

Status	Patient ID	Age (yrs)	Sex	PMI (hours)
CTL	A306	65	F	7
CTL	A337	86	F	29
CTL	A368	65	M	11
CTL	4514	66	M	17.3
CTL	A168	69	F	19
CTL	4621	83	F	17.6
CTL	5214	61	M	19.5
CTL	4823	35	F	11.3
SPMS	4605	62	F	11.8
SPMS	5308	54	F	9.3
SPMS	5053	59	M	24.9
SPMS	56	59	F	5.08
SPMS	130	40	F	5.25
SPMS	149	61	F	3
SPMS	4959	47	F	UNK

Table 1. Age, sex, and post-mortem interval (PMI) for samples used for sNuc-seq. CTL, control; SPMS, secondary progressive MS; F, female; M, male; UNK, unknown/data missing.

Astrocyte (21 genes)	Microglia (22 genes)	Neuron (19 genes)	Oligodendrocyte (20 genes)	OPC (13 genes)
ADGRV1 ANGPTL4 APOE AQP4 CHI3L1 CLU COL5A3 CST3 DPP10 DTNA GFAP GLIS3 GPC5 GPM6A MGST1 RFX4 RNF219-AS1 SLC14A1 SLC1A2 SPARCL1 TPD52L1	ADAM28 APBB1IP ARHGAP24 C10ORF11 C1QB C1QC CD74 DOCK8 FYB INPP5D LPAR6 MEF2A P2RY12 PLXDC2 PTPRC RGS1 RP11-624C23.1 SFMBT2 SRGN ST6GAL1 TBXAS1	CCK CDH9 CHRM3 CNTN5 CNTNAP2 GABRB2 GALNTL6 GRIK2 GRIN2A KCNC2 KCNQ5 MEG3 RBFOX1 ROBO2 RP11-123O10.4 SNAP25 SYNPR TENM2 ZNF385D	APLP1 CLDN11 CNP CTNNA3 ENPP2 LINC01608 LURAP1L-AS1 MAN2A1 MOBP MOG PIP4K2A PLCL1 RNF220 SEPP1 SLC44A1 SLC5A11 ST18 TMEM144 TMTC2 TTLL7	BRINP3 DSCAM LHFPL3 LRRC4C LUZP2 MEGF11 MMP16 NOVA1 PTPRZ1 RP4-668E10.4 SEMA5A TNR VCAN

Table 2. Core gene signatures used for annotation of astrocytes, microglia, neurons, oligodendrocytes, and oligodendrocyte progenitor cells (OPC).

Status	Brain ID	Sex
CTL	4307	M
CTL	4823	F
CTL	5214	M
CTL	4621	F
CTL	4514	M
CTL	A168 8-1	F
CTL	A0212 12-4	M
SPMS	5252/Sec8	F
SPMS	5053	M
SPMS	4605	F
SPMS	4399/Sec5	M
SPMS	MS137 4-IRT	F
SPMS	4732/Sec7	F
SPMS	5276	F
PPMS	4961	F
PPMS	4951	F
PPMS	2485	M
PPMS	5149	M
PPMS	3816	F
RRMS	5095	M
RRMS	505	F
RRMS	5154	M
RRMS	5139	M
RRMS	5102	F
RRMS	5123	F

Table 3. Samples used for bulk RNA-sequencing. CTL, control; SPMS, secondary progressive MS; PPMS, primary progressive MS; RRMS, relapsing-remitting MS.

ID	Platform	Case.Disease
GSE36980.GPL6244.test3	GPL6244	Alzheimer's disease (AD)
GSE48350.GPL570.test2	GPL570	Alzheimer's disease (AD)
GSE48350.GPL570.test3	GPL570	Alzheimer's disease (AD)
GSE8397.GPL96.test1	GPL96	Parkinson's disease (PD)
GSE36980.GPL6244.test2	GPL6244	Alzheimer's disease (AD)
GSE48350.GPL570.test4	GPL570	Alzheimer's disease (AD)
GSE13162.GPL571.test2	GPL571	frontotemporal lobar degeneration (FTLD)
GSE84422.GPL570.test2	GPL570	Alzheimer's disease (AD)
E-MEXP-2280.A-AFFY-44.test2	AFFY-44	frontotemporal lobar degeneration (FTLD)
GSE84422.GPL570.test1	GPL570	Alzheimer's disease (AD)
GSE13162.GPL571.test3	GPL571	frontotemporal lobar degeneration (FTLD)
GSE39420.GPL11532.test1	GPL11532	Alzheimer's disease (AD)
GSE28146.GPL570.test1	GPL570	Alzheimer's disease (AD)
GSE7621.GPL570.test1	GPL570	Parkinson's disease (PD)
GSE84422.GPL96.test9	GPL96	Alzheimer's disease (AD)
GSE20164.GPL96.test1	GPL96	Parkinson's disease (PD)
E-MEXP-2280.A-AFFY-44.test4	AFFY-44	frontotemporal lobar degeneration (FTLD)
GSE13162.GPL571.test5	GPL571	frontotemporal lobar degeneration (FTLD)
GSE84422.GPL96.test8	GPL96	Alzheimer's disease (AD)
GSE49036.GPL570.test3	GPL570	Parkinson's disease (PD)
GSE84422.GPL96.test17	GPL96	Alzheimer's disease (AD)
GSE28146.GPL570.test3	GPL570	Alzheimer's disease (AD)
E-MEXP-2280.A-AFFY-44.test1	AFFY-44	Alzheimer's disease (AD)
GSE54562.GPL6947.test1	GPL6947	major depressive disorder
GSE49036.GPL570.test2	GPL570	Parkinson's disease (PD)
GSE1297.GPL96.test1	GPL96	Alzheimer's disease (AD)
GSE39420.GPL11532.test2	GPL11532	Alzheimer's disease (AD)
GSE8397.GPL96.test3	GPL96	Parkinson's disease (PD)
GSE29378.GPL6947.test2	GPL6947	Alzheimer's disease (AD)
GSE5389.GPL96.test3	GPL96	bipolar disorder
GSE13162.GPL571.test1	GPL571	frontotemporal lobar degeneration (FTLD)
GSE44593.GPL570.test1	GPL570	major depressive disorder
GSE28146.GPL570.test2	GPL570	Alzheimer's disease (AD)
GSE36980.GPL6244.test1	GPL6244	Alzheimer's disease (AD)
GSE54566.GPL570.test1	GPL570	major depressive disorder

Table 4. Studies used for GSVA analysis.