

SUPPLEMENTARY FIGURE LEGENDS

Supplementary Figure 1. S1PR1 expression in neurons in S1PR1-eGFP knock in mice.

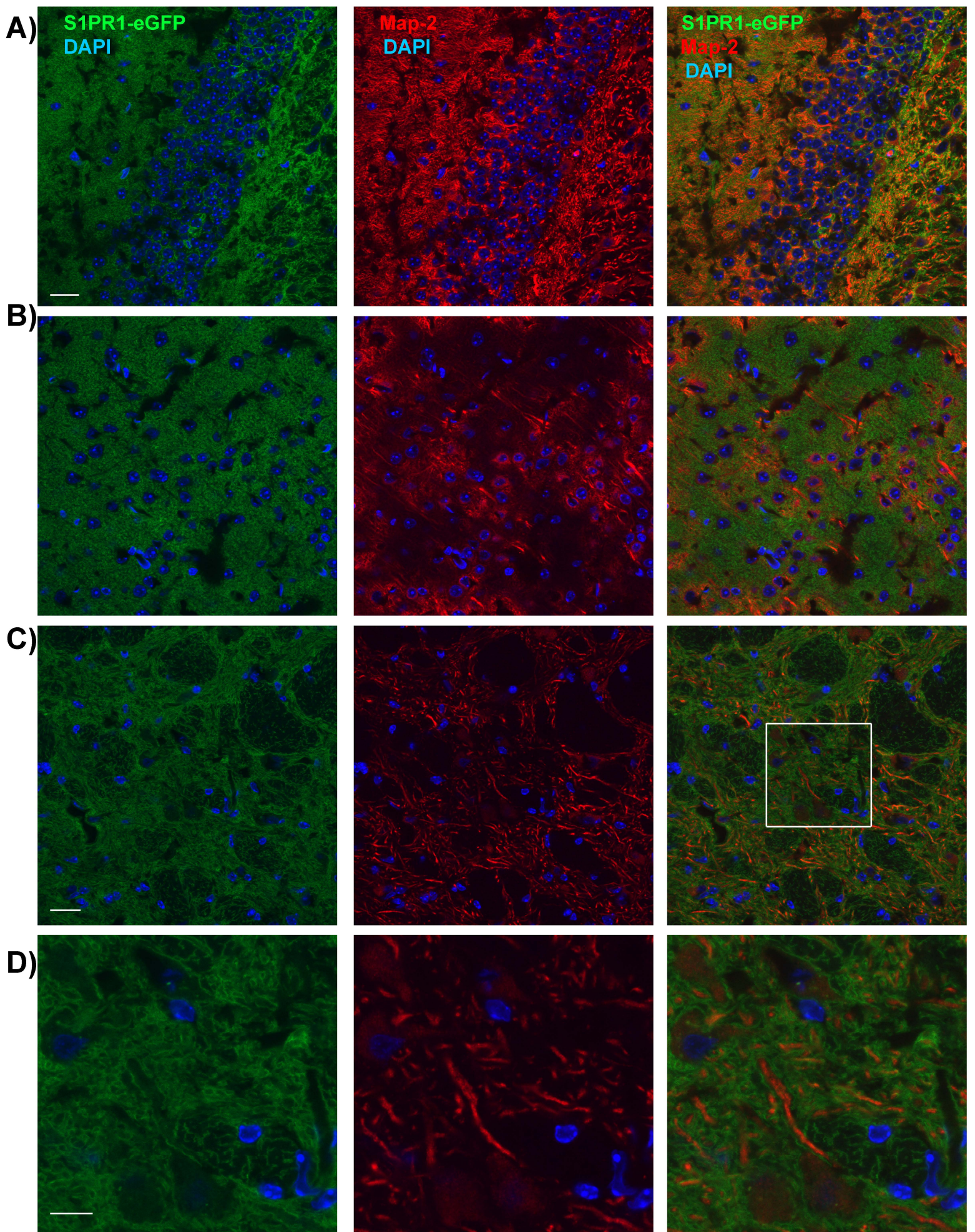
S1PR1-eGFP fluorescence confocal analysis in the mouse brain. Expression of S1PR1-eGFP in neurons (green channel), and the neuropil. Immunofluorescence for MAP-2 is shown in the red channel. Representative images from hippocampus (dentate gyrus, A), cortex (B) and internal capsula (C, D) are shown. D) Selected region from C. Scale bar 20 μ m (A-C) or 10 μ m (D) Representative pictures are shown. N=5-6

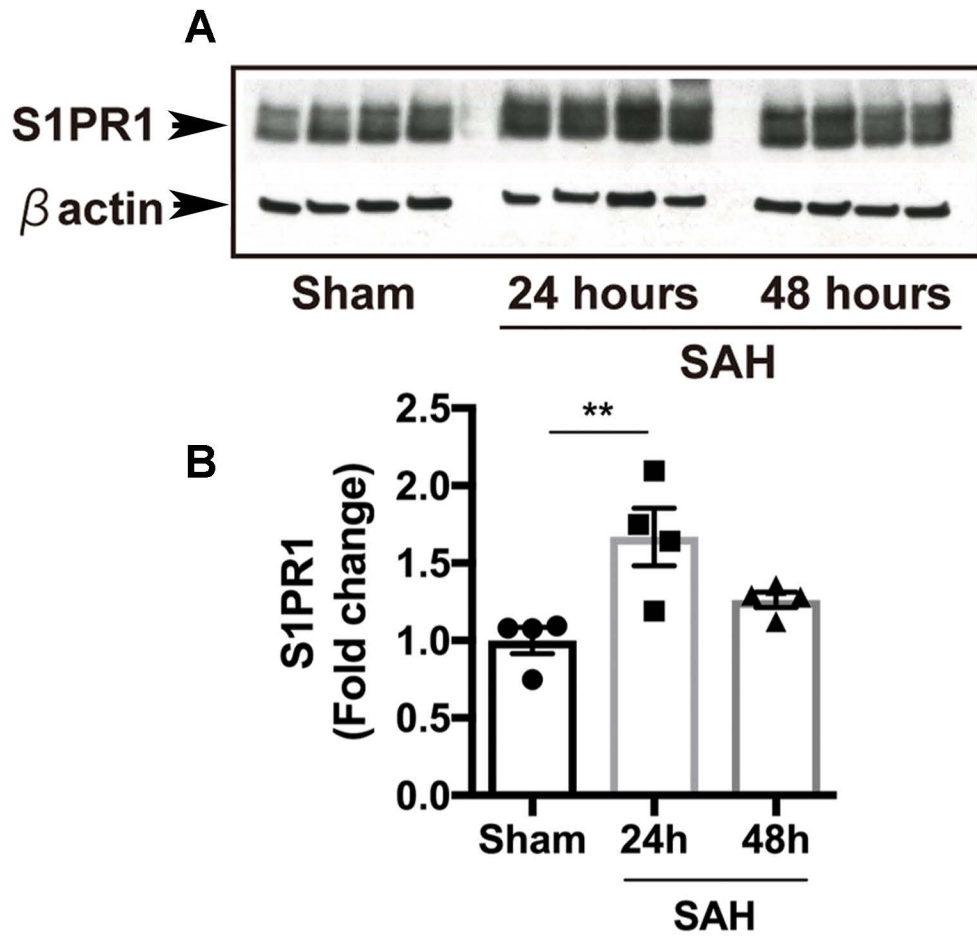
Supplementary Figure 2. Expression of S1PR1 in cortical microvessels after SAH.

Western blot analysis for S1PR1 in brain microvessels. 24 and 48 hours after subarachnoid hemorrhage (SAH) cortical microvessels were isolated and S1PR1 levels were detected by western blot ($n = 4$). Immunoblot image (A) and quantification of S1PR1 (B) are shown. β actin bands are used as a loading control and for normalization in quantification. Individual values and mean \pm SEM are shown. $**P < 0.01$, One-way ANOVA followed by Tukey's test.

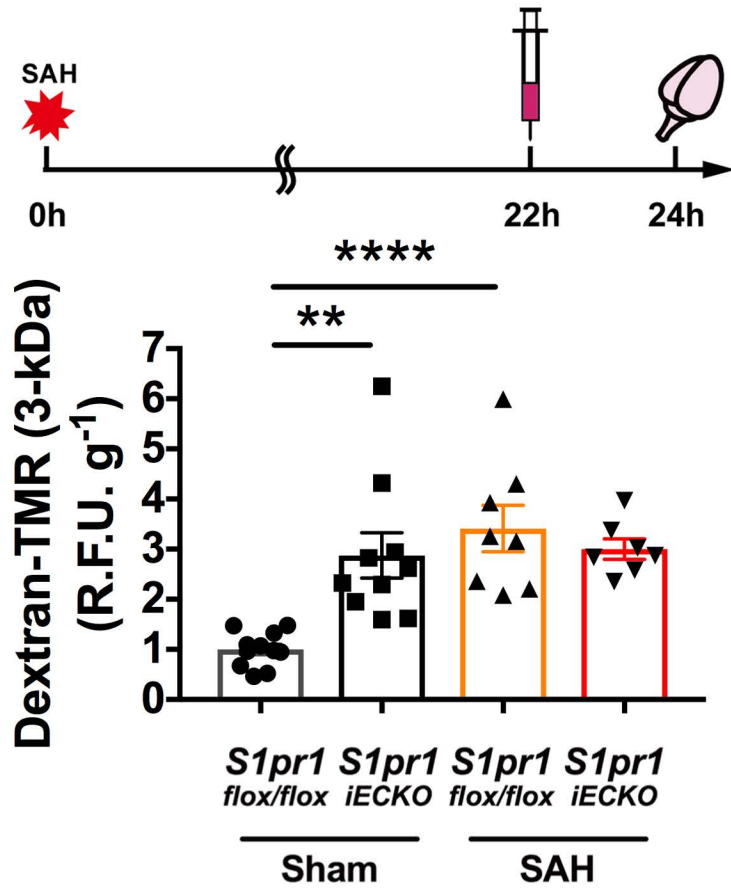
Supplementary Figure 3. Small molecule (3 kDa dextran) BBB leakage upon SAH.

3-kDa dextran-TMR leakage 24 hours after sham or SAH surgery in $S1pr1^{flox/flox}$ and $S1pr1^{iECKO}$ mice. Dextran-TMR dye was circulating for 2 hours. $N = 7 - 10$. The individual values and mean \pm SEM are shown. $**P < 0.01$, $***P < 0.001$ (One-way ANOVA followed by Tukey's test). y axis shows relative fluorescence units (R.F.U.) per gram of tissue. Notice that 3KDa TMR-dextran BBB leakage was increased in sham $S1pr1^{iECKO}$ compared to sham $S1pr1^{flox/flox}$, consistent with our recently published studies⁴⁵. 24 hours after SAH, 3KDa TMR-dextran leakage was significantly increased in $S1pr1^{flox/flox}$ mice compared to sham animals. However, in $S1pr1^{iECKO}$ mice we did not detect a significant further increase in small molecule (3KDa TMR-dextran) BBB leakage after SAH compared to sham.





Supplementary Figure 2



Supplementary Figure 3