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## Fatal virus apes HIV in chimps

Researchers say study could lead to vaccine for humans

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A team of scientists, including two from Chicago's Lincoln Park Zoo, have discovered chimpanzees in Tanzania falling ill and dying from an AIDS-like disease, a surprising finding that researchers hope could lead to new insights into the disease process and ultimately to a vaccine.

The team's study, to be published in Thursday's edition of the British research journal *Nature*, showed that chimps infected by certain strains of Simian Immunodeficiency Virus, a precursor to HIV, died 10 to 16 times more frequently than uninfected chimps during a 9-year study.

The results contradict previous evidence suggesting that chimpanzees were immune from AIDS and that SIV infections in the species were harmless.

Researchers already knew that some wild chimpanzees were infected with SIV from eating infected monkeys. A strain of SIV at some point mutated to HIV (Human Immunodeficiency Virus) in wild chimps in West Africa, where it had jumped into humans who ate infected chimp meat.

AIDS researchers say the new discovery presents a unique opportunity to deduce how the closely related SIV and HIV viruses can cause disease in closely related species—chimps and humans. Being able to compare them should speed up development of more effective AIDS therapies and vaccines, researchers say.

"It is a pretty momentous study," said Danny Douek, chief of the human immunology section of the National Institutes of Health vaccine research center in Bethesda, Md.

"You can regard the study as one that provides a missing link in the history of the HIV pandemic," said Douek, who is searching for possible AIDS vaccines and was not part of the Gombe project. "If we identify the evolutionary adaptations, that opens up therapeutic avenues for HIV disease."

The chimps in the study, from Tanzania's Gombe Stream National Park, are the same animals that scientists have followed since famed primatologist Jane Goodall began watching them in 1960. The 94 Gombe chimps, living in two groups, are "habituated" to the sight of human researchers following them, a key to the study's success.

While the principal research was con-



An African chimp with an AIDS-like virus cuddles a baby. Chicago experts proved chimps aren't immune. NATURE PHOTO 2006

ducted at the University of Alabama at Birmingham, the findings relied on the work of two Lincoln Park scientists, Elizabeth Lonsdorf, director of the zoo's primate research, and zoo epidemiologist Dominic Travis, who set up a survey in 2004 to assess the overall health of the Gombe chimps.

They trained Gombe park biologists to gather data by following animals at least once a month, taking notes on behavioral cues for possible illness or injury and gathering fecal and urine samples.

For a urine sample, the researchers rose before dawn and waited under trees where targeted chimps still slept aloft in nests.

"The first thing chimps do upon rising is relieve their bladders over the side of the nest," said Lonsdorf, "and you catch the samples as they come down, in containers on the end of a long stick."

The urine and fecal samples were sent to the University of Illinois veterinary medical school's pathology department in Chicago for analysis. The Chicago pathologists trained park veterinarians in Gombe to do field necropsies when a chimp died, taking tissue and fluid samples from the carcasses for analysis in Chicago.

The health survey dovetailed perfectly with another project under way at Gombe by University of Alabama at Birmingham AIDS researcher Beatrice Hahn. Hahn, who pioneered research into the origins of HIV, has headed a consortium of scientists studying SIV-infected Gombe chimps since 2000.

Pathologist Karen Terio was the first to see the evidence of the SIV disease process in the chimps from necropsy samples she examined in Chicago, seeing in tissues of one of a dead chimp what "looked just like a sample from a human patient who has died of AIDS."

"I couldn't quite believe what I was seeing in the microscope," Terio said, "so I had colleagues confirm it and then immediately got on the phone to tell Lonsdorf and Hahn."

The contribution of the zoo's Gombe health survey was "critical" to the success of the SIV research, said Hahn.

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