Supplementary Materials and Methods:

TUNEL assay

TUNEL staining was performed using the Intergen ApopTag kit, revealing apoptotic cells with DAB and using a methyl green counterstain.

Zinc and cytochrome oxidase histochemistry

To chelate and stain synaptic zinc, mice were administered sodium selenite (5 mg/ml intraperitoneal) 60 min prior to dissection (Danscher, 1982). Cortical hemispheres were dissected, flattened, frozen, and 20 μm sections were cut using a cryostat. Sections were mounted, placed in a descending series of ethanol (95%, 70%, 50%, water), and dipped in 0.5% gelatin. Selenium-bound zinc was visualized by development in 50% gum arabic/ 2M sodium citrate/ 0.5M hydroquinone/ 37mM silver lactate for 2h. Slides were washed, immersed in 5% sodium thiosulphate for 12 minutes, postfixed, taken through an ethanol series (70%, 95%, 100%), cleared in xylene, and mounted with Permount. Cytochrome oxidase was visualized histochemically using a modified method (Silverman and Tootell, 1987). Briefly, sections were fixed in 4% PFA/50 mM phosphate buffer (pH 7.4; PB), rinsed twice in PB and incubated at 37°C for 45-60 min, in 50mg nickel ammonium sulphate/250μl 1M imidazole/1g sucrose/25mg 3, 3'-diaminobenzidine tetrahydrochloride /15mg cytochromeC/10mg catalase in 100 ml PB. Slides were rinsed in PB, dehydrated in an ascending series of ethanols, cleared in xylene and coverslipped using Permount.

In utero electroporation

In utero electroporation was performed as described (Saito and Nakatsuji, 2001). Briefly, a dsRed reporter construct (CMV/βactin promoter/enhancer) was microinjected through the exposed uterus of a pregnant mother, and into the telencephalic vesicles of E12.5 embryos. 5 pulses of 50V were applied across the uterus. The uterus was placed back in the body cavity, the peritoneum and skin were sutured, and the mother was allowed to recover until E18.5. At E18.5, embryos were dissected and genotyped by tail clipping. Brains that were successfully electroporated were fixed for 2 hours in 4%PFA at 4

degrees and processed for cryosectioning. Sectioned brains were counterstained with DAPI, mounted with AquaPolymount and photographed.

Affymetrix accession numbers:

Accession numbers for the genes analysed were: *Otx1* (AW125883), *Foxg1* (U36760), *Gli3* (X95255), *COUP-TFI* (X74134), *Pax6* (X63963), *Ngn1* (U63841), *Math3* (AF036257), *Math2* (U29086), *Nscl1* (M97506), *NeuroD* (U28068), *NeuroD2* (D83507), *VGLUT1* (AI846460), *VGLUT2* (AI841371), *Dlx1* (U51000), *Dlx2* (M80540), *GAD1* (Z49976), *Dlx5* (U67840), *Brn4* (M88301), *GAD2* (D42051), *ER-81* (L10426), *Mash1* (M95603), *GABA-T1* (M92378), *GABA/GlyT* (AJ001598).

RNA in situ probes:

The cRNA probes used in this study were the following: *Dlx1* (Anderson et al., 1997), *SCG10* (Stein et al., 1988), *Mash1* (Cau et al., 1997), *Ngn2* (Gradwohl et al., 1996), *Ngn1* (Ma et al., 1997), *GAD1* (Behar et al., 1994), *Math2* (Bartholoma and Nave, 1994), *Tbr1* (Hevner et al., 2001), *ER81* (Arber et al., 2000), *ROR-β* (Schaeren-Wiemers et al., 1997), *Oct6* (Meijer et al., 1990), *Emx2* (Theil et al., 1999), *Lhx2* (Bulchand et al., 2001), *Gsh2* (Toresson and Campbell, 2001), *Tlx* (Stenman et al., 2003), *Robo1* (Anselmo et al., 2003), *Slit1* (Anselmo et al., 2003), *Id2* (Gunnersen et al., 2002), *GluR2* (Hollmann et al., 1989), *Pax6* (Stenman et al., 2003), *VGLUT1/2* (Fremeau et al., 2001).

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