SUPPORTING INFORMATION LEGENDS

Supplementary Table S1. Mice were examined daily for signs of locomotor disability and assigned a score as shown in the Table. Animals with a score exceeding 5 were humanely killed.

Supplementary Table S2. Antibodies used for immunolabelling in this study. CD45 (identifies T-cells, B-cells, monocytes, macrophages and granulocytes), F4/80 and IBA1 (pan-macrophage/microglia), isolectin-B4 (ILB4) (microglia, endothelial cells, neutrophils). Nestin, Doublecortin (DCX) or the polysialated form of the neuronal cell adhesion molecule (PSA-NCAM) all identify neural precursors. OLIG2 and SOX10 identify OL lineage cells whereas NG2 labels only OLPs. GFAP identifies a subset of astrocytes, Collagenase-IV, Endosialin and Smooth Muscle Actin identify (new) blood vessels. MBP, CNPase and Opalin label differentiated OLs and myelin. NeuN identifies mature neurons and P_0 myelinating Schwann cells.

Supplementary Figure S1. A very small proportion of YFP+ cells give rise to neurons and astrocytes. Rarely NeuN+ (**A, C**) neurons, in the gray matter, were seen co-labelled with YFP (**B, C**). A small fraction of YFP+ cells (**E, F**) were also labelled with GFAP (**D, F**). Counts for GFAP+/YFP+ cells are shown in figure 4J. Double-labelled cells are indicated by arrows. Scale bar, 20μm.

Supplementary Figure S2. YFP^+ cells that are OLIG2-negative are also SOX10-negative. A small proportion of YFP^+ cells (**A**) were not co-labelled with OLIG2 (**A, B** arrows). The same YFP^+ cells (seen in **C**) were also not co-labelled with SOX10 (**C, D** arrows). Cell nuclei are seen in blue. The image was taken at 24dpi in Tam+EAE animal. Scale bar, 50μm.

Supplementary Figure S3. To try to identify the OLIG2-negative YFP^+ cells in *Pdgfra-CreER^{T2}* : *R26R-YFP* spinal cords we immunolabelled sections from Tam+EAE animals for YFP and cell type-specific antibodies (for details of the antibodies see **supplementary Table S2**). YFP^+ cells did not co-label for IBA-1 (**A-C**), Collagenase-IV (**D-F**), Endosialin (**G-I**), Doublecortin (Dcx, **J-L**), GFAP (**M-O**) or S100β (**P-R**). There was also no overlap between YFP and ILB4, CD45, F4/80, Smooth Muscle Actin, Nestin

or PSA-NCAM (not shown). All images are of 24 dpi tissue. Cell nuclei labelled with Hoechst are seen in blue. Scale bar, 20 μm.

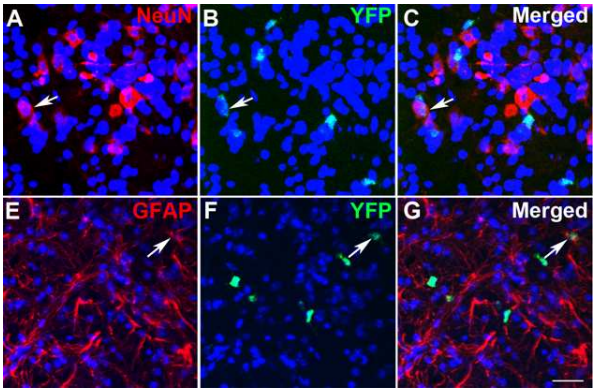
Supplementary Figure S4. A few YFP^+ cells (**B**) co-labelled for the Schwann cell myelin marker P_0 (**C**). These were very infrequent and were confined to the periphery of the spinal cord near the pial surface - unlike the majority of YFP^+, OLIG2-negative cells - suggesting that most of the latter were unlikely to be Schwann cells. Cell nuclei were stained with Hoechst dye (blue). The image was taken at 28 dpi. Scale bar, 20 μm.

Supplementary Table 1: Locomotor Scoring Criteria

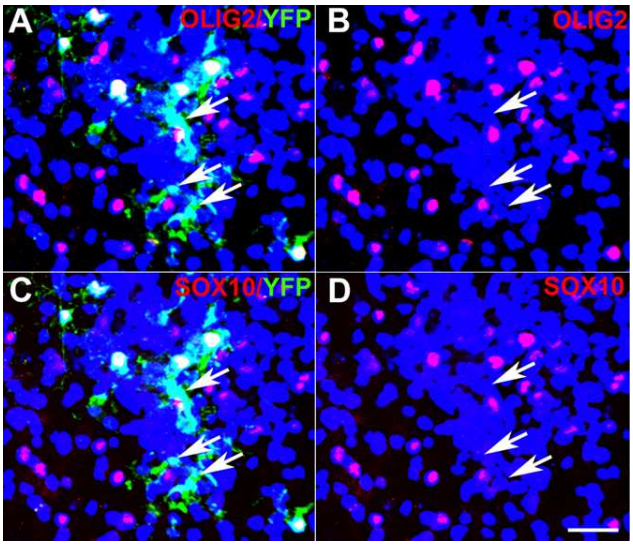
Symptoms	Score
Slight loss of tail tone / slight tail spasticity	0.5
Loss of tail tone / tail spasticity	1
Slightly impaired righting reflex	1.5
Impaired righting reflex	2
Slight hind limb weakness / hind limb weakness in one leg	2.5
Slight hind limb spasticity / hind limb spasticity in one leg	2.5
Hind limb weakness / hind limb spasticity with movement	3
Hind limb weakness or spacticity in one leg and paralysis in the other / severe hind limbs weakness in both legs	3.5
Hind limb paralysis / severe hind limb spasticity causing rigid hind limbs	4
Slight forelimb weakness / forelimb weakness in one limb / slight forelimb spasticity	4.5
Forelimb weakness / forelimb spasticity	5
Forelimb weakness in one leg and paralysis in the other / severe forelimb weakness / forelimb spasticity causing immobility of one forelimb / severe forelimb spasticity	5.5
Forelimb paralysis / severe forelimb spasticity causing rigid forelimbs	6
Moribund	7

Supplementary Table 2: Antibodies used in this study

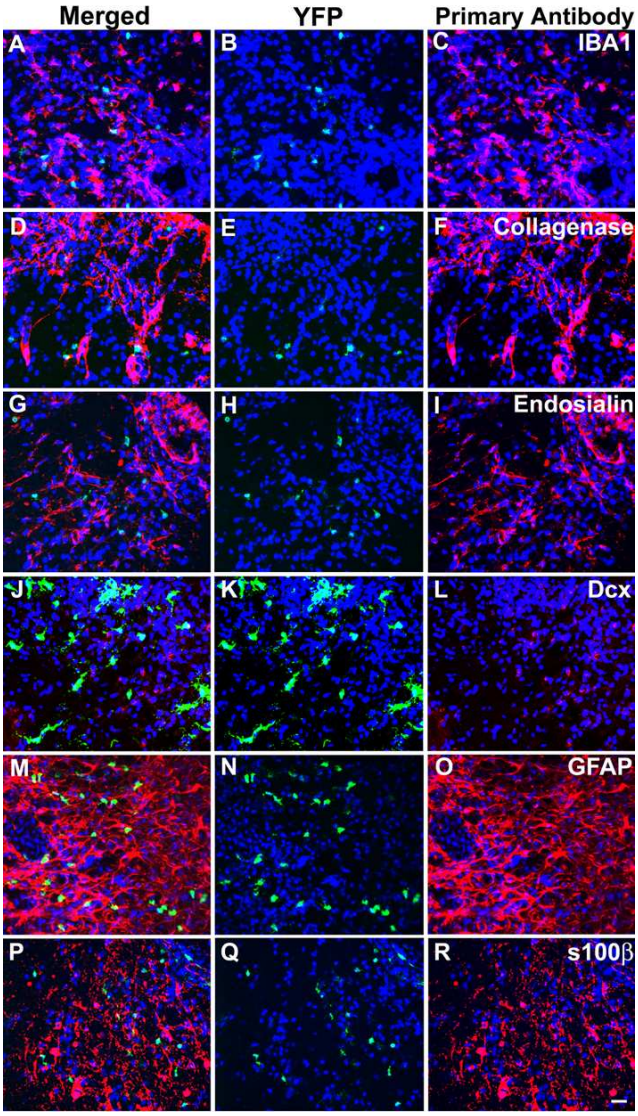
Antibody	Species	Concentration	Supplier
NG2	Rabbit	1:500	Chemicon
Olig2	Rabbit	1:700	Chemicon
MBP	Rat	1:100	AbD Serotec
GFAP	Rabbit	1:500	Dako
GFP	Rabbit Rat	1:6000 1:3000	Abcam Fine Chemical Products Ltd
NeuN	Mouse	1:500	Chemicon
Neurofilament	Mouse	1:700	Chemicon
CNPase	Mouse	1:2000	Chemicon
F4/80	Rat	1:100	AbD Serotec
CD45	Rat	1:200	AbD Serotec
Iba1	Rabbit	1:500	Biocare Medical
Collagenase IV	Rabbit	1:200	AbD Serotec
Smooth muscle Actin (Cy3 conjugated)	Mouse	1:200	Sigma
Nestin	Mouse	1:50	Developmental Studies Hybridoma Bank
PSA-NCAM	Mouse	1:1000	Chemicon
Doublecortin	Guinea pig	1:2000	Chemicon
Sox10	Guinea pig	1:2000	Gift from Dr. Michael Wegner, University of Erlangen, Germany
Opalin	Rabbit	1:1000	Gift from Dr. Ori Peles, Weizmann Institute of Science, Israel
Endosialin	Mouse	1:500	Gift from Prof Clare Isacke, Chester Beatty Laboratories, London
Isolectin B4 (Fluorescein conjugated)	Mouse	1:100	Vector Labs
S100β	Mouse	1:1000	Sigma
P0	Mouse	1:500	Gift from Dr Juan Archelos, University of Graz, Austria.
CC1/ APC	Mouse	1:200	Calbiochem
Ermin/Juxtanodin	Rabbit	1:400	Gift from Dr. Ori Peles, Weizmann Institute of Science, Israel



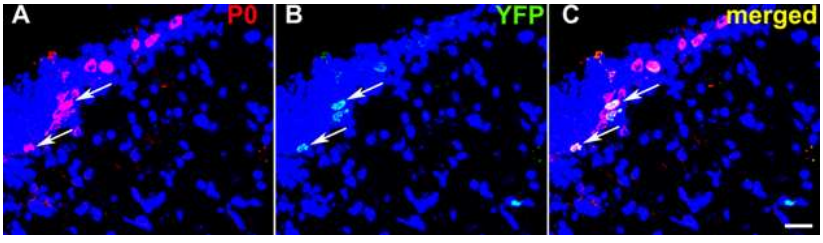
Supplementary Fig S1



Supplementary Fig S2



Supplementary Fig S3



Supplementary Fig S4