World Organisation for Animal Health
Founded as OIE

2nd Meeting of the Eastern Africa Sub-Regional Network for Rabies Control

10 – 12 October 2023 Addis Ababa, Ethiopia

Tracking the rabies virus in Africa: Trends from genomics surveillance

Claude Sabeta, WOAH expert for Rabies, RSA

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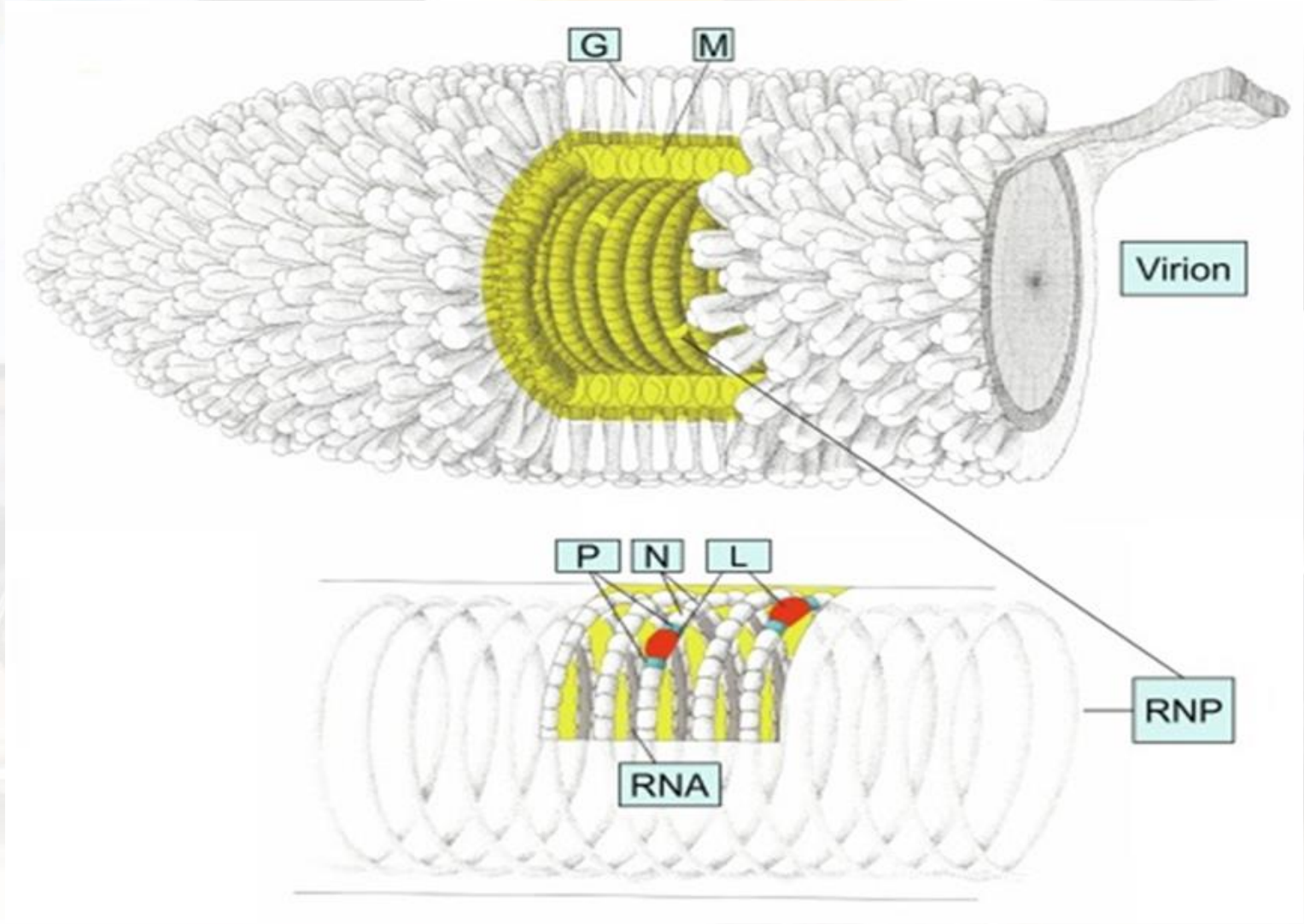
Table 1. Test methods available for the diagnosis of rabies and their purpose

Method	Purpose					
	Population freedom from infection	Individual animal freedom from infection prior to movement	Contribute to eradication policies	Confirmation of clinical cases	Prevalence of infection – surveillance	Immune status in individual animals or populations post-vaccination
Detection and identification of the agent						
DFA (antigen detection)	+++	–	+++	+++	+++	–
dRIT (antigen detection)	+++	–	+++	+++	+++	–
RTCIT (virus isolation)	–	–	+++	+++	+++	–

Method	Purpose					
	Population freedom from infection	Individual animal freedom from infection prior to movement	Contribute to eradication policies	Confirmation of clinical cases	Prevalence of infection – surveillance	Immune status in individual animals or populations post-vaccination
MIT (virus isolation)	–	–	+	+	+	–
Conventional RT-PCR (RNA detection)	+++	–	+++	+++	+++	–
Real-time RT-PCR (RNA detection)	+++	–	+++	+++	+++	–
Detection of immune response						
VN	–	+++	+++	–	–	+++
ELISA	–	–	+++	–	–	+++

Key: +++ = recommended for this purpose; ++ recommended but has limitations;
+ = suitable in very limited circumstances; – = not appropriate for this purpose.
DFA = direct fluorescent antibody test; dRIT = direct rapid immunohistochemistry test; RTCIT = rabies tissue culture infection test; RT-PCR = reverse-transcription polymerase chain reaction; MIT = mouse inoculation test; VN = virus neutralisation; ELISA = enzyme-linked immunosorbent assay.


G
M
Virion
P
N
L
RNP
RNA

- Ikoma lyssavirus (African civet, Tanzania)
- Matlo bat lyssavirus identified during a surveillance in bats in Limpopo province.
- Phala bat lyssavirus identified in 2021 in the same area (northern South Africa)
- Both viruses were sequenced (N and G)

Evaluation of Taxonomic Characteristics of Matlo and Phala Bat Rabies-Related Lyssaviruses Identified in South Africa

Natalie Viljoen [1,2], Jacqueline Weyer [1,2,3], Jessica Coertse [1,2] and Wanda Markotter [1,*]

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2 Centre for Emerging Zoonotic and Parasitic Diseases, National Institute for Communicable Disease of the National Health Laboratory Service, Johannesburg 2131, South Africa
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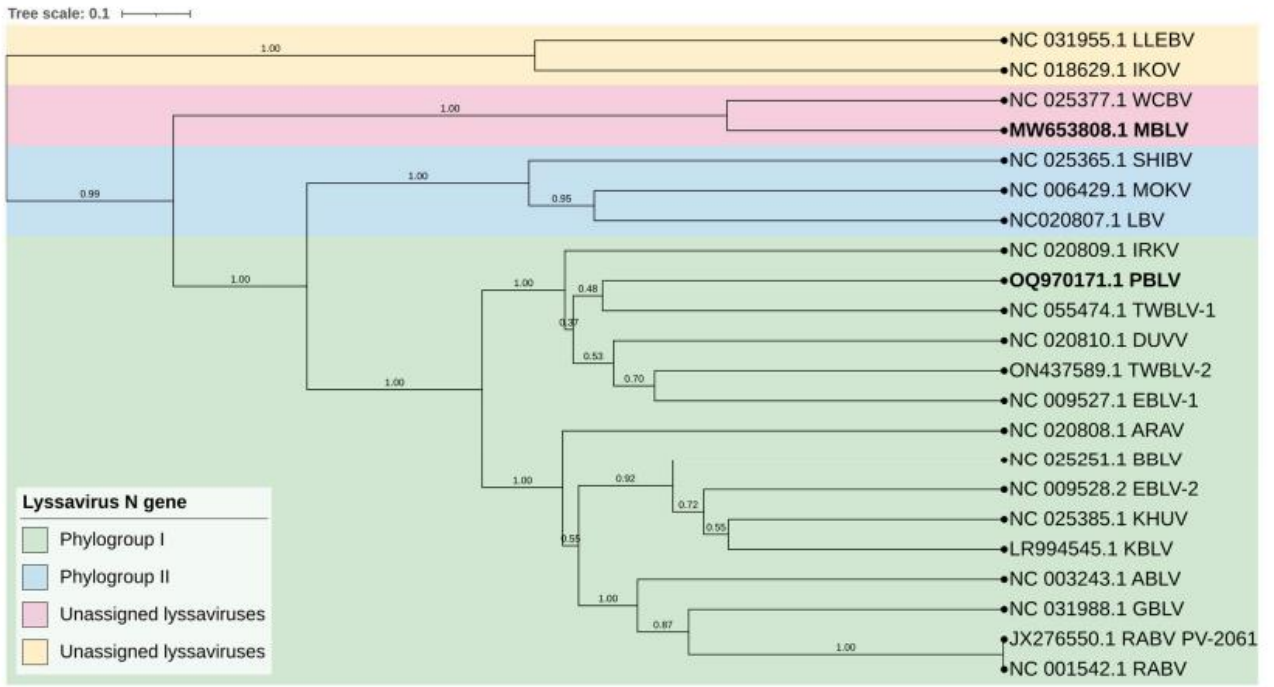

Epidemiological aspects of the persistent transmission of rabies during an outbreak (2010 – 2017) in Harare, Zimbabwe

Andre Coetzer[1,2], **Lambert Gwenhure**[3], **Pious Makaya**[3], **Wanda Markotter**[4], **Louis Nel**[1,2]*

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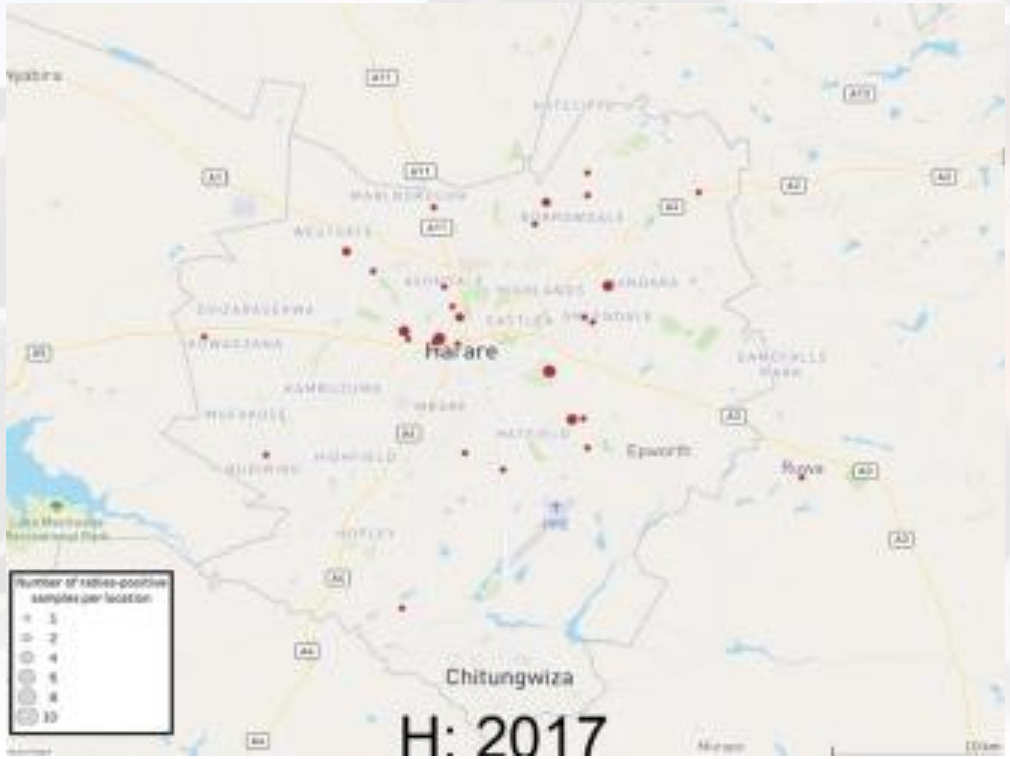
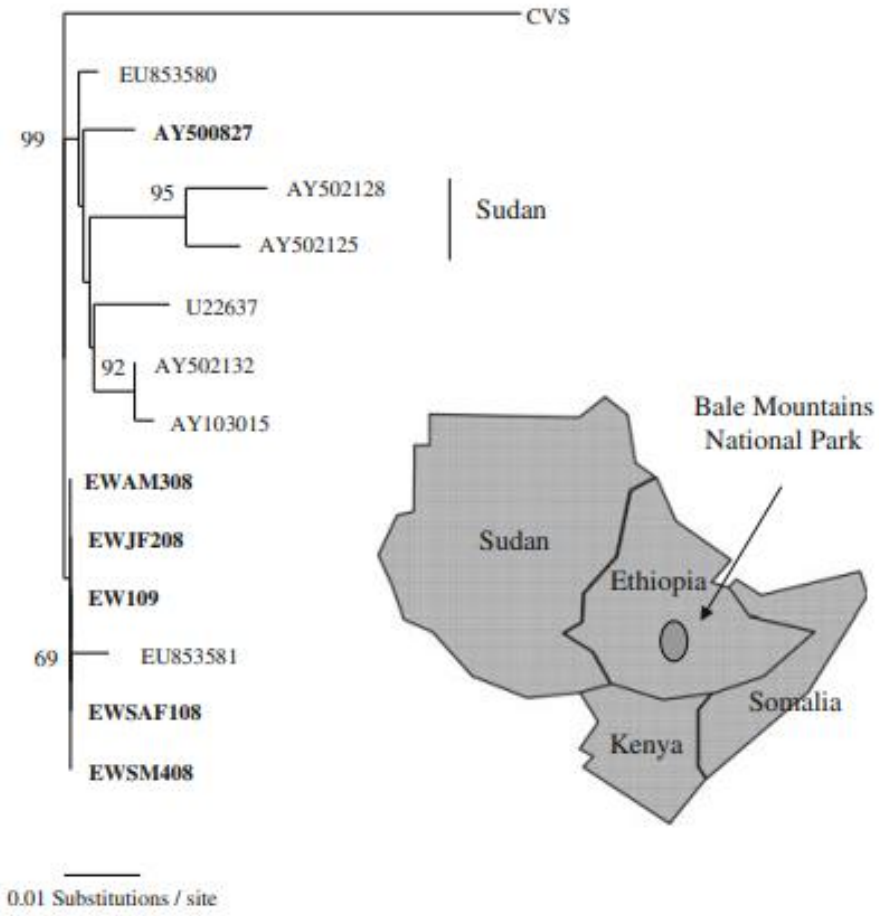


- Animal rabies outbreak in the Harare metropolitan city (2010-2017)
- Routine surveillance data and molecular analysis
  - Identified specific suburbs where disease transmission took place
  - Rabies introduced from north-eastern Zimbabwe

A new outbreak of rabies in rare Ethiopian wolves (*Canis simensis*)

N. Johnson · K. L. Mansfield · D. A. Marston · C. Wilson · T. Goddard · D. Selden · G. Hemson · L. Edea · F. van Kesteren · F. Shiferaw · A. E. Stewart · C. Sillero–Zubiri · A. R. Fooks



- Rabies virus genome amplified from the sample
- Five sequences from 2008/9 outbreak showed sequence similarity;
  - 1.2 sequence divergence with those from 2003/4 outbreak
  - Likely source of the October case is a dog reservoir
  - 2009 case could be due to wolf-wolf transmission

Tracking the rabies virus in Africa

- Some laboratories on the continent have the **capacity** to apply molecular techniques to rabies diagnosis and research:
  - Identify new lyssavirus variants
  - Establish sources of rabies outbreaks
  - Determine spillover between domestic and wildlife hosts (dogs and jackals in southern Africa)
  - Together with other techniques establish reservoirs status of specific animal species
  - Establish transboundary nature of the disease
    - Multinational control of rabies

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