

**Supplementary Table 3. Marker genes used for cell type annotation.**

| Cell type                     | Genes   |         |         |        |         |         |
|-------------------------------|---------|---------|---------|--------|---------|---------|
| Neuroepithelial cells         | NOTCH1  | HES1    | HES3    | CDH1   | OCN     | SOX10   |
| Radial glia                   | PAX6    | HES1    | HES5    | GFAP   | GLAST   | BLBP    |
|                               | TNC     | CDH2    | NES     | SOX2   |         |         |
| Astrocytes                    | NDRG2   | GFAP    | S100B   | SLC1A3 | SLC1A2  | ALDH1L1 |
|                               | SOX9    | AQP4    | ATP1A2  | LYRIC  | SPARC1L | SPARC   |
|                               | CD99    | TTYH1   | S100A10 |        |         |         |
| Microglia                     | PTPRC   | ITGAM   | AIF1    | CX3CR1 | ADGRE1  | CD68    |
|                               | CD40    | PTPRC   | FLT1    |        |         |         |
| Progenitors                   | ELAVL3  | SOX10   | MAP1B   | DCX    | IGFBP2  | SLC1A2  |
| Immature neurons              | TUBB3   | NEUROD1 | TBR1    | STMN1  |         |         |
| Neurons                       | NASP    | RBFOX3  | MAP2    | NEFM   | NEFH    | SYN     |
|                               | DLG4    | CHAT    | SNAP25  | SLC1A2 | SIX1    | NRXN1   |
|                               | MANF    | GDNF    | NEFL    | BASP1  | RTN1    | FSTL5   |
| Interneurons                  | PVALB   | VIP     | DLX2    | SCGN   | ADRB2   | GAD2    |
|                               | GAD1    | HTR3A   | LHX6    | LAMP5  | VSX2    | SOX1    |
|                               | EVX1    | FOXP4   |         |        |         |         |
| Motor Neurons                 | ISL1    | ISL2    | NEUROG2 | OLIG2  | CHAT    | NEFH    |
|                               | SLC5A7  | PHOX2B  | TUBB3   | NEFM   | PHOX2A  | TUBB2B  |
|                               | HOXA5   | HOXB5   | ACHE    |        |         |         |
| Glutamatergic neurons         | SLC17A7 | GRIN1   | GRIN2B  | GLS    | GLUL    | SLC17A6 |
| GABAergic neurons             | GABBR1  | DLX5    | DLX6    | GAD2   | GAD1    | SLC6A5  |
| Dopaminergic neurons          | SLC6A3  | FOXA2   | KCNJ6   | NR4A2  | LMX1B   |         |
| Serotonergic neurons          | SLC6A4  | TPH1    | TPH2    |        |         |         |
| Cholinergic neurons           | SLC18A3 | ACHE    | CHAT    | SLC5A7 | TAC1    | ACLY    |
|                               | BRCA1   |         |         |        |         |         |
| Dorsal neurons                | IRX5    | PAX6    | GBX2    | PAX7   |         |         |
| Ventral neurons               | TUBA1A  | ELAVL2  | SOX11   | NKX6-1 | NKX2-2  | NKX2-8  |
|                               | ISL2    | MNX1    | SCL10A4 | SCL5A7 | FOXP4   | VSX1    |
|                               | TAL1    | MSX1    |         |        |         |         |
| Oligodendrocytes              | OLIG2   | OLIG3   | CLDN11  | MBP    | MOG     | SOX10   |
|                               | MOBP    | PLP1    | OMG     | MAG    | MYT1    | MYEF2   |
|                               | A1KXE4  | MYT1L   | ERMN    | OPALIN |         |         |
| OPCs                          | SLC1A2  | PLP1    | MBP     | SNAP25 | NG2     | PDGFRA  |
| Schwann cell precursor        | SOX10   | GAP43   | BLBP    | MPZ    | DHH     | P75NTR  |
| Myelinating Schwann cells     | SOX10   | S100    | EGR2    | MBP    | MPZ     |         |
| Not myelinating Schwann cells | SOX10   | GAP43   | S100    | NCAM   | P75NTR  |         |
| Cycling cells                 | MDK     | TOP2A   |         |        |         |         |
| Mesoderm                      | MYL1    | MYLPF   |         |        |         |         |
| Fibroblast                    | PDGFRA  | PDGFRB  | S100A4  | FN1    | COL1A1  | POSTN   |
|                               | DCN     | COL1A2  | FBLN2   | DES    | CDH11   |         |