



Diagnosis of emerging viral infections in the context of One Health

Specific serological assays

West Nile virus (WNV), Usutu virus (USUV) and tick-borne encephalitis virus (TBEV) are worldwide endemic vector-borne and zoonotic flaviviruses, often co-circulating in the same areas (e.g. in several European countries, including Germany). Many animals can be infected and develop severe disease, among them horses, birds and humans.

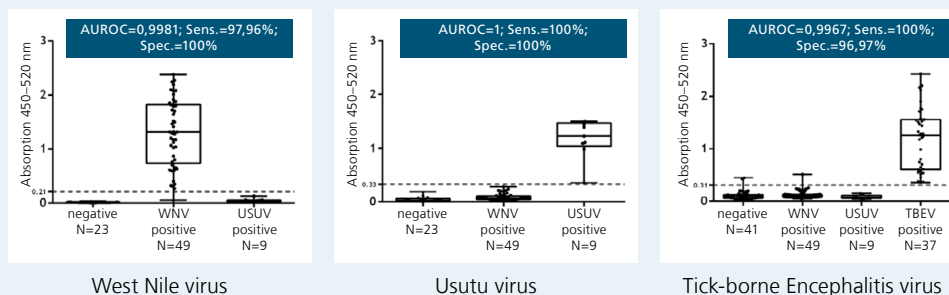
Serological diagnosis of WNV, USUV and TBEV is severely compromised by cross-reactive antibodies to these structurally very

similar viruses. As a consequence, existing test systems frequently detect samples as false-positive. Fraunhofer IZI has developed modified recombinant virus antigens (protected under WO 2015139784) that do not bind cross-reactive antibodies and therefore enable extremely specific diagnosis and differentiation of the three virus infections. Resulting tests are applicable for horses (shown below), poultry and humans and offer a new level of diagnostic accuracy in areas where multiple flaviviruses are co-circulating.

Open for collaboration

- Specific and sensitive diagnosis of flavivirus infections
- In animals and humans
- In several diagnostic platforms

ELISA tests of horse sera using proprietary antigens from Fraunhofer IZI



ELISA for horse IgG, using antigens from WNV, USUV or TBEV (left, middle, right, respectively) on serum samples with pre-defined infection status (N=numbers of sera). Data on sensitivity and specificity are given on top of each panel. Cut-off is indicated by the dashed line. From Schwarzer et al., Scientific Reports (2025) 15:28752 (collaborative study with the Friedrich Löffler Institute).

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