Figure 4. Effects of VIP activation are strongest in layer 4.

A. Mean sound modulation index during laser-on and laser-off trials, across cortical layers. VIP activation significantly suppressed modulation of neural activity by sound in layer 4, but not other layers. L2/3 laser-off 0.51 ± 0.04, laser-on 0.47 ± 0.05, n = 22; L4 laser-off 0.45 ± 0.04, laser-on 0.28 ± 0.07, n = 34; L5 laser-off 0.44 ± 0.02, laser-on 0.44 ± 0.02, n = 122; L6 laser-off 0.67 ± 0.03, laser-on 0.64 ± 0.03, n = 45; $\mathcal{X}^2$ = 14.47, p = 0.0023, post-hoc signed-rank for L4 (MI laser-on vs laser-off) p = 0.001; r =0.40).

B. The effect of VIP activation on sound modulation in layer 4 was driven by evoked activity in narrow-spiking neurons. Laser effect is the difference in evoked activity between laser-on and laser-off trials, normalized to each cell's peak laser-off firing rate. Evoked activity in layer 4 narrow-spiking cells was significantly suppressed by VIP activation (NS: $\mathcal{X}^2$ = 11.75, p = 0.008, n = 73).

C. Laser effect for spontaneous activity was similar across all cortical layers (NS:$\mathcal{X}^2$ = 4.12, p = 0.24, n = 73).

D. Depth distribution of cells that were either suppressed or disinhibited by VIP activation, for evoked activity. Peak density of disinhibited cells was in layer 5; suppressed cells showed an additional peak in layer 4 (arrow).

E. Depth distributions of suppressed and disinhibited cells for spontaneous activity were similar to each other. Peak densities were in layer 5.