**Supplementary Table 1. Summary of RNA-seq datasets analyzed in this study**

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Study | Figure | Accession number |  | Tissue | Sample description | Library type | Total read  number |
| Tasic et al., 2018 | 3A | GSE115746 |  | Visual cortex | 8,414 single cells (core cells) | PE 51nt | 22,790,704,728 |
| Tasic et al., 2018 | 3B | GSE115746 |  | Anterior Lateral motor cortex | 12,740 single cells (core cells) | PE 51nt | 31,047,590,020 |
| Furlanis et al., 2019 | 3C | GSE133291 |  | Cortex and hippocampus | 8 neuronal cell types, each with 4 biological replicates | PE 101nt | 8,621,488,551 |
| Yan et al., 2015 | 4A | SRP055008 |  | Cortex | 9 samples at E14, E16, P0, P7, P15, P30, P110, and 21 months, each with 2 biological replicates | PE 101nt | 3,456,180,370 |
| Lister et al., 2013 | 4B | GSE47966 |  | Frontal cortex | 7 samples at fetal stage, 1W, 2W, 4W, 6W, 10W and 22 months, each with various number of biological or technical replicates | SE 101nt | 1,882,083,523 |
| Jacko et al., 2018 | 4C | SRP128054 |  | ESC-derived motor neuron | ESC-derived motor neurons at day 5 or day 10 with *Rbfox1/2/3* TKO or not, each with 2 or 3 biological replicates | PE 101nt | 392,425,505 |
| Charizanis et al., 2012 | 4D | GSE38497 |  | Brain | WT or Mbnl2 KO brain tissues, each with 3 biological replicates | PE 40nt | 140,103,131 |
| Weyn-Vanhentenryck et al., 2018 | 4D | SRP142522 |  | Frontal cortex | WT or *Mbnl1/2* DKO frontal cortex tissues, each with 3 biological replicates | PE 101nt | 364,615,403 |
| Li et al., 2014 | 4E | GSE51733 |  | Brain and cortex | WT or *Ptbp2* KO brain or cortex tissues | PE 100nt | 657,339,603 |