

Infectious Agents in Indian Flying Fox (*Pteropus medius*) in Sri Lanka

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ABSTRACT

Pteropid fruit bats are recognized hosts for emerging pathogens such as Hendra virus, Nipha virus, and Ebola virus. The Indian flying fox, Pteropus medius (formerly P. giganteus), occurs in several southern Asian countries, including Sri Lanka where it is the most abundant among the four fruit bat species on the Island. To better understand pathogens and diseases affecting this species, 100 dead P. medius carcasses were collected from the ground under a large urban roosting colony located in the Kandy district in Sri Lanka, from January 2014 to December 2015. Each bat was subjected to complete post-mortem examination. Five of 70 bats tested were found to be infected with a new Lyssavirus. One of 55 bats had pathogenic Leptospira sp. in the kidney. Fifteen of 100 bats were infected with at least one Toxocara pteropidis, an intestinal nematode. Advanced molecular techniques are now being applied to assess Lyssavirus-free bats for other potential zoonotic viruses.

INTRODUCTION

- ❑ Bats belonging to the family *Pteropodidae* (Fruit bats) recently gained attention as a wild reservoir for many emerging viral pathogens
- ❑ The Indian flying fox *Pteropus medius* (formerly *Pteropus giganteus*) occurs in several Asian countries including Sri Lanka [1].
- ❑ A general pathology and infectious agent surveillance was carried out to detect and identify pathogens of *P. medius*.

MATERIALS AND METHODS

- ❑ One hundred *P. medius* were subjected to a complete *postmortem* examination performed in a biosafety level 2 facility.
- ❑ Seventy brain samples were subjected to fluorescence antibody test (dFAT).
- ❑ DNA from the kidney tissues were extracted and subjected to polymerase chain reaction for identifying pathogenic *Leptospira* DNA.
- ❑ The entire intestinal tract was examined and intestinal nematodes were collected and counted.

RESULTS, DISCUSSION AND CONCLUSION

- ❑ Five out of 70 *P. medius* tested positive for Lyssavirus.
- ❑ Further studies revealed that these bats were infected with a novel Lyssavirus designated as Gannoruwa Bat Lyssavirus (GBLV) [2] (Figure 1).
- ❑ Fifteen immature *P. medius* were infected with *Toxocara pteropidis*. The number of nematodes per bat ranged from 1 – 18. (Figure 2).
- ❑ DNA of pathogenic *Leptospira spp.* was present in one of the kidneys of 55 *P. medius* tested. DNA sequencing data revealed it was *Leptospira interrogans*.

- ❑ Advanced molecular techniques are now being applied to assess for other potential zoonotic viruses.
- ❑ This study reports three potentially zoonotic infections in a new host species *P. medius* in a new geographic region.

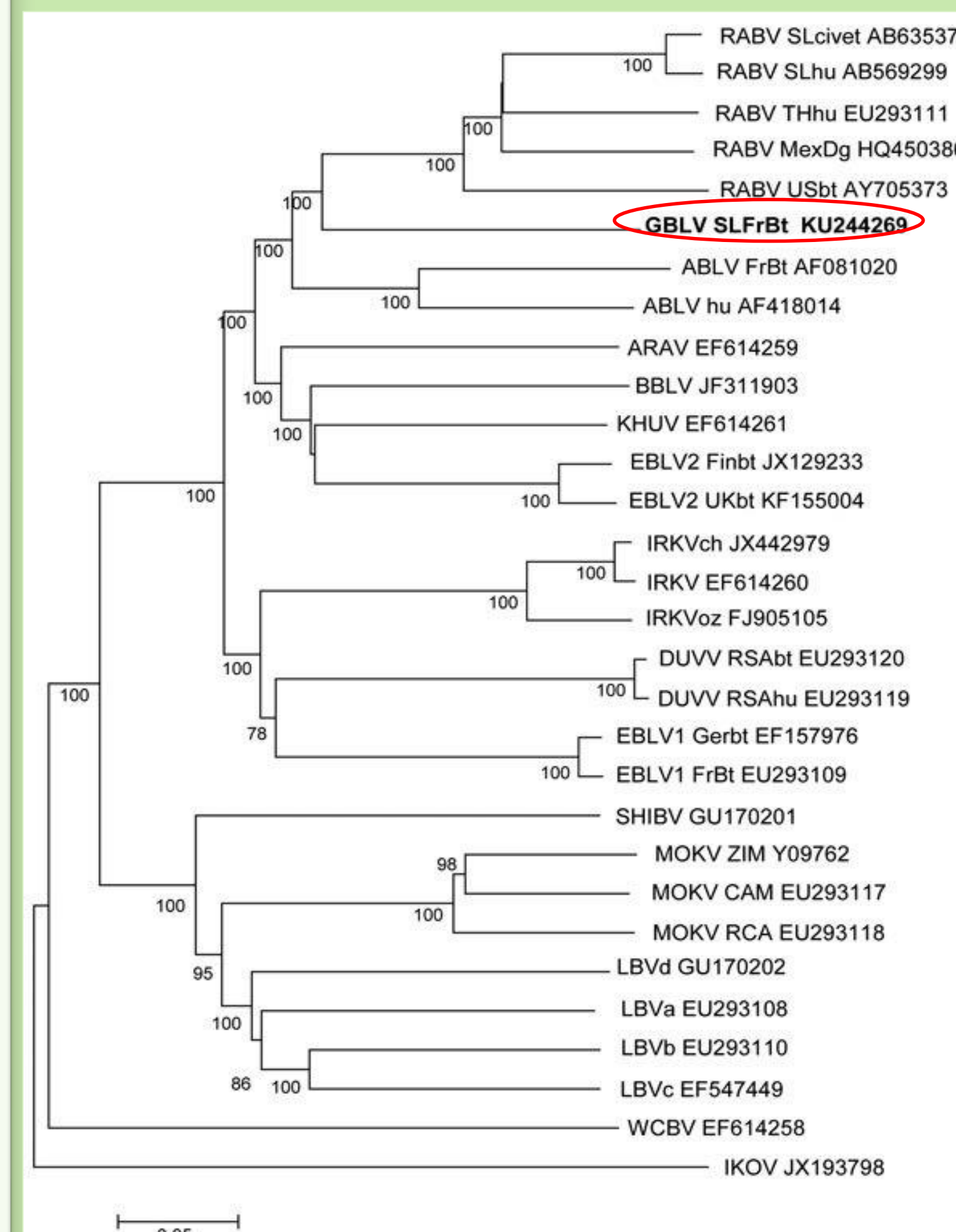


Figure 1: Phylogenetic relationships between representatives from all classified Lyssaviruses and novel Gannoruwa Bat Lyssavirus (GBLV) on the basis of complete genome sequences [2].

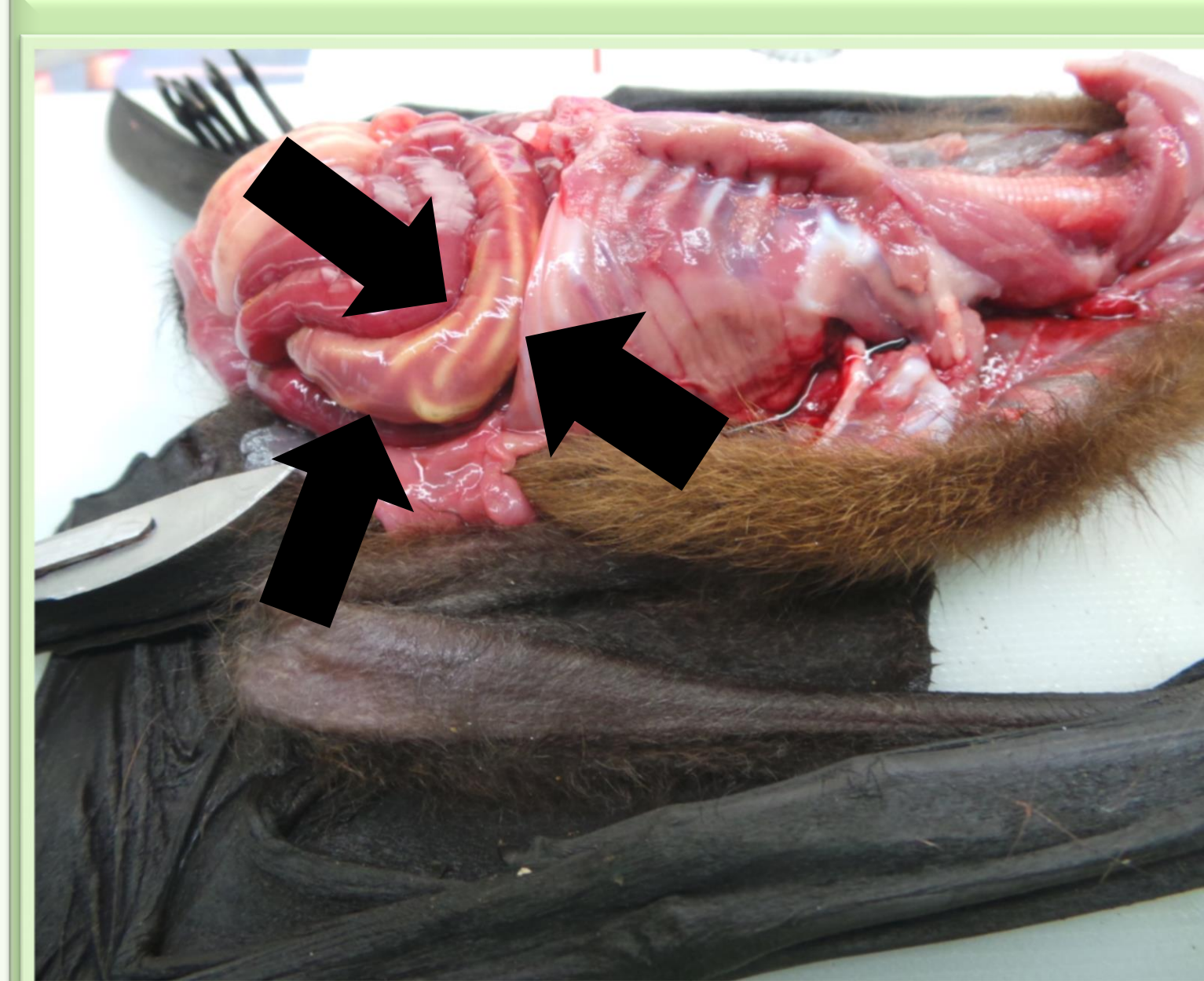


Figure 2: *T. pteropidis* completely obscuring the small intestine (Arrows) of immature *P. medius*

REFERENCES

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ACKNOWLEDGEMENT

This project received funding from Canada's International Development Research Centre (IDRC) through the project entitled Building Research Excellence in Wildlife and Human Health in Sri Lanka.