

### **Description of Additional Supplementary Files**

Supplementary Data 1. Transcriptomic waves analyzed by scRNAseq in control and Brn1/2-cKO mice at E12.5 and E14.5.

Supplementary Data 2. Differential expressed genes (DEG) between Brn1/2-cKO neurons and controls analyzed by scRNAseq in mice at E12.5 and E14.5. A. DEG in E12.5 Neurons; B. DEG in E14.5 Neurons; C. DEG in E12.5 Brn1/2-cKO total neurons when compared to control DLNs; D. DEG in E14.5 Brn1/2-cKO total neurons when compared to control DLNs.

Supplementary Data 3. Differential expressed genes (DEG) between Brn1/2-cKO progenitors and controls analyzed by scRNAseq in mice at E12.5 and E14.5. A. DEG in E12.5 apical progenitors (AP); B. DEG in E14.5 AP; C. DEG in E12.5 basal progenitors (BP); D. DEG in E14.5 BP; E. DEG in E12.5 progenitors; F. DEG in E14.5 progenitors.

Supplementary Data 4. Differential expressed genes (DEG) between control and BRN2KO analyzed by scRNAseq in monkeys at E36. A. DEG in E36 progenitors; B. DEG in E36 neurons.