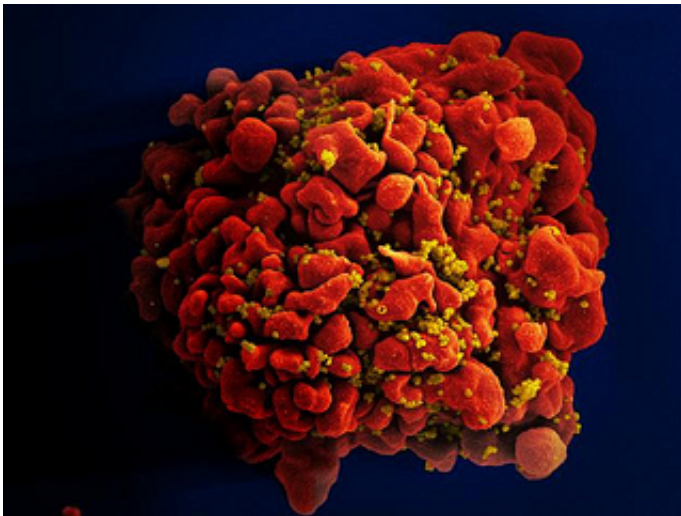


# Gorilla origins of the last two AIDS virus lineages confirmed

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Scanning electron micrograph of an HIV-infected H9 T cell. Credit: NIAID

Two of the four known groups of human AIDS viruses (HIV-1 groups O and P) have originated in western lowland gorillas, according to an international team of scientists from the Perelman School of Medicine at the University of Pennsylvania, the University of Montpellier, the University of Edinburgh, and others. The scientists, led by Martine Peeters from Montpellier, conducted a comprehensive survey of simian immunodeficiency virus (SIV) infection in African gorillas. Beatrice Hahn, MD, a professor of Medicine and Microbiology, and others from Penn were part of the team, whose findings appear online this week in the *Proceedings of the National Academy of Sciences*.

HIV-1, the virus that causes AIDS, has jumped species to infect humans on at least four separate occasions, generating four HIV-1 lineages—groups M, N, O, and P. Previous research from this team found that groups M and N originated in geographically distinct chimpanzee communities in southern Cameroon, but the origins of groups O and P remained uncertain.

The four cross-species transmissions have had very different outcomes in humans. Group M gave rise to the AIDS pandemic, infecting more than 40 million people worldwide by spreading across Africa and throughout the rest of the world. Groups N and P, at the other extreme, have only been found in a few individuals from Cameroon. However, group O, although not as widespread and prevalent as group M, has nonetheless infected about 100,000 people in west central Africa.

The team screened fecal samples from western lowland gorillas, eastern lowland gorillas, and [mountain gorillas](#) in Cameroon, Gabon, the Democratic Republic of Congo, and Uganda for evidence of SIVgor infection. They identified four field sites in southern Cameroon where western lowland gorillas harbor SIVgor.

"Viral sequencing revealed a high degree of genetic diversity among the different gorilla samples," explains Hahn. "Two of the gorilla virus lineages were particularly closely related to HIV-1 groups O and P. This told us that these two groups originated in western lowland gorillas."

"Understanding emerging disease origins is critical to gauge future human infection risks," adds Peeters. "From this study and others that our team has conducted in the past it has become clear that both chimpanzees and gorillas harbor viruses that are capable of crossing the species barrier to humans and have the potential to cause major disease outbreaks."

**More information:** Origin of the HIV-1 group O epidemic in western lowland gorillas, *PNAS*,

[www.pnas.org/cgi/doi/10.1073/pnas.1502022112](http://www.pnas.org/cgi/doi/10.1073/pnas.1502022112)

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