

Supplementary movie legends

Supplementary Movie S1

In vivo spinal cord two-photon time lapse series in *Thy1:TNXXL* mouse line over 6h after AQP4-IgG/complement application, corresponding to images in **Fig. 1D**. Axons develop beadings that grow in size and number over time, but only few of them show intracellular calcium rise (green-to-red transition).

Supplementary Movie S2

3D rendering of an ATUM EM volume of *Aldh1l1:GFPxThy1:OFP* mouse spinal cord lesions 6h after NMO induction, related to **Fig. 3**. A 16x20x32 μm^3 EM volume is shown, comprising 160 sections at 200 nm thickness. Myelinated (blue) and unmyelinated axon (green) segmentations reveal one and two axonal swellings, respectively.