

Press release

## **Rabies in Africa: from its origins to the current fight**

**Today, Africa is the second continent most affected by rabies, after Asia. A recent study conducted by Institut Pasteur researchers retraced the origins and evolution of the disease in Western and Central Africa, and revealed that the emergence and the dissemination of the rabies virus coincided with the beginning of European colonization. In addition to its historical value, this research also yields important data for the future of the fight against rabies in this region.**

Despite the existence of effective vaccines, 24,000 people die of rabies in Africa each year and the infection is mainly transmitted by dogs.

The Lyssavirus Dynamics and Host Adaptation Unit at the Institut Pasteur in Paris, headed by Hervé Bourhy, investigated the evolutionary dynamics of dog rabies viruses in Western and Central Africa. The research, led by Chiraz Talbi and Hervé Bourhy, was undertaken in partnership with teams from America, Italy and Africa (Burkina-Faso, Ivory Coast, Mali, Mauritania, Niger, Central African Republic), and the Institut Pasteur in Dakar and Bangui.

The researchers analyzed a total of 182 isolates of rabies viruses, sampled from 27 African countries over 29 years; 92 of these isolates were newly collected and sequenced.

Their genetic study revealed that the rabies viruses circulating in this region belong to the same lineage, known as “Africa 2”. The phylogenetic study of this lineage suggests a possible east-to-west spread of the rabies viruses across Africa. The findings also show that the emergence of these viruses in the African region studied is relatively recent, i.e. less than 200 years ago (the average date for the emergence of the “Africa 2” lineage in the study is 1845). This period coincides with the rise in European colonization and urbanization.

According to the evolution of the viral isolates observed by the researchers, the viruses were probably introduced in central Africa. They then gradually spread west- and south-westwards, as travel and trade increased between the various countries following colonization in the first half of the 20th century. The urbanization process probably also helped to spread and establish dog rabies in this region.

Detailed phylogenetic analysis shows that the “Africa 2” lineage spread gradually — probably over more than a century — to Western and Central Africa. These findings challenge a theory put forward by other authors in 2007, which suggests that rabies

viruses could spread rapidly from endemic regions in Africa via “superspreader” dogs, capable of transmitting rabies over large distances.

This study on the history of dog rabies viruses in this African region also brings new hope for the future.

*“Our study may be useful for devising an efficient strategy for controlling and eradicating dog rabies in Western and Central Africa”*, the authors emphasized.

For the first time, the researchers have revealed two factors of key importance in the fight against rabies in this region. Firstly, rabies does not spread between North African and Sub-Saharan countries; and secondly, the exchange of viruses between countries in Western and Central Africa is limited.

*“Consequently, a gradual strategy aiming to eradicate rabies in Western and Central Africa is conceivable”*, concluded Hervé Bourhy.

*This research was conducted as part of the European research program RABMEDCONTROL (<http://www.rabmedcontrol.org/>).*

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For further information about rabies, please read our fact sheet:

<http://www.pasteur.fr/ip/easysite/go/03b-00000j-0hr/presse/fiches-sur-les-maladies-infectieuses/rage>

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## Source:

*“Evolutionary history and dynamics of dog rabies virus in western and central Africa”*

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**Read the article:** <http://www.sgm.ac.uk/JGVDirect/007765/007765ft.pdf>

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