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Chimpanzees Do Die From Simian AIDS, Study Finds



Michael L. Wilson

Chimp 099 with her daughter in Gombe National Park, Tanzania, in early 2006. She died in November 2006 from complications of a spinal cord injury. Her body was one of three bodies of S.I.V.cpz-infected chimpanzees that were subject to post-mortem analysis.

By [LAWRENCE K. ALTMAN](#)
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For the first time, scientists have shown that chimpanzees in the wild become sick and die from the simian version of [AIDS](#).

The finding upsets a widely held scientific belief that chimpanzees, the closest relatives to humans, can get the simian AIDS virus but without harm.

The finding also suggests that an outbreak of AIDS is contributing to the declining chimpanzee population in Africa, said the leader of the research team, Dr. Beatrice Hahn of the [University of Alabama at Birmingham](#).

She also said that comparisons of the viruses that cause AIDS in chimpanzees and humans could lead to new insights into the responses of the immune systems in both species.

“Our findings allow us to look at H.I.V. from a new angle, comparing and contrasting chimpanzee and human infections,” Dr. Hahn said in an interview. Her team’s study is being reported in the journal *Nature* on Thursday.

As researchers conducted autopsies on the bodies of the dead chimps they could find, they detected evidence of organ and tissue damage similar to that in late-stage human AIDS. Infected chimpanzees were also found to have a 10 to 16 times greater risk of dying than uninfected ones. Infected females were less likely to give birth. If they did, they could pass the virus to their infants, and they had a higher infant death rate than that of uninfected females.

The scientists made the discovery by testing hundreds of samples of chimpanzee waste in a nine-year study of three small communities of chimpanzees at the Gombe National Park in Tanzania, which [Jane Goodall](#) made famous. While chimpanzees nested in trees at night, a field assistant who sat below them caught urine in a plastic bag held between a forked twig. Researchers also picked up feces from the forest floor. Most chimpanzees were tested at least once a year.

The simian virus, known as S.I.V.cpz, is considered the precursor of H.I.V.-1, which crossed the species barrier sometime in the last 100 years. It has caused tens of millions of human AIDS cases in the world.

“We cannot date exactly when chimpanzees first got infected, but we certainly suspect that it was much, much longer than 100 years ago,” Dr. Hahn said. “Our gut feeling is that the chimp virus infection is not quite as” damaging as H.I.V.-1 is in humans.

The difference in the way the virus damages tissue, she said, “leads us to speculate that chimps may be one step ahead in adapting to the virus, and identifying that step would be important.”

More than 40 simian immunodeficiency viruses are known to infect African primates. African monkeys infected with the virus that causes simian AIDS have rarely developed AIDS. Only seven chimpanzees naturally infected with S.I.V.cpz have been studied in captivity, and five of them died of unknown causes as infants.

The only chimpanzee that was naturally infected with the simian virus and underwent standard virological and immunological tests showed none of the typical damage of AIDS, like low CD-4

cell counts and damaged lymph nodes. Two other chimpanzees injected with S.I.V.cpz in captivity did not show such changes.

Until now, scientists have known little about S.I.V.cpz's effects on chimpanzees in the wild, because they lacked the means to identify and monitor chimp behavior there. Using recently developed molecular and other tests, Dr. Hahn's team of primatologists, pathologists, geneticists and virologists studied three chimpanzee communities in Gombe National Park.

The chimpanzee communities, called Kasekela, Mitumba and Kalande, have distinct ranges. But the chimpanzees have territorial fights, and females typically leave their native group before having their first babies.

Starting in 2000, the scientists followed 94 chimpanzees in the park where Dr. Goodall and other scientists have observed these primates for nearly 40 years. Every day, a team of field assistants followed one chimpanzee from each community from dawn to dusk, recording behavioral data for each chimp and those interacting with it. Mating, aggression and other conspicuous social interactions were also observed.

Gene tests of feces identified individual chimpanzees. S.I.V.cpz infection was found in all three chimpanzee communities, and virological testing indicated that migrating females helped spread S.I.V.cpz among the communities.

The scientists found nearly identical S.I.V.cpz viruses in four chimpanzees. That suggested that some of them acquired S.I.V.cpz from mating partners soon after they had become infected, a period when transmission of the virus is greatest.

Two baby chimpanzees were infected. In one, transmission presumably was through [breast-feeding](#) because the animal was uninfected at birth.

Of 30 uninfected females, 22 gave birth to 30 infants. Of nine infected females, four gave birth to four infants. The difference was statistically significant.

Infected chimpanzees died or disappeared at a faster rate than uninfected chimpanzees. Workers recovered the bodies of 8 of the 18 chimpanzees that died (7 bodies of 17 infected chimps and 11 bodies of 77 uninfected chimps) and performed autopsies.

The scientists said it was not practical to treat infected chimpanzees in the wild.