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Fatal human encephalitis with new virus and characterized by standardized and validated Shotgun metagenomic approach

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Context

Shotgun metagenomics have demonstrated high potential to detect all pathogens in undiagnosed syndromic infectious disease. Thus, we have developed an accredited (ISO EN NF 15189) SMg technology (MetaMIC®) to explore atypical and severe clinical cases.

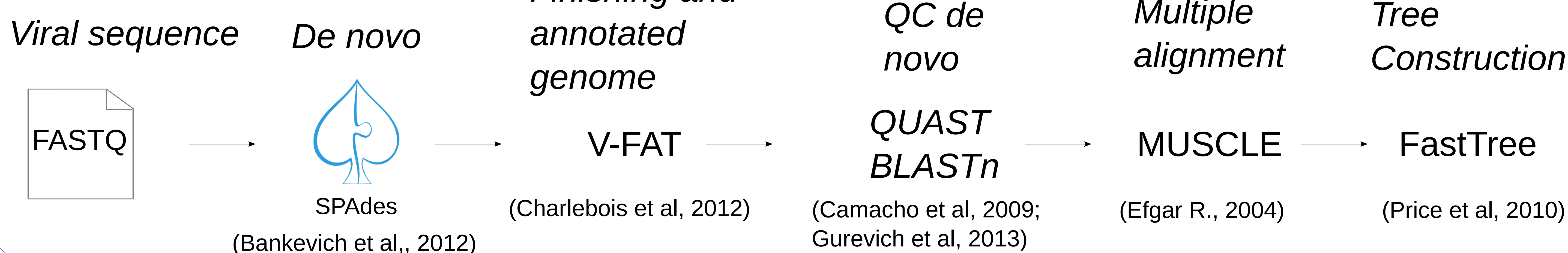
We report a case of a 58-year-old woman, admitted to the emergency department for neurological syndrome, treated as epileptic disease. Despite intensive symptomatic treatment therapy, the patient falls into a coma and subsequently died with encephalitis symptoms. MRIs concluded to probable severe status epilepticus and all conventional microbiology testing assays remained negative on clinical samples including sequential cerebrospinal fluids and cerebral biopsy which were tested by SMg.

Materials and Methods

Detection of pathogens

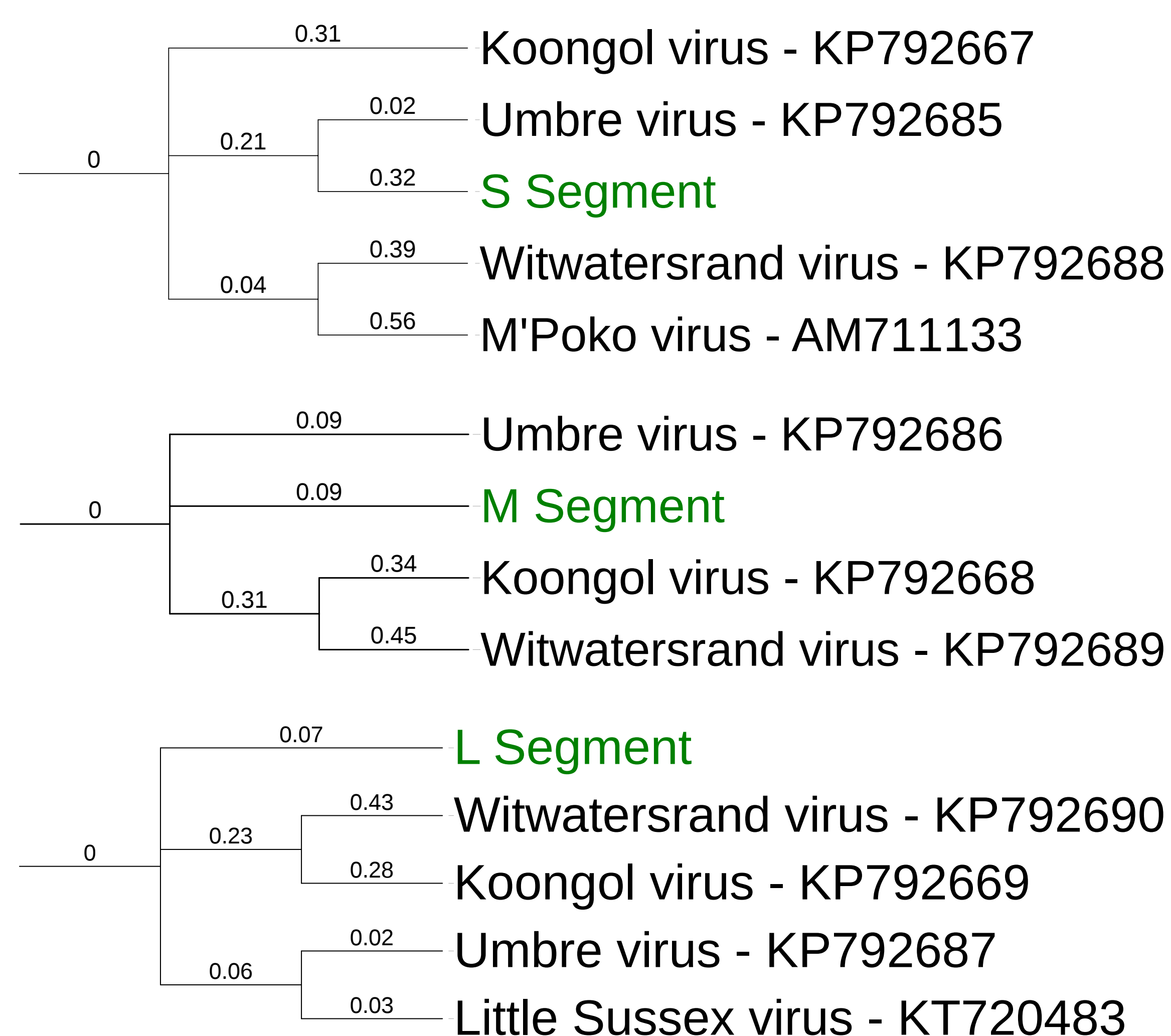


Viral assembly

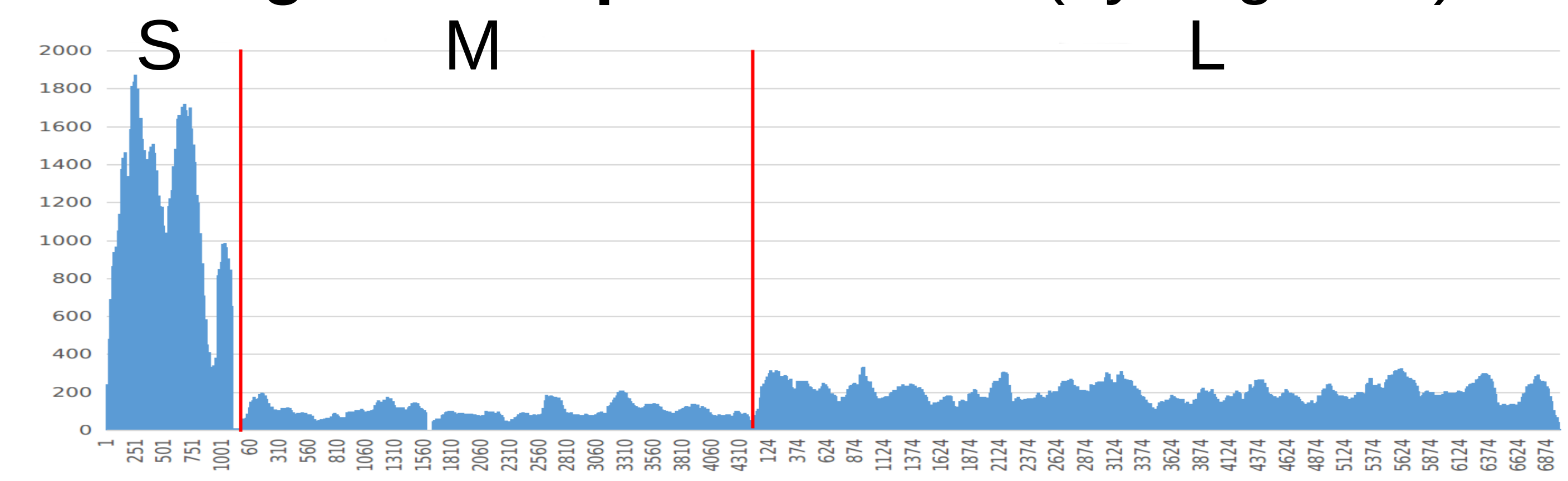


Results

Viral phylogeny of Orthobunyaviridae



Coverage and depth obtained (by segment)



Conclusion

- The patient harbored an encephalitis infection with a new virus impossible to detect with conventional diagnostic tools.
- This case highlighted the major advantage of having a reliable SMg tool to diagnose new pathogens in a world with frequent emerging infectious diseases.