequenced a group of strains from their country that had common characteristics. According to Seyom Ayehunie, leader of the team from Addis Ababa, these characteristics "set them apart from all other isolates of HIV-1 sequenced to date". Researchers from the Central African Republic also described strains that differed markedly from the classic strain.

Alash'le Abimiku, a virologist from the University of Jos in Nigeria, currently working at the National Institutes of Health, said vaccine researchers must work with strains found in Africa. "They have to look at strains that are endemic in these areas," she said. "It's no good bringing things in from abroad."

Abimiku is trying to sequence isolates of HIV from Nigeria. "What we are hoping to do is to set up retroviral research units in Nigeria. The competence is there, it is just a matter of equipment and training."

Many researchers fear that the companies currently developing vaccines in the US and Europe are devoting too little attention to Africa. "I fear a lot of work will be invested in developing a vaccine and it might not be right for here in Africa, where the problem is worst," said Peter Piot from the Institute of Tropical Medicine in Antwerp.

The strain of HIV from Africa that has received most attention, so far, is a highly virulent strain of HIV from Zaire. Scientists now based at a research unit in Marseilles, which is funded by the French government, have been studying this strain of the virus since 1985.

The strain known as NDK, is 10 000 times as effective at killing cells as the classic strain. Recently the team, led by Jean-Claud Chermann, discovered that the strain lacks a crucial feature that scientists believe may be HIV's Achilles heel. This is a peptide forming part of a loop known as V3 on the protein coat of the virus. The peptide is involved in infecting cells. Antibodies to the virus prevent the virus from infecting cells and many researchers are pinning their hopes on it as a potential vaccine. This peptide, called gpgr, is shared by the majority of western strains so it should in theory protect against most of them.

The discovery that NDK lacks the peptide raises fears that vaccines based on gpgr would not protect against this strain. Researchers focusing on gpgr in the West include Marc Girard of the Pasteur Institute and Scott Putney of Repligen in Cambridge, Massachusetts.

But the Marseilles team's latest discovery is equally alarming. Yvan Hirsch, a member of the Marseilles group, presented his findings at the conference. This research suggests that NDK can infect cells without entering via the usual receptor on the cell surface, CD4. "This is something completely new," says Hirsch. "This is the first time I know of that cells can be infected in the presence of antibodies to CD4."

He has found that, in the laboratory, the virus appears capable of infecting cells not normally vulnerable—epithelial cells from the lining of the lung and fibroblasts. The team has now identified the precise part of the genome that makes NDK so virulent. It is a part of the gene *gag*, which encodes HIV's protein coat. Until now, researchers had believed that the gene *env* controlled virulence. These latest discoveries could have implications for potential therapies for the virus, says Hirsch. □