Supplementary Figure 6 Reduced GABAergic synaptic transmission in neocortex and hippocampus of Dlx1^{-/-} mice. IPSC recordings were obtained in ACSF containing CNQX and APV.

(a, b) Representative spontaneous IPSCs (sIPSCs) recordings from cortical layer II/III pyramidal cells and CA3 pyramidal cells of 2-months-old Dlx1^{+/+} and Dlx1^{-/-} mice. (c, d) Cumulative probability plots of amplitude and inter-event interval of sIPSCs from cortical and CA3 pyramidal cells of Dlx1^{+/+} (black lines) and Dlx1^{-/-} (red lines) mice. Note that the curve of the amplitude in Dlx1^{-/-} is shifted to the left (lower amplitude), as compared with Dlx1^{+/+} (Kolmogorov-Smirnov (K-S) test P < 0.001), and the curve of the inter-event interval in Dlx1^{-/-} is shifted to the right (lower frequency), as compared with Dlx1^{+/+} (K-S test P < 0.001). The inset plots of the sIPSCs amplitude and frequency show decreased values on both neocortical and CA3 pyramidal neurons from Dlx1^{-/-} (amplitude: neocortex, 16.9 ± 0.8 pA, n = 32; CA3, 21.5 ± 0.6 pA, n = 16; frequency: neocortex, 1.9 ± 0.2 Hz, n = 32; CA3, 3.5 ± 0.3 Hz, n = 16), as compared with controls (amplitude: neocortex, 21.7 ± 2 pA, n = 14; CA3, 30.3 ± 2.5 pA, n = 16; frequency: neocortex, 3.7 ± 0.5 Hz, n = 14; CA3, 5.8 ± 0.4 Hz, n = 14).

(e, f) Representative miniature IPSC (mIPSC) recordings of cortical and CA3 pyramidal cells from Dlx1^{+/+} and Dlx1^{-/-} 2-months-old mice. (g, h) Cumulative probability plots inter-event interval of mIPSCs from cortical and CA3 pyramidal cells of Dlx1^{+/+} (black lines) and Dlx1^{-/-} (red lines) mice at 1 and 2 months of age. Note that the curve of the inter-event interval in Dlx1^{-/-} is shifted to the right (lower frequency), as compared with Dlx1^{+/+} (K-S test P < 0.001). The inset plots of the mIPSCs frequency show decreased values on both neocortical and CA3 pyramidal neurons from Dlx1^{-/-} for both age periods. mIPSCs, at one month of age, were decreased in frequency on neocortical and CA3 pyramidal neurons from Dlx1^{-/-} (neocortex, 16.9 ± 0.8 Hz, n = 19; CA3, 2.1 ± 0.2 Hz, n = 10) compared with controls (neocortex, 5.25 ± 0.5 Hz, n = 11; CA3, 3 ± 0.2 Hz, n = 10). Reduced mIPSC frequency was also observed at two months of age for both cell types (Dlx1^{+/+}: neocortex, 1.6 ± 0.1 Hz, n = 19; CA3, 2.2 ± 0.2 Hz, n = 10; Dlx1^{-/-}: neocortex, 3.1 ± 0.4 Hz, n = 10; CA3, 4.5 ± 0.6 Hz, n = 8). Black bar graph: Dlx1^{+/+}; red bar graph: Dlx1^{-/-}. Error bars indicate SEM *P < 0.05; **P < 0.001 ANOVA.