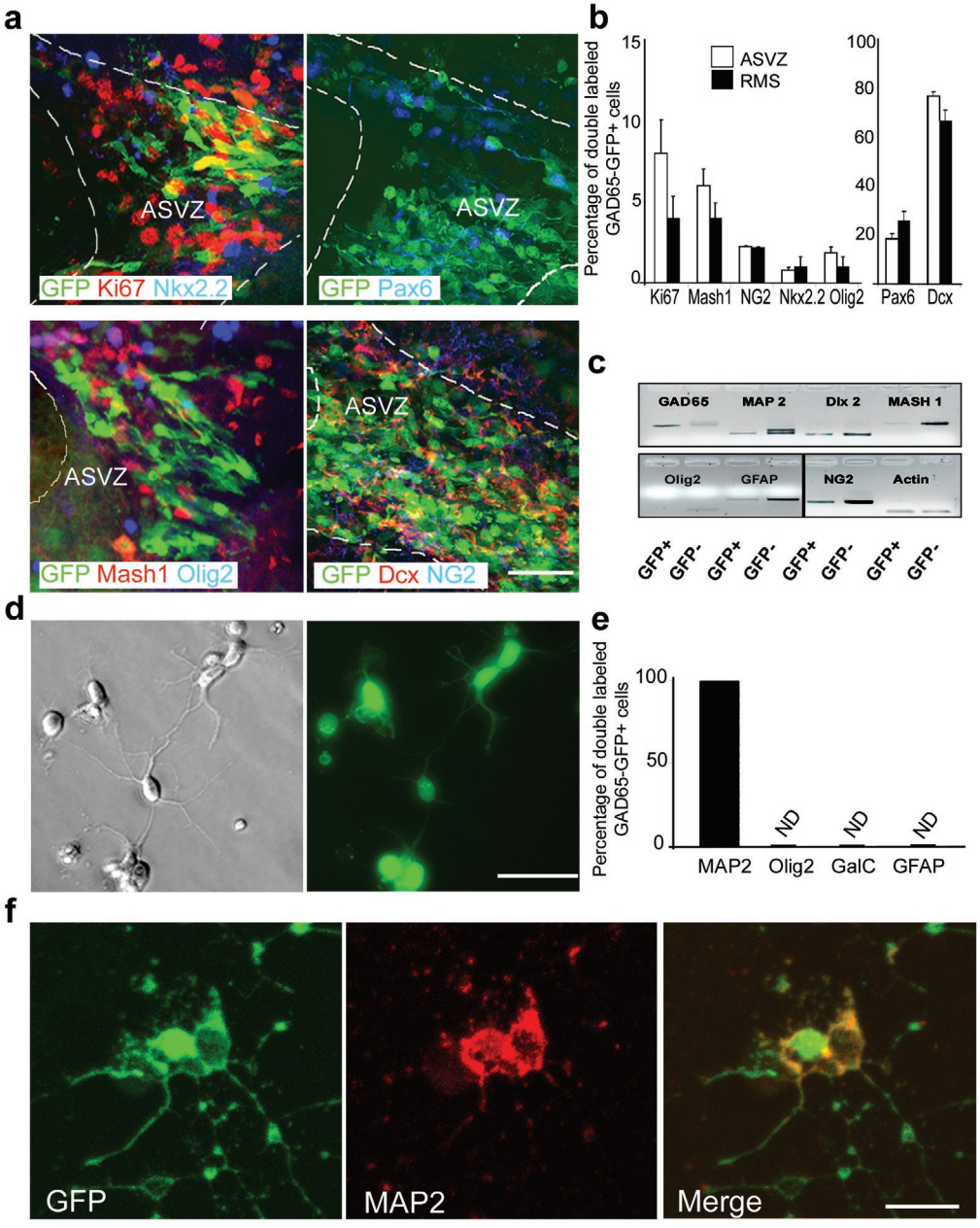
Supp. Fig.1



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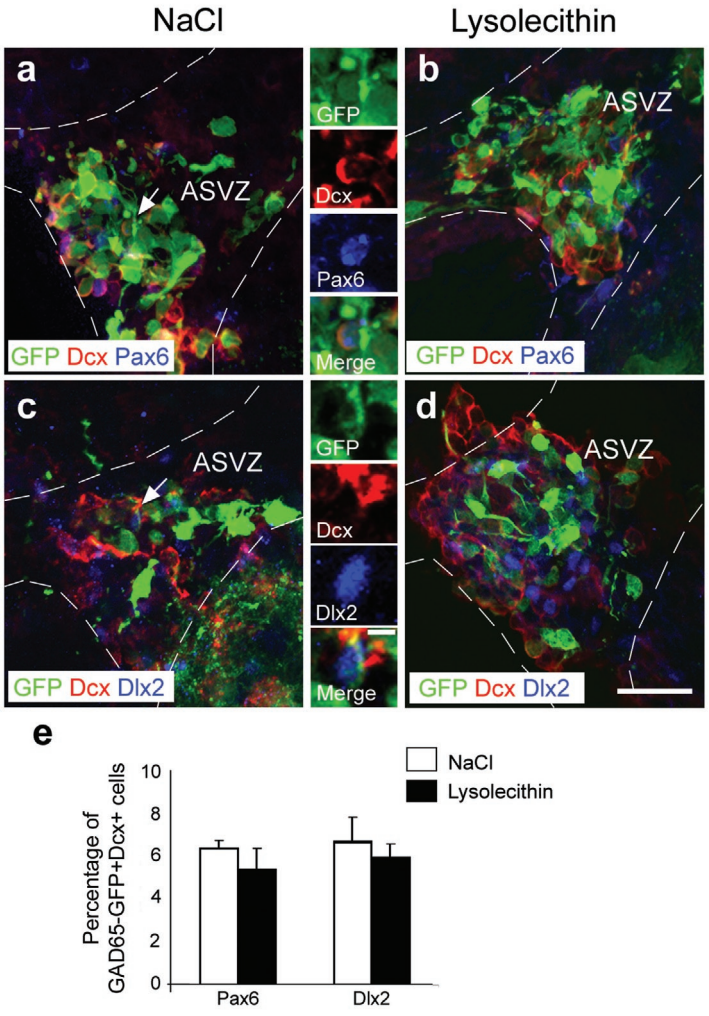
Supplementary Figure 1. Neuronal and glial markers expressed in SVZ GAD65-GFP$^+$ cells of adult GAD65-GFP mice. (**a**) Merged confocal images of the anterior subventricular zone (ASVZ) show GAD65-GFP$^+$ cells co-labeled with antibodies against Ki67, Mash1, NG2, Nkx2.2, Olig2, Pax6, and Dcx. Dotted lines bound the ASVZ. Scale bar = 500 μm. (**b**) The majority of ASVZ GAD65-GFP$^+$ cells expressed neuronal markers (Pax6, Dcx). Bar graphs represent mean ± s.e.m. (n = 4 brains per marker). (**c**) RT-PCR from FACS-purified GAD65-GFP$^+$ and GAD65-GFP$^-$ cells from ASVZ shows GAD65-GFP$^+$ cells expressing neuronal and oligodendrocytic genes. (**d**) Images of cultured (5 days) FACS-sorted GAD65-GFP$^+$ cells from ASVZ in bright field (left) and fluorescence (right) microscopy show neuronal morphology of GAD65-GFP$^+$ cells. Scale bar = 50 μm. (**e**) Percentages of different cell types in FACS-purified SVZ GAD65-GFP$^+$ cells cultured for 5 days. All GAD65-GFP$^+$ cells displayed a neuronal phenotype, as demonstrated by MAP2 immunoreactivity; no Olig2, GalC or GFAP expression was detected (data from 2 independent experiments). ND = not detectable. (**f**) GAD65-GFP$^+$ cells FACS-purified from the adult SVZ and cultured for 5 days were immunostained with anti-MAP2 (red). Scale bar = 20 μm.

Supp. Fig. 2



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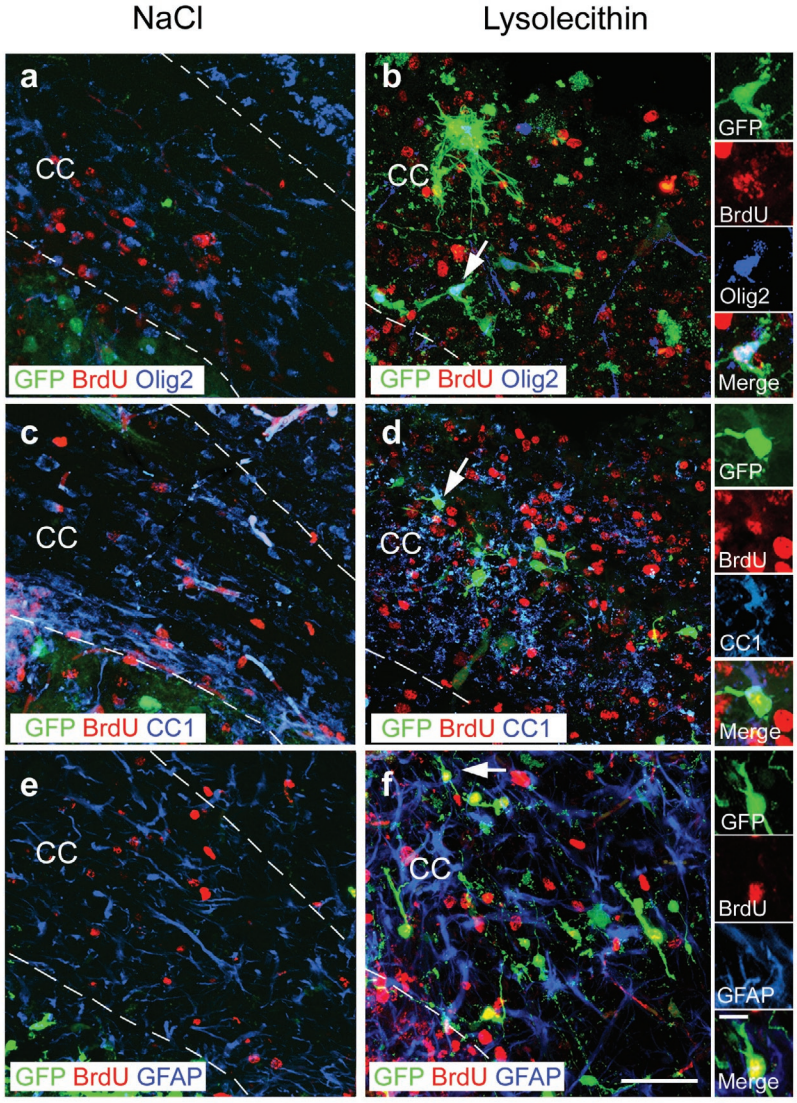
Supplementary Figure 2. Characterization of GAD65-GFP$^+$ neuroblasts in the SVZ. (**a**–**d**) Tri-colored images (5dpl) of GAD65-GFP$^+$ cells expressing Dcx (in red) together with Pax6 or Dlx2 (in blue) after NaCl (**a,c**) and LPC injections (**b,d**) into the corpus callosum. (**e**) Percentages of GAD65-GFP$^+$Dcx$^+$ cells co-expressing Pax6 and Dlx2 at 5 dpl. No differences were found in percentages of GAD65-GFP$^+$Dcx$^+$ neuroblasts that express Pax6 and Dlx2 in demyelinated corpus callosum, compared to NaCl-injected brains. Bar graphs represent mean ± s.e.m. (n = 4 brains, $P < 0.5$, *t*-test).

Supp. Fig. 3



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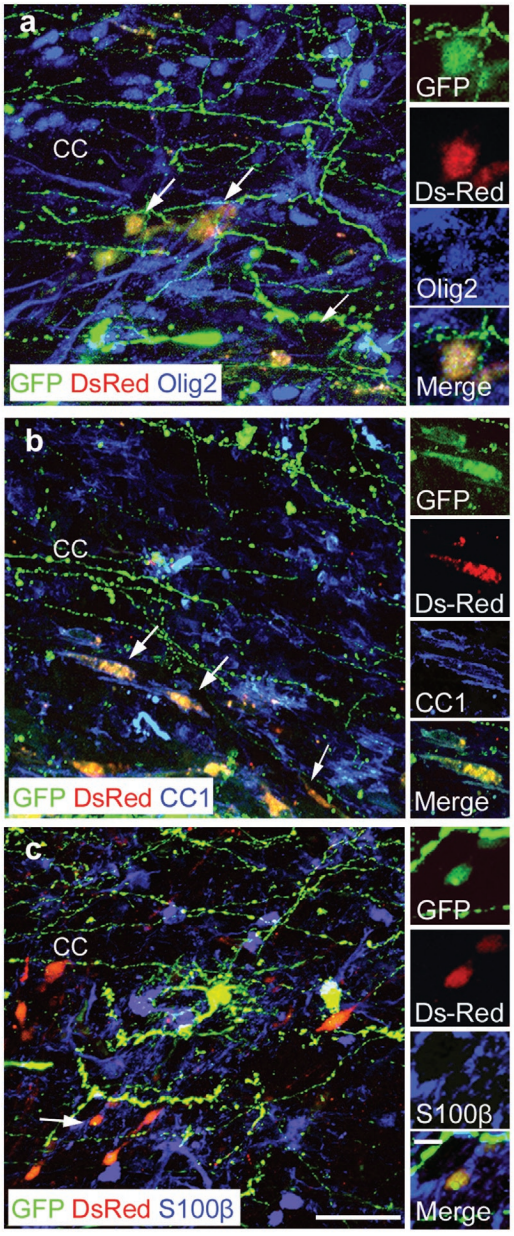
Supplementary Figure 3. GAD65-GFP$^+$ cell proliferation increases in corpus callosum after demyelination. Tri-colored confocal images from NaCl- (**a,c,e**) and LPC-injected (**b,d,f**) corpus callosum (10 dpl) after intraperitoneal injection of BrdU (every 24 hrs for 5 consecutive days) and double immunostaining with antibodies against BrdU together with anti-Olig2 (**a,b**), anti-CC1 (**c,d**), or anti-GFAP (**e,f**) antibodies. Dotted lines bound corpus callosum. Cells pointed by arrows are magnified in insets. Scale bar = 50 μm.

Supp. Fig.4



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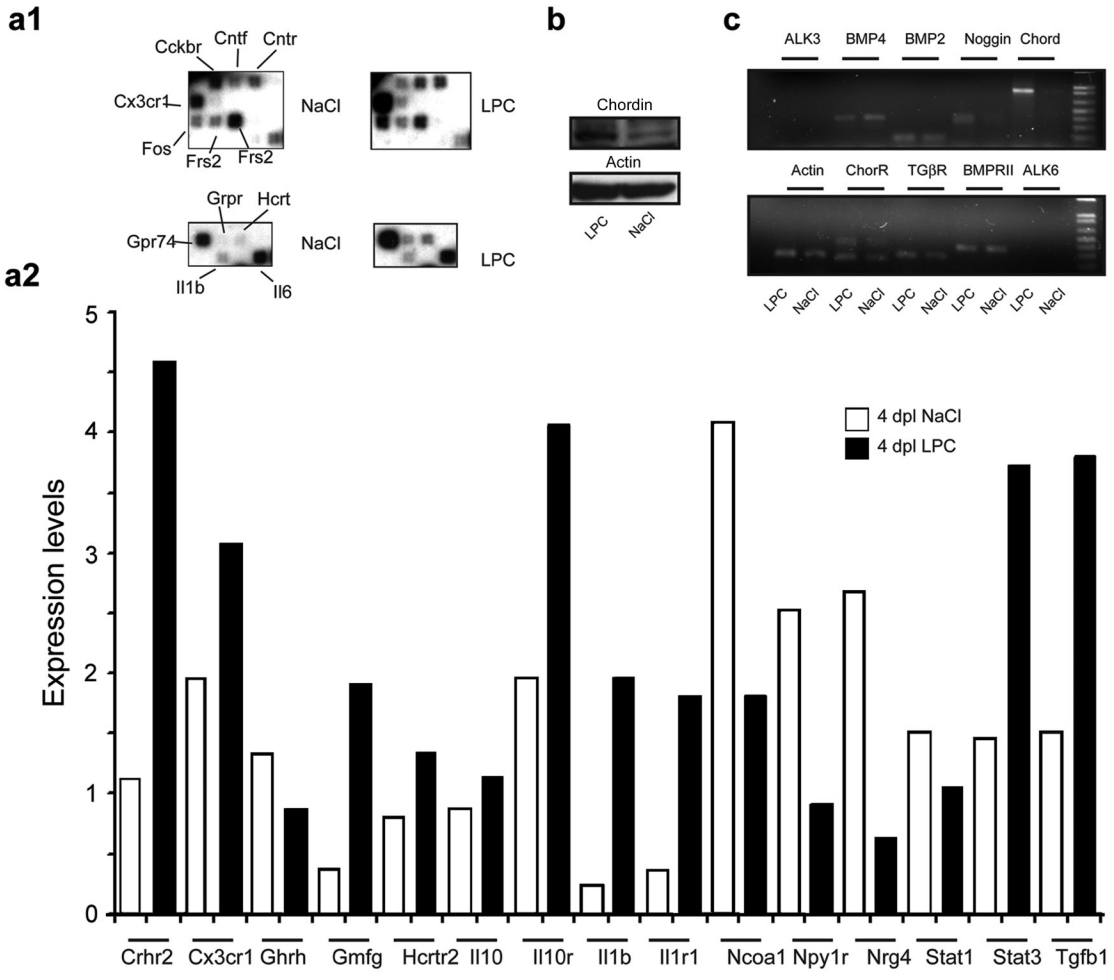
Supplementary Figure 4. GAD65-GFP$^+$ cells found in demyelinated corpus callosum migrate from the SVZ. Tri-colored images from LPC-injected corpus callosum (**a**–**c**)**.** GAD65-GFP$^+$ cells were infected with dsRed virus and labeled with anti-Olig2 (**a**), anti-CC1 (**b**), or anti-S100β (**c**) antibodies at 14 dpl. Inserts show higher magnification of retrovirally labeled GAD65-GFP$^+$dsRed$^+$ cells expressing Olig2, CC1, and S100β in demyelinated corpus callosum. Arrows point to GAD65-GFP$^+$dsRed$^+$Olig2$^+$, GAD65-GFP$^+$dsRed$^+$CC1$^+$, or GAD65-GFP$^+$dsRed$^+$S100β$^+$ cells in corpus callosum. Scale bar = 50 μm.

Supp. Fig.5



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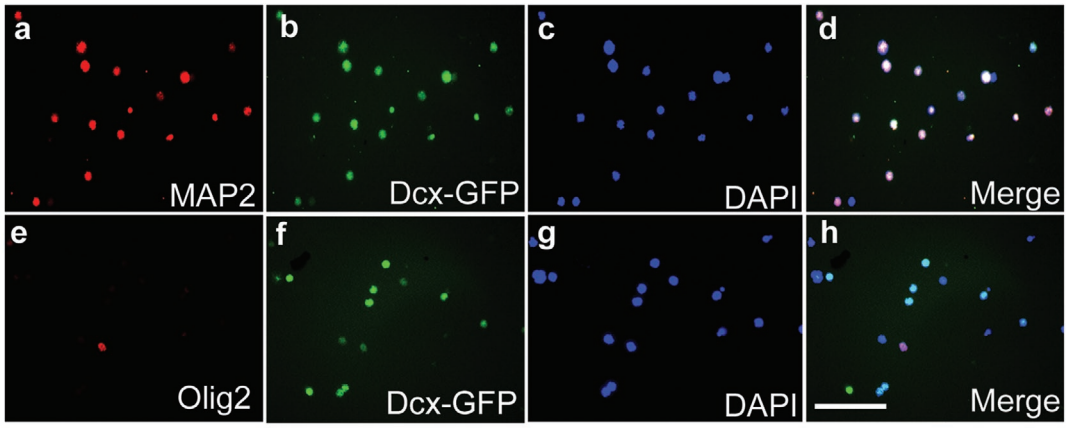
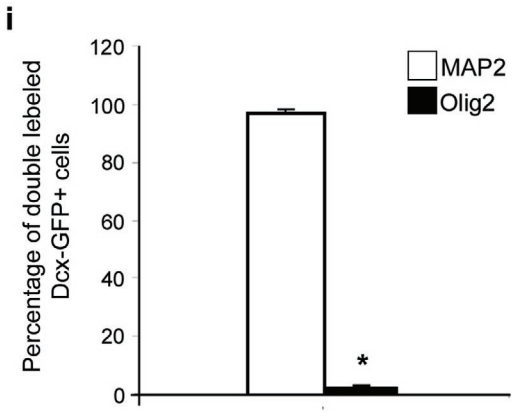
Supplementary Figure 5. Microarray analysis of SVZ tissue from NaCl- and LPC-injected brains. (**a1, a2**) Gene expression analysis shows upregulation of *Crhr2*, *Cx3cr1*, *Il10r*, *Stat3*, and *Tgfb1* after demyelination (4dpl). Corticotropin releasing hormone receptor 2 (*Crhr2*), Chemokine receptor 1 (*Cx3cr1*), Growth hormone releasing hormone (*Ghrh*), Glia maturation factor gamma (*Gmfg*), Hypocretin (orexin) receptor 2 (*Hcrtr2*), Interleukin 10 (*Il10*), Interleukin 10 receptor beta (*Il10r*), Interleukin 1 beta (*Il1b*), Interleukin 1 receptor, type I (*Il1r1*), Nuclear receptor coactivator 1 (*Ncoa1*), Neuropeptide Y receptor Y1 (*Npy1r*), Neuregulin 4 (*Nrg4*), Signal transducer and activator of transcription 1 (*STAT1*), Signal transducer and activator of transcription 3 (*STAT3*), Transforming growth factor beta 1 induced transcript 1 (*Tgfb1*). (**b**) Western blot analysis showed upregulation of chordin after demyelination (LPC), compared to NaCl-injected tissue (NaCl; representative samples - 4 independent corpus callosum samples were analyzed in each group). (**c**) RT-PCR revealed decreased *BMP4*, and higher expression of *chordin*, *noggin*, and *ChorR* in SVZ after LPC injection into corpus callosum (4 independent corpus callosum samples analyzed per group).

Supp. Fig.6


a
MAP2
b
Dcx-GFP
c
DAPI
d
Merge
e
Olig2
f
Dcx-GFP
g
DAPI
h
Merge


i
Percentage of double lebeled Dcx-GFP+ cells
120
100
80
60
40
20
0
MAP2
Olig2
*

Supplementary Figure 6. Culture homogeneity of Dcx-GFP cells. Images of FACS-purified Dcx-GFP$^+$ cells immunostained with anti-MAP2 (**a**–**d**) and anti-Olig2 (**e**–**h**) antibodies at 24hr in culture. (**i**) Bar graph represents percentages of Dcx-GFP$^+$ cells expressing MAP2 and Olig2. The Dcx-GFP$^+$ cell population expresses the neuronal marker MAP2 (99.5%). Bar graph represents means ± s.e.m. (n = 3 independent cultures, ***$P < 0.001$, *t*-test)