

AIDS Debate Declared Dead

by Jon Cohen on 25 April 2001, 7:00 PM

At a meeting last September, a controversial theory that a contaminated polio vaccine triggered the AIDS epidemic was all but pronounced dead. Now, four scientific papers collectively declare that--to paraphrase the Munchkin coroner in *The Wizard of Oz*--the theory is not only merely dead, it's really most sincerely dead.

In his hotly debated 1999 book, *The River*, British writer Edward Hooper linked the first known cases of AIDS to tests of an oral polio vaccine in 1 million Africans more than 40 years ago. Hooper contends that during the manufacturing process, scientists accidentally introduced a precursor of HIV, a chimpanzee virus known as SIVcpz, into the vaccine, after they grew the poliovirus vaccine in cells taken from chimps infected with SIVcpz. The scientists, led by Hilary Koprowski, former director of the Wistar Institute in Philadelphia, denied the charge, asserting that they grew the vaccine virus in monkey, not chimp, cells. They said no evidence supported the notion that SIVcpz or HIV had contaminated any batches of the vaccine.

Preliminary data presented at a Royal Society meeting in London ([ScienceNOW](#), [12 September 2000](#)) challenged each of Hooper's main claims, and the new papers now formally dismiss them. The authors of two papers published in *Nature* this week and one in [Science](#) examined old samples of Koprowski's vaccine and found that none contained DNA from chimpanzee cells. Each lab also found evidence of monkey DNA. Two of the labs also looked for genetic material from HIV or SIVcpz but found none.

The fourth paper, published in *Nature* by evolutionary biologist Edward Holmes and co-workers at Oxford University, analyzed an altogether different contention made by Hooper: that the odd shape of the evolutionary tree formed by different strains of HIV supports the contaminated polio vaccine theory. Hooper highlighted the fact that the various subtypes of HIV seemed to appear simultaneously, forming clusters called "starbursts"; these theoretically could have occurred if this massive human trial used an SIVcpz-contaminated vaccine. By studying 197 HIV isolates obtained in 1997 in the Congo--where the bulk of these polio vaccine tests took place--Holmes and co-workers found that the HIV tree does not show the distinctive subtypes that are seen in many previously constructed evolutionary trees.

Hooper did not respond to an interview request. But to Holmes, these studies have, in the absence of new evidence, thoroughly dismissed Hooper's theory. "Hooper's evidence was always flimsy, and now it's untenable," Holmes says. "It's time to move on."

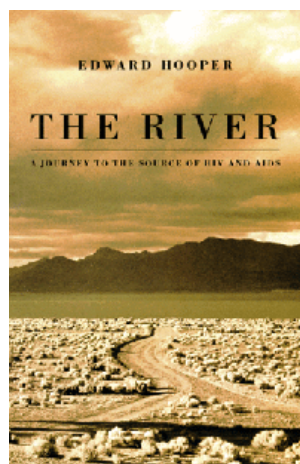
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Down the river. Four papers have dismissed the link between polio vaccines and AIDS proposed by Edward Hooper.

The River without a paddle

Four new studies may finally have put paid to the polio-vaccine hypothesis for HIV's origins.

Tom Clarke

The controversial theory that researchers developing polio vaccines in Africa in the 1950s accidentally triggered today's global AIDS epidemic has today been dealt what could finally be a fatal blow. Four new studies have found no evidence for the main claims of the theory.^{[1](#),[2](#),[3](#),[4](#)}

In his 1999 book *The River: A Journey to the Source of HIV and AIDS*, journalist Edward Hooper promulgated a disturbing theory about the origins of AIDS. Hooper's assertions threatened to capture the public's imagination until they were largely discredited by preliminary investigations presented at the Royal Society in September last year. At the time, Hooper dismissed the results as "irrelevant" to his hypothesis.

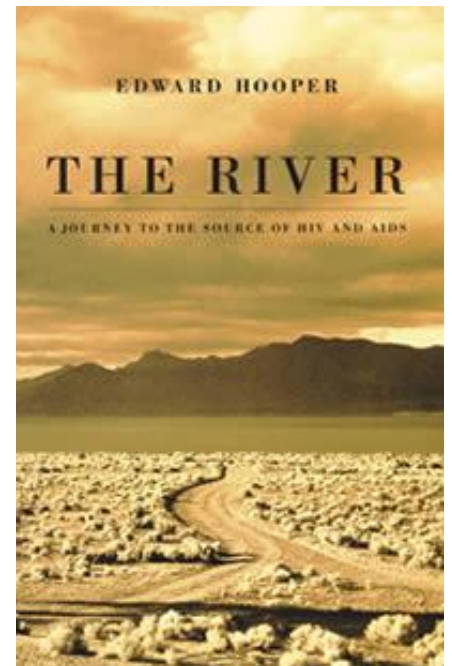
Hooper claimed that by using chimpanzee kidney tissues infected with human immunodeficiency virus (HIV) when developing an oral polio vaccine (OPV), researchers at the Wistar Institute in Philadelphia, Pennsylvania inadvertently contaminated their vaccine stocks with the virus. He alleges that when these vaccines were tested in as many as one million people in the Congo between 1957 and 1959 they seeded the human population with HIV-1 -- the strain that most commonly causes AIDS.

Four independent research groups have now found no trace of chimpanzee tissue in any of the remaining stocks of the original vaccine, including a vial of the stock used to create the OPV tested in the Congo. They also detected neither HIV nor its primate form and closest ancestor, simian immunodeficiency virus (SIV). Furthermore, they present evidence that the virus emerged in human populations before the Congo vaccine trial.

The researchers admit that their findings cannot disprove Hooper's theory. "It's the old problem of proving a negative," says Neil Berry of the National Institute for Biological Standards and Control (NISBC) in Potters Bar, UK. "But the data really don't provide any support for his hypothesis."

Out in the cold

Perhaps the most compelling evidence against Hooper's theory comes from Berry's group^{[1](#)}. They analysed a vial of the same vaccine stock as was used to treat people in the Congo and is directly



New research could wash Hooper's allegations away once and for all.

blamed in *The River* for the outbreak of HIV in humans. When *The River* was published, the Wistar Institute could not produce a sample of that vaccine; the one that has now been tested was later found in a freezer at the NISBC.

Berry's team did not detect HIV or SIV in the suspect vaccine. What's more, the only tissue identified was from macaque monkeys -- which Wistar researchers insisted that they had used -- and not from chimpanzees. "We used a sensitive assay for both tissues and only one was positive," says Berry.

Philippe Blancou at the Pasteur Institute in Paris and his colleagues looked at the remaining samples of the original vaccine stock from the Wistar Institute. Again, they found only evidence of macaque tissue and no chimpanzee DNA². In a separate study Svante Pääbo and colleagues at the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany scrutinised the same stocks. They too found no evidence of chimp DNA, only macaque⁴.

Finally, having examined samples of HIV collected in the Congo in 1997, Edward Holmes at the University of Oxford and his colleagues conclude that the multiple sub-types that characterize modern-day HIV could not have originated from contamination with chimpanzee tissue in the 1950s³. According to Holmes' team, the last common ancestor of the variants known in the Congo today was present in a human host and was not, as Hooper alleges, transferred from a primate.

Proof positive

The genetic history of HIV-1 strains, says Holmes, "fits a classic exponential epidemiological spread and says nothing at all about multiple transfer" from vaccination with a contaminated oral polio vaccine. "It's appealing to point the finger at someone rather than admit it may be a natural, ecological process, which is what I believe it is," Holmes adds.

Edward Hooper was not available for comment but has so far stood firmly in support of his theory. He has said that the only evidence he will accept is proof that HIV existed in humans before 1957. "He's going to fight until someone finds a blood sample from the 1940s that's HIV-positive," says Holmes.

Simon Wain-Hobson, a member of the Blancou team at the Pasteur Institute sympathizes with Hooper's "compelling" theory. "Such an outrageous thing [as HIV] requires an outrageous explanation." But, he argues, the scientific evidence for the origins of HIV tell a less dramatic tale. "You can play conspiracy theories 'til you're blue in the face, but the onus is now on [Hooper] to provide proof," he says.

References

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