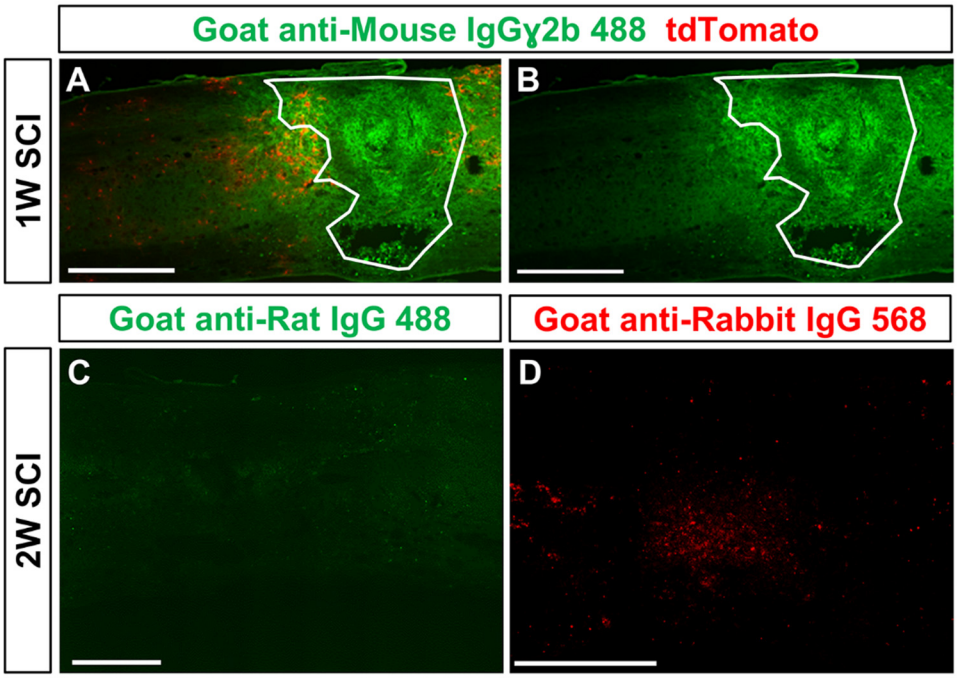
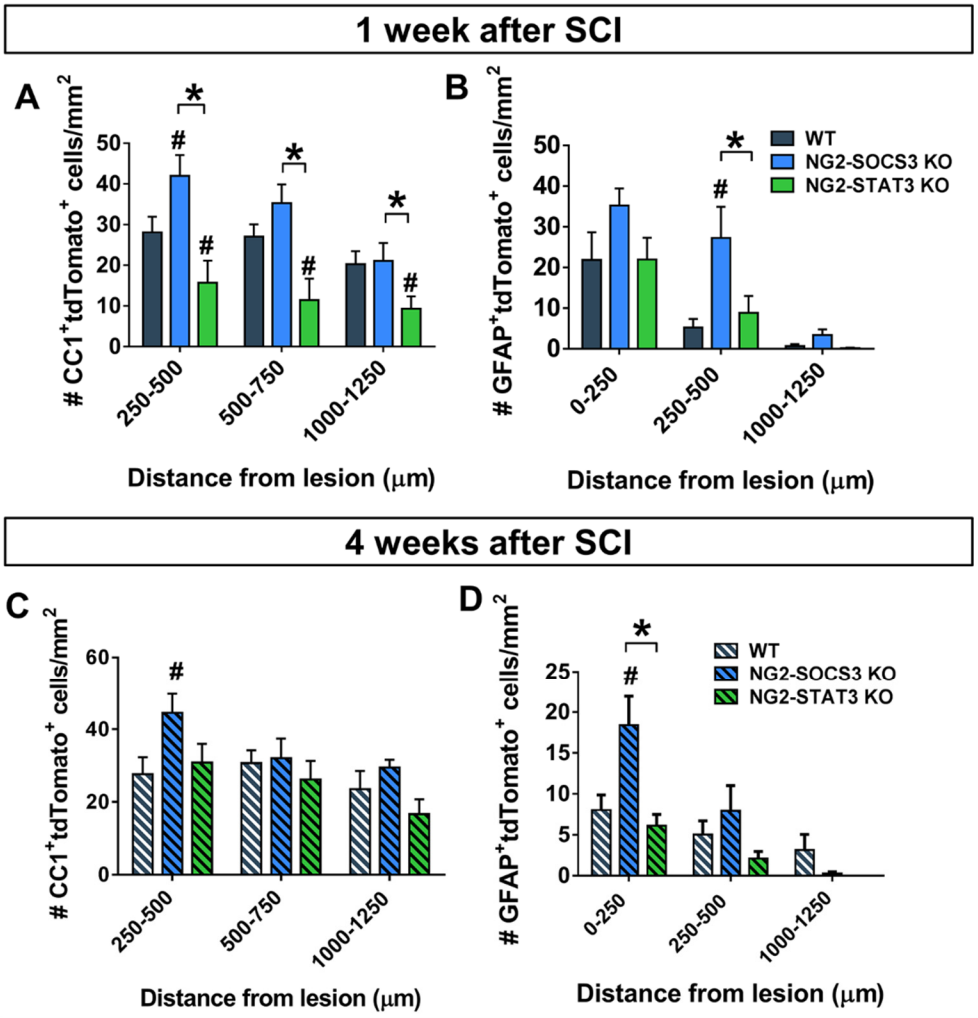
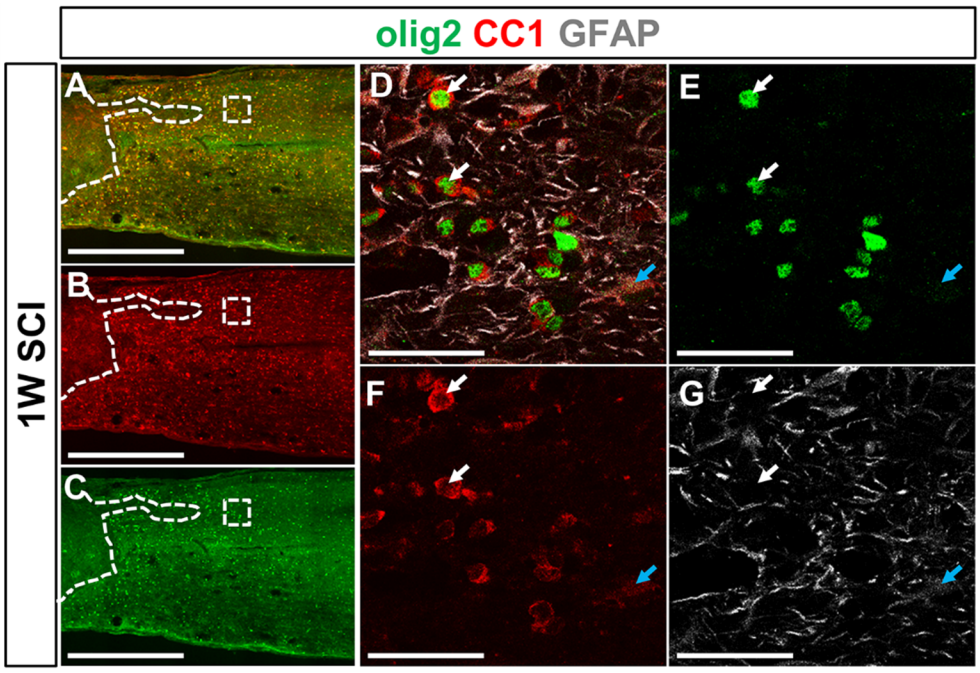


Supplementary Figure 1. Non-specific staining from secondary antibody used for immunohistochemistry. Since CC1 is an antibody made in mouse, no primary controls are shown in **(A-B)** to show that non-specific staining from the anti-mouse IgGγ2b secondary antibody (green) does not colocalize with tdTomato (red) and is limited to the lesion site (outlined by solid line) and adjacent region. Thus, the 0-250 μm region was excluded from analyses. Secondary antibody controls for Goat anti-Rat IgG 488 **(C)**, Goat anti-Rabbit 568 **(D)** are also shown. Scale bar=500 μm.



Supplementary Figure 2. Densities of NG2-derived oligodendrocytes and astrocytes after SCI. At 1 week after SCI, the density of tdTomato$^+$ cells that differentiated into CC1$^+$ mature oligodendrocytes **(A)** was significantly increased at 250-500 μm from the lesion in the NG2-SOCS3 KO mouse, and was significantly decreased at all regions analyzed in the NG2-STAT3 KO mouse compared to WT mice. At 1 week **(B)** and 4 weeks **(D)** after SCI, the density of tdTomato$^+$ cells that differentiated into GFAP$^+$ astrocytes was significantly increased. At 4 weeks after SCI, compared to the WT mouse, the density of tdTomato$^+$ cells that differentiated into mature oligodendrocytes **(C)** was significantly increased at the 250-500 μm from the lesion in the NG2-SOCS3 KO mouse. n=5-7 animals. #$p<0.05$ compared to WT. *$p<0.05$ comparing bars enclosed in brackets. Two-way ANOVA with repeated measures and Tukey's multiple comparisons *post hoc* test.



Supplementary Figure 3. Olig2 expression in CC1$^+$ cells. The olig2$^+$ (green) antibody labels the nuclei of CC1$^+$ (red) oligodendrocytes included in our analysis. White arrows represent examples of CC1$^+$ cells with olig2$^+$ nuclei. The majority of CC1 staining colocalized with olig2 (A-C) after SCI, however, occasional colocalization with GFAP was observed (blue arrows, D-G). These cells displayed faint CC1 staining located in cell processes.