Shuni virus (SHUV) and Schmallenberg virus (SBV) are Culicoides biting midges transmitted orthobunyaviruses causing severe fetal malformation, abortions and stillbirth in ruminants. For SHUV, also neurological symptoms were described and a general zoonotic potential cannot be ruled out. While SBV is endemic in Europe, SHUV is distributed in Africa and the Middle East and a further northern spread seems likely.

The tri-segmented RNA genome of SHUV and SBV codes for four structural and two nonstructural proteins, namely NSs and NSm. NSs is a virulence factor in vertebrate hosts, counteracting the interferon induction, while NSm plays a role in virus assembly and morphogenesis and a function in the insect host is supposed. For SBV, a reverse genetics system including NSs and NSm deletion mutants is already available. To investigate the function of both SBV nonstructural proteins in the insect vector, multistep growth studies with NSs and NSm deletion mutants were performed in Culicoides sonorensis cells. For the establishment of a SHUV reverse genetics system, cDNA copies of the three RNA segments of a recent Israeli isolate were cloned into a plasmid vector and deletion mutants lacking NSs and/or NSm will be generated and in vitro characterized.

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