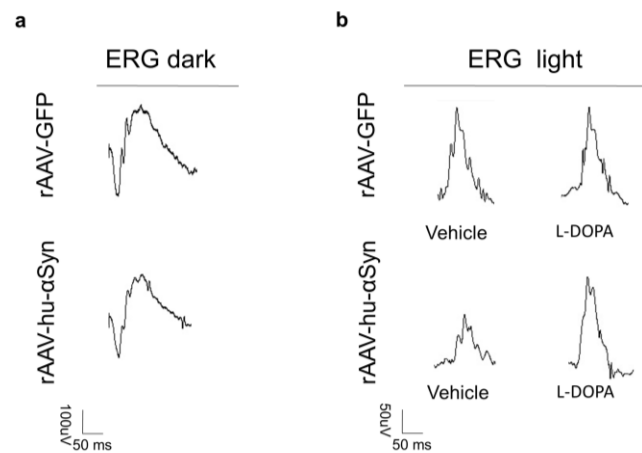
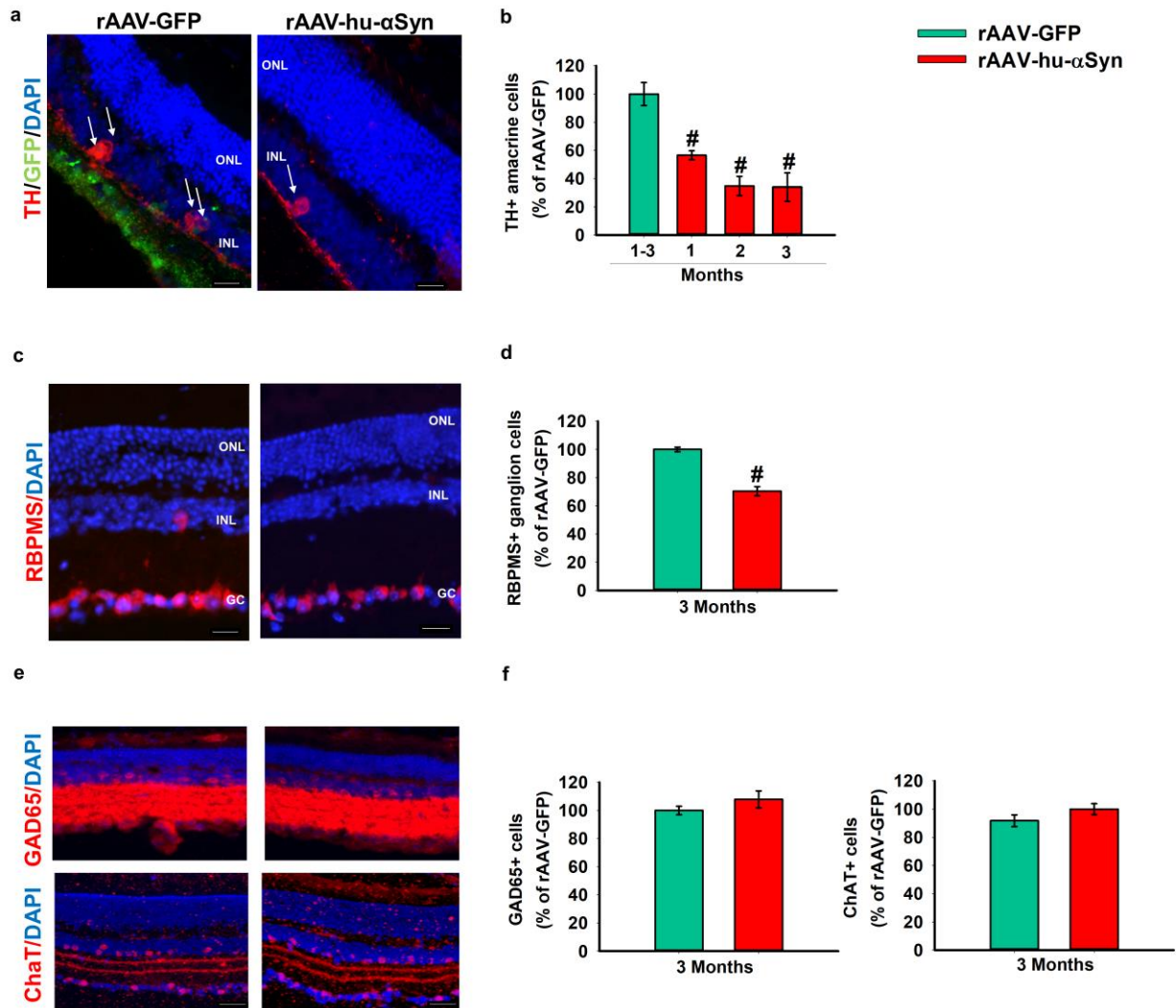


α -synuclein overexpression in the retina leads to vision impairment and degeneration of dopaminergic amacrine cells

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Supplementary Figure 1, related to Figure 1. (a) Representative ERG traces (in dark conditions) showing the maximum amplitude obtained with flashes of 10 cd.s/m² in animals treated with rAAV2/6-hu- α -syn and rAAV2/6-GFP (control). (b) Representative ERG traces (light conditions) in animals treated with rAAV2/6-hu- α -syn and rAAV2/6-GFP (control) after treatment with vehicle or L-DOPA. The waves refer to retinal responses after 8 min of light adaptation (last point Figure 1e).



Supplementary Figure 2, related to Figure 4. Dopaminergic amacrine cells, but not GABAergic or cholinergic, are lost in α -syn injected retina. (a-b) Representative immunofluorescence on vertical retinal sections of rAAV-hu- α -syn injected mice (left) and rAAV-GFP mice (right) stained with antibody anti-tyrosine hydroxylase (TH) (red). White arrows indicate TH+ amacrine cells 1 month post-injection (10x Magnification, Scale bar 50 μ m), [one-way ANOVA group $F_{(1,3)}=1161.600$; $p<0.0001$]. **(c-d)** RBPMS staining (red) performed at 3 months post injection in rAAV-hu- α -syn injected mice and rAAV-GFP mice (right) (20x

Magnification, Scale bar 50 μ m) [one-way ANOVA, group $F_{(1,27)}=5.204$; $p=0.0306$]. **(e-f)** GAD65 and ChAT staining on retina of rAAV-hu- α -syn and rAAV-GFP- injected at 3 month post injection (20x Magnification, Scale bar 50 μ m) [GAD65: one-way ANOVA, group $F_{(1,41)}=0.733$; $p=0.3970$; ChAT+: one-way ANOVA, group $F_{(1,28)}=2.128$; $p=0.155$]. Data represent mean \pm SEM. # $p < 0.05$ vs rAAV-GFP.

Supplementary Videos. Videos showing visual task performance of C57BL/6J mice pre-injection (Video 1), after intravitreal injection of (rAAV-hu- α -syn) combined with saline (Video 2) and L-DOPA replacement therapy (Video 3). **(Video 1)** Representative sample trial of a C57BL/6J mouse during the visual task where it is required to discriminate between a 3 cm black and white striped card and a 4 cm black and white striped card. The platform is located under the 3 cm striped card. **(Video 2)** Representative trial of the visual task showing that bilateral rAAV-hu- α -syn intravitreal injection affects performance at the first stage of the procedure when animals are required to discriminate between a 1 cm black and white striped card and a 10 cm black and white striped card. The platform is located under the 1 cm striped card. **(Video 3)** Representative trial of the visual task showing that L-DOPA treatment rescues performance in rAAV-hu- α -syn injected mice on the same trial reported in Video 2.