

### Multiplex serological investigation of antibodies against Ebolaviruses in a large panel of African bat species

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**Introduction:** The reservoir(s) and ecology of Ebola viruses (EBV) remains largely unknown, but previous detection of viral RNA and anti-EBV antibodies in bats suggests that they may play a role in zoonotic transmission.

**Objectives:** Gain insight into the circulation of EBV in bat populations in West and Central Africa by testing for the presence of antibodies against different EBV, using high throughput technology.

**Materials and methods:** Bats were captured across 7 regions in Cameroon and 4 in Guinea, and released immediately after collection of dried blood spots and biological data. Here we used a multiplex immunoassay with Luminex® technology for antibody detection against NP, GP and VP40 antigens for Zaire (EBOV), Sudan (SUDV), Bundibugyo (BDBV) and Reston (RESTV) EBV. In the absence of positive controls, cut-off values were determined using the change-point analysis method with bootstrapping (10 000 times). A sample was considered positive if the detected antibodies level was over the estimated cut-off for both NP and GP antigens.

**Results:** We studied 1796 bats (Cameroon, n=1365 and Guinea, n=431) belonging to 10 genera of the frugivorous family *Pteropodidae* (n=641) and 12 genera of 6 insectivorous families (n=1155). Based on the change-point analysis, 0,2% (3/1796) of bats were positive for EBOV (*E. helvum*, n=1; *M. angolensis*, n=1 and *Mops sp.*, n=1) and 0,1% (1/1796) for SUDV (*R. aegyptiacus*). A total of 7,9% (142/1796) reacted to at least one EBV antigen, mainly GP. These bats belonged mainly (97%) to 8 frugivorous species and one insectivorous genus (*Mops*).

**Conclusion:** we confirm the presence of antibodies in 2 frugivorous bat species and 1 insectivorous genus previously found to be seropositive, as well as for the first time in *M. angolensis*, a frugivorous species. Using a stringent method of interpretation (change-point analysis), prevalence of EBV antibodies can be underestimated. More studies are needed to evaluate the extend of EBV in bats in areas at risk for EBV outbreaks in Africa and complementary less conservative methods to define cut-offs could be used for comparison in order to reflect natural circulation or exposure to Filoviruses.

# Abstract book



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## Filovirus 2017 – Abstracts of Invited Speakers

Public Health Response.....	IL 01–IL 04, IL 37
Virus Structure & Biology I.....	IL 05–IL 10
Virus Structure & Biology II.....	IL 11–IL 13
Pathology and Pathogenesis.....	IL 14–IL 18
Virus Structure & Biology III.....	IL 19–IL 20
Immune Response to Filovirus Infection.....	IL 21–IL 22
Filovirus Vaccines I.....	IL 23–IL 24
Therapy I.....	IL 25–IL 27
Filovirus Vaccines II & Therapy II.....	IL 28–IL 29
Ecology & Epidemiology.....	IL 30–IL 32
Clinical Management.....	IL 34–IL 36

## Filovirus 2017 – Abstracts of Oral Presentations

Virus Structure and Biology I.....	OP 01
Virus Structure and Biology II.....	OP 02–OP 05
Pathology and Pathogenesis.....	OP 06
Virus Structure and Biology III.....	OP 07–OP 10
Immune Response to Filovirus Infection.....	OP 11–OP 15
Filovirus Vaccines I.....	OP 16–OP 19, OP 33
Therapy I.....	OP 20–OP 22
Filovirus Vaccines II & Therapy II.....	OP 23–OP 27
Ecology & Epidemiology.....	OP 28–OP 30
Clinical Management.....	OP 31–OP 32

## Filovirus 2017 – Abstracts of Poster Presentations

Public Health Response to Filovirus-Outbreaks.....	P 1–P 7
Virus Structure.....	P 8–P 10
Virus Biology.....	P 11–P 34
Pathology and Pathogenesis.....	P 35–P 42
Filovirus Diagnostics.....	P 43–P 47
Virus Ecology and Epidemiology.....	P 48–P 55
Antivirals.....	P 56–P 71
Filovirus Vaccines.....	P 73–P 87
Immune Response to Filovirus Infection.....	P 88–P 106