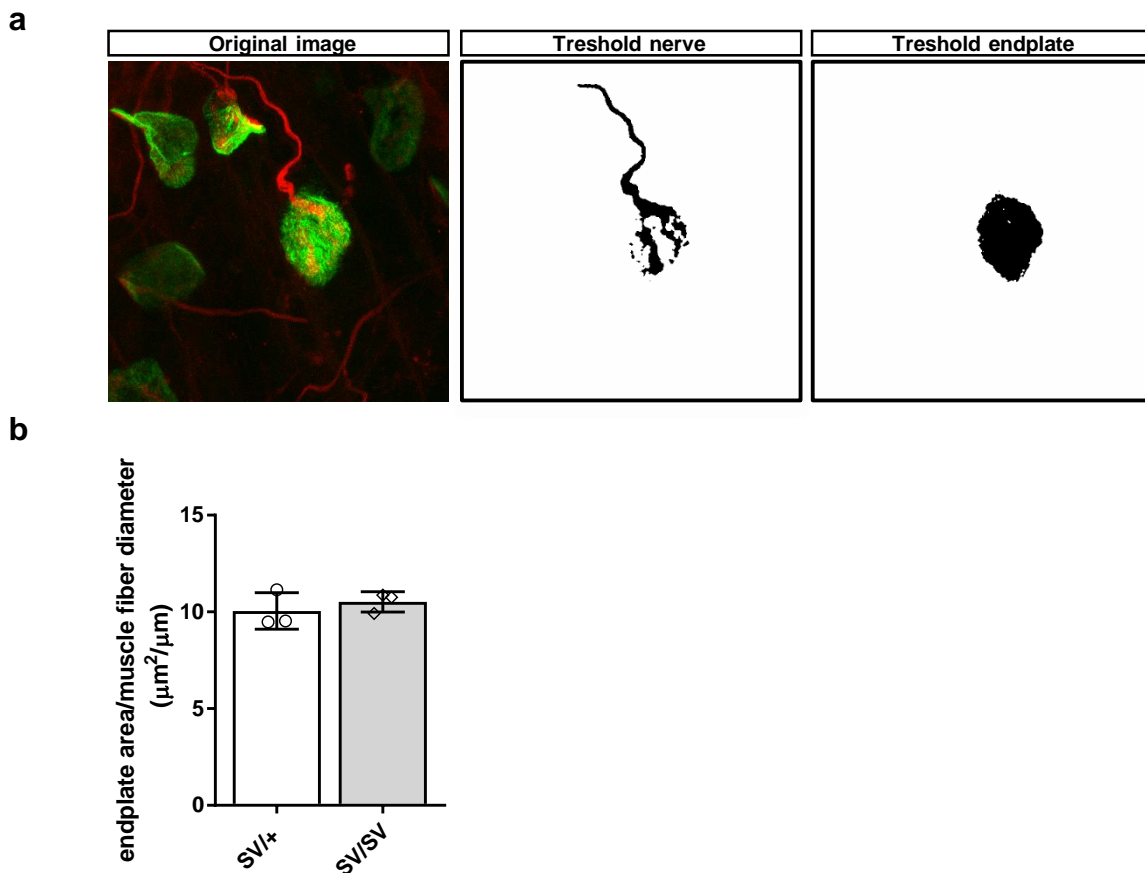
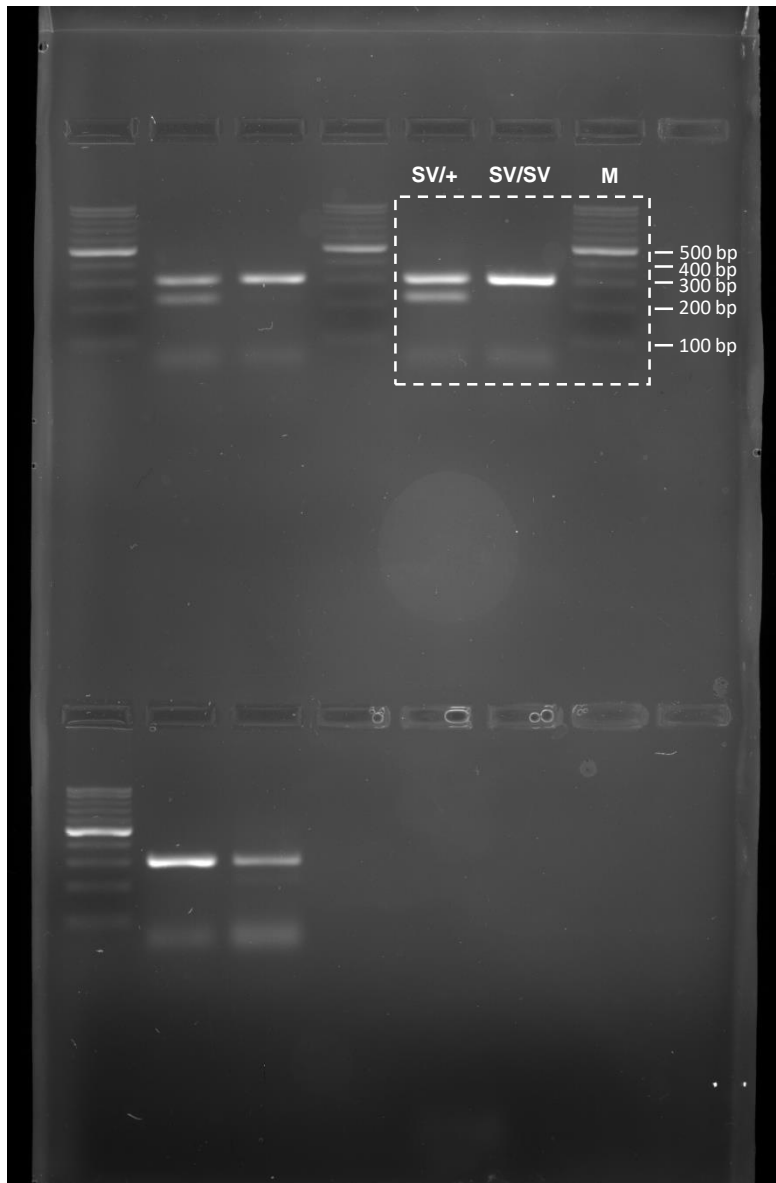


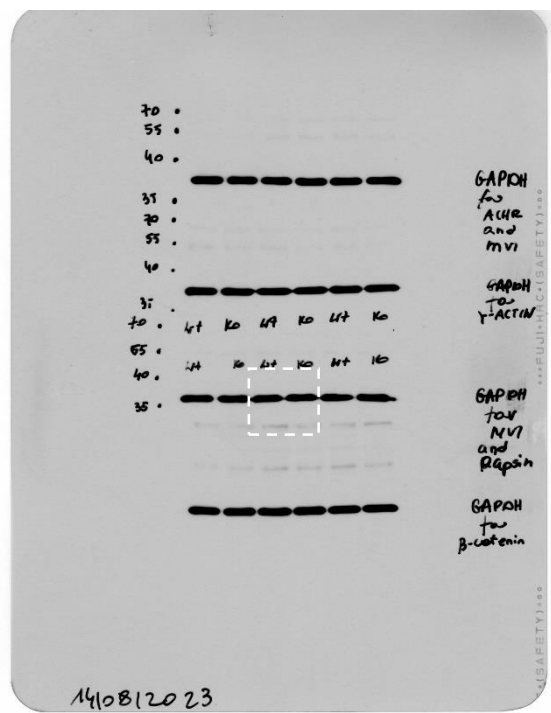
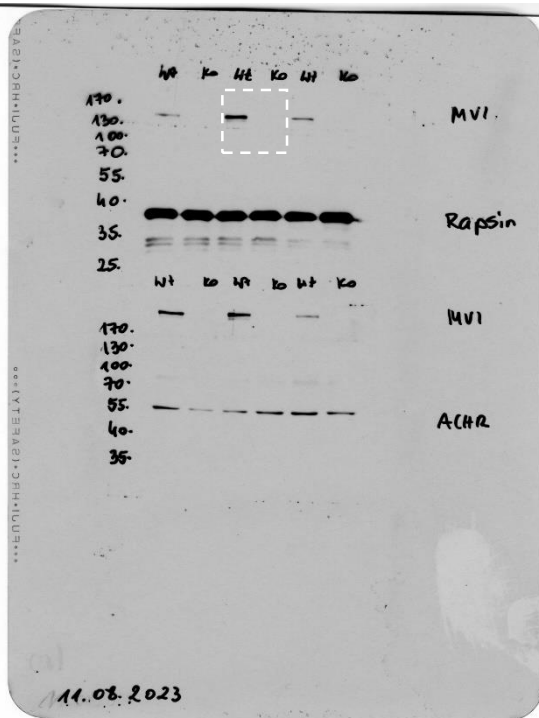
**Supplementary Figure 1. MVI is expressed at NMJs of various types of muscles.** Representative MVI localisation at NMJs in the diaphragm (fast) and the *Triangularis sterni* and soleus (slow) muscles at P45. MVI is enriched at the postsynaptic machinery in all analysed muscles (orthogonal views in lower and right panels). AChRs (green) are labelled with bungarotoxin ( $\alpha$ -BTX), and MVI (red) with anti-MVI antibody. Scale bars = 10  $\mu$ m.



**Supplementary Figure 2. Decreased endplate area in SV mice correlates with the smaller muscle fibre diameter. (a)** Representative images showing the NMJ morphometric analysis with aNMJ-morph. Binary images on the right show digital reconstruction of presynaptic (threshold nerve) and postsynaptic NMJ domains (threshold endplate). Thresholding method – *Default*. **(b)** Endplate area normalised to muscle fibre diameter is similar in SV/+ and SV/SV mice, indicating that the reduced NMJ and muscle fibre size are associated. Two-tailed unpaired *t*-test, *N* = 3,  $\pm$ SD, \*  $p \leq 0.05$ , not significant.



**Supplementary Figure 3. Original uncropped gel from Fig.2b.** SV/+, controls, heterozygotes (WT allele = 230 bp, SV allele = 318 bp). SV/SV, MVI knockouts, homozygotes (SV allele = 318 bp). M, DNA molecular weight marker, bp - base pairs. Dotted frame shows the cropped area.



**Supplementary Figure 4. Original uncropped blots from Fig.2c. MVI (left) and GAPDH (right) protein levels. Dotted frames show the cropped areas.**

Name	Dilution	Supplier and catalogue number
<b>Primary antibodies</b>		
anti-neurofilament (2H3)	1:350- 1:1000 (IF)	DSHB, Iowa, IA, USA; cat. #AB_2314897
anti-Synaptophysin (Syn.)		Synaptic Systems, Göttingen, Germany; cat. #101 004
anti-dystrophin	1:100 (IF)	Abcam, cat. # ab7164
anti-Myosin VI	1:250 (IF) 1:1000 (WB)	Proteus BioSciences, Ramona, CA, USA; cat. #25-6791
Anti-GAPDH	1:25 000 (WB)	Merck Millipore; MA, USA, cat. # MAB374
<b>Secondary antibodies/fluorescent markers</b>		
<b>IF</b>		
BTX-AlexaFluor 488/555	1:500	ThermoFisher Scientific, Waltham, MA, USA; cat. #B13422/#B35451
anti-mouse-AlexaFluor 488/555/647	1:100-800	ThermoFisher Scientific, Waltham, MA, USA; cat. #A28175/#A-31570/#A-21236
anti-rabbit-AlexaFluor 555	1:500-800	ThermoFisher Scientific, Waltham, MA, USA; cat. #A-11004
anti-guinea pig-AlexaFluor 647	1:600	ThermoFisher Scientific, Waltham, MA, USA; cat. #A-21450
DAPI	1:1000	AppliChem, Darmstadt, Germany; cat. #A4099
<b>WB</b>		
Anti-mouse-HRP	1:10 000	Merck Millipore; MA, USA, cat. # AP308P
Anti-rabbit-HRP		Merck Millipore; MA, USA, cat. # AP307P

**Supplementary Table S1. List of antibodies and fluorescent markers.**