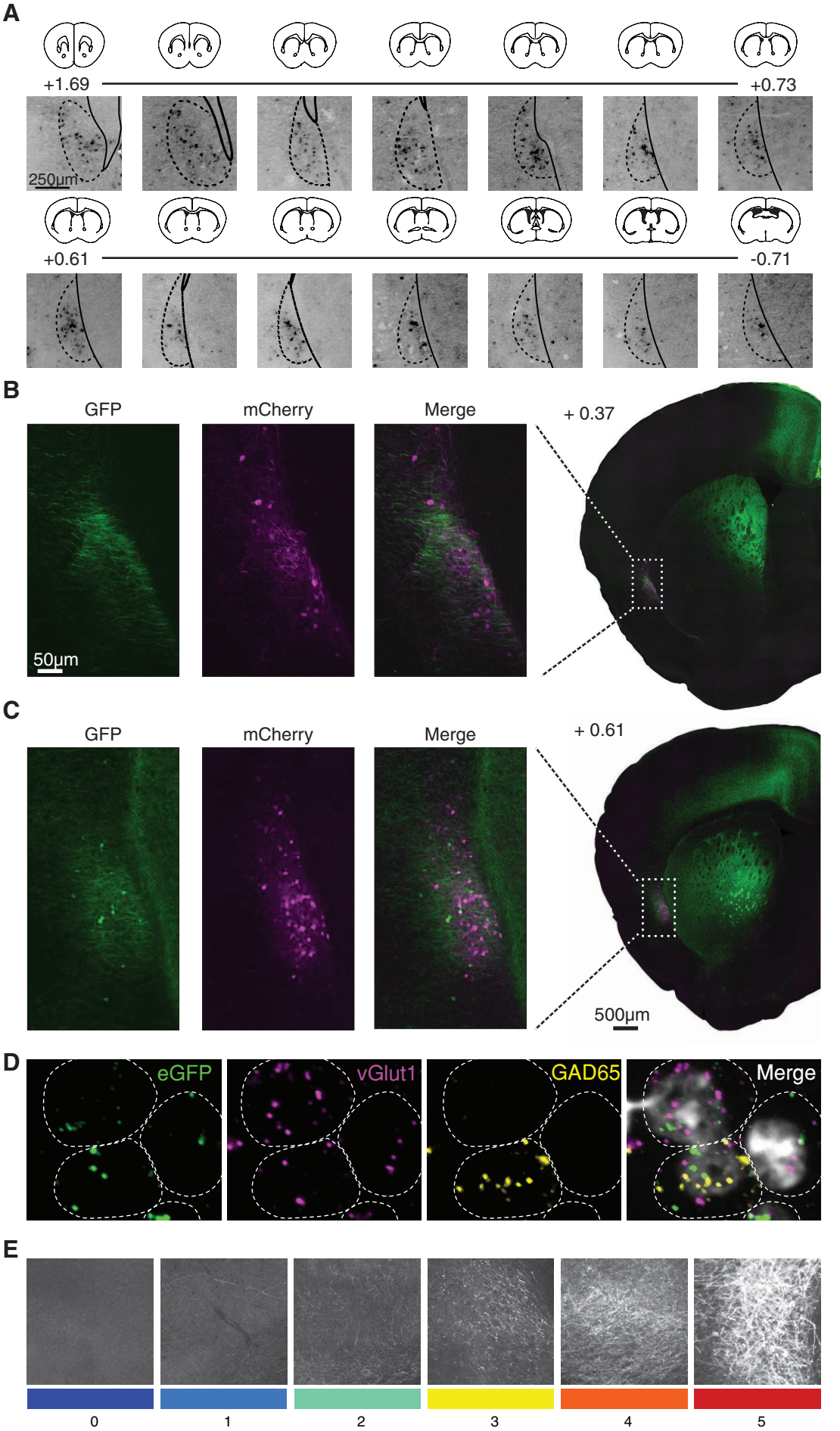

Figure S1. Supplemental information related to Figure 1. (**A**) Chromogenic *in situ* hybridization (ISH) analysis of the expression of Egr2 throughout the anterior-posterior axis of the claustrum. The boundaries of the claustrum are indicated on coronal sections corresponding to the atlas images located above the images. Numbers represent distance from Bregma (mm). (**B-C**) Coronal sections representing the overlap between frontal cortical afferents to the claustrum and CL_{Egr2+} neurons. Green labeling corresponds to AAV-CMV-GFP labeled projections from the ACA/ORB, while magenta represents the AAV-DIO-mCherry expression in CL_{Egr2+} neurons. (**B**) Afferents to the claustrum from the anterior cingulate cortex (ACA). (**C**) Afferents to the claustrum from the Orbitofrontal cortex (ORB). (**D**) Single-molecule fluorescent ISH (smFISH), demonstrating co-expression of vGlut1 and GAD65 in CL_{Egr2+} neurons. Individual channels are shown, as well as the merge of the three channels with DAPI (white background). Putative outlines of cell bodies are demarcated. (**E**) Representative images of CL_{Egr2+} anterograde tracing, demonstrating the scoring scale and color scheme used the qualitative numerical representation of anterograde tracing (**Figure 1J, N**).

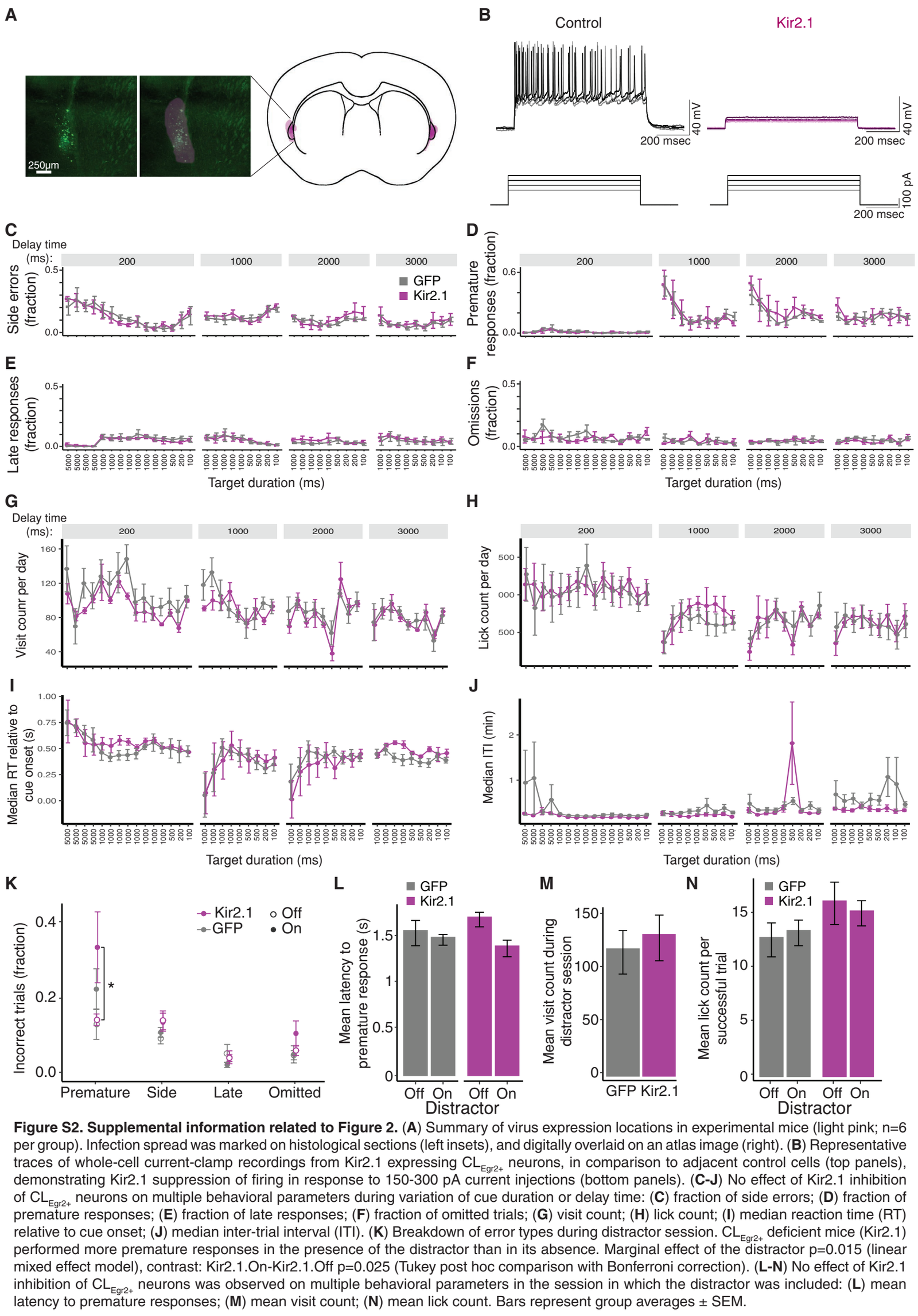

Figure S2. Supplemental information related to Figure 2. (**A**) Summary of virus expression locations in experimental mice (light pink; n=6 per group). Infection spread was marked on histological sections (left insets), and digitally overlaid on an atlas image (right). (**B**) Representative traces of whole-cell current-clamp recordings from Kir2.1 expressing CL_{Egr2+} neurons, in comparison to adjacent control cells (top panels), demonstrating Kir2.1 suppression of firing in response to 150-300 pA current injections (bottom panels). (**C-J**) No effect of Kir2.1 inhibition of CL_{Egr2+} neurons on multiple behavioral parameters during variation of cue duration or delay time: (**C**) fraction of side errors; (**D**) fraction of premature responses; (**E**) fraction of late responses; (**F**) fraction of omitted trials; (**G**) visit count; (**H**) lick count; (**I**) median reaction time (RT) relative to cue onset; (**J**) median inter-trial interval (ITI). (**K**) Breakdown of error types during distractor session. CL_{Egr2+} deficient mice (Kir2.1) performed more premature responses in the presence of the distractor than in its absence. Marginal effect of the distractor p=0.015 (linear mixed effect model), contrast: Kir2.1.On-Kir2.1.Off p=0.025 (Tukey post hoc comparison with Bonferroni correction). (**L-N**) No effect of Kir2.1 inhibition of CL_{Egr2+} neurons was observed on multiple behavioral parameters in the session in which the distractor was included: (**L**) mean latency to premature responses; (**M**) mean visit count; (**N**) mean lick count. Bars represent group averages ± SEM.

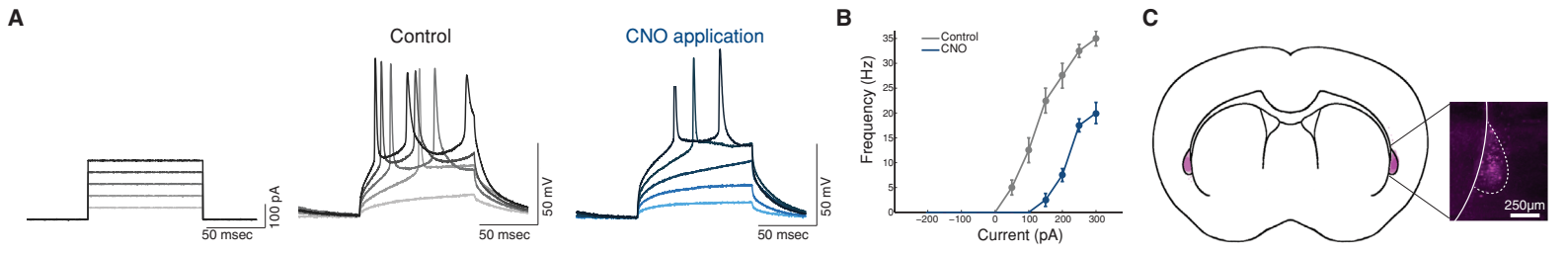

Figure S3. Efficacy and efficiency of transduction of hMDi infection of CL_{Egr2+} neurons (Related to Figure 2). (**A**) Representative traces of whole-cell current-clamp recordings from CL_{Egr2+} neurons expressing the hM4Di DREADD, in the presence or absence of CNO (clozapine-N-oxide; 1 μM). 50-250 pA current injections (right) demonstrate the reduction of excitability in cells expressing hM4Di before (middle) and after (right) application of CNO. (**B**) Summary graph of the impact of CNO on the excitability of neurons expressing hM4Di. (**C**) Verification of viral expression in mice used for transient inhibition experiments (n=4). The site of expression in individual mice (light pink) was digitally overlayed on an atlas image. Right inset depicts a representative infection from a single mouse.

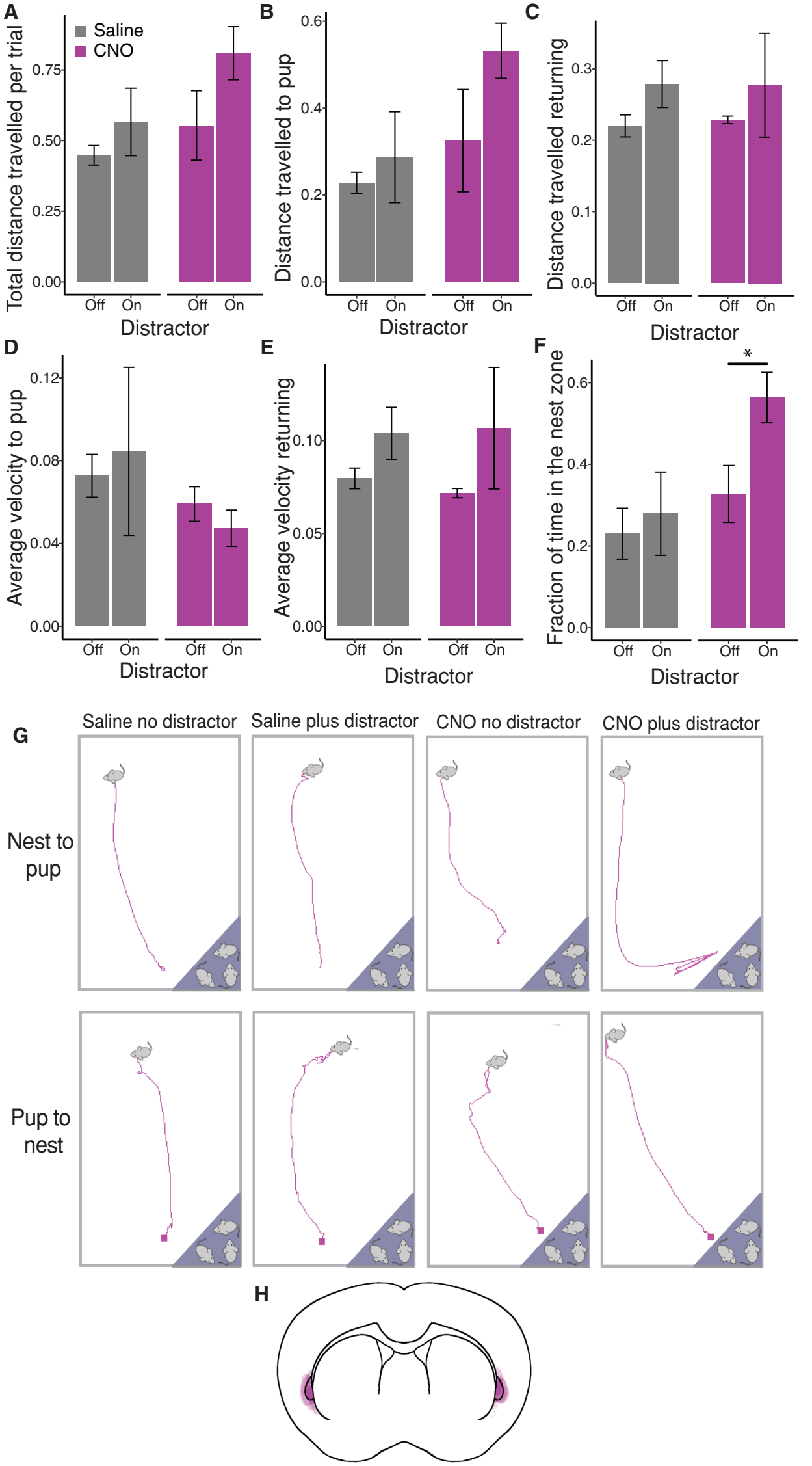

Figure S4. Analysis of the activity of dams during pup retrieval (Related to Figure 3). (**A**) Mean total distance travelled per single trial of pup retrieval. (**B**) Distance travelled to collect the pup (meter), marginal effect for injection type p=0.0588 (generalized mixed effect linear model). (**C**) Distance travelled returning to the nest (meter). (**D**) Average velocity to collect the pup (m/s). (**E**) Average velocity returning to the nest (m/s). (**F**) Fraction of time spent in the nest zone. Marginal effect for injection type p=0.0228 (generalized mixed effect linear model), contrast Saline.On-CNO. ON p=0.0402, (Tukey post hoc comparisons with Bonferroni corrections). (**G**) Example trajectories of a representative dam under different experiment conditions. Top: trajectory towards the pup. Bottom: trajectory returning to the nest. (**H**) Verification of viral expression in mice. Summary of virus expression locations in mice involved in the maternal pup retrieval assay during chemogenetic inhibition of CL_{Egr2+} neurons (light pink; n=5). Infection spread was marked on histological sections, and digitally overlaid on an atlas image.