

Description of Additional Supplementary Files

File Name: Supplementary Data 1

Description: RNA- and ATAC-seq library descriptions and sequencing reads. Sample and experiment type with the corresponding numbers of sequenced and mapped reads.

File Name: Supplementary Data 2

Description: Regulator and target genes. The regulator and target genes in the TF networks at different timepoints after *NEUROG1/2* induction.

File Name: Supplementary Data 3

Description: Human TF CRISPR screen normalized gRNA counts. Unique identifier and gene target for each guide RNA in the GeCKO-hTF (human) library and normalized gRNA counts from plasmid (Plasmid), hESCs at day 7 (D7_ES), *NEUROG1/2*-induced cells at day 7 (D7_neuron) and flow sorted MAP2-tdTomato positive (MAP2-pos) and negative (MAP2-neg) populations.

File Name: Supplementary Data 4

Description: Neuron-essential TFs (neTFs) and *k*-means cluster identity. Gene names and *k*-means cluster labels for the 120 neTFs.

File Name: Supplementary Data 5

Description: Mouse TF CRISPR screen normalized gRNA counts. Unique identifier and gene target for each guide RNA in the GeCKO-mTF (mouse) library and normalized gRNA counts from plasmid (Plasmid), mESCs at day 7 (ES_D5), embryoid body (EmyBody), flow sorted TUBB3-GFP positive (GFPpos), and negative (GFPneg) populations.