Headline	Detective reveals the path of AIDS's earliest days		
MediaTitle	International Herald Tribune		
Date	19 Oct 2011	Color	Full Color
Section	Health Science	Circulation	91,039
Page No	10	Readership	273,117
Language	English	ArticleSize	580 cm²
Journalist	N/A	AdValue	RM 198,442
Frequency	Daily	PR Value	RM 595,325

Detective reveals the path of AIDS's earliest days

Canadian doctor tracks virus's journey from its origins in central Africa

BY DONALD G. MCNEIL JR.

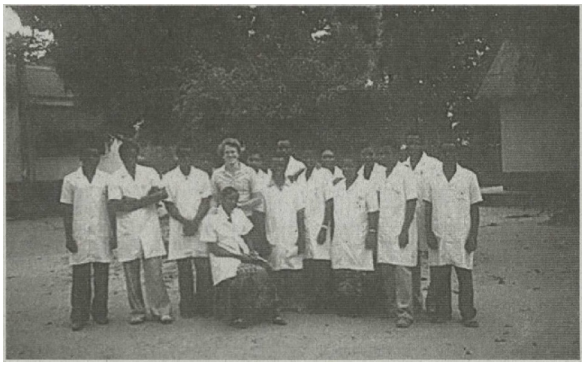
Our story begins sometime close to 1921, somewhere between the Sanaga River in Cameroon and the Congo River in the former Belgian Congo. It involves chimps and monkeys, hunters and butchers, syringes and plasma-sellers, evil colonial lawmakers and decent colonial doctors with the best of intentions. It stars a virus that, against all odds, appears to have made it from one ape in the central African jungle to one Haitian bureaucrat leaving Zaire for home and then to a few dozen men in California gay bars before it was even noticed — about 60 years after its journey began.

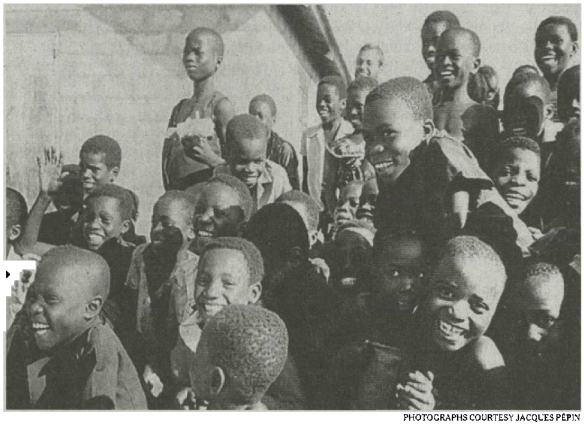
Most books about AIDS begin in 1981, when gay American men began dying of a rare pneumonia. In "The Origins of AIDS," published last week, Jacques Pépin, an infectious disease specialist at the Université de Sherbrooke in Canada, performs a remarkable feat.

Dr. Pépin sifts the blizzard of scientific papers written about AIDS, adds his own training in epidemiology, his observations from treating patients in a bush hospital, his studies of the blood of elderly Africans and years of digging in the archives of the European colonial powers, and works out the most likely path the virus took during the years it left almost no tracks.

Working slowly forward from 1900, he explains how Belgian and French colonial policies led to an incredibly unlikely event: a fragile virus infecting a small minority of chimpanzees slipped into the blood of a handful of hunters, one of whom must have sent it down a chain of "amplifiers" — disease eradication campaigns, red-light districts, a Haitian plasma center and gay-sex tourism. Without those amplifiers, the virus would not be what it now is: a grim pilgrim atop a mountain of 62 million victims, living and dead.

In the early 1980s, Dr. Pépin was a young doctor fighting a sleeping sickness epidemic at a hospital in Nioki, in what was once the Belgian Congo, then Zaire and is now the Democratic Republic of Congo. AIDS was unknown in Africa, but his work gave him clues that would later help him on its trail. In retrospect, he says in his book, he may have inadvertently infected some of his patients.





PHOTOGRAPHS COURTESY JACQUES PÉPIN

Snapshots from Nioki, Zaire, from around 1982 to 1985 when Dr. Pépin was a medical officer in the Mai-Ndombe region. He was the only doctor in the district.

Ideally, the glass syringes used in Nioki were sterilized in the hospital's autoclave. But with the electricity often out, nurses boiled them instead. "And I did not pay too much attention to how long they were boiled," he said.

Later, he worked in Guinea-Bissau on H.I.V.-2, which is related to H.I.V.-1 but causes a milder and harder-to-transmit form of AIDS that some victims live with for decades. Noting that cases were more common among older people, he concluded that it was dying out. If sexual transmission among young people was not keeping it alive, he reasoned, some other route must have first made it so widespread among the elderly. He suspected the aggressive campaigns that colonial doctors waged against syphilis, yaws, leprosy, tuberculosis and other ills until independence arrived in the 1960s. They all used injections, since pill versions of many antibiotics did not exist or were costly.

In 2005, Dr. Pépin began field studies. By sampling the blood of Africans 55 and over, he showed that those who had many injections in their youth or had un-

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dergone ritual circumcision, in which many boys were cut with the same blade, often had antibodies to hepatitis C or HTLV, a virus that, like H.I.V.-1, comes from chimps and infects the CD4 cells of the immune system, but is harmless.

That was hard evidence that blood and syringes had spread other viruses. Blood and tissue samples stored in freezers in Africa and in European hospitals that treat Africans — a few going back to the 1950s — form a map of AIDS viral subtypes, which is surprisingly complex.

The ancestor to AIDS is in one chimpanzee subspecies, Pan troglodytes, which in nature lives only between the Sanaga and Congo Rivers. It is a blend

Working slowly forward from 1900, he explains how Belgian and French colonial policies led to an incredibly unlikely event.

of simian viruses from mangabeys and guenons, small monkeys that chimps hunt and eat. From colonial archives in Paris, Marseilles, Brussels, Lisbon and London, Dr. Pépin dug out old records of clinics where, as early as 1909, African prostitutes were required to have venereal disease inspections. He went through stacks of newspapers, which wrote extensively about polygamy and prostitution, and pored over studies.

His recounting of the epic journey is this: In nature, only about 6 percent of troglodytes chimps are ever infected. Within a troop, each female mates with many males, but mating with outsiders is rare, so most troops are untouched while a few are heavily infected.

H.I.V.-1's four genetic groups, M, N, O and P, show that it made the chimp-human jump at least four times. But group M accounts for more than 99 percent of all cases. Why did only one spread? Molecular clock dating shows that M reached humans somewhere near 1921. Chimpanzees are too big and agile to be hunted with anything but guns, which until the 20th century were almost entirely in white hands.

Using colonial census data, surveys of how modern bushmeat hunters butcher kills, and infection rates among nurses stuck by dirty needles, Dr. Pépin calculates that, in the early 1920s, a maximum of 1,350 hunters might have had blood-to-blood contact with troglodytes chimps. Only six percent of the chimps — about 80 — would have been infected, and fewer than 4 percent of the scratched hunters could have caught it. That would suggest only three infected hunters at most.

Given how inefficient most sexual spread is sex alone would not have let three hunters, or even a dozen, pass on their virus to today's millions, Dr. Pépin argues. There must have been an amplifier. Studies among heroin addicts — from Italy, New York, Edinburgh and Bangkok — show that blood transmission is 10 times as efficient.

In the 1920s, machine-made glass syringes replaced expensive hand-blown ones, and the Belgians and French attacked many diseases in their colonies, both out of paternalism and to create herd immunity to protect whites. Patients might get up to 300 shots in a lifetime. Other diseases have spread this way; an Egyptian campaign against schistosomiasis ended in 1980 after giving more than half its "beneficiaries" hepatitis C. Thus, one hunter's group M infection could have become dozens.

The next link, eventually, was Haiti. The United Nations hired bureaucrats and teachers from abroad to work in Congo. About 4,500 Haitians answered the call; they were black, well-educated, French-speaking and eager to earn more than they could at home.

Dr. Pépin's work suggests that AIDS crossed the Atlantic in just one Haitian. Molecular clock dating indicates it reached Haiti roughly in 1966.

Again, he argues that rapid expansion through sex alone is mathematically impossible and points to an amplifier. He believes the culprit was a Port-au-Prince plasma center named Hemo-Caribbean that operated from 1971 to 1972 and was known to have low hygiene standards. Plasma centers take blood, spin it and return the red cells. If new tubing isn't used for each patient, infections spread. Sloppy plasma operations caused later H.I.V. outbreaks in Mexico, Spain, India and, most famously, in China, where 250,000 sellers were infected.

Hemo-Caribbean exported 1,600 gallons of plasma to the United States a month, an article in The New York Times said. And Haiti was a prime destination for gay sex tourists. By the early 1980s, subgroup B was killing American homosexuals and hemophiliacs alike, suggesting it arrived via both routes. The modern history of AIDS had begun.

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