

Gorillas harbour AIDS-like virus, says study

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Gorilla. Photo courtesy Roger Birkel, The Baltimore Zoo.

Gorillas appear to be widely infected by a close relation to the AIDS virus, according to a study that appears on Thursday in the British journal *Nature*.

An international team — including scientists from the universities of Nottingham, Montpellier and Alabama — has made the surprising discovery of a virus closely related to HIV-1 in wild western lowland gorillas.

The new virus, which the scientists designate SIVgor, is notable for its

close genetic relatedness to an unusual variant of HIV-1 termed ‘group O’ that infects and causes AIDS in humans in west central Africa.

The findings raise a host of new questions about the ability of immunodeficiency viruses to spread between species.

The scientists, led by Martine Peeters at the University of Montpellier, France, in collaboration with Paul Sharp at The University of Nottingham, UK, and Beatrice Hahn at the University of Alabama at Birmingham, USA, publish their findings in the November 9 issue of the scientific journal *Nature*.

Earlier this year, the same team of investigators traced the origins of the pandemic form of HIV-1 (termed group M) and a different non-pandemic form (group N) to distinct, geographically isolated chimpanzee communities in southern Cameroon. But the primate reservoir of the third lineage, HIV-1 group O, could not be identified.

In the present study, the team thus conducted the first-ever molecular epidemiological survey of SIV (simian immunodeficiency virus) infection in wild-living gorillas.

By analyzing fecal samples collected from the forest floor at remote jungle regions in Cameroon, the Peeters and Hahn teams were able to detect SIVgor antibodies and nucleic acids (viral genetic information) in three gorillas living nearly 400 km apart. To their surprise, evolutionary analyses by The University of Nottingham group revealed that the newly identified SIVgor viruses were the closest known relatives of HIV-1 group O.

Despite the finding of SIV infection in gorillas, the present study reaffirms that chimpanzees likely served as the primary reservoir of SIVs now found in chimpanzees, gorillas and humans.

Dr Peeters said: “HIV-1 groups M and N clearly arose by transfer of viruses from chimpanzees to man, while the origin of HIV-1 group O is less clear.

“Chimpanzees could have transmitted group O-like viruses to gorillas and humans independently, or they could have transmitted the virus first to gorillas, which in turn transmitted it to humans.”

Dr Hahn said: “Either way, the finding of HIV-1 related viruses in wild gorillas opens a Pandora’s box of questions and speculation about the ability of these viruses to spread between species.”

Dr Sharp added: “This finding provides a unique opportunity to study host-specific adaptive changes in the virus and their effects on viral pathogenicity [the ability of an organism to cause disease in another organism] and disease outcome.”

In future studies, the team plans to determine the prevalence, geographic distribution and natural history of SIVgor infection, as well as the routes by which gorillas acquired SIVgor in the wild.

“The latter is quite a mystery,” said Fran Van Heuverswyn, a PhD student at the University of Montpellier and lead author of the study, “since gorillas are herbivores and physical encounters between gorillas and chimpanzees are believed to be rare. How is it then that gorillas became infected?”

Dr Peeters emphasized that the current study resulted from a close working partnership with Cameroonian government officials and with other collaborating scientists including Ying Ying Li, Bandon Keele, Weimin Liu and George Shaw from UAB; Cecile Neel, Florian Liegeois, Cristelle Butel and Eric Delaporte from the University of Montpellier, France; Elizabeth Bailes from The University of Nottingham, UK; and

Severin Loul, Eitel Mpoudi Ngole and Yanga Bienvenue from the Project Prevention du Sida au Cameroun (PRESICA) in Cameroon.

Source: University of Nottingham

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