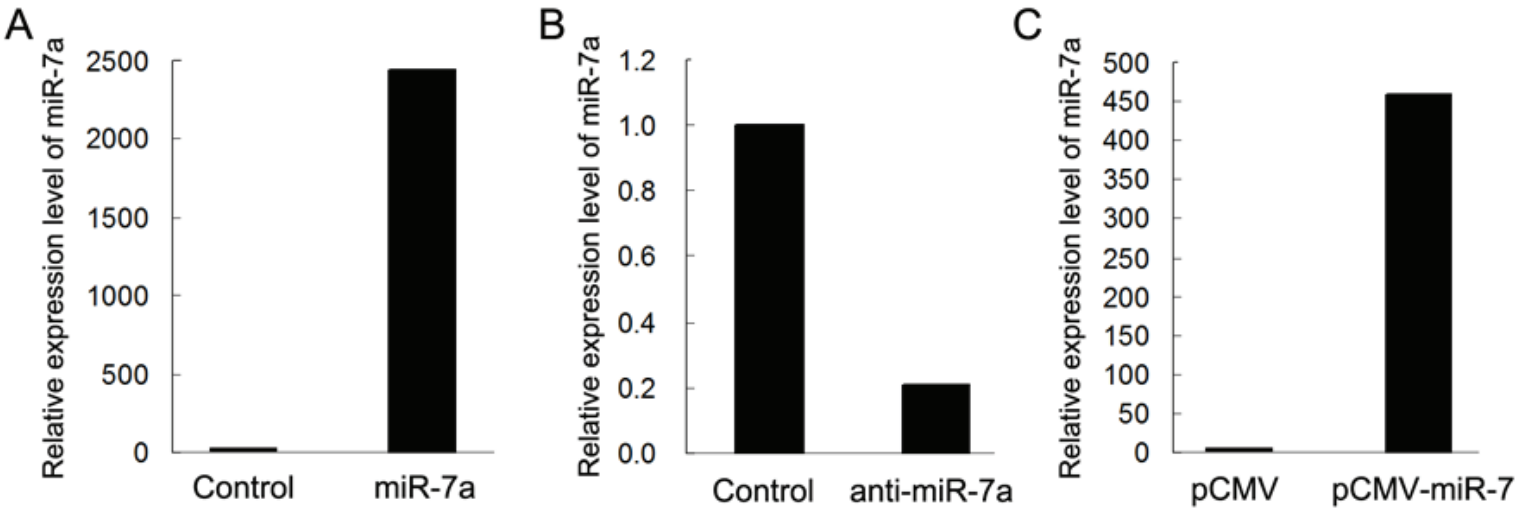
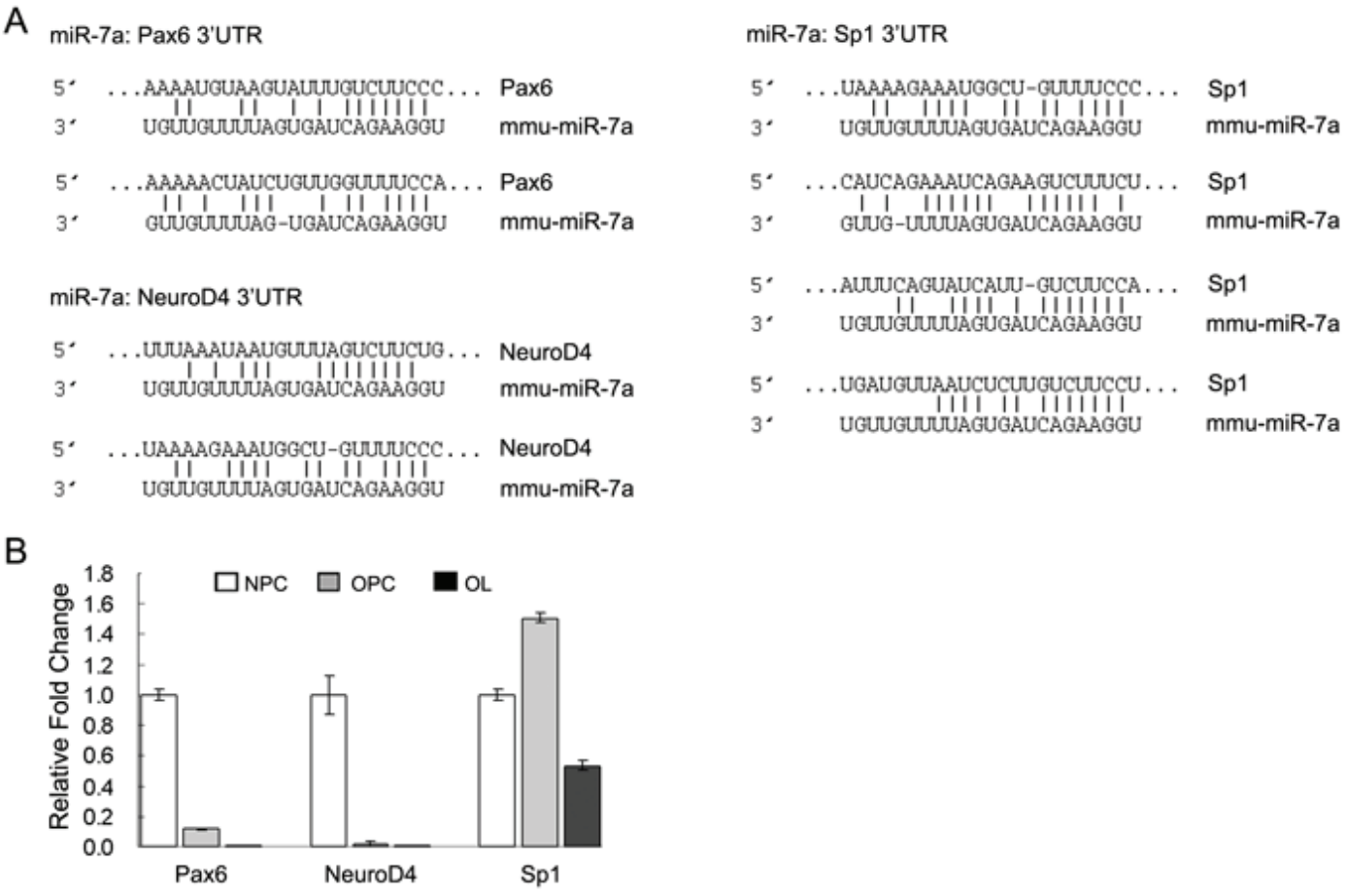
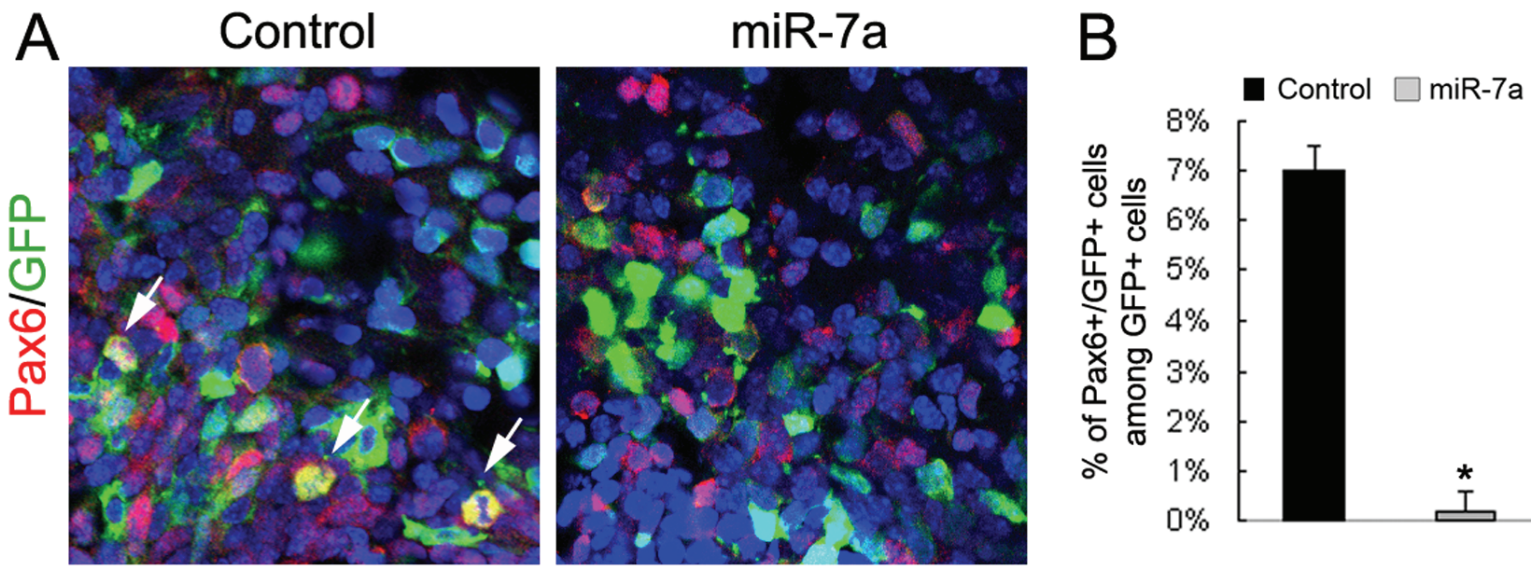


Supplementary Figure S1: Validation of miR-7a expression after transfection. (A) Expression of mature miR-7a from differentiating NPCs transfected with miRNA mimics was analyzed by qRT-PCR using Taqman microRNA assay. (B) Expression of mature miR-7a from differentiating NPCs transfected with miRNA hairpin inhibitors was analyzed by qRT-PCR. (C) Expression of mature miR-7a from Cos-7 cells transfected with expression vectors carrying miR-7a coding sequence was analyzed by qRT-PCR.

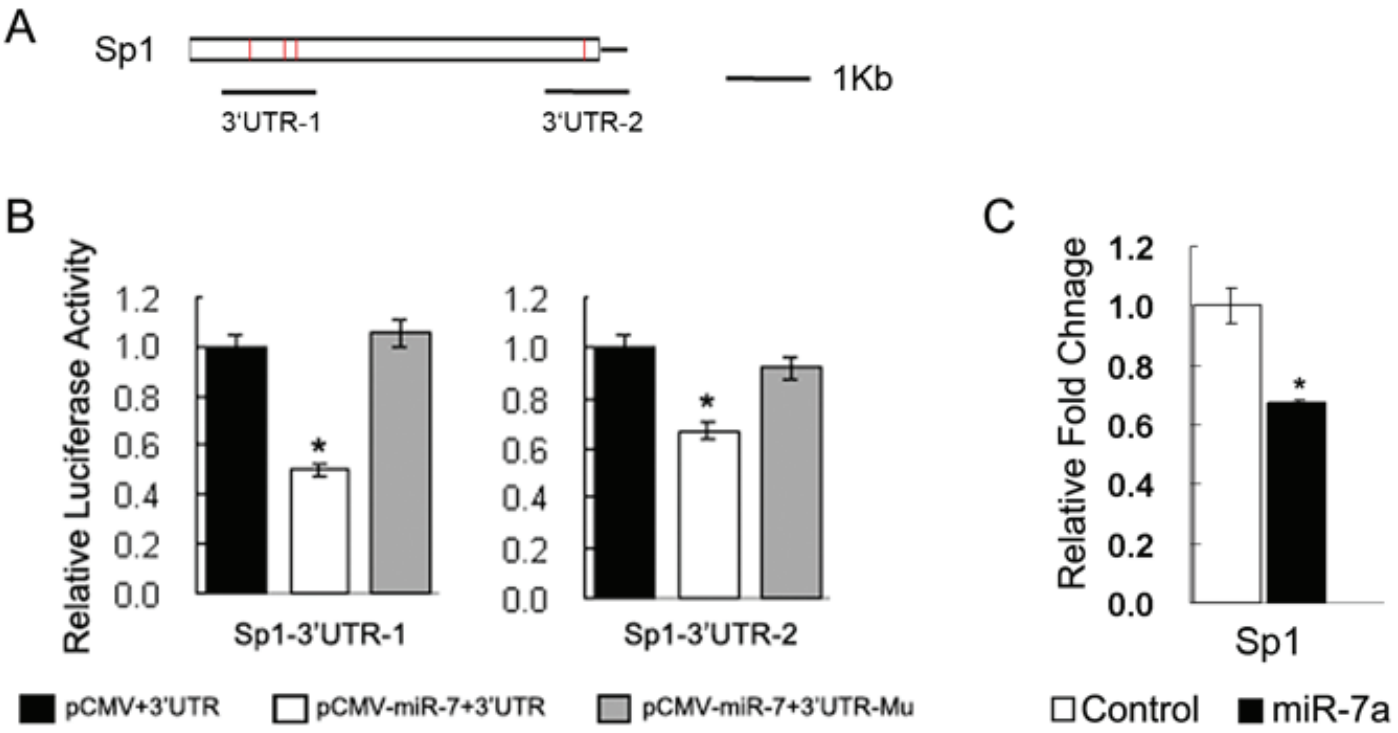


Supplementary Figure S2: Pax6, NeuroD4 and Sp1 as predicated targets for miR-7a. (A) Sequence alignments between miR-7a with Pax6, NeuroD4 and Sp1, respectively, were shown based on *TargetScan, PicTar, miRanda* and *mirBase* prediction algorithms. (B) Expression of Pax6, NeuroD4 and Sp1 was examined in neural progenitor cells (NPC), oligodendrocyte precursor cells (OPC) and mature oligodendrocytes (OL) by qRT-PCR.



Supplementary Fig S3: miR-7a overexpression in embryonic cortex inhibited Pax6 expression

(A) Representative images showing the immunostaining of Pax6 in control and miR-7a plasmid electroporated GFP$^+$ cells after 3 days in utero electroporation. Arrows indicate GFP+ cells co-labeling with Pax6 in control treatment. (B) Quantification the percentage of Pax6+GFP+cells among GFP$^+$ cell in a defined cortical area (0.25mm^2). Data represent mean ± SEM. * $p<0.05$ (Student's t test).



Supplementary Fig S4: Sp1, an important regulator for myelin basic protein (MBP) expression, is a target of miR-7a. (A) Sequence analysis of 3'UTR of mouse Sp1 transcripts. The recognition sites of miR-7a were indicated by red bars. Black lines underneath depicted the regions of 3'UTRs that were cloned into pMir-reporter: Sp1 3'UTR-1, 1221bp; Sp1 3'UTR-1, 1065bp. (B) Luciferase reporter assays for the effects of miR-7a expression on activities of reporters carrying the 3'UTR segments of Sp1. The mutant forms with corresponding ''seed'' sequence mutations were included as negative control. The histogram showed the ratio of the luciferase activity normalized to control expression vector. (C) qRT-PCR analysis of Sp1 expression from RNAs isolated from NPCs 3 days after transfection with miR-7a mimics. Scrambled miR transfection was included as control. Data were from three independent experiments. * $p<0.05$ (one-way ANOVA in B; Student's t test in C)