

Supplementary Materials for  
**Contextual drive of neuronal responses in mouse V1 in the absence of  
feedforward input**

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**The PDF file includes:**

Figs. S1 and S2  
Legend for movie S1

**Other Supplementary Material for this manuscript includes the following:**

Movie S1

## Supplementary Material

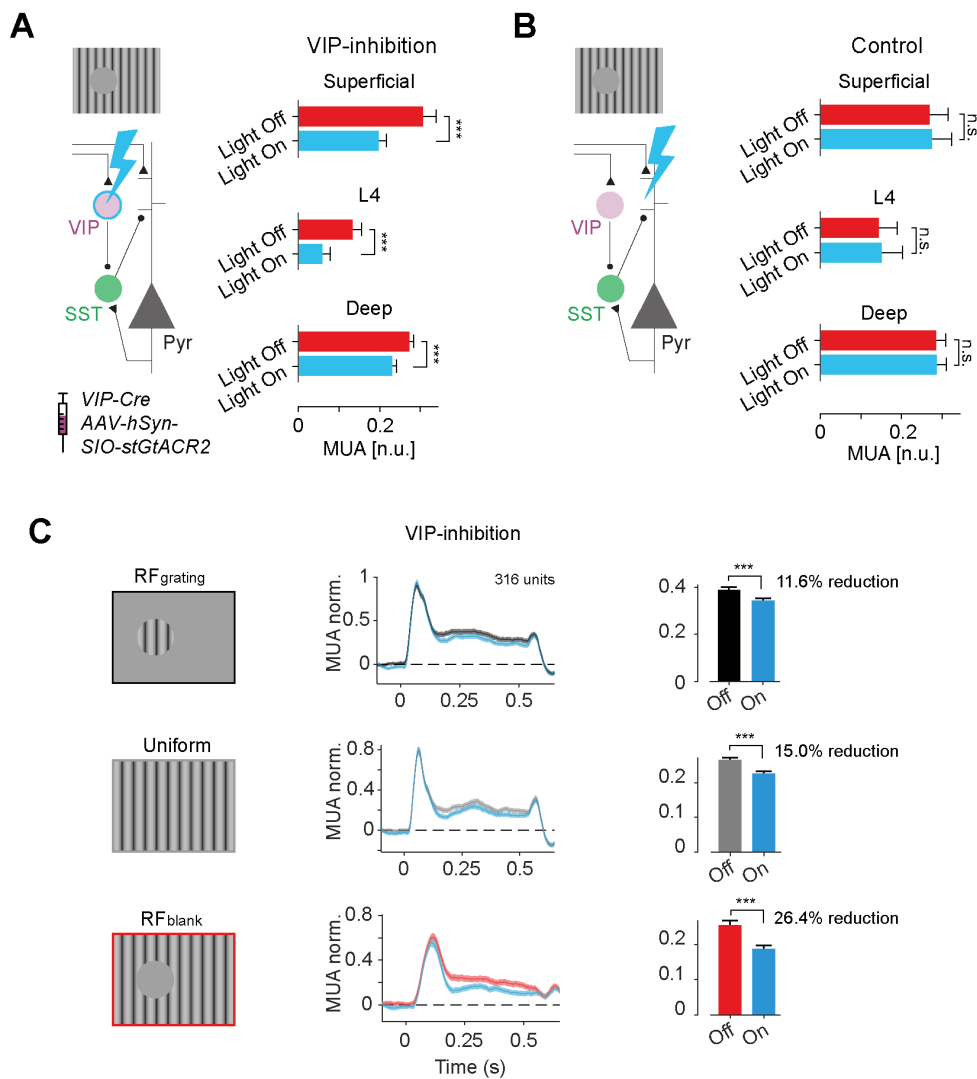


Figure S1, Tissue heating through laser exposure did not influence activity.

**A**, Multi-unit activity (MUA) evoked by the RF<sub>blank</sub> stimulus in superficial (top), layer 4 (middle) and deep (bottom) layers of the cortex with (blue) and without (red) inhibition of VIP-neurons. \*\*\*,  $p < 0.001$  **B**, We performed a control experiment, in which the optogenetic construct was not expressed and the cortical tissue was exposed to identical laser intensities. MUA evoked by RF<sub>blank</sub> stimulus in superficial (top), layer 4 (middle) and deep (bottom) layers of the cortex with (blue) and without (red) exposure to laser light. Laser light did not affect the response to the RF<sub>blank</sub> stimulus. **C**, VIP-neuron inhibition reduced the activity evoked by the RF<sub>grating</sub> (top row), Uniform (middle row) and RF<sub>blank</sub> (bottom row) stimuli by 11.6%, 15.5% and 26.4% respectively (time window from 0-0.5s). Left, visual stimuli; middle, activity evoked by the three stimuli across a population of 316 recording sites in the presence (blue) or absence (black/grey/red) of optogenetic inhibition of VIP neurons. Right, average MUA across 316 sites with (blue) and without (black/grey/red) optogenetic inhibition.

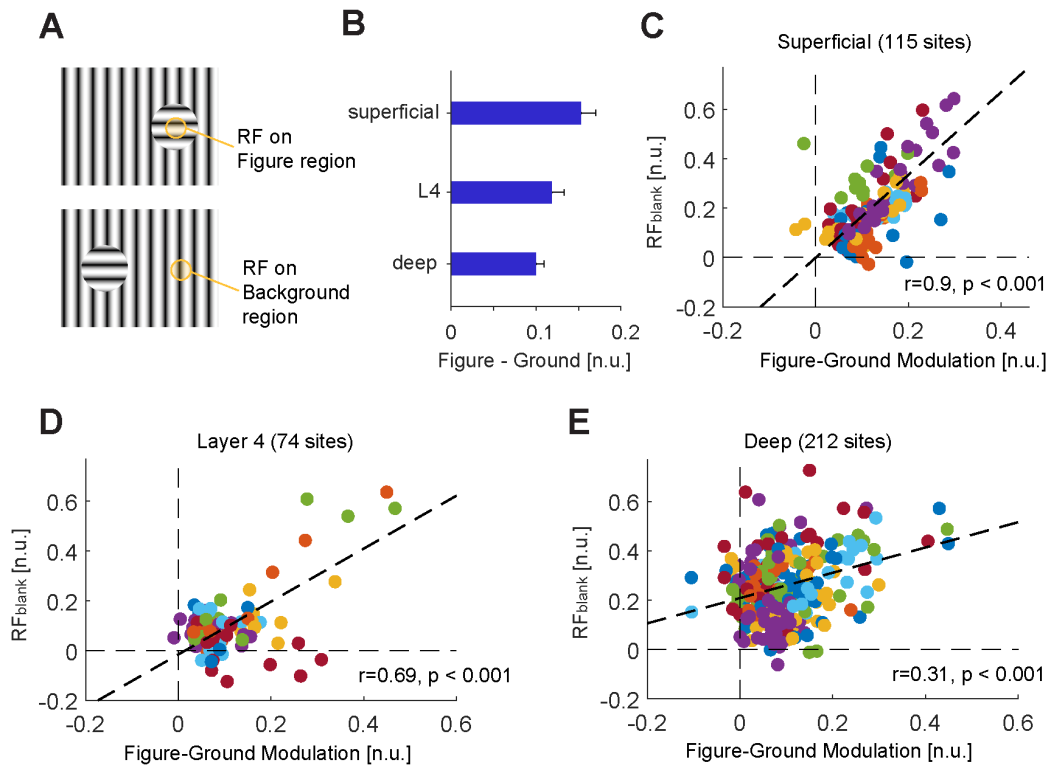


Figure S2, Figure-Ground modulation across cortical depths.

**A**, Stimuli that induce figure-ground perception consisting of circular gratings that differ from the background in orientation. **B**, Strength of figure-ground modulation per laminar compartment (superficial, layer 4 and deep layers), quantified as the average, normalized activity evoked by figure regions minus activity evoked by the background. In line with previous reports, figure-ground modulation was strongest in the superficial layers and weaker in the deep layers (14). **C-E**, Figure-ground modulation and the response to the  $RF_{\text{blank}}$  stimulus was significantly correlated in all laminar compartments.

*Supplementary Movie 1, Dynamic occlusion stimuli.*

Movie showing stimuli in which the blank image region is perceived as either a figure (left panel) or a background (middle panel) using dynamic occlusion cues. The full-screen texture stimulus is shown as the right panel.