

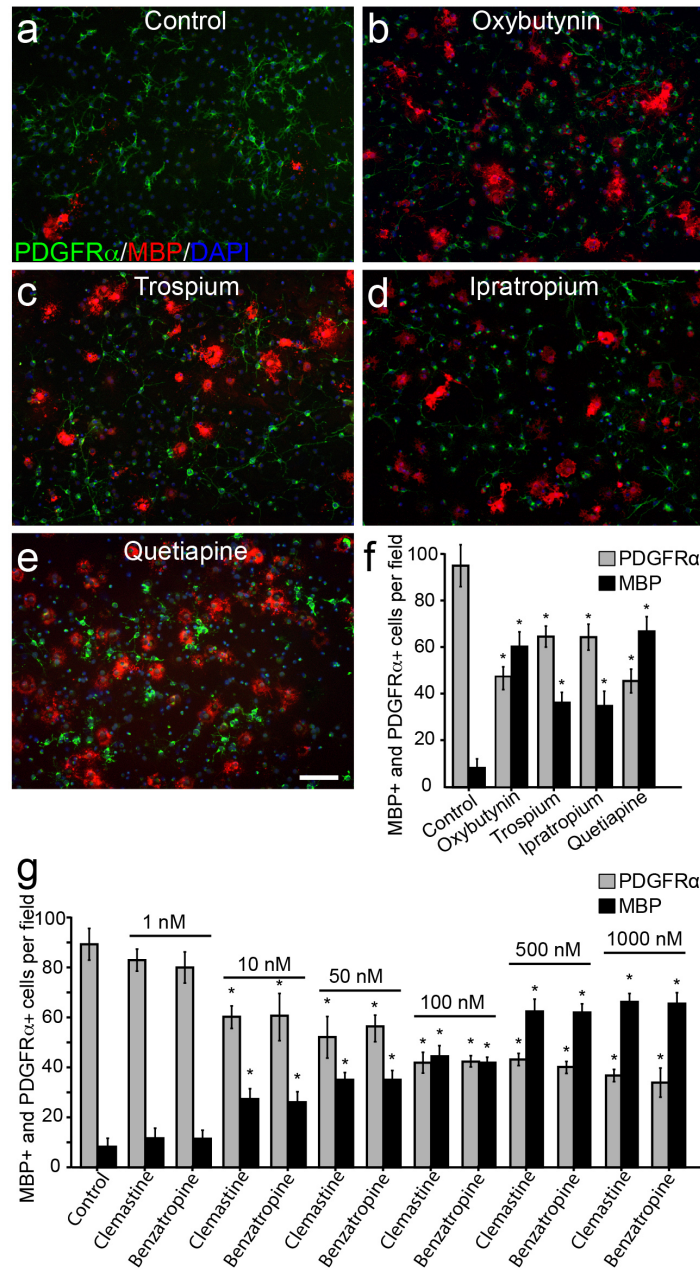
SUPPLEMENTARY INFORMATION

Micropillar arrays as a high-throughput screening platform for therapeutics in Multiple Sclerosis

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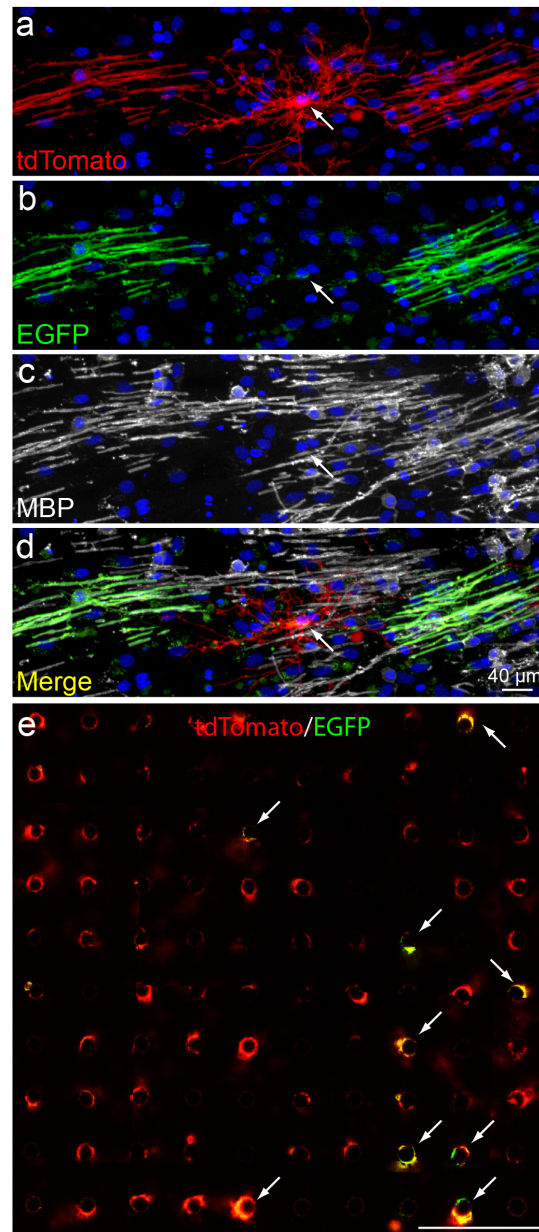
Supplementary Item	Title
Supplementary Figure 1	Validation of muscarinic antagonists with purified oligodendroglia cultured alone.
Supplementary Figure 2	OPCs isolated from PLP-CreER(T2);tdTomato/EGFP transgenic mice on micropillars and cocultures.
Supplementary Figure 3	Quetiapine promotes remyelination in mice after gliotoxic injury with lysolecithin.

Supplementary Figure 1



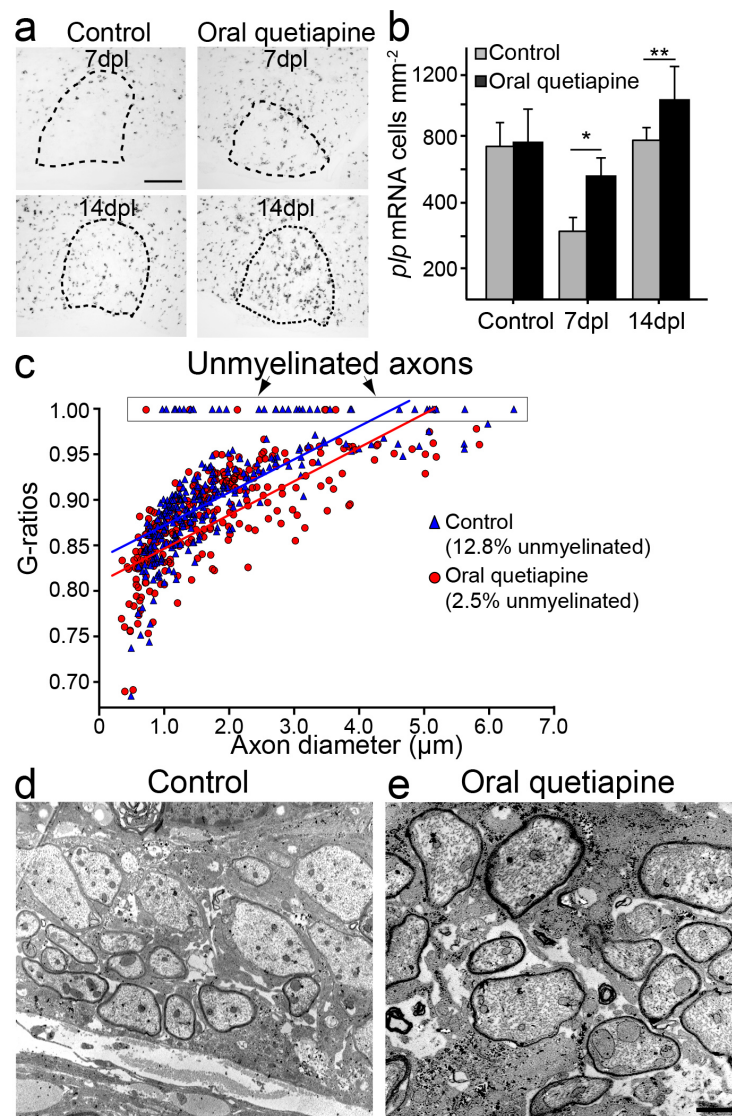
Supplementary Figure 1. Validation of muscarinic antagonists with purified oligodendroglia cultured alone. (a-e) Control cultures (a), cultures treated with oxybutynin (b), trospium (c), ipratropium (d) or quetiapine (e) for three days are immunostained for MBP (red) and PDGFR α (green). Scale bar = 100 μ m. Quantification of the percent MBP- and PDGFR α - positive cells from the purified OPC cultures (f) in the presence of oxybutynin, trospium, ipratropium and quetiapine. (g) Dose response of clemastine and benztatropine on OPC differentiation. Error bars represent SEM and all experiments were performed in triplicate. Asterisks represent significance based on Student t-test with the respective controls ($p < 0.05$).

Supplementary Figure 2



Supplementary Figure 2. OPCs isolated from PLP-CreER(T2);tdTomato/EGFP transgenic mice on micropillars and cocultures. (a-d) Oligodendroglia isolated from *plp*-CreER(T2);tdTomato/EGFP mice express red membrane fluorescence tdTomato (a, red) and EGFP expression (b, green), dependent on the presence of tamoxifen in the culture medium is displayed upon differentiation and myelination (MBP⁺)(c, white). Scale bar = 40 μm. (d) Representative 100-micropillar field with oligodendroglia (tdTomato-positive OPCs, red) and arrows indicating EGFP (green, arrows) expression in myelinating oligodendrocytes. Scale bar = 100 μm.

Supplementary Figure 3



Supplementary Figure 3. Quetiapine promotes remyelination in mice after gliotoxic injury with lysolecithin. (a) Six mice orally treated with quetiapine and six control mice were subjected to focal demyelinated lesions induced by injection of lysolecithin. Mice were analyzed by in situ hybridization of *p/p* at 7 and 14 dpl after oral administration of quetiapine. (b) Quantification of *p/p* in situ hybridization. Error bars represent SD and all experiments were performed in triplicate. Asterisks represent significance based on Student's t-test (single asterisk; $p = 0.001$ and double asterisk; $p = 0.02$). (c) Quantification of myelin sheath thickness and the proportion of (un)myelinated axons in control (blue) and quetiapine-treated (red) mice after 14 dpl by g-ratio analysis. The scatter plot displays g-ratios of individual axons as a function of axonal diameter. All g-ratios were analyzed from transmission EM images. Representative EM images for the control (d) and the quetiapine-treated mice (e) after 14 dpl. Scale bar = 2 μm .