

Supplementary Table 1.

| Protein Brain region | Cathepsin D | p62 | Bip | GFAP | Lamp1 | LC3B |
|-------------------------|-------------|-----|------|------|-------|------|
| Brainstem | -7% | +6% | +9% | -15% | -13% | -1% |
| Midbrain | -9% | +7% | +13% | -10% | -7% | -10% |
| Striatum | -5% | +5% | +8% | -16% | -5% | +13% |

Legend: - decrease in protein levels in *L444P*/+ mice compared to +/+ control littermates
+ increase in protein levels in *L444P*/+ mice compared to +/+ control littermates

Supplementary Table 2.

| Protein Brain region | Cathepsin D | p62 | GFAP | Lamp1 | LC3B |
|-------------------------|-------------|------|------|-------|------|
| Brainstem | -2% | +9% | -11% | -14% | +9% |
| Midbrain | -5% | +13% | -2% | -10% | +6% |
| Striatum | -10% | +4% | -5% | -2% | +3% |

Legend: - decrease in protein levels in *L444P*/+ mice compared to +/+ control littermates
+ increase in protein levels in *L444P*/+ mice compared to +/+ control littermates

Supplementary Table 3.

| <i>L444P/+</i> | <i>+/+</i> (for <i>L444P/+</i>) | <i>KO/+</i> | <i>+/+</i> (for <i>KO/+</i>) |
|--|-------------------------------------|-------------|----------------------------------|
| Buried pellet test (the latency to find and start eating the piece of chocolate) | | | |
| 141s | 135s | 81s | 70s |
| Pole test – t-turn (time to orient downward) | | | |
| 1.25s | 1.3s | 2.28s | 1.42s |
| Pole test – t-total (total time to descend) | | | |
| 4.67s | 4.5s | 5.42s | 5.32 |
| Novel object recognition test (time spent exploring novel object divided by the sum of time spent exploring both novel and familiar object) | | | |
| 0.47 | 0.51 | 0.57 | 0.53 |