

UAB Researchers Discover HIV-1 Originated in Wild Chimpanzees

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An international team of scientists, led by researchers at the University of Alabama at Birmingham (UAB), has discovered a crucial missing link in the search for the origin of HIV-1, the virus responsible for human AIDS. That missing link is the natural reservoir of the virus, which the team has found in wild-living chimpanzees in southern Cameroon.

The findings provide important clues to how the disease migrated from



non-human to human primates and will be published in an upcoming issue of Science magazine.

Although researchers have long suspected that HIV-1's origins lie in some way with chimpanzee infection through a closely related virus SIVcpz (simian immunodeficiency virus from chimpanzees), only a few captive apes had been found to harbor SIVcpz.

In the study, UAB Professor of Medicine Beatrice H. Hahn, M.D., and her team conducted the first-ever molecular epidemiological survey of SIVcpz infection in wild-living chimpanzees in west-central Africa.

By analyzing ape fecal samples collected by trackers from the forest floor in remote jungle regions of Cameroon, Hahn and her colleagues were able to detect SIVcpz-specific antibodies and nucleic acids (viral genetic information) in as many as 35 percent of chimpanzees in some ape communities.

The UAB investigators went on to molecularly clone and sequence the complete viral genomes from four individual chimpanzees. According to UAB post-doctoral researcher Brandon Keele, Ph.D., lead author of the report, "this allowed for unprecedented genetic comparisons to be done between HIV-1 and its closest simian virus counterpart."

He went on to say that "finding this cluster of naturally infected chimpanzees will allow us to explore the natural history and behavior of SIVcpz in its natural host and help us begin to unravel how and why SIVcpz made the jump to humans."

Hahn, who for more than a decade has led an international effort to elucidate the origins of HIV-1, emphasized that the current study could not have succeeded without a close working partnership with Cameroonian government officials and with other collaborating



scientists, including George M. Shaw, M.D., Ying Ying Li, Jun Takehisa, Mario Santiago, Frederic Bibollet-Ruche, and Yalu Chen from UAB; Fran Van Heuverswyn, Florian Liegeois, Eric Delaporte and Martine Peters from the University of Montpellier, France; Elizabeth Bailes, Louise Wain, John Brookfield and Paul Sharp from the University of Nottingham, England; and Severin Loul, Eitel Mpoudi Ngole and Yanga Bienvenue from the Project Prévention du Sida au Cameroun (PRESICA).

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