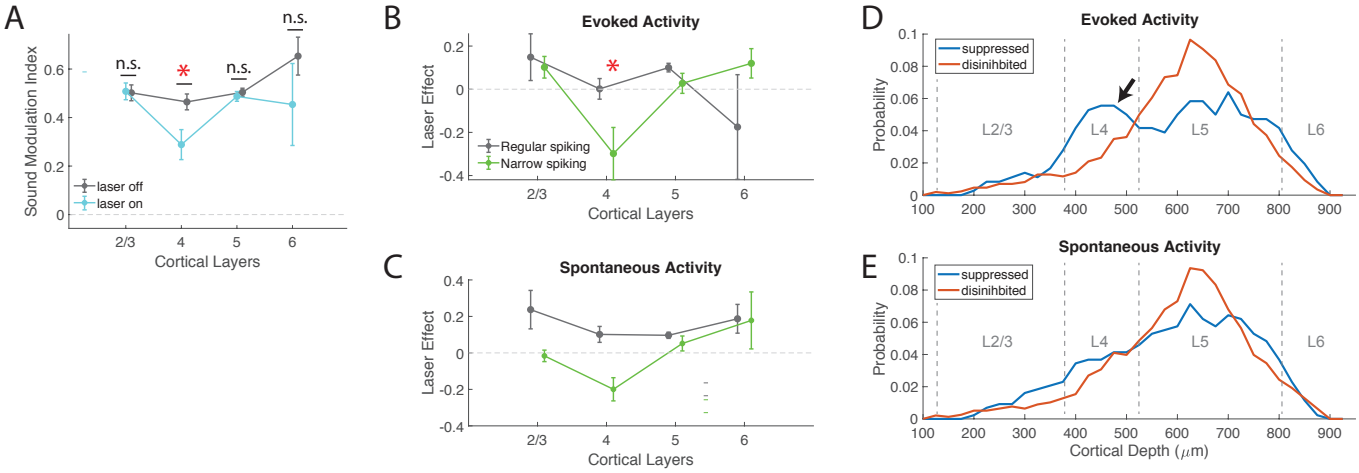

Figure 4. Effects of VIP activation are strongest in layer 4.

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 0.50 ± 0.03 laser-on 0.51 ± 0.03, n = 20; L4 laser-off 0.46 ± 0.03, laser-on 0.29 ± 0.06, n = 40; L5 laser-off 0.50 ± 0.02, laser-on 0.49 ± 0.02, n = 178; L6 laser-off 0.65 ± 0.08, laser-on 0.45 ± 0.17, n = 6; X^2 (3,240) = 14.42, p = 0.0024, post-hoc signed-rank for L4 (MI laser-on vs laser-off) p = 0.0014; r = 0.36).

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 X^2 (3,73) = 10.06, p = 0.0141; post-hoc rank-sum for L4 laser effect < 0: p = 0.0161; L4 NS vs. RS cells: p = 0.0230).

C. Laser effect for spontaneous activity in regular-spiking neurons was similar across all cortical layers, but for narrow-spiking cells was suppressed in L4 (NS: X^2 (3,73) = 8.8, p = 0.03).

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). We defined L4 as 381 - 525 μm.

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