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Supplemental information

Suppression of abnormal α-synuclein expression by activation of BDNF transcription ameliorates Parkinson's disease-like pathology

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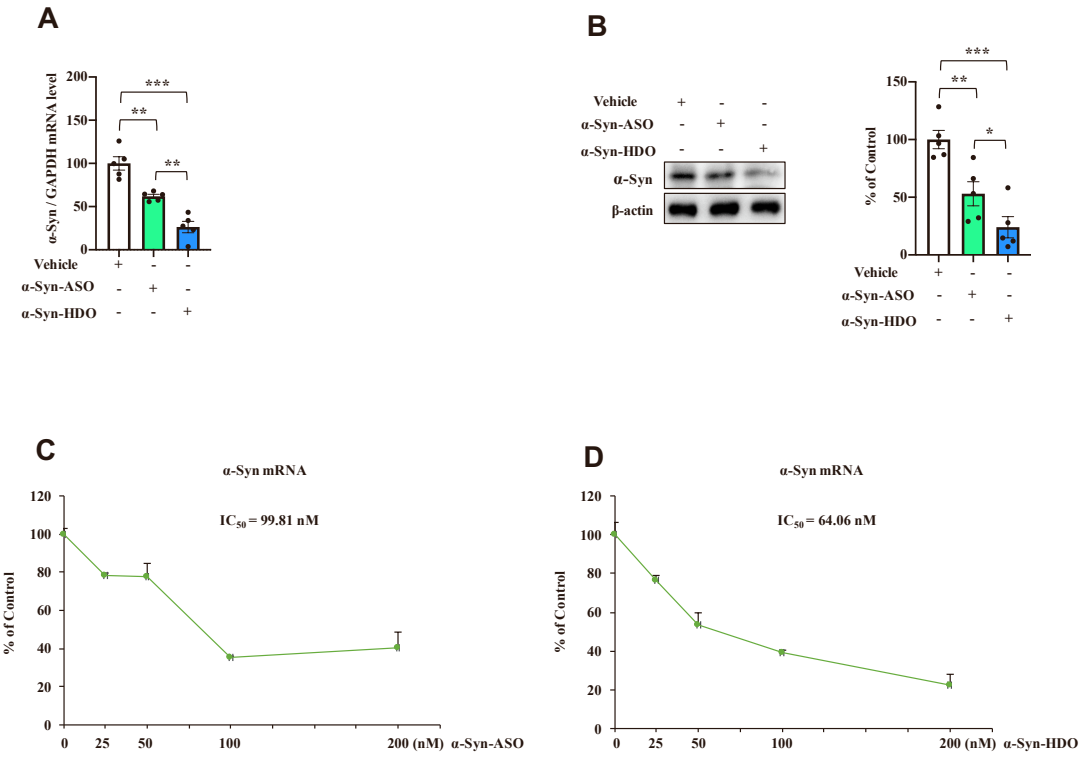
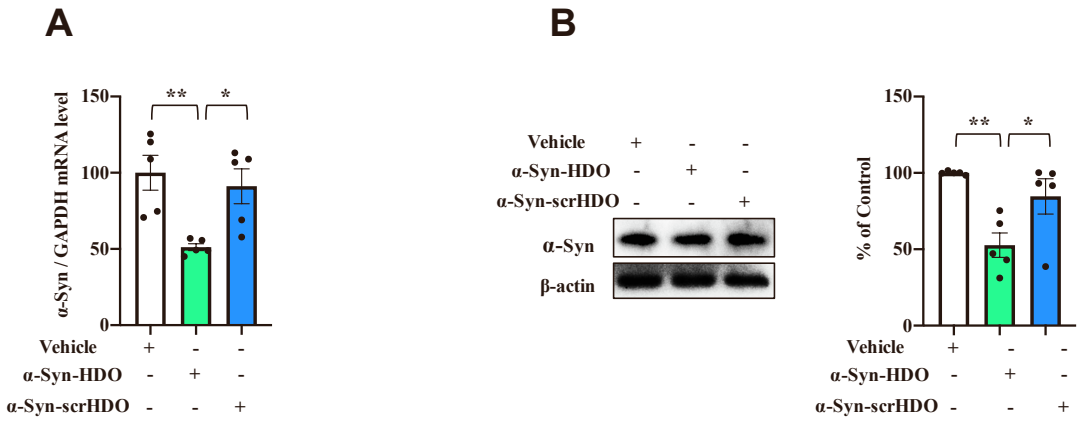
Supplemental Information

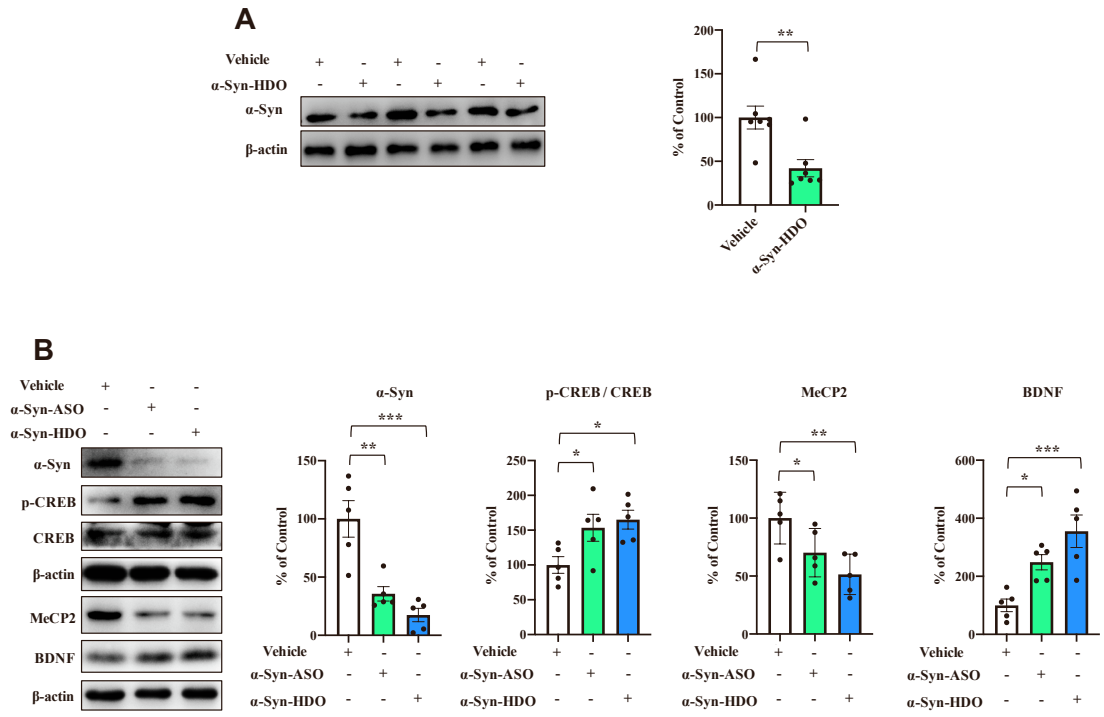
Supplement



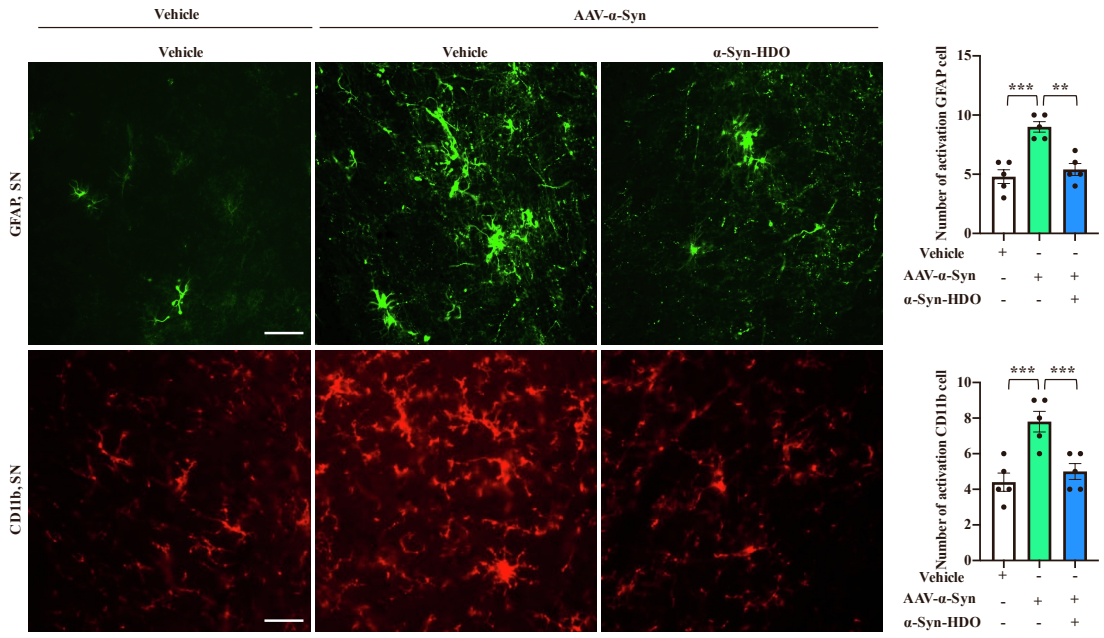
Supplement figure 1. α-Syn-HDO exerted a more potent silencing effect on α-Syn than α-Syn-ASO. **A:** qPCR analysis of α-Syn in SH-SY5Y cells treated with α-Syn-ASO or α-Syn-HDO. (Mean ± SEM, n = 5 per group, Student's *t*-test, **p* < 0.05). **B**: Western blot assay for α-Syn in SH-SY5Y cells after α-Syn-ASO or α-Syn-HDO administration. (Mean ± SEM, n = 5 per group, one-way ANOVA, **p* < 0.05 and ***p* < 0.01). **C** and **D**: The IC_{50} for α-Syn in SH-SY5Y cells treated with α-Syn-ASO or α-Syn-HDO. (Mean ± SEM, n = 5 per group)



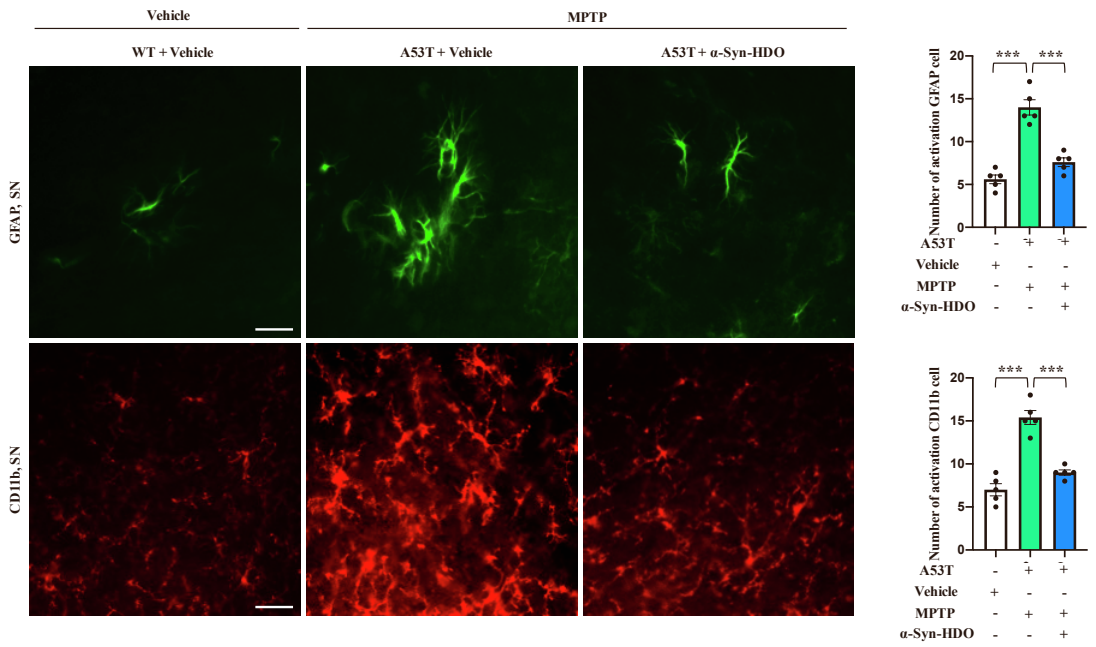
Supplement figure 2. The scrambled α-Syn-HDO did not show any silencing effects for α-Syn. **A**: qPCR analysis of α-Syn in SH-SY5Y cells after α-Syn-HDO or scrambled α-Syn-HDO (α-Syn-scrHDO) administration. (Mean ± SEM, n = 5 per group, one-way ANOVA, *$p < 0.05$ and **$p < 0.01$). **B**: Western blot assay for α-Syn in SH-SY5Y cells after α-Syn-HDO or α-Syn-scrHDO administration. (Mean ± SEM, n = 5 per group, one-way ANOVA, *$p < 0.05$ and **$p < 0.01$)



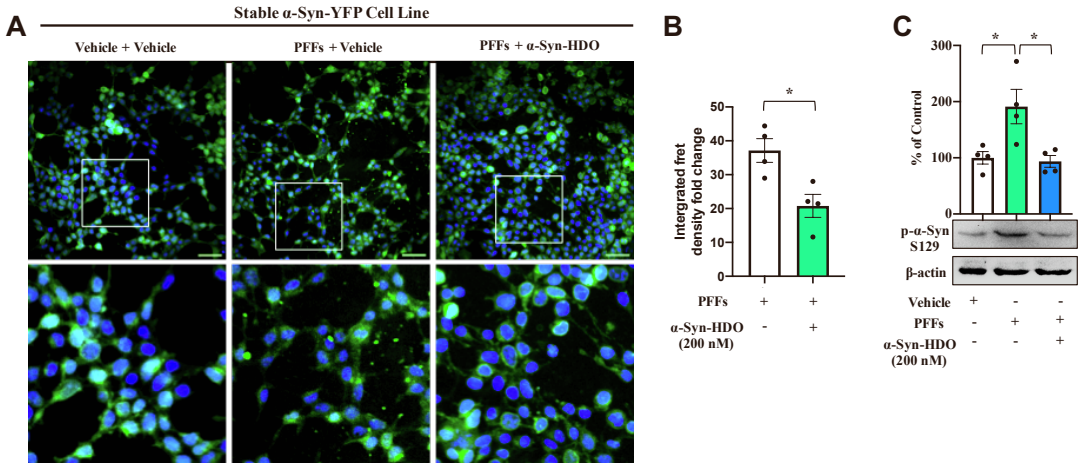
Supplement figure 3. α-Syn-HDO silenced α-Syn expression in SNc of WT mice and promoted BDNF upregulation. **A**: Western blot assay for α-Syn in SNc of WT mice after α-Syn-HDO administration. (Mean ± SEM, n = 7 per group, Student's *t*-test, $^{**}p < 0.01$). **B**: Western blot assay for α-Syn; the ratio of p-CREB/CREB; MeCP2 and BDNF in SNc of WT mice after α-Syn-HDO administration. (Mean ± SEM, n = 5 per group, one-way ANOVA, $^{*}p < 0.05$, $^{**}p < 0.01$ and $^{***}p < 0.001$).



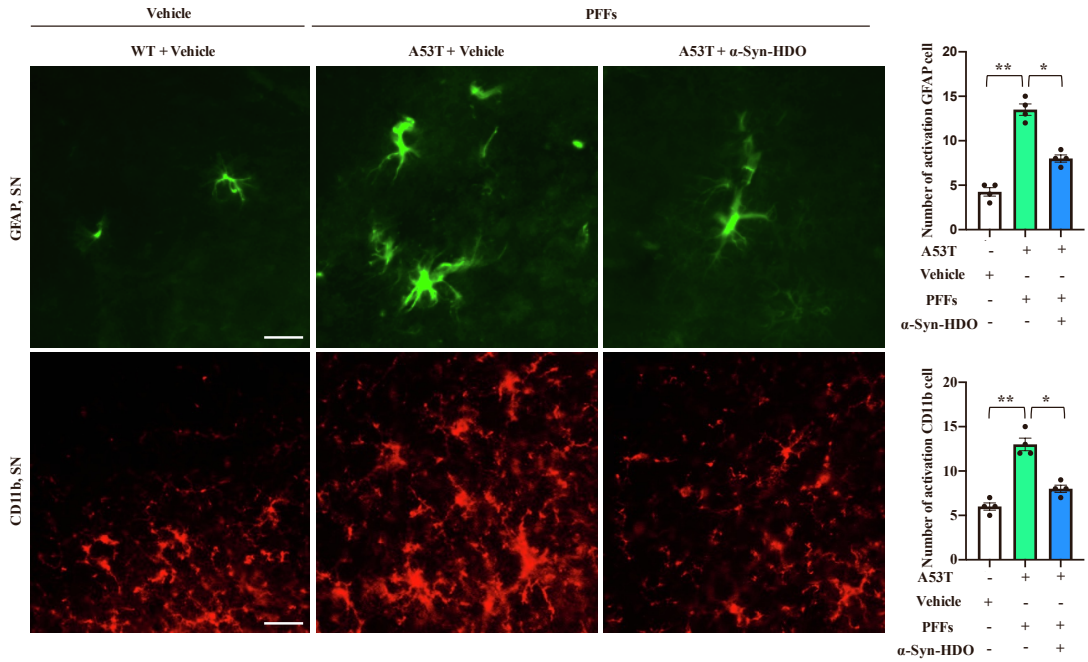
Supplement figure 4. α-Syn-HDO attenuates GFAP and CD11b immunoreactivity in AAV9-hSyn-human SNCA-treated mice. The immunofluorescence staining for GFAP and CD11b in the SNc. Quantification analysis of GFAP and CD11b (Mean ± SEM, n = 5 per group, one-way ANOVA, $^{**}p < 0.01$ and $^{***}p < 0.001$). Scale bar = 50 μm.



Supplement figure 5 α-Syn-HDO attenuates GFAP and CD11b immunoreactivity in MPTP-treated α-Syn-A53T mice. The immunofluorescence staining for GFAP and CD11b in the SNc. Quantification analysis of GFAP and CD11b (Mean ± SEM, n = 5 per group, one-way ANOVA, ***$p < 0.001$). Scale bar = 50 μm.



Supplement figure 6. α-Syn-HDO prevents α-Syn-induced PD pathology *in vitro*. **A** and **B**: Representative images of α-Syn aggregation in HEK293-α-Syn cells treated with PFFs in the presence or absence of α-Syn-HDO (mean ± SEM, n = 4 per group, Student's *t*-test, $^{**}p < 0.01$). Green fluorescence spots represent abnormally aggregated α-Syn. Scale bar = 50 μm. **C**: HEK293-α-Syn cells were treated with or without PFFs in the presence of vehicle or α-Syn-HDO. Western blotting was used to examine the expression of p-α-Syn (S129) after 24 hours of transfection (mean ± SEM, n = 4 per group, one-way ANOVA, $^{*}p < 0.05$).



Supplement figure 7. α-Syn-HDO attenuates GFAP and CD11b immunoreactivity in PFFs-treated α-Syn-A53T mice. The immunofluorescence staining for GFAP and CD11b in the SNc. Quantification analysis of GFAP and CD11b (Mean ± SEM, n = 4 per group, one-way ANOVA, *$p < 0.05$ and **$p < 0.01$). Scale bar = 50 μm.