Supporting Information

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SI Materials and Methods

Subjects and in Vivo Dox Treatment. Adult male transgenic mice were obtained from the breeding of Tet-Bax with nestin-rtTA founder mice, as described previously (1–3). In brief, in this model, hippocampal neural precursors can be selectively killed by overexpressing the proapoptotic Bax protein (1). The inducible overexpression of Bax specifically in neural precursors was obtained using the rTAT-regulated system. rtTA is a transcription factor that recognizes specific response elements (i.e., tetracycline response elements) in the promoter region of target genes. In our model, it is expressed under the control of the nestin promoter, which is specific to neural precursors, and activated by the administration of an exogenous tetracycline analog, Dox. The nestin promoter is a well characterized promoter for neural progenitors present in the adult brain (4–6) but not in peripheral tissues, including heart, lung, liver, thymus, and skin (3). Dox treatment of bigenic mice induces the death of nestin-expressing cells in the subgranular zone of the DG where neural precursors reside without causing a vascular response or mild inflammation (1). Consequently, cell proliferation and neurogenesis are reduced in the DG (1, 2), whereas neurogenesis remains unchanged in the subventricular zone-olfactory bulb system (1, 2). In contrast, gliogenesis remains unchanged after Dox treatment (3). Furthermore, cell death is not modified in several brain areas, including the olfactory bulb, cerebellum, cortex, striatum, hypothalamus, and amygdala (1, 2).


Fig. S1. Conditional ablation of adult-born neuron does not affect synaptic transmission or plasticity in the CA1 region of the hippocampus. (A) (Upper) Schematic representation of hippocampal circuits. S, stimulation; R, recording electrodes; SC, Schaffer collateral pathway. (Lower) I/O relationship at Schaffer collateral–CA1 pyramidal cell synapses for Bi-Dox (solid triangles; n = 6) and Co-Dox (open triangles; n = 6) mice. P > 0.05, two-way ANOVA. (B) (Lower) HFS induced similar fEPSP potentiation in both Co-Dox (open triangles; n = 6) and Bi-Dox (solid triangles; n = 7) mice. (Upper) Representative and superimposed traces before HFS (1) and 40 min after HFS (2). (C) Histogram summarizing LTP amplitude measured at 30–40 min after HFS in Co-Dox (open bar; 122.2 ± 8.6%; n = 7) and Bi-Dox (solid bar; 132.9 ± 6.7%; n = 6) mice. *P < 0.05, t test.