**Supplementary Table 1: List of injected animals.**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **AAV** | **Injection type** | **Injection volume** | **Mouse genotype** | **Age at Injection** | **n** | **Survival** | **Use** |
| pAAV-hSyn1-TFEB-HA  | Unilateral | 2 | Q175/Q7 | 3 m | 2 | 1 m | IHC |
| pAAV-hSyn1-GFP  | Unilateral | 2 | Q175/Q7 | 3 m | 2 | 1 m | IHC |
| pAAV-hSyn1-TFEB-HA  | Bilateral | 2 | Q175/Q7 | 3 m | 4 | 1 m | WB |
| pAAV-hSyn1-GFP  | Bilateral | 2 | Q175/Q7 | 3 m | 4 | 1 m | WB |
| pAAV-hSyn1-TFEB-HA  | Bilateral | 2 | Q175/Q7 | 3 m | 2 | 2 m | IHC |
| pAAV-hSyn1-GFP  | Bilateral | 2 | Q175/Q7 | 3 m | 2 | 2 m | IHC |
| Non-injected |  |  | Q175/Q7 | - | 2 | 5 m | IHC |
| pAAV-hSyn1-TFEB-HA  | Bilateral | 2 | Q175/Q7 | 3 m | 4 | 2 m | WB |
| Non-injected |  |  | Q175/Q7 | - | 4 | 5 m | WB |
| Non-injected  |  |  | WT |  | 4 | 5 m | WB |

WB, Western blot; IHC, immunohistochemistry

**Supplementary Table 2: Staining intensity and number of DARPP32 positive neurons in AAV hSyn1 TFEB-HA, AAV hSyn1 GFP and non-injected mice. Mice represented in figures are indicated.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Genotype** | **Treatment** | **Post-injection interval** | **Mouse#** | **DARPP32 staining intensity** | **DARPP32 positive neuron numbers** |
|  | **mean change ± SEM (%)** | **Whole striatum estimate** |
| Q175/Q7 | TFEB‑HA | 1 month | Mouse 1 | -7.69±1.28% |  |
| Mouse 2 | -7.64±2.53% |  |
| GFP | Mouse 3 | -3.73±3.09% |  |
| Mouse 4 | -1.85±1.38% |   |
| Q175/Q7 | TFEB‑HA | 2 months | Mouse 5 | -33.36±2.87% | 566766.81 |
| Mouse 6 | -11.00±2.12% |  |
| GFP | Mouse 7 | -1.78±0.88% |  |
| Mouse 8 | -2.24±0.88% | 614247.44 |
| None | Mouse 9 | 0.89±1.40% |  |
| Mouse 10 | -0.58±2.86% | 652665.06 |
| WT | TFEB‑HA | 2 months | Mouse 11 | -11.32±2.72% |  |
| Mouse 12 | -21.51±1.35% |  |
| GFP | Mouse 13 | 1.57±1.14% |  |
| Mouse 14 | 5.22±0.93% |   |

Mean change ± SEM (%) in the injected area relative to unaffected region.

**Supplementary Figure 1**

**Co-localization of TFEB-HA and NeuN in AAV-hSyn1-TFEB-HA injected mouse, 1 month post-injection.** Maximum projection of z-stack scan through striatum double stained for HA and NeuN. All TFEB-HA positive cells (red in merge, arrows) are also positive for NeuN (green in merge; arrows). Nuclei were counterstained by DAPI (blue in merge). Smaller nuclei (arrowheads) most likely of glial cells are negative for both TFEB-HA and NeuN (arrowheads denote position of the same nuclei in NeuN and TFEB-HA channels).

****

**Supplementary Figure 2**

**Western blot analysis of DARPP32, GFAP and PDE10A in striatal crude homogenates of mice injected with either AAV hSyn1 TFEB-HA or AAV hSyn1 GFP and analyzed 1 month post-injection.** A) Western blots for DARPP32, GFAP and PDE10A, GAPDH was used as a loading control. B) Bar graphs show results of densitometry for Western blots in A. All mice are age matched and were examined at 1 months post-injection. Each column represents sample from a different mouse, N=4 mice per treatment group, p-values from unpaired t-test.

****