**Supplemental material**

**Supplementary Figure 1**



**Figure1**. OPCs, HBMECs and human EPCs were identified by A2B5 (A-C), CD31(D-F) and CD133 (G-I) immunofluorescent staining. Scale bars: 20μm.

**Supplementary Figure 2**



**Figure 2.** Oxygen-glucose deprivation (OGD) caused morphological changes and apoptosis of ECs. A,OGD caused morphological changes of ECs. Scale bar=50μm. **B-C,** ODG induced ECs apoptosis was detected by FACS and quantitative analyzed at different time points (n = 4, triplicates per group). **D,** OGD resulted in significant reduction of ECs viability by CCK-8 analysis (n = 6, triplicates per group). Data were analyzed using one-way ANOVA and shown as mean ± SEM. \**P* < 0.05, \*\**P* < 0.01, \*\**P* < 0.001 vs. Ctrl group; #*P* < 0.05, ##*P* < 0.01 vs. OGD 3 h group.

**Supplementary Figure 3**



**Figure 3.** The mRNA and protein of CXCL12 of ECs were detected by RT-qPCR and western blotting. **A**, There was no statistically differences in the CXCL12 mRNA among the groups. **B**, Quantification of CXCL12protein levels from immunoblots, and no statistically significant differences among the four groups. Compared the mean ± SEM by one-way ANOVA (n = 4, triplicates per group).

**Supplementary Figure 4**



**Figure 4. A,** The transplanted EC-pEPCs (conditioned medium from hypoxic endothelial cells preconditioned EPCs ) were observed by immunofluorescent staining with the antibody that specifically binds to human CD133. EC-pEPCs distributed along corpus callosum. **B**, A schematic diagram was used to illustrate the effects and mechanism of EC-pEPCs on OPCs and oligovascular remodeling *in vitro* and *in vivo*.