

Figure S1. Patient underwent corrective surgery for scoliosis. Chest radiography of patient P3433 (A) before and (B) after the operation.

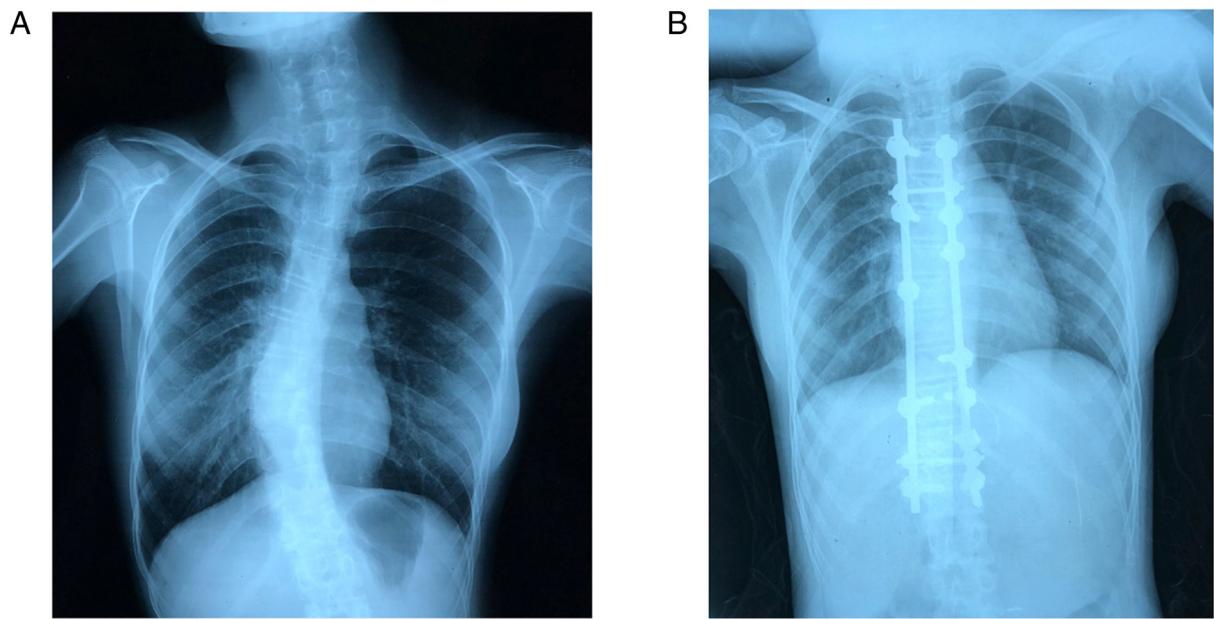


Figure S2. Enrichment analysis of upregulated cell-specific differentially expressed genes. Enrichment results of (A) microglia and (B) astrocytes. GO, Gene Ontology..

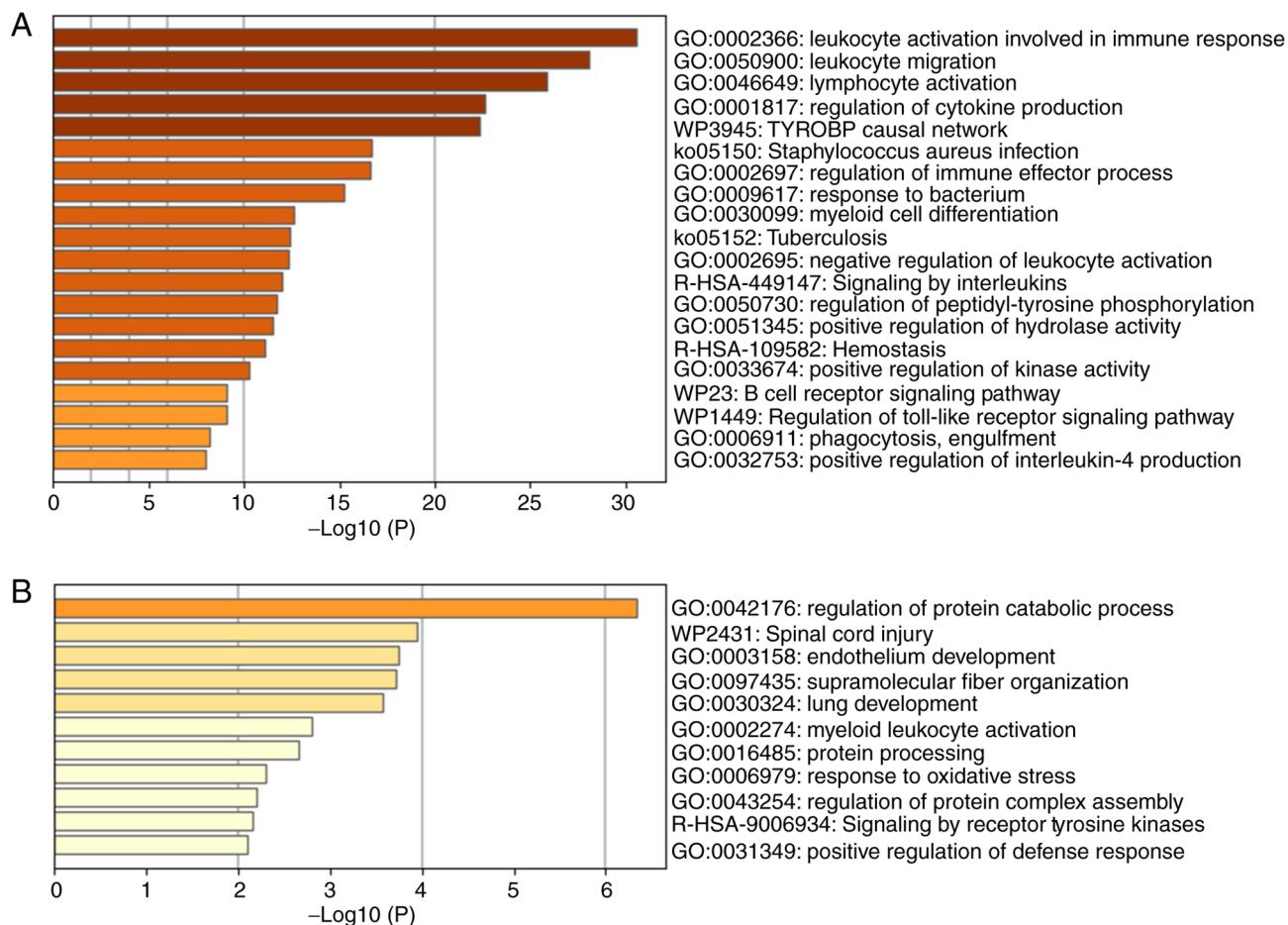


Table SI. Clinical information of subjects used in bioinformatics analysis.

NIH ID	Sex	Age	Diagnosis
885	female	0	Alexander disease
1070	male	0	Alexander disease
1161	male	2	Alexander disease
1482	female	0	Alexander disease
5488	female	1	Alexander disease
1671	male	0	healthy control
4321	male	2	healthy control
4907	female	4	healthy control

Table SII. Top 100 ranked cell type-enriched genes from the study by McKenzie *et al* (27).

Gene	Grand_mean	Cell_type_mentions	Total_Mentions	Celltype
AQP4	6.8172	668	2,293	ast
GJA1	6.1412	42	684	ast
GJB6	5.6534	41	447	ast
SLC4A4	5.5901	9	229	ast
SLC1A2	5.4706	160	408	ast
F3	5.4523	28	7,046	ast
BMPR1B	5.4032	9	288	ast
FGFR3	5.3065	17	1,958	ast
SLC39A12	5.2309	0	9	ast
CLDN10	5.2301	0	26	ast
DIO2	5.0409	6	354	ast
ALDOC	5.0237	4	38	ast
ALDH1L1	4.9630	30	78	ast
SLC1A3	4.9418	162	471	ast
CLU	4.9264	39	1,513	ast
ATP13A4	4.9220	0	11	ast
SLCO1C1	4.9178	6	60	ast
SLC14A1	4.9116	0	45	ast
CHRDL1	4.8924	0	34	ast
GPR37L1	4.8827	3	14	ast
ACSBG1	4.8541	0	5	ast
ATP1A2	4.7806	16	318	ast
SLC25A18	4.7746	0	5	ast
EDNRB	4.7738	5	449	ast
PPAP2B	4.7738	1	34	ast
GFAP	4.7533	6,647	13,311	ast

SOX9	4.7205	34	3,531	ast
SDC4	4.7078	2	330	ast
PPP1R3C	4.6810	3	53	ast
NCAN	4.6705	26	176	ast
MLC1	4.6593	36	245	ast
GLI3	4.6394	4	802	ast
SLC7A11	4.6388	15	247	ast
ACSL6	4.4600	0	41	ast
RFX4	4.4483	0	25	ast
ID4	4.4358	16	304	ast
AGT	4.3726	13	2,506	ast
SFXN5	4.3695	0	4	ast
GABRG1	4.3672	0	38	ast
PAX6	4.3427	73	2,714	ast
RORB	4.3295	0	62	ast
GRM3	4.3261	2	106	ast
PTPRZ1	4.3101	22	205	ast
PSD2	4.3058	0	39	ast
SLC6A11	4.2996	9	69	ast
ATP1B2	4.2921	15	50	ast
NTSR2	4.2878	6	88	ast
S1PR1	4.2823	8	327	ast
SLC15A2	4.2300	0	30	ast
ELOVL2	4.1817	0	92	ast
TRIL	4.1539	0	71	ast
SCARA3	4.1521	0	23	ast
MGST1	4.0880	0	131	ast
KIAA1161	4.0713	0	1	ast
FAM107A	4.0642	1	35	ast

BCAN	4.0603	13	115	ast
SPARCL1	4.0306	13	101	ast
NWD1	4.0005	0	3	ast
NTRK2	3.9555	5	272	ast
SLC7A10	3.9394	2	31	ast
SCG3	3.9229	0	22	ast
ACOT11	3.9179	0	8	ast
KCNN3	3.9053	2	226	ast
MFGE8	3.8951	4	295	ast
RANBP3L	3.8919	0	1	ast
GPC5	3.8646	0	76	ast
EZR	3.8571	0	61	ast
ADHFE1	3.8499	0	14	ast
GABRB1	3.8396	0	78	ast
TMEM47	3.8284	0	5	ast
PAMR1	3.8195	0	7	ast
CPE	3.7863	23	4,711	ast
FABP7	3.7836	49	1,463	ast
LIX1	3.7739	1	22	ast
SLC13A5	3.7579	1	48	ast
IL33	3.7494	17	1,177	ast
SLC7A2	3.7462	1	65	ast
EGFR	3.7355	186	41,635	ast
PREX2	3.7311	0	41	ast
NDRG2	3.7133	23	216	ast
DTNA	3.7051	0	57	ast
ABCD2	3.6898	5	250	ast
HEPACAM	3.6887	9	52	ast
RGS20	3.6729	0	29	ast

ARHGEF26	3.6697	0	4	ast
GPAM	3.6513	0	64	ast
CHI3L1	3.6048	20	805	ast
ADCYAP1R1	3.5922	10	189	ast
GDPD2	3.5920	0	0	ast
SLC1A4	3.5843	13	58	ast
POU3F2	3.5778	3	79	ast
ETNPPL	3.5604	0	2	ast
MEGF10	3.5291	5	37	ast
MT3	3.5259	8	495	ast
TTYH1	3.5147	1	19	ast
PRODH	3.4760	0	191	ast
PLCD4	3.4435	0	21	ast
DDAH1	3.4302	0	128	ast
LGR4	3.4236	0	132	ast
HTRA1	3.4115	1	464	ast
APOLD1	7.0057	1	5	end
FLT1	6.5900	1,293	1,424	end
RGS5	6.5031	37	169	end
PTPRB	6.3854	10	30	end
TM4SF1	6.3331	6	69	end
ABCB1	6.3325	169	4,340	end
ITM2A	6.2589	3	32	end
SDPR	6.2350	2	41	end
SLCO1A2	6.2101	5	98	end
FN1	6.1402	34	541	end
EMCN	5.8631	8	22	end
ESAM	5.7056	49	109	end
NOSTRIN	5.7044	20	34	end

CD34	5.6844	5,616	30,881	end
SLC38A5	5.5675	5	35	end
CYYR1	5.5428	1	8	end
PODXL	5.5111	15	98	end
CDH5	5.4757	62	98	end
VWF	5.3854	3,422	9,107	end
MECOM	5.3674	2	343	end
CD93	5.3454	20	85	end
ABCG2	5.3448	208	3,696	end
TEK	5.2783	293	1,045	end
PALMD	5.2771	0	11	end
ERG	5.2749	221	9,134	end
CLDN5	5.2393	224	379	end
PECAM1	5.2169	108	169	end
KDR	5.1991	2,798	3,729	end
ITGA1	5.1869	6	54	end
ICAM2	5.1346	123	286	end
ATP10A	5.0992	0	34	end
ANXA3	5.0573	3	72	end
CA4	5.0232	42	1,298	end
MYCT1	4.9954	0	14	end
GIMAP6	4.9872	1	5	end
ANXA1	4.9852	36	413	end
PTRF	4.8964	14	147	end
KIAA1462	4.8894	1	10	end
EBF1	4.8889	1	359	end
HMCN1	4.7990	2	37	end
ENG	4.7907	2,869	116,718	end
IGFBP7	4.7471	26	244	end

ARHGAP29	4.7420	5	29	end
ANXA2	4.7387	192	1,677	end
OCLN	4.7273	374	1,387	end
HIGD1B	4.6501	0	5	end
SLC2A1	4.6395	325	2,421	end
GNG11	4.6311	0	14	end
SLC19A3	4.6263	1	97	end
EPAS1	4.6213	162	239	end
TBX3	4.6163	3	356	end
SRGN	4.6091	0	15	end
SOX7	4.5916	26	124	end
SLC16A4	4.5909	10	174	end
CAV1	4.5668	437	2,939	end
CLIC5	4.5536	3	43	end
VIM	4.5345	36	2,604	end
HEG1	4.5228	6	17	end
CCDC141	4.5213	0	3	end
C10ORF10	4.4725	1	11	end
EDN1	4.4623	56	307	end
ROBO4	4.4570	86	116	end
TMEM204	4.4562	1	5	end
PROM1	4.4405	426	2,159	end
IFITM1	4.4386	4	149	end
LEF1	4.4190	15	967	end
COBLL1	4.4163	0	15	end
WWTR1	4.4130	7	167	end
HBB	4.4045	13	1,049	end
ETS1	4.3995	170	1,244	end
SLC39A8	4.3389	7	61	end

COL4A1	4.3358	22	296	end
OSMR	4.3187	9	146	end
ADCY4	4.3149	1	8	end
TIE1	4.3131	141	188	end
EDN3	4.2758	6	167	end
THBD	4.2641	104	293	end
BSG	4.2231	101	1,197	end
AHNAK	4.2206	9	132	end
MYO1B	4.2158	0	39	end
IL1R1	4.2120	15	263	end
CXCL12	4.2114	1,344	6,746	end
CLEC14A	4.1758	12	15	end
GATA2	4.1699	120	1,053	end
SGPP2	4.1526	2	14	end
SHE	4.1518	596	104,086	end
PLTP	4.1263	14	471	end
SPARC	4.1257	256	3,077	end
ACVRL1	4.1105	180	501	end
MMRN2	4.1104	4	8	end
NID1	4.1043	5	37	end
TNFSF10	4.0996	97	3,066	end
FOXC1	4.0926	29	370	end
UACA	4.0782	0	27	end
CGNL1	4.0449	2	15	end
MFSD2A	4.0355	7	32	end
NET1	4.0299	3	185	end
ABCC9	4.0281	11	269	end
FLI1	4.0241	170	1,231	end
C1ORF54	4.0098	0	0	end

CCL4	7.7801	100	9,050	mic
CCL3	7.4541	140	3,215	mic
CSF1R	7.1157	46	403	mic
CX3CR1	7.0600	366	1,478	mic
P2RY12	6.9574	29	800	mic
C1QB	6.9470	13	99	mic
RGS1	6.9409	1	183	mic
GPR183	6.8749	0	46	mic
GPR34	6.7099	3	33	mic
CTSS	6.6530	3	171	mic
LAPTM5	6.6509	1	39	mic
CD53	6.5663	2	173	mic
IL1A	6.5382	2	493	mic
C3AR1	6.5095	3	33	mic
PLEK	6.4811	0	25	mic
FCGR2A	6.3786	0	261	mic
CD83	6.3054	5	2,425	mic
ITGAM	6.1056	33	497	mic
P2RY13	6.0523	0	44	mic
CD86	6.0436	129	8,233	mic
TREM2	6.0331	129	367	mic
TYROBP	5.9883	46	334	mic
FCER1G	5.9682	0	31	mic
NCKAP1L	5.9483	1	9	mic
SELPLG	5.9052	0	26	mic
SLC2A5	5.8441	1	95	mic
CD14	5.7917	177	12,843	mic
C1QC	5.7459	0	40	mic
C1QA	5.7281	14	126	mic

MPEG1	5.6975	3	45	mic
HAVCR2	5.6871	5	442	mic
PTAFR	5.6498	0	23	mic
LY86	5.6153	0	63	mic
AIF1	5.5993	581	1,005	mic
ALOX5AP	5.5980	1	408	mic
LPCAT2	5.5950	1	27	mic
SLA	5.5320	0	2,274	mic
PTPRC	5.4923	29	805	mic
FCGR1A	5.4626	1	139	mic
CCL2	5.4538	479	13,650	mic
BLNK	5.4289	0	185	mic
IL10RA	5.4282	2	68	mic
BCL2A1	5.3809	0	133	mic
C5AR1	5.3211	5	191	mic
RHOH	5.3026	0	89	mic
CD84	5.3003	0	78	mic
CSF3R	5.2887	48	5,392	mic
TLR7	5.2706	31	2,410	mic
TLR2	5.2514	211	8,342	mic
HPGDS	5.2506	6	43	mic
LCP1	5.2257	0	95	mic
CD300A	5.1529	0	55	mic
FYB	5.1494	0	278	mic
MRC1	5.1330	13	274	mic
FAM105A	5.1297	0	2	mic
IRF8	5.1238	22	359	mic
LCP2	5.0813	0	28	mic
RGS10	5.0611	10	75	mic

CD74	5.0523	23	580	mic
PTPN6	5.0450	11	1,239	mic
TBXAS1	5.0228	0	31	mic
LYZ	5.0225	0	218	mic
DOCK2	4.9997	2	86	mic
TMEM119	4.9901	3	13	mic
NLRP3	4.9607	88	3,080	mic
ARHGDI1B	4.9430	0	102	mic
CCRL2	4.9080	4	53	mic
IKZF1	4.8962	0	495	mic
ARHGAP25	4.8263	0	13	mic
DOCK8	4.8192	0	162	mic
HEXB	4.8125	8	230	mic
THEMIS2	4.7993	0	4	mic
SAMSN1	4.7717	0	17	mic
HK2	4.7259	0	781	mic
PLD4	4.7024	4	11	mic
APBB1IP	4.6865	0	27	mic
ITGB2	4.6774	0	119	mic
RUNX1	4.6472	7	3,221	mic
SLCO2B1	4.6231	0	167	mic
TLR1	4.6033	29	1,108	mic
FGD2	4.5685	0	9	mic
HCLS1	4.5455	0	101	mic
GPR84	4.5184	4	43	mic
OLFML3	4.4923	1	11	mic
MAFB	4.4818	3	393	mic
PIK3CG	4.4727	8	294	mic
SIGLEC7	4.4469	0	46	mic

IL1B	4.4294	77	2,249	mic
PIK3R5	4.4113	0	14	mic
IL6R	4.3629	1	385	mic
CXCL16	4.3499	5	481	mic
CLEC4A	4.3480	0	38	mic
PTGS1	4.3328	88	5,492	mic
SUSD3	4.3251	0	5	mic
LYN	4.3198	19	2,636	mic
VAV1	4.3188	4	772	mic
SLC11A1	4.3073	1	248	mic
RBM47	4.3073	0	12	mic
SYK	4.3039	23	3,472	mic
C10ORF128	4.3011	0	0	mic
RELN	6.4437	104	284	neu
VIP	5.5901	3,086	17,172	neu
GAD2	5.4408	39	120	neu
SYNPR	5.1903	22	38	neu
GAD1	5.1406	95	242	neu
CNR1	4.8944	75	501	neu
SYT1	4.8587	153	416	neu
SCG2	4.6581	7	41	neu
TAC3	4.6409	21	79	neu
GABRG2	4.5978	46	278	neu
GABRA1	4.4457	83	345	neu
STMN2	4.4045	95	137	neu
DLX1	4.3567	79	178	neu
KCNC2	4.3167	10	19	neu
TMEM130	4.2923	0	2	neu
RAB3C	4.2614	12	44	neu

SST	4.1984	298	3,586	neu
VSTM2A	4.1928	0	1	neu
SNAP25	4.1835	486	1,183	neu
ROBO2	4.1441	136	239	neu
CALB2	4.1079	781	1,159	neu
KIT	4.0743	759	48,509	neu
CNTNAP2	4.0485	61	261	neu
GABRB2	4.0433	33	152	neu
FSTL5	4.0345	1	11	neu
NRXN3	4.0218	11	73	neu
SYT4	4.0179	23	59	neu
GRIA1	3.9829	25	103	neu
VSNL1	3.9754	63	130	neu
INA	3.9561	376	3,664	neu
NPY	3.9508	3,314	9,591	neu
GRIN2A	3.9197	18	165	neu
IGF1	3.8976	138	3,144	neu
PENK	3.8904	35	362	neu
ELAVL2	3.8722	21	69	neu
MYT1L	3.8618	37	64	neu
KCNQ5	3.8599	47	125	neu
MEG3	3.7944	7	343	neu
NRIP3	3.7934	0	3	neu
CHGB	3.7897	11	106	neu
CLSTN2	3.7850	6	21	neu
SCN2A	3.7636	70	370	neu
RAB3B	3.7127	13	82	neu
ZMAT4	3.7118	0	4	neu
NELL1	3.7035	4	93	neu

PNOC	3.7011	4	42	neu
ERBB4	3.6667	266	1,626	neu
SPHKAP	3.6621	0	7	neu
C11ORF87	3.6586	0	0	neu
ADARB2	3.6429	2	20	neu
SLC4A10	3.6374	8	35	neu
KIAA1324	3.6301	0	8	neu
GRIN2B	3.6240	25	232	neu
BCL11A	3.6082	7	332	neu
CELF4	3.5686	6	31	neu
PNMA2	3.5617	2	8	neu
DISP2	3.5596	0	7	neu
NYAP2	3.5448	1	3	neu
SV2B	3.5405	38	72	neu
SERPINI1	3.5178	4	20	neu
SLC2A13	3.4975	8	17	neu
RGS8	3.4895	11	55	neu
RTN1	3.4796	23	96	neu
NAP1L2	3.4673	4	10	neu
CCK	3.4654	1,485	12,853	neu
C8ORF34	3.4618	0	1	neu
DYNC1I1	3.4546	4	15	neu
SRRM4	3.4511	6	12	neu
RBFOX1	3.4485	33	118	neu
SLC12A5	3.4479	16	26	neu
NDRG4	3.4473	8	71	neu
ZNF804A	3.4405	15	141	neu
LPPR4	3.4388	3	6	neu
SLITRK4	3.4289	2	8	neu

GPR158	3.4197	2	12	neu
NDNF	3.4186	4	6	neu
KCNJ3	3.4123	7	73	neu
PCSK2	3.4123	1	70	neu
CADPS	3.4066	16	44	neu
OLFM3	3.4035	2	12	neu
GABBR2	3.4007	36	103	neu
SULT4A1	3.3966	6	33	neu
GLRA2	3.3964	22	64	neu
SYT13	3.3888	0	8	neu
CACNA2D1	3.3800	40	158	neu
GDA	3.3769	86	2,959	neu
SYNGR3	3.3639	4	7	neu
MAL2	3.3625	4	98	neu
PGM2L1	3.3602	0	4	neu
SLC7A14	3.3580	1	9	neu
GPR83	3.3480	3	30	neu
FRMPD4	3.3470	2	9	neu
NELL2	3.3305	25	51	neu
RGS4	3.3160	61	575	neu
CSRNP3	3.3102	0	0	neu
DCX	3.3021	749	1,170	neu
ATP1A3	3.2978	34	178	neu
ST8SIA3	3.2973	0	2	neu
UCHL1	3.2876	400	1,190	neu
GAP43	3.2854	348	575	neu
PLP1	8.3125	239	526	oli
MOBP	7.7507	55	86	oli
CLDN11	7.3994	33	129	oli

MBP	7.3775	1,584	10,788	oli
UGT8	7.2576	8	47	oli
ERMN	7.2058	0	7	oli
MOG	7.1218	1,761	2,215	oli
MAG	6.7258	482	10,145	oli
OPALIN	6.6827	11	17	oli
CNP	6.3447	352	2,538	oli
MAL	6.2882	32	46,688	oli
GPR37	5.7440	1	62	oli
TF	5.6940	48	16,604	oli
MYRF	5.6812	10	12	oli
GJB1	5.6370	18	223	oli
ASPA	5.6192	37	339	oli
ENPP2	5.6187	5	100	oli
BCAS1	5.5092	0	21	oli
LPAR1	5.4305	0	89	oli
FA2H	5.3846	7	63	oli
ENPP6	5.3262	4	11	oli
APOD	5.2868	7	491	oli
CNTN2	5.2738	6	191	oli
CRYAB	5.1924	9	341	oli
KLK6	5.1752	6	211	oli
ERBB3	5.1389	37	1,569	oli
ANLN	5.0809	0	34	oli
SEPT4	5.0265	1	95	oli
PLEKHB1	5.0159	1	12	oli
TMEFF2	4.9015	0	110	oli
ST18	4.8081	1	107	oli
PTGDS	4.7627	3	85	oli

PEX5L	4.7247	0	28	oli
SLAIN1	4.7056	0	9	oli
QDPR	4.6597	0	41	oli
PLLP	4.6348	11	47	oli
TMEM125	4.6240	0	0	oli
HHIP	4.4728	0	166	oli
LGI3	4.4294	0	19	oli
TUBB4A	4.4292	1	42	oli
PLEKHH1	4.4237	0	2	oli
S1PR5	4.4209	1	33	oli
MAP6D1	4.4202	0	2	oli
GSN	4.3949	1	274	oli
EVI2A	4.3734	3	22	oli
EDIL3	4.3714	1	88	oli
CMTM5	4.3463	0	17	oli
GJC3	4.3319	2	15	oli
CA14	4.2728	0	25	oli
NFASC	4.2684	36	133	oli
TPPP	4.1848	21	87	oli
TMEM88B	4.1556	0	3	oli
TRIM59	4.1501	0	17	oli
CDH19	4.1272	1	16	oli
APLP1	4.1266	0	239	oli
NIPAL4	4.1135	0	15	oli
ADAMTS4	4.1101	1	438	oli
STMN4	4.0736	0	27	oli
S100B	4.0581	24	2,039	oli
CA2	4.0578	247	122,338	oli
PRR18	4.0507	0	1	oli

OLIG1	4.0376	166	197	oli
FOLH1	3.9844	0	48	oli
NINJ2	3.9813	0	25	oli
NDRG1	3.9764	13	364	oli
SLC24A2	3.9691	0	2	oli
SGK2	3.9607	0	47	oli
GALNT6	3.9481	0	12	oli
KCNA1	3.9308	13	305	oli
SH3TC2	3.9284	4	54	oli
TTLL7	3.9138	0	8	oli
SH3GL3	3.9124	0	14	oli
DOCK5	3.9042	0	36	oli
SCD	3.9032	8	9,898	oli
FEZ1	3.8702	2	100	oli
SLC44A1	3.8489	0	32	oli
RHOU	3.7975	0	99	oli
PPP1R16B	3.7810	0	17	oli
TSPAN2	3.7607	5	26	oli
C10ORF90	3.7365	0	6	oli
TNFAIP6	3.7127	0	296	oli
NKAIN2	3.7020	0	14	oli
MOB3B	3.6571	0	3	oli
PRKCQ	3.6544	4	453	oli
PPP1R14A	3.6466	1	134	oli
PLA2G16	3.6465	0	44	oli
DBNDD2	3.6438	0	0	oli
CDK18	3.6347	0	7	oli
PCDH9	3.6275	0	42	oli
ANO4	3.6211	0	6	oli

AGPAT4	3.6192	0	14	oli
OMG	3.6180	53	409	oli
FGFR2	3.6044	21	2,535	oli
TMEM63A	3.5770	0	3	oli
GLTP	3.5684	0	92	oli
CCP110	3.5561	0	34	oli
PLEKHG3	3.5441	0	7	oli
RAB33A	3.5437	0	28	oli
PSAT1	3.5209	0	48	oli
ZNF536	3.4907	0	3	oli
PDGFRA	7.3298	10	1,691	opc
TNR	6.5867	0	354	opc
PCDH15	6.0012	0	153	opc
SHC4	5.4083	0	13	opc
VCAN	5.3958	2	442	opc
LHFPL3	5.1735	0	6	opc
NEU4	4.9906	0	70	opc
GPR17	4.9589	17	79	opc
PTPRZ1	4.8887	4	205	opc
OLIG1	4.8728	32	197	opc
MMP16	4.8377	0	105	opc
DSCAM	4.6354	0	250	opc
C8ORF46	4.6042	0	1	opc
SEMA5A	4.5972	1	69	opc
MATN4	4.5952	0	23	opc
UGT8	4.5932	0	47	opc
GRIA3	4.5178	0	65	opc
CNTN1	4.4717	2	72	opc
BCAS1	4.3609	0	21	opc

SULF2	4.3405	0	129	opc
LUZP2	4.2729	0	4	opc
GJC3	4.2424	0	15	opc
NXPH1	4.2399	0	25	opc
APOD	4.2371	2	491	opc
MEGF11	4.2226	0	6	opc
LRRTM3	4.2195	0	17	opc
BRINP3	4.1858	0	8	opc
GALNT13	4.1353	0	16	opc
GRIA4	4.1340	0	53	opc
MYT1	4.1166	3	240	opc
SUSD5	4.1124	0	1	opc
LRRN1	4.1055	0	32	opc
SOX10	4.1001	25	986	opc
PRKCQ	4.0900	1	453	opc
SOX6	4.0725	2	285	opc
ITGB8	4.0703	0	50	opc
TMEM255A	4.0649	0	0	opc
GFRA1	4.0624	0	386	opc
RLBP1	3.9940	0	51	opc
PNLIP	3.9852	0	80	opc
XYLT1	3.9757	0	29	opc
GPSM2	3.9298	0	72	opc
TMEM255B	3.9202	0	0	opc
SEZ6L	3.9199	0	17	opc
STK32A	3.9061	0	3	opc
C14ORF37	3.8887	0	0	opc
LPPR5	3.8734	0	1	opc
SEMA3D	3.8477	0	57	opc

CSPG4	3.8417	0	102	opc
CSMD3	3.8162	0	24	opc
TMEM132B	3.7838	0	1	opc
SCRG1	3.7738	0	14	opc
KCNH8	3.7692	0	8	opc
CACNG4	3.7624	0	19	opc
UGDH	3.7164	0	70	opc
DPP6	3.7138	0	115	opc
BCAT1	3.7017	0	80	opc
PLLP	3.6705	1	47	opc
ERBB3	3.6593	7	1,569	opc
RNF43	3.6572	1	107	opc
S100B	3.6500	3	2,039	opc
SORCS1	3.6228	0	54	opc
OLIG2	3.6112	122	947	opc
CHRNA4	3.5664	0	248	opc
KCNJ16	3.5487	0	21	opc
PPAPDC1A	3.5058	0	5	opc
CSMD1	3.4789	0	99	opc
OPCML	3.4542	0	84	opc
PRKG2	3.4112	0	84	opc
COBL	3.4039	0	61	opc
FIGN	3.4024	0	14	opc
ACAN	3.4008	0	394	opc
TGFA	3.3951	0	275	opc
NLGN1	3.3946	0	46	opc
SLC6A13	3.3922	0	58	opc
EMID1	3.3894	0	0	opc
CHST6	3.3844	0	55	opc

TMEM100	3.3786	0	16	opc
GAL3ST1	3.3515	0	8	opc
EDIL3	3.3460	0	88	opc
KCNJ10	3.3386	2	327	opc
SLITRK3	3.3371	0	6	opc
SNTG1	3.3314	0	7	opc
CSPG5	3.3154	0	28	opc
ERBB4	3.3112	11	1,626	opc
SLC35F1	3.3092	0	4	opc
B3GAT2	3.2661	0	13	opc
C1QL1	3.2572	0	9	opc
SERINC5	3.2568	0	13	opc
CKAP2	3.2564	0	36	opc
LRRTM4	3.2562	0	12	opc
DPYD	3.2547	0	343	opc
SLITRK1	3.2436	0	57	opc
NCALD	3.2428	0	25	opc
CALCRL	3.2353	0	266	opc
SPP1	3.2307	2	3,159	opc
ZNF488	3.2216	0	2	opc
ADAM12	3.2212	0	401	opc
SULF1	3.2164	1	182	opc
HAS2	3.2144	0	615	opc

This table shows the top 100 cell type-enriched genes, ranked within each cell type by their mean log fold-change across five datasets. ‘Grand_mean’ refers to the mean log fold-change of each gene across datasets; ‘cell type mentions’ refers to the number of studies on PubMed that mention the ‘gene AND cell type’; ‘total mentions’ refers to the number of studies on PubMed that mention the ‘gene’. Ast, astrocyte; end, endotheliocyte; mic, microglia; neu, neuron; oli, oligodendrocyte; opc, oligodendrocyte

precursor cell.

Reference: 27. McKenzie AT, Wang M, Hauberg ME, et al.: Brain cell type specific gene expression and co-expression network architectures. *Scientific reports* 8: 1-19, 2018.

Table SIII. Top 20 clusters with their representative enriched terms (one per cluster).

Term	Description	Count	%	Log10(P)	Enriched Cell Type
GO:0002274	myeloid leukocyte activation	33	37.50	-30.27	astrocyte, microglia
GO:0050900	leukocyte migration	28	31.82	-26.41	endotheliocyte, microglia
GO:0046649	lymphocyte activation	29	32.95	-23.01	microglia
GO:0006909	phagocytosis	22	25.00	-21.17	endotheliocyte, microglia
GO:0042116	macrophage activation	15	17.05	-20.70	microglia
GO:0001819	positive regulation of cytokine production	22	25.00	-19.36	astrocyte, endotheliocyte, microglia
GO:0042063	gliogenesis	24	12.77	-18.01	astrocyte, microglia, oligodendrocyte
ko05150	Staphylococcus aureus infection	11	12.50	-16.69	microglia
GO:0002697	regulation of immune effector process	20	22.73	-16.64	microglia
GO:0009611	response to wounding	30	15.96	-15.07	endotheliocyte, microglia, OPCs
GO:0009617	response to bacterium	22	25.00	-14.91	microglia
GO:0030099	myeloid cell differentiation	17	19.32	-13.56	microglia
GO:0032103	positive regulation of response to external stimulus	20	10.64	-12.74	endotheliocyte, microglia
ko05152	Tuberculosis	12	13.64	-12.36	microglia
R-HSA-449147	Signaling by Interleukins	22	11.70	-12.12	endotheliocyte, microglia
GO:0050730	regulation of peptidyl-tyrosine phosphorylation	13	14.77	-11.67	microglia
GO:0002683	negative regulation of immune system process	16	18.18	-11.53	astrocyte, microglia
hsa04611	Platelet activation	10	11.36	-11.00	microglia
GO:0051345	positive regulation of hydrolase activity	18	20.45	-10.46	microglia

GO:0002286	T cell activation involved in immune response	9	10.23	-10.19	microglia
------------	---	---	-------	--------	-----------

GO, Gene Ontology; OPCs, oligodendrocyte precursor cells; Count, the number of enriched genes; %, the percentage of all of the input genes that were found in the enriched term; Log10(P), the p-value in log base 10.