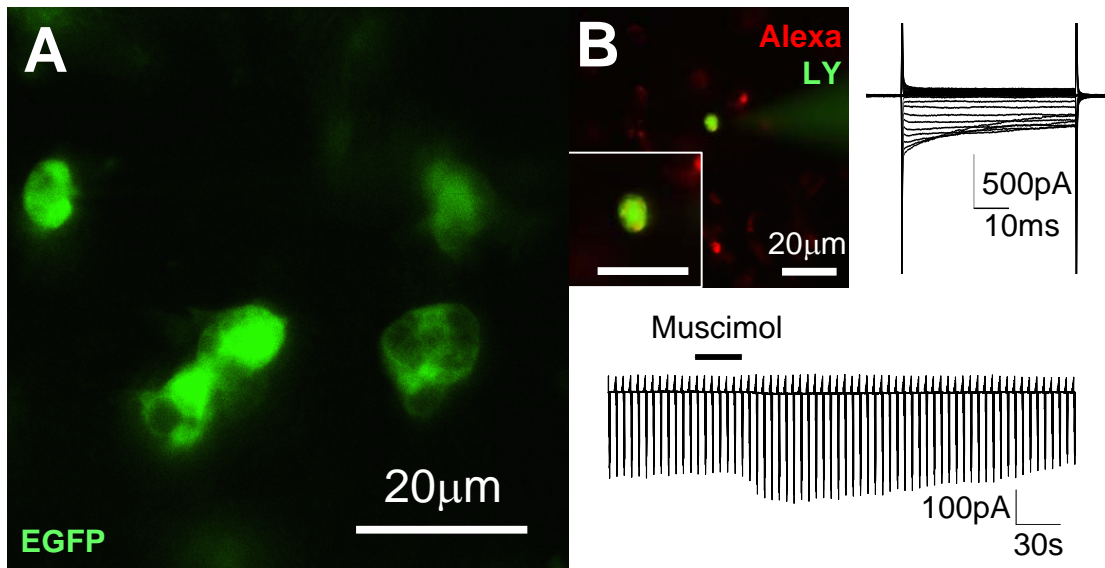
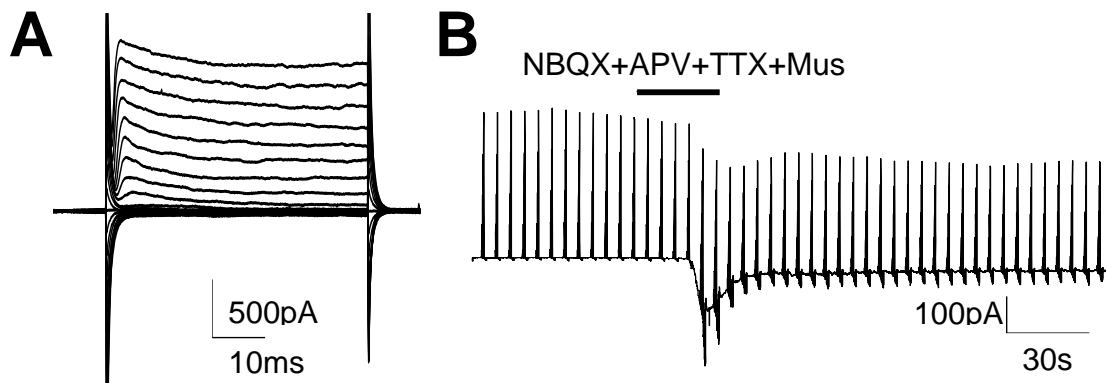


Supplementary Figure 1. Kinetics of perfusate exchange in perfusion chamber. $[K^+]_0$ was measured using K^+ sensitive microelectrode during an increase of $[K^+]_0$ from 3 mM by 2 – 3 mM via bath perfusion. The resulting trace was fitting into a mono-exponential curve from which the time constant of K^+ accumulation was determined. The speed of perfusion was 4.2 ml/min; volume in chamber was 2.1 ml and the flow was turbulent.



Supplementary Figure 2. Ameboid microglial population and response towards muscimol. (A) Image of EGFP fluorescence of ameboid microglia on the surface of the corpus callosum in an acute brain slice prepared from postnatal (P6 - 8) Iba1-EGFP transgenic mouse. (B) Ameboid microglia within the corpus callosum brain slice prepared from NMRI mice (P6 - 8) could be identified after incubation of the slices for 40 min with fluorescently (Alexa Fluor 594) labelled tomato lectin (60 $\mu\text{g/ml}$), a marker for microglial cells. The cell was filled with Lucifer yellow (2 mg/ml) via patch pipette. Inset shows ameboid morphology of the patched cell in higher resolution. Membrane current was recorded as described in *Fig. 1*. Bath application of muscimol (100 μM ; 30 s) induced current changes as shown.



Supplementary Figure 3. Specific GABA_A mediated current response in neighboring glial progenitor cells of the postnatal corpus callosum. Using the same approach of *Fig. 6B*, a glial progenitor cell in the neighbourhood of amoeboid microglia in the postnatal corpus callosum was voltage-clamped. (A) Membrane currents revealed voltage-gated currents were recorded as described in *Fig. 1B*. (B) Membrane current was recorded as described in *Fig. 1C* during application of muscimol (100 μ M; 30 s) in the presence of AMPA/kainate receptor antagonist NBQX (10 μ M), NMDA receptor antagonist APV (50 μ M) and an action potential blocker TTX (0.5 μ M). AMPA = alpha-amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid; NBQX = 2,3-dihydroxy-6-nitro-7-sulfamoyl-benzo[f]quinoxaline-2,3-dione; NMDA = N-methyl-D-aspartic acid; APV = amino-5-phosphonovaleric acid; TTX = tetrodotoxin.