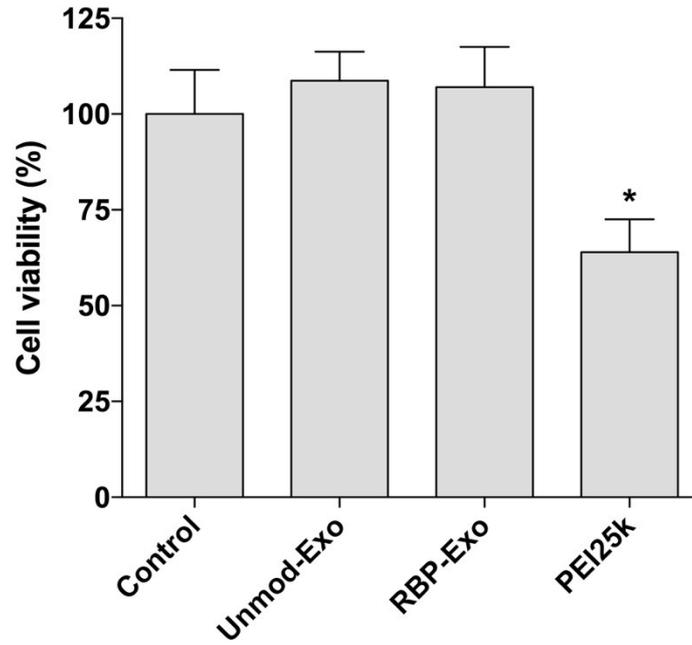


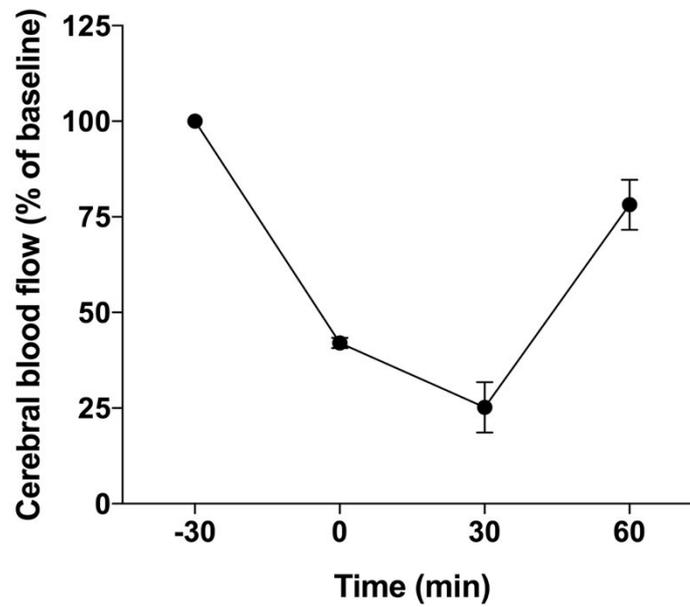
Supplementary Figure 1. Western blot assay with anti-HA antibody

Total proteins of RBP-Exo were isolated and separated by SDS-PAGE. The proteins were transferred to a PVDF membrane and incubated with anti-HA antibody to detect RBP-Lamp2b-HA. RVG-Exo and T7-Exo were used as positive controls, as previously reported (Kim G, Kim M, Lee Y, Byun JW, Hwang DW, Lee M. Systemic delivery of microRNA-21 antisense oligonucleotides to the brain using T7-peptide decorated exosomes. *J Control Release*. 2020; 317: 273-81; Kim M, Kim G, Hwang DW, Lee M. Delivery of high mobility group box-1 siRNA using brain-targeting exosomes for ischemic stroke therapy. *J Biomed Nanotechnol*. 2019; 15(12): 2401-12). RVG-Exo and T7-Exo were used as positive controls, because RVG-Lamp2b-HA and T7-Lamp2b-HA contained the HA tag as fusion proteins of Lamp2b. GAPDH was detected as an internal control. CD63 was detected as an exosome marker.



Supplementary Figure 2. Cytotoxicity of exosomes and PEI25k

RBP-Exo and Unmod-Exo without AMO181a were added to Neuro2A cells. After 24 h, the cytotoxicity of the exosomes was evaluated in the Neuro2A cells using an MTT assay. PEI25k was used as a control. The data are presented as the mean value \pm standard deviation of quadruplicate experiments. * $P < 0.05$ compared with the other groups.



Supplementary Figure 3. CBF in the MCAO rat model

CBF was measured in the MCAO rat model by laser Doppler flowmetry. The data are presented as the mean value \pm standard deviation of triplicate experiments.