

Supplementary Figure legends

Supplementary Figure 1. Additional Transcriptome analysis upon ectopic α -synuclein expression in SH-SY5Y neuroblastoma cells. (a) Validation of the differential expressed genes (DEGs) of DNA repair by qPCR. (b) Reactome analyses of common genes in the Rank-Rank Hypergeometric Overlap analysis.

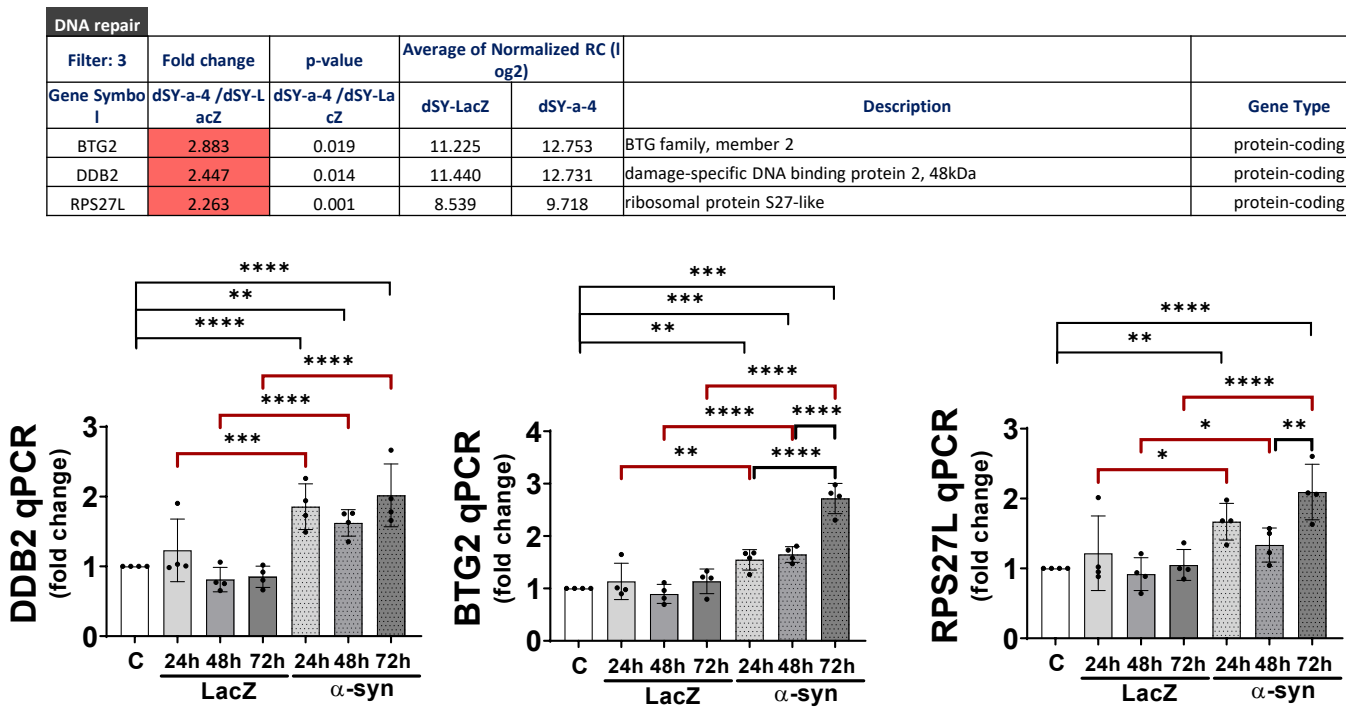
Supplementary Figure 2. Genomic distribution of P53 and γ H2AX in cells expressing α -Synuclein. Genomic distribution of P53 and γ H2A peaks in each sample.

Supplementary Figure 3. Changes in the DNA repair genes by α -Synuclein expression. (a) A diagram showing genes involved in the single-strand and double-strand DNA repairs. The genes with red circles are tested for differential expression. (b) PARP1, a gene involved in the single strand repair and DSB HR repairs, is tested for expression change with α -synuclein levels. Note that PARP1 decreases, rather than increases, with α -synuclein expression, showing that SSB and DSB HR pathways are downregulated. (c) Rad51, a gene important for DSB HR repair, decreased with α -synuclein expression. (d,e) ERCC1 and XRCC1, genes important for SSB NER and BER respectively, remained the same or decreased with α -synuclein expression.

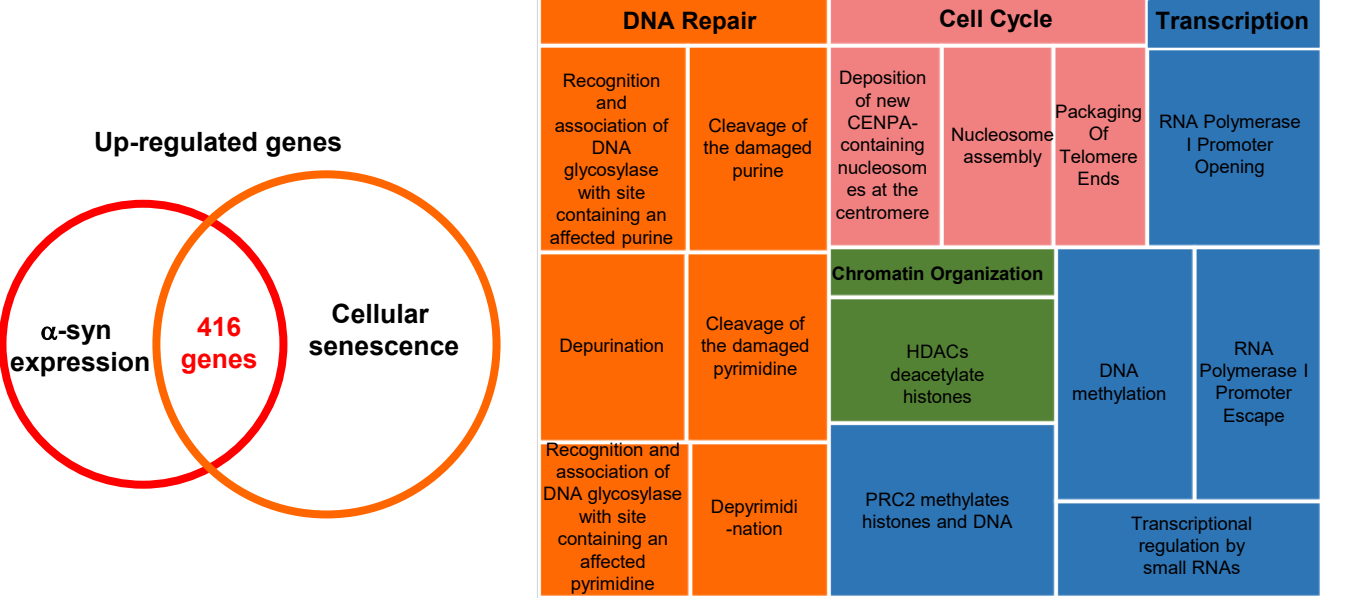
Supplementary Figure 4. Changes in the γ H2AX levels with a longer expression of α -synuclein. The cell number with γ H2AX foci and γ H2AX foci number per cell increased dramatically with a longer expression of α -synuclein (up to day 10). (scale bar: 20 μ m).

Supplementary Figure 5. Real-time PCR analysis of p16, p21, and p53 genes in WT and α -syn Tg mice at 3 months. The real-time PCR results of p16, p21, and p53 genes in each WT and α -syn Tg at 3 mo. of age.

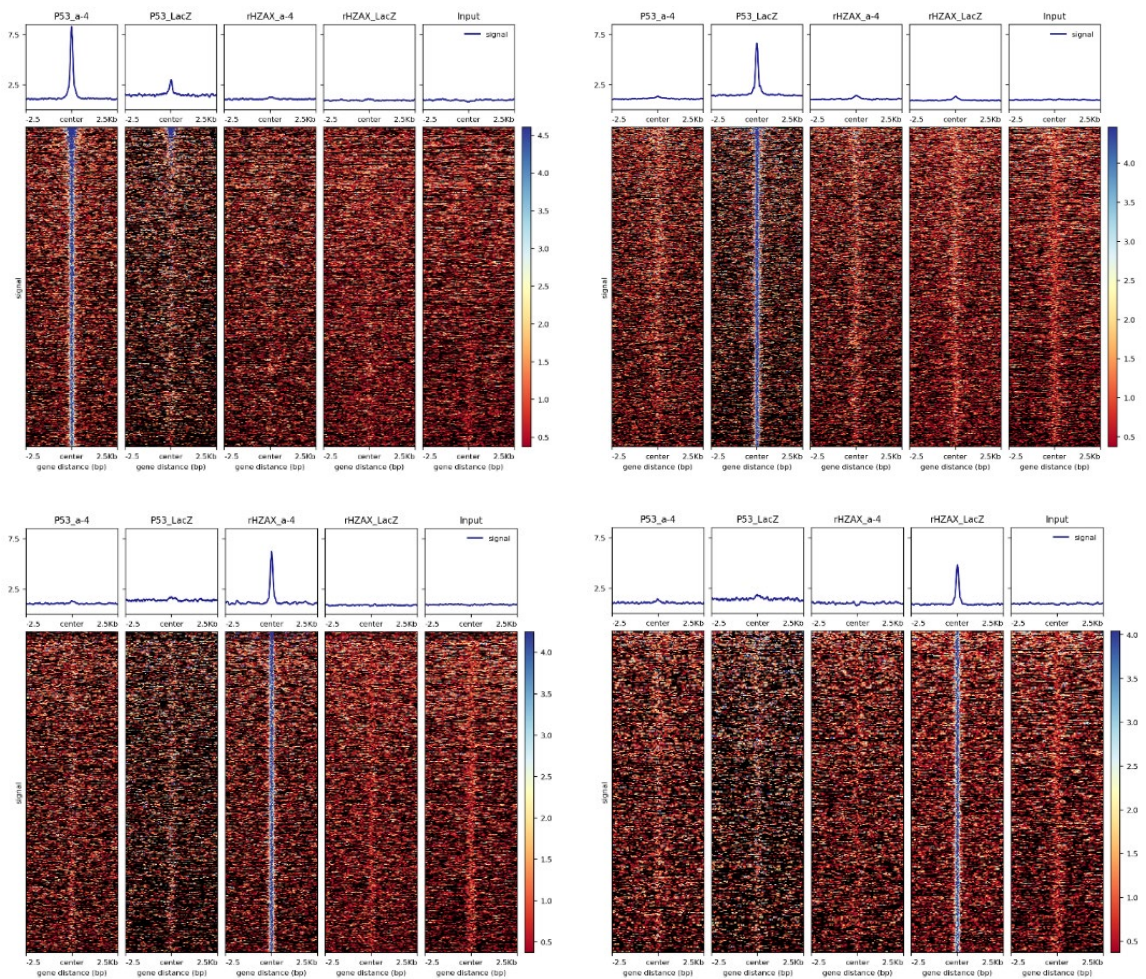
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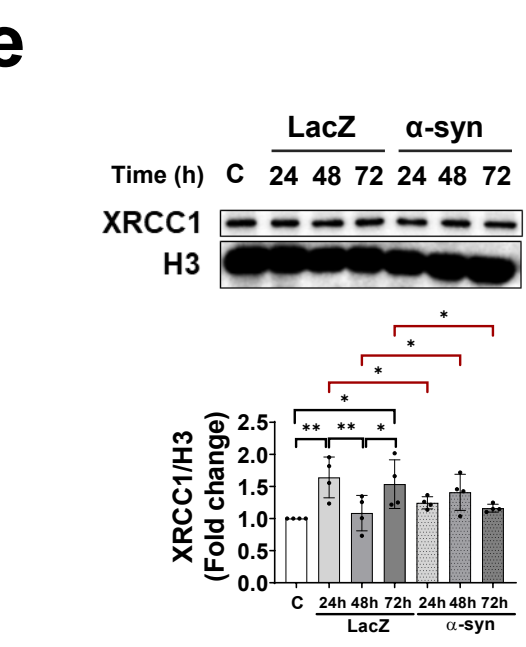
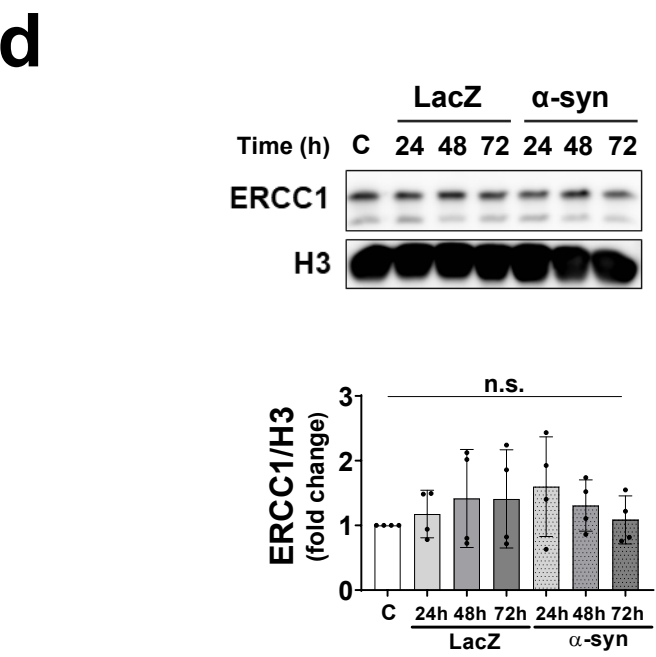
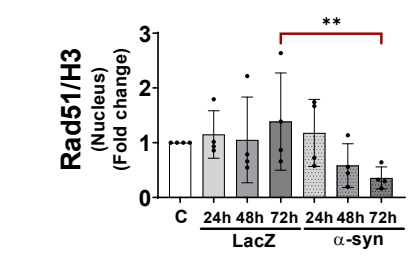
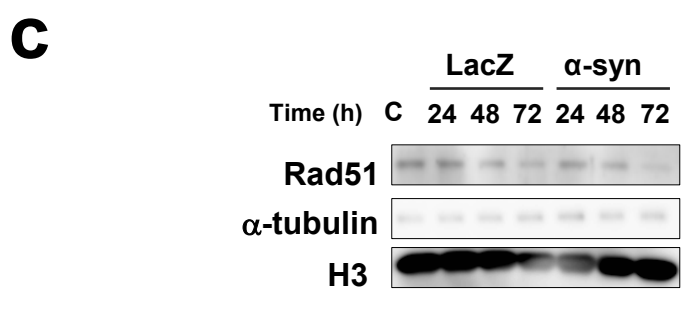
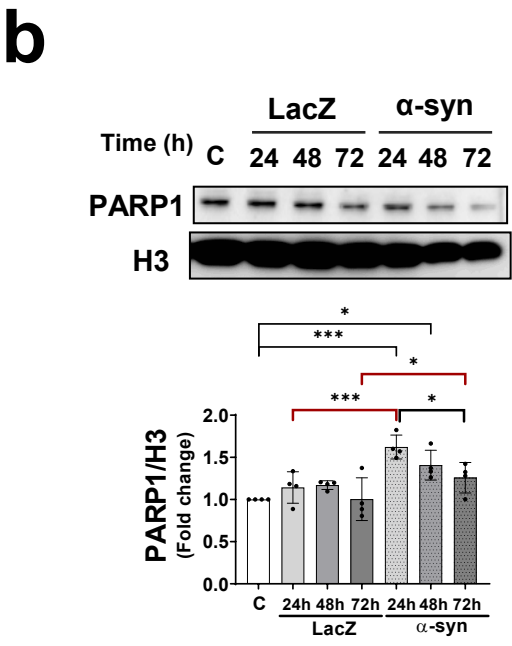
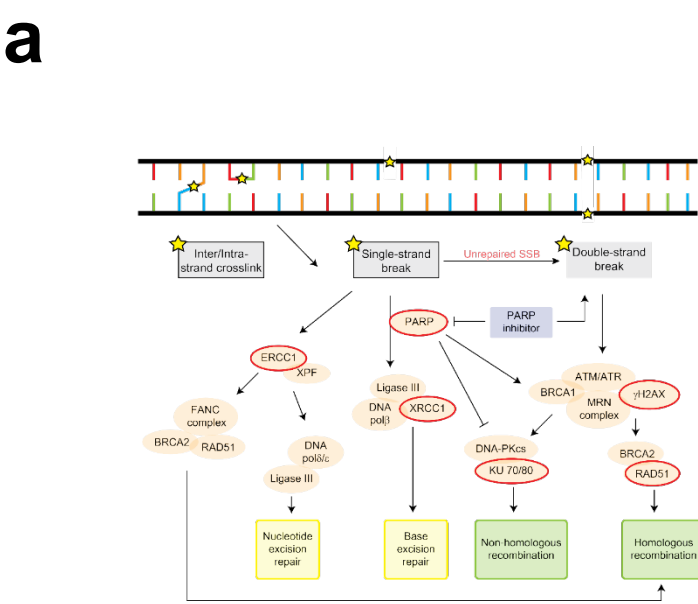
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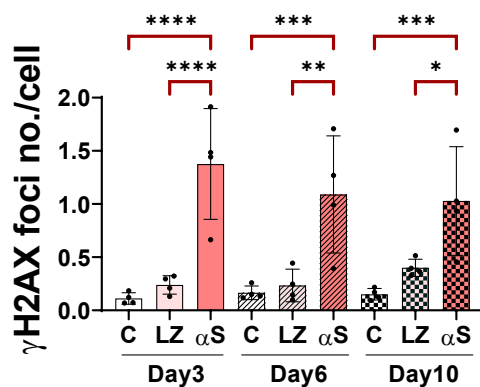
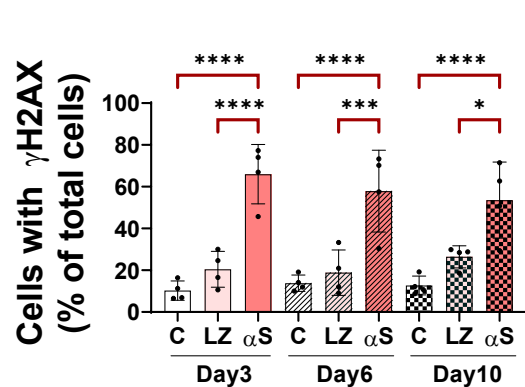
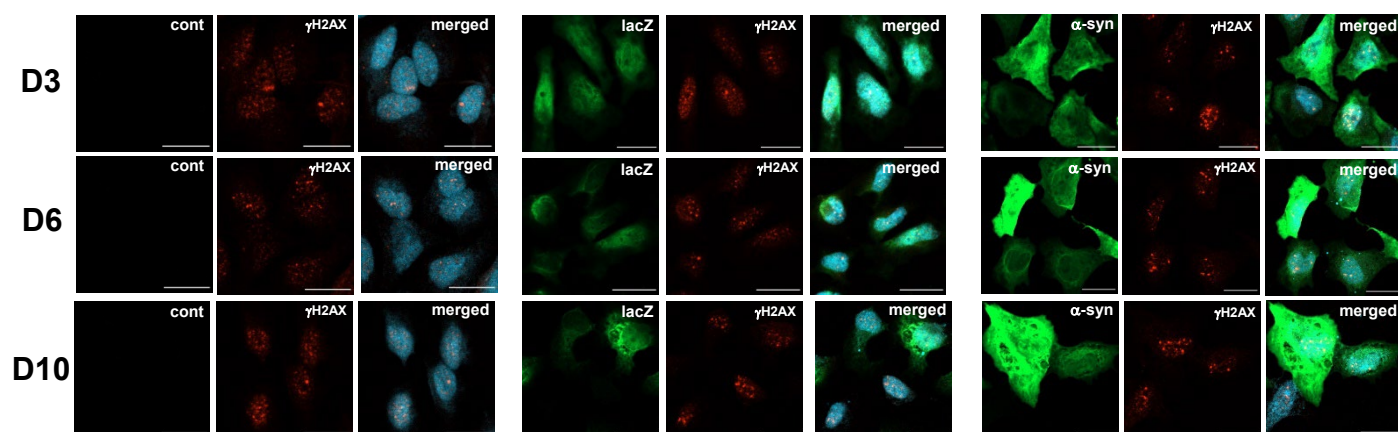
Supplementary Figure 1



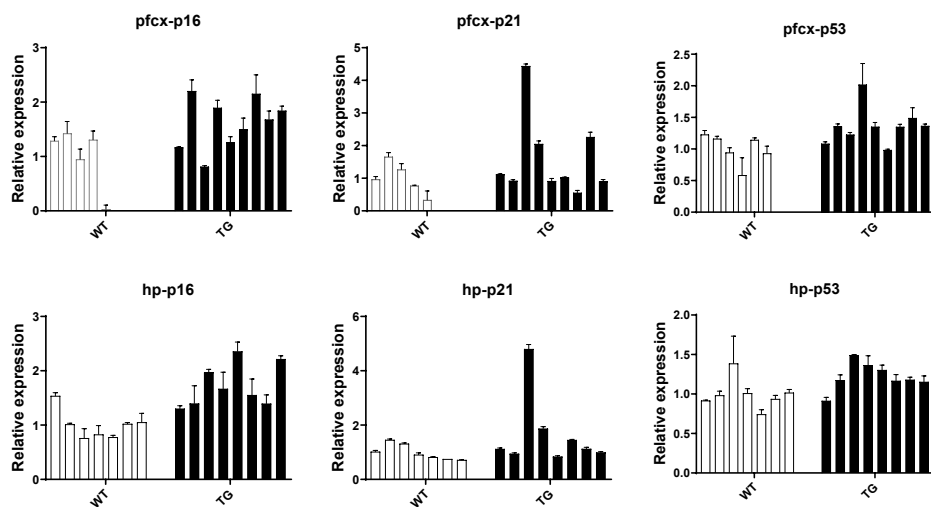
Supplementary Figure 2



Supplementary Figure 3



Supplementary Figure 4



Real time PCR