Supplemental Information

Visual deprivation causes refinement of intracortical circuits in the auditory cortex

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3 Supplemental Figures

Supplementary Figures

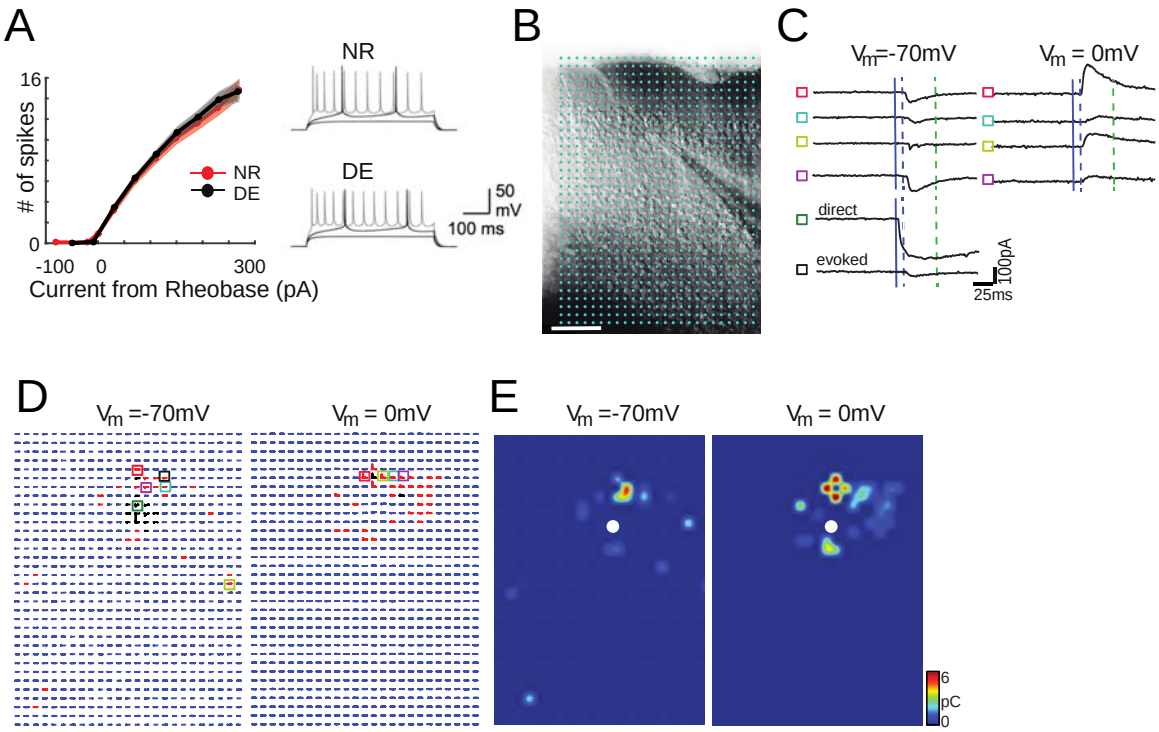

Figure S1, related to Figure 1: Intrinsic excitability and determination of synaptic responses

A: Measurement of intrinsic excitability by current clamp recordings. The graph on the left shows the numbers of spikes triggered by varying levels of depolarization generated by current injections normalized to rheobase (shaded bands indicate ± SEM). No differences were observed between NR (N = 14, 4 mice) and DE (N = 10 cells, 3 mice) ($p > 0.1$). The traces on the right are 2 example recordings. There was no significant difference in resting membrane potential, action potential threshold, or input resistance between the two groups. **B**: Infrared image of brain slice with patch pipette on layer 2/3 neuron. Stimulation grid indicated by blue dots. Scale bar = 200 µm. **C**: Whole-cell voltage clamp recordings of the cell in Panel B at holding potentials of -70 mV (left) or 0 mV (right). Direct and evoked traces obtained with photostimulation at different locations which are indicated with colored squares in Panel D. Solid blue line indicates the time of photostimulation; dashed blue line marks 8 ms post-stimulus, which is the minimal latency for synaptic responses; dashed green line marks 50 ms, the end of the event-detection window. **D**: Traces obtained by LSPS when holding the cell in panel B at -70 and 0 mV, respectively. Traces showing large-amplitude direct responses are in black. The responses that have latencies between 8 and 50 ms are shown in red. Otherwise,

the traces are shown in blue. **E**: Pseudocolor maps show PSC charge at each stimulus location when holding the cell at -70 and 0 mV, respectively.

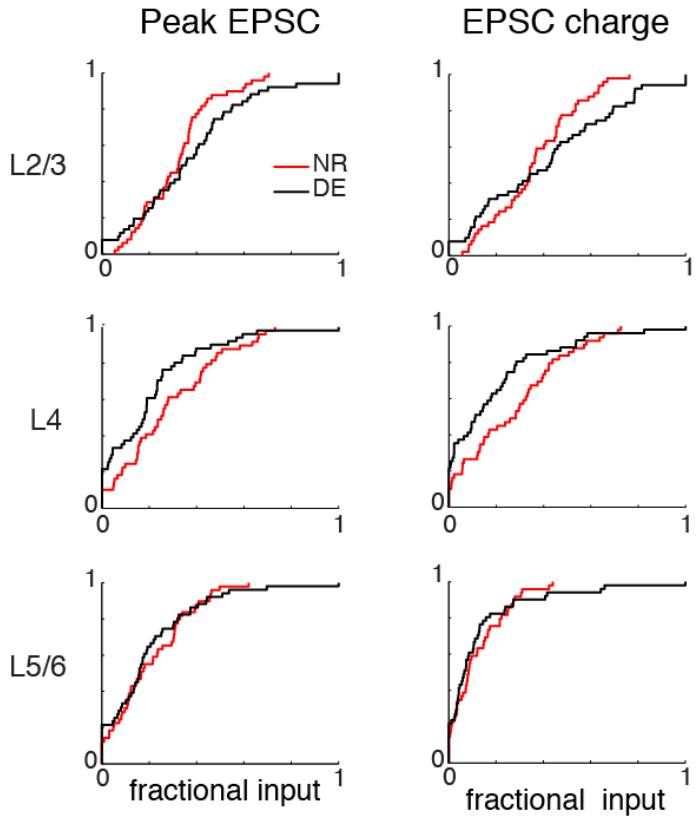

Figure S2, related to Figure 2: DE does not change the balance between intra-laminar and inter-laminar excitatory inputs

Cumulative distributions (CDFs) of the relative total excitatory amplitude and charge to L2/3 neurons from L2/3 (top), L4 (middle), L5/6 (bottom). Distributions in NR and DE animals are similar (EPSC amplitude: L2/3 p=0.179, L4: p=0.0558, L5/6=0.910, Fractional EPSC charge: L2/3: p=0.283, L4: p=0.0626, L5/6 p=0.391; all KS-test). A trend for reduced input from L4 is observed.

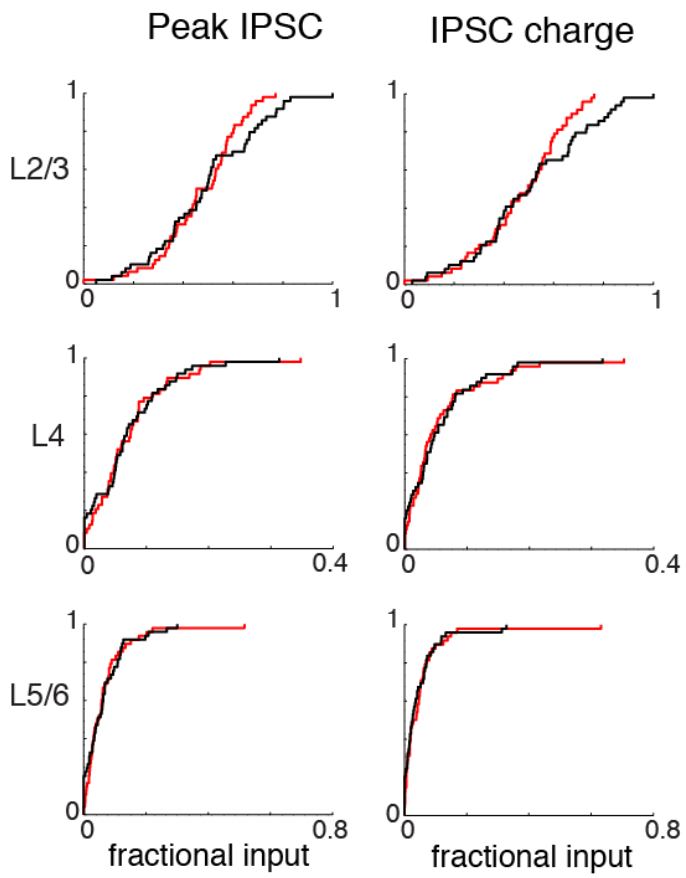

Figure S3, related to Figure 3: DE does not change the balance between intra-laminar and inter-laminar inhibitory inputs

Cumulative distributions (CDFs) of the relative total inhibitory amplitude to L2/3 neurons from L2/3 (top), L4 (middle), L5/6 (bottom) in NR (red) and DE (black) animals. NR and DE distributions are similar (Fractional IPSC amplitude L2/3: p=0.566, L4: p=0.5882 L5/6: p=0.820, Fractional IPSC charge: L2/3: p=0.358, L4: p=0.958, L5/6: p=0.556; all KS-test).