

Fig. S6

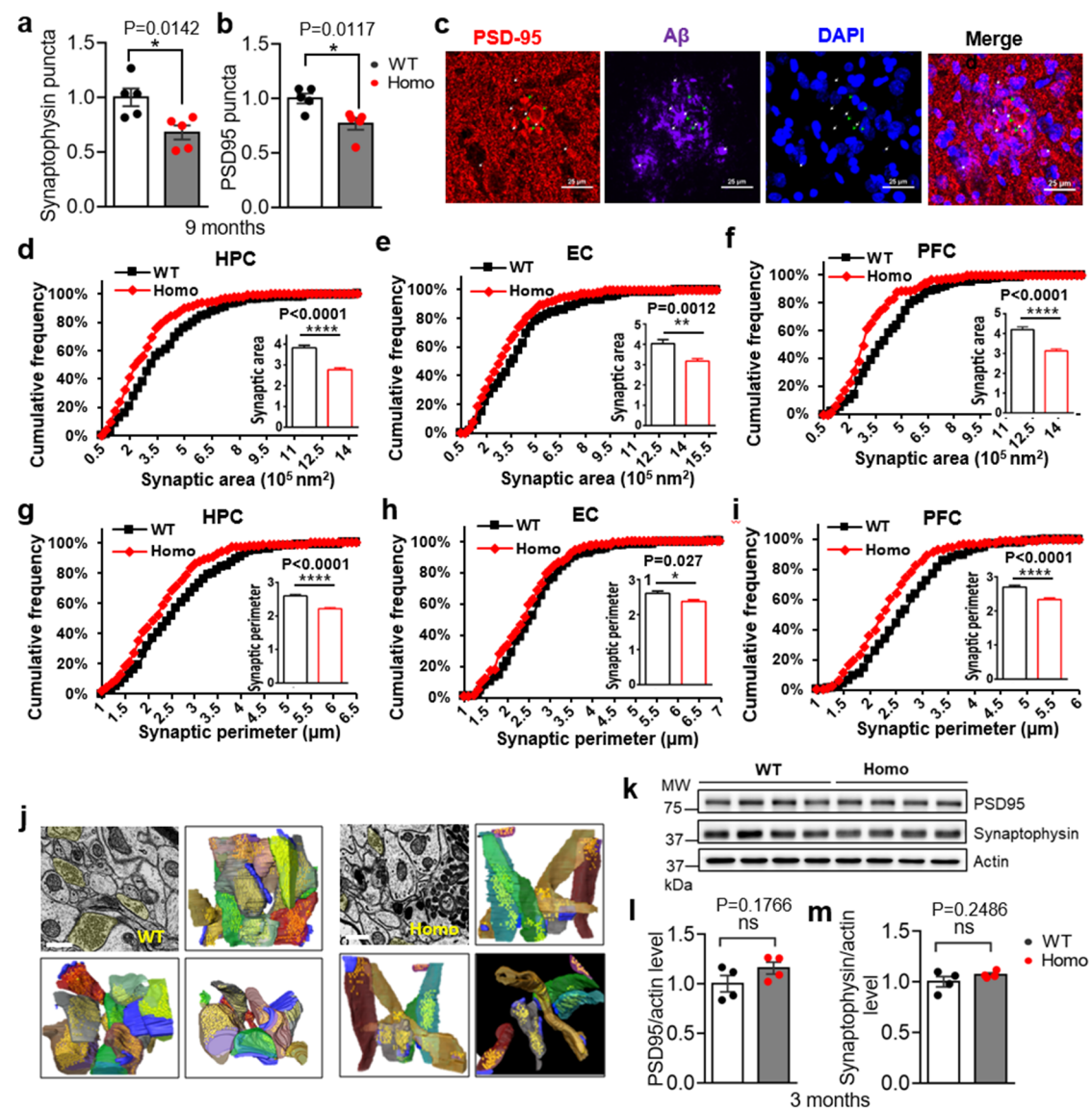


Fig. S6. Enhanced Synaptic degeneration in *App*^{NL-G-F} rats.

a, b, Quantification of synapse density in the regions where no plaques in 9-month-old *App*^{NL-G-F} rats. The quantified images were derived from the experiments of **Fig. 4d**. **c**, Representative images of PSD95 immunostaining. Brain sections from 12-month-old homozygous *App*^{NL-G-F} rat were triple immunostained with fluorostyryl benzene (FSB, purple) for A β plaque, DAPI (blue), and PSD95 (red) antibodies for postsynaptic markers, respectively. White and green arrows respectively indicate swelling and hollowing of postsynaptic density, respectively. Scale bars represent 25 μ m. **d-f**, Quantification of synapse area in hippocampus (**d**), entorhinal cortex (**e**) prefrontal cortex (**f**) from EM images of 6-month old WT and Homo rats by cumulative frequency plots. Insets display box plots of the actual synaptic area. At least 180 synapses were analyzed for each group. N = 3 rats / group. Statistics: Kolmogorov-Smirnov test (non-parametric test) was used to compare cumulative distributions. **g-i**, Quantification of synapse perimeter hippocampus (**g**), entorhinal cortex (**h**) prefrontal cortex (**i**) from EM images of 6-month old WT and Homo rats by cumulative frequency plots. Insets display box plots of the actual synaptic perimeter. At least 180 synapses were analyzed for each group. n = 3 rats/group. **j**, 3D reconstruction of synapses in hippocampus. Representative ATUM-SEM (Automated Tape-collecting UltraMicrotome - Scanning Electron Microscopy) image (upper left) and 3D reconstruction (other three) of synapses from WT (left) or homozygous *App*^{NL-G-F} (right) rats. Presynaptic terminals in pseudo colors (except blue) and post-synaptic densities in blue were reconstructed from a set of 50 ATUM-SEM image stacks (40 nm/slice). **k-m**, Levels of synaptic proteins in 3-month-old *App*^{NL-G-F} rats. Synaptosomal extracts from 3-month-old WT and Homo rat hippocampus were immunoblotted for presynaptic (synaptophysin) and postsynaptic (PSD95) markers (**k**). Quantifications of synaptic protein levels are shown in the right (**l, m**). n =4.