**‘****NSm is a critical determinant for bunyavirus transmission between vertebrate and mosquito hosts’.** **Data repository READme file.**

**Tab 1: Figure 2**

(b) BUNV-wt or BUN-ΔNSm titres in bodies and heads at 3-, 6- and 16-days post-blood meal (dpbm).

(c) BUNV-wt or BUN-ΔNSm titres in guts, bodies, and salivary glands (SG) at 3 and 15 dpbm. Titres are displayed as PFU/mL for each tissue with individual samples displayed (n = 20 per condition). All samples are presented in the graph. Lines indicate median values and the circled numbers represent the percentage of infected samples for each condition.

**Tab 2: Figure 3**

(b)Virus titres in midguts and salivary glands (SG) at 3 and 9 days after BUNV-wt or BUN-ΔNSm exposure by intrathoracic injection (5 x 104 PFU/mosquito). Virus titres were measured by plaque assay on BHK-21 cells. Titres are displayed as PFU/mL for each tissue with individual samples displayed (n = 20 per condition). Statistical significance shown on the graph was obtained using a two-way ANOVA followed by a Tukey’s multiple comparisons test. ns, not significant, p value > 0.5; \*\*\*\*, p value < 0.0001.

(c,d) Adult females were inoculated intrathoracically with 5 x 104 PFU/mosquitoof BUNV-wt (n = 19) or BUN-ΔNSm (n = 20) and virus titres of individual salivary glands (c) and saliva (d) quantified at 7 dpi by plaque assay on BHK-21 cells. Viral titres were analysed by a two-tailed Mann-Whitney test and the infection prevalence was analysed with a Chisquare test. ns = not significant. All the samples are presented in the graph. Lines indicate median values and the circled numbers represent the percentage of infected mosquitoes. Infection prevalence for the saliva were not different (p = 0.25).

**Tab 3: Figure 4**

(b) BUNV-wt or BUN-ΔNSm titres in mosquitoes at 0h and 1, 2, 3 and 6 dpbm fed with a blood meal containing 2 x 107 PFU/mL of virus. Virus titres were measured by plaque assay on BHK-21 cells and are displayed as PFU/mL for each animal with individual samples displayed (n = 5 per condition for 0h, n = 16-20 per condition for 1, 2, 3 and 6 dpbm). Statistical significance shown on the graph was obtained using a two-way ANOVA followed by a Tukey's multiple comparisons test. ns, not significant, p value > 0.5; \*\*\*\*, p value < 0.0001.

(c) BUNV S RNA levels in the midgut at 3, 24, 48 and 72h pbm were quantified by RT-qPCR. Normalised expression for each sample was obtained as described, normalised to the *S7* ribosomal gene and as relative values to that of the control group (BUNV-wt 3h, RQ geomean set to 1). Log2-transformed RQ values were plotted (n = 5 pools of 4 midguts per group and time point). Box plots display the RQ minimum, first quartile, median, third quartile, and maximum. Statistical testing by two-way ANOVA followed by a Tukey's multiple comparisons test. \*, p value < 0.05p = 0.0225; \*\*\*\*, p value < 0.0001.

**Tab 4: Figure 5**

(f) Virus titres of whole mosquitoes at 3 dpbm were determined by plaque assay on BHK-21 cells and displayed as PFU/mL with all individual animals that were infected displayed (n = 20 per condition). Lines indicate median values. Statistical testing by two-tailed Mann-Whitney test for viral titres. \*\*\*\*, p value < 0.0001. Statistical analysis of the infection prevalence for controls (20 %) and pPUb-NSm-V5 (75 %) was performed using a Chisquare test. \*\*\*, p = 0.0006.

(h-i) Quantification of individual (h) or cluster of (≥ 3 cells/foci, i) N positive cells per midgut of infected female mosquitoes (n= 18 and 14 for controls and pPUb-NSm respectively) at 3 dpbm. Lines indicate mean values. Statistical testing by two-tailed Mann-Whitney test. \*\*, p value = 0.006 and \*\*\*, p value = 0.001.

**Tab 5: Figure 6**

(b) Mosquitoes were fed with 2 x 107, 7 x 107 or 2 x 108 PFU/mL of either BUNV-wt and BUN-DNSm, and virus titres determined. Titres are displayed as PFU/mL for each whole individual female (n = 20 per condition). Statistical significance shown on the graph was obtained using a two-way ANOVA followed by a Tukey's multiple comparisons test. ns, not significant, p value > 0.5. Lines indicate median values and the circled numbers represent the percentage of infected samples.

(c) Total number of N positive cells per midgut of infected female mosquitoes with 2 x 107 (n = 22) or 2 x 108 PFU/mL (n = 20) of BUN-DNSm. Statistical testing by two-tailed Mann-Whitney test. \*\*, p = 0.004. Lines indicate mean values.

(d) Mosquitoes were fed with either 2 x 107 or 2 x 108 PFU/mL of BUN-DNSm, and individual midguts and rest of bodies virus titres at 3 and 6 dpbm were determined (n = 20 per condition). Statistical testing by a two-way ANOVA followed by a Tukey's multiple comparisons test. ns, not significant, p value > 0.5; \*\*\*, p value = 0.0002, \*\*\*\*, p < 0.0001. Lines indicate median values and the circle number represent the percentage of infected samples.

(e) Confocal images of midguts infected by 2 x 108 PFU/mL of BUN-DNSm and stained at 2, 3 and 6 dpbm with an N antibody (green) and DAPI (blue). Scale bars are 150 µm. Total number of N positive cells per midgut of infected female mosquitoes at 2 (n = 14), 3 (n = 18) and 6 (n = 18) dpbm. Statistical testing by Kruskal-Wallis. ns, not significant, p value > 0.5. Lines indicate mean values.

**Tab 6: Figure S2**

(b) Growth curves of BUNV-wt and BUN-ΔNSm on mammalian cells (BHK-21, A549 and A549/Npro) and mosquito cells (*Ae*. *albopictus* larvalC6/36 and U4.4 cell lines and *Ae. aegypti* embryonic Aag2 cell line). Cells were infected with BUNV (MOI 0.01), and culture supernatants were harvested at different time points post-infection as indicated. Viral titres were determined by plaque assay on BSR-T7/5 cells. Curves represent one experiment performed in either duplicate or triplicate. Error bars represent standard errors of the means (SEM). Statistical testing by Mann-Whitney Test. ns = not significant.

**Tab 7: Figure S3**

(a) Adult females were fed with an artificial blood meal containing 4 x 108 PFU/mL of BUNV-wt or BUN-ΔNSm and several whole mosquitoes were sampled minutes after blood feeding to ensure that the mosquitoes were fed with an equivalent number of viral particles from each viral strain.

(b) Adult females were injected intrathoracically with 5 x 104 PFU/mosquito of BUNV-wt or BUN-ΔNSm and several whole mosquitoes were analysed minutes after injection to ensure that an equivalent number of viral particles of each viral strain were delivered in each mosquito.

(a,b) Titres are displayed as Log10 PFU/mL with individual samples displayed (n = 5 per condition). Lines indicate median values and statistical significance shown on the graph was obtained using a two-tailed Mann-Whitney test between BUNV-wt and BUN-ΔNSm. ns, not significant.

All other data are available in the manuscript or in supplementary files.