File Name: Supplementary Data 1

Description: nCounter® Mouse AD Panel - Gene list

File Name: Supplementary Data 2

Description: $Spi1^{+/-}$;APPPS1 vs APPPS1 - NanoString list

File Name: Supplementary Data 3

Description: $Spi1^{+/-}$;APPPS1 vs APPPS1 - Pathway enrichment analysis using the Enrichr software

File Name: Supplementary Data 4

Description: $Spi1^{+/-}$;APPPS1 vs APPPS1 - Pathway enrichment analysis using the MetaCore software

File Name: Supplementary Data 5

Description: $Spi1^{TG/0}$;5xFAD vs 5xFAD - NanoString list

File Name: Supplementary Data 6

Description: $Spi1^{TG/0}$;5xFAD vs 5xFAD - Pathway enrichment analysis using the Enrichr software

File Name: Supplementary Data 7

Description: $Spi1^{TG/0}$;5xFAD vs 5xFAD - Pathway enrichment analysis using the MetaCore software

File Name: Supplementary Data 8

Description: LIMMA-Transcription Factors enrichment analysis

File Name: Supplementary Data 9

Description: LIMMA-Pathway enrichment analysis

File Name: Supplementary Data 10

Description: LIMMA-GO processes enrichment analysis

File Name: Supplementary Data 11

Description: LIMMA-Process Network enrichment analysis

File Name: Supplementary Data 12

Description: Cell-type clusters DEGs between $Spi1^{Tg/0}$;5XFAD and 5XFAD mice

File Name: Supplementary Data 13

Description: Ontology of Microglial clusters DEGs (Biological Process, BP; Molecular Function, MF;

Cellular Component, CC; KEGG)

File Name: Supplementary Data 14

Description: Modules of scWGCNA (network edge and weight)

File Name: Supplementary Data 15

Description: CellChat Comparion between $Spi1^{Tg/0}$;5XFAD and 5XFAD mice

File Name: Supplementary Data 16

Description: Sequence of the primers used in the study