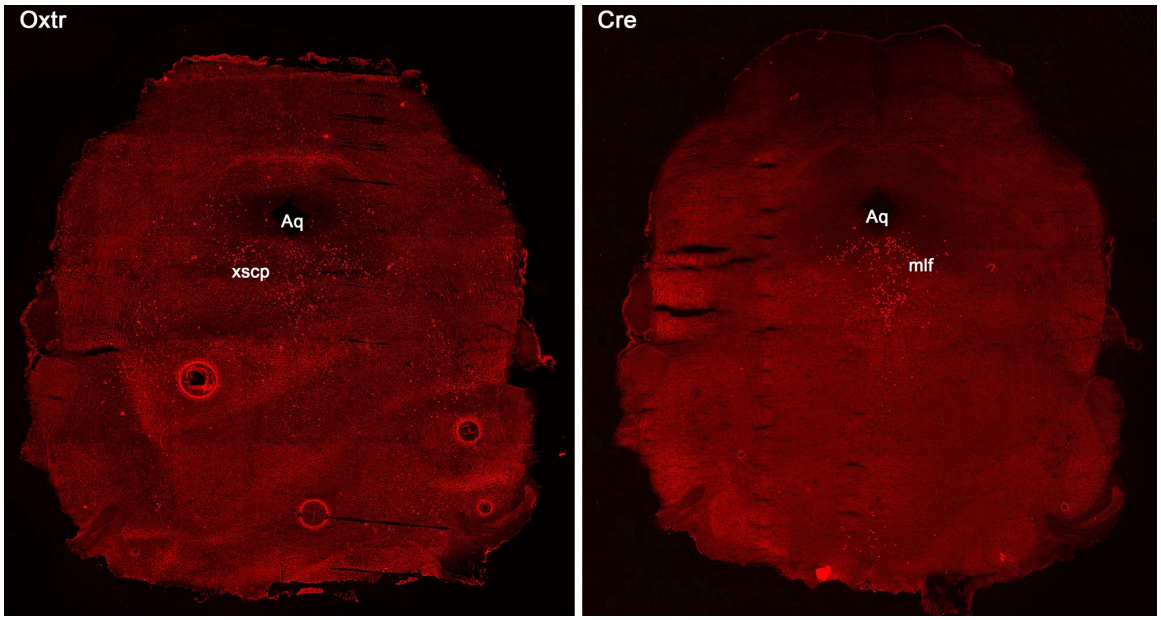
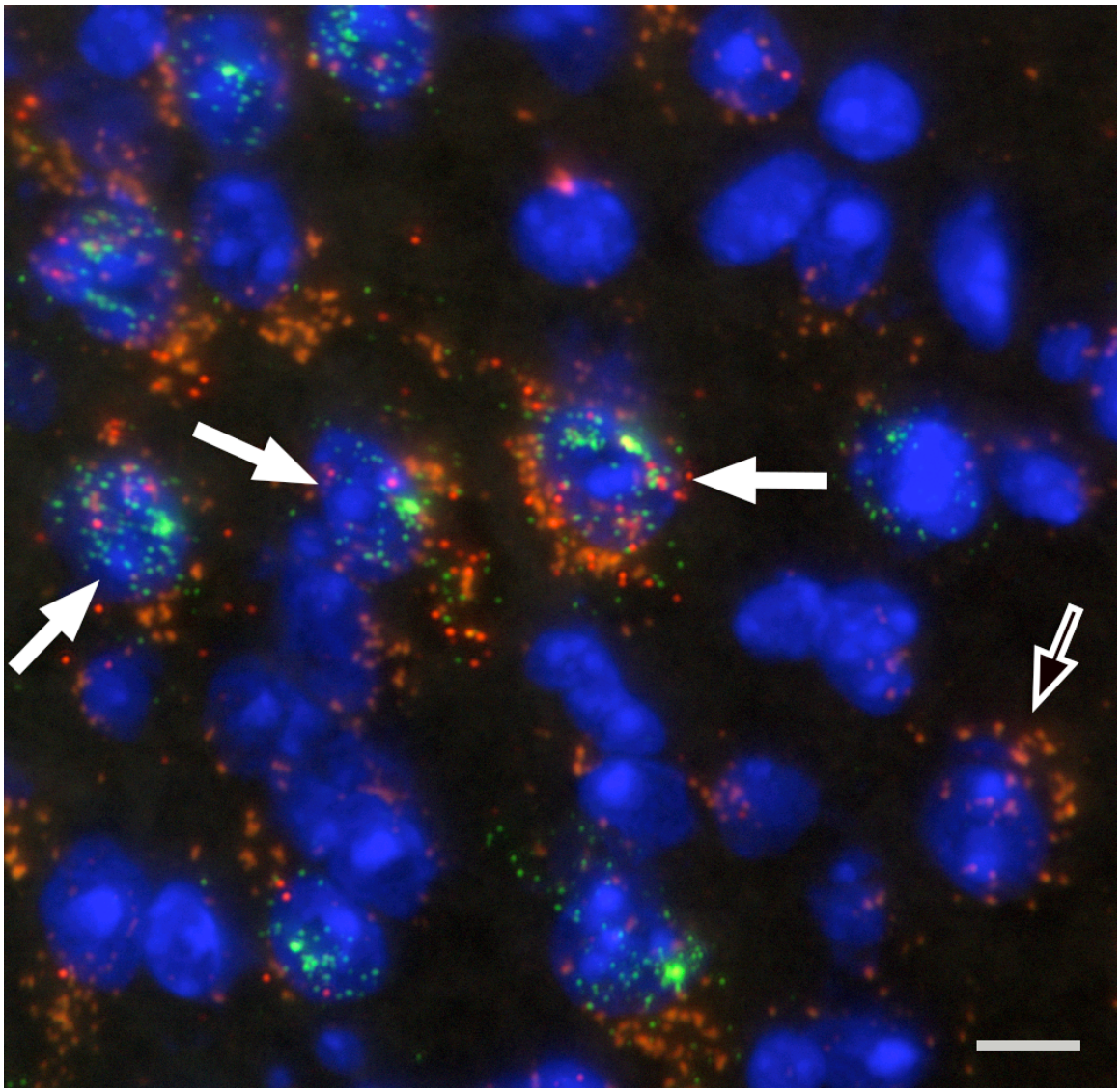
Supporting Information

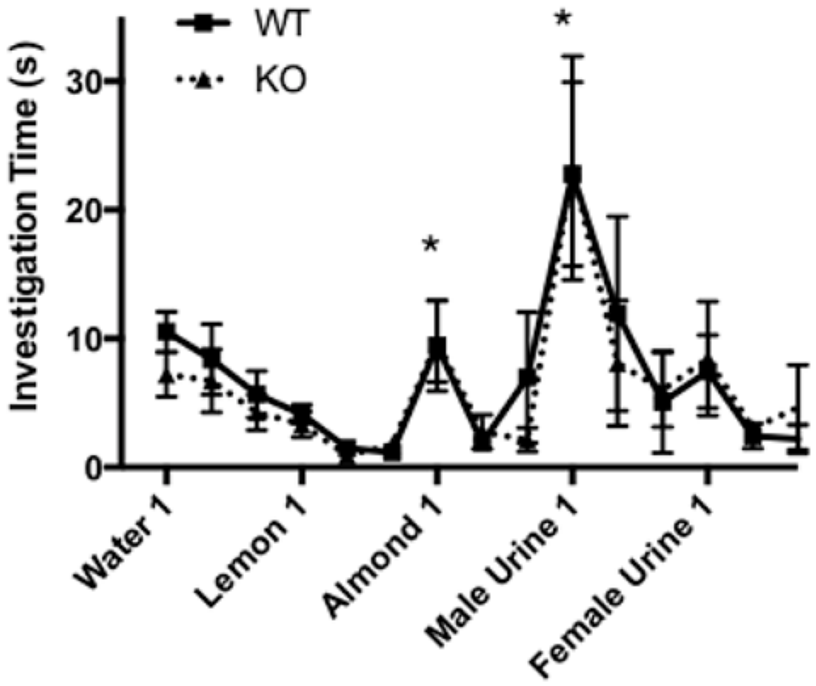
Supplementary Figure 1a. Low magnification photomicrographs of adjacent sections containing the dorsal and median raphe nuclei, demonstrating Oxtr (left panel) and cre recombinase (right panel) transcripts. Cells expressing Oxtr are more widespread through this level than cre recombinase (which is confined to raphe serotonergic cells). These 16µm sections were processed using the single probe RNAscope technique, as described in the Materials and Methods. Higher magnifications of the dorsal raphe from these sections are presented in Figure 1. Photomicrographs were taken courtesy of Dr. Charles Gerfen (NIMH). Aq, aqueduct; mlf, medial longitudinal fasciculus; xscp, decussation of the superior cerebellar peduncle.



Supplementary Figure 1b. High magnification photomicrograph, from a section containing the median raphe, demonstrating cre recombinase (green signal) and Oxtr (red signal) transcripts from a non-Oxtr floxed mouse. Most, if not all, raphe cre-positive neurons also express Oxtr (solid arrows) whereas there are numerous cre-negative neurons that also express Oxtr (open arrow). Because this mouse was **not** crossed with the floxed Oxtr line, the cre recombinase did not eliminate Oxtr expression (as in Fig. 1). This section was processed for the Multiplex RNAscope technique as described in the Materials and Methods and counterstained with DAPI. The bar represents 10μm.



Supplementary Figure 2. Olfactory habituation/dishabituation in males. Significant dishabituations were observed for almond and male urine olfactory stimuli in males. *= p< 0.05 compared to previously exposed olfactory stimuli (e.g., lemon 3 vs. almond 1). WT mice: solid lines with squares. Raphe Oxtr KOs: dotted lines with triangles.



Supplementary Table 1. Anxiety-like behavior in females (baseline and post-partum). Data from Experiments 4 and 5. Mean ± SD is indicated for each measurement. WT, wildtype; HET, heterozygous Cre recombinase-expressing; KO, raphe Oxtr knockout.

	WT (n=8)	**HET (n=4)**	**KO (n=9)**	
	Elevated Plus Maze (Baseline)			
Time in open arms [open/(open+closed) as %]	34.6 ± 30.5	78.3 ± 57.4	25.3 ± 20.3	F(2, 18) = 0.33, p = 0.7
Number of open arm entries	21.0 ± 16.1	26.5 ± 17.1	14.5 ± 9.19	F(2, 18) = 1.07, p = 0.4
	WT (n=6)	**HET (n=4)**	**KO (n=8)**	
	Elevated Plus Maze (Postpartum)			
Time in open arms [open/(open+closed) as %]	9.85 ± 10.1	16.0 ± 12.8	7.39 ± 33.3	F(2, 14) = 0.81, p = 0.4
Number of open arm entries	6.66 ± 7.55	6.00 ± 4.32	4.40 ± 4.84	F(2, 14) = 0.03, p = 1.0
	WT (n=11)	**HET (n=5)**	**KO (n=11)**	
	Open Field (Baseline)			
Time in inner square (s)	53.6 ± 21.5	70.7 ± 42.0	62. 4 ± 29.9	F(2, 24) = 0.44, p = 0.7
Distance traveled (cm)	4364 ± 706	4273 ±1446	4421 ± 986	F(2, 24) = 0.02, p = 1.0
	Elevated O Maze (Baseline)			
Time in open arms [open/(open+closed) as %]	39.8 ± 13.9	32.4 ± 9.6	44.3 ± 12.7	F(2, 24) = 0.87, p = 0.4

Supplementary Table 2. Serotonin and metabolism

5-HT levels (pg 5-HT/µg protein)

Region	Wildtype	Raphe KO	Statistics
Neocortex	310.11 ± 68.85	259.34 ± 43.76	F(1,14) = 0.42, p = 0.5
Amygdala	415.50 ± 55.33	424.40 ± 66.62	F(1,14) = 0.01, p = 0.9
Hippocampus	363.73 ± 87.35	410.73 ± 167.67	F(1,13) = 0.06, p =0.8
Hypothalamus	535.56 ± 134.04	406.86 ± 60.73	F(1,13) = 0.96, p = 0.3

5-HT/5-HIAA ratios

Region	Wildtype	Raphe KO	Statistics
Neocortex	0.19 ± 0.02	0.20 ± 0.02	F(1,14) = 0.06, p = 0.8
Amygdala	0.18 ± 0.01	0.19 ± 0.01	F(1,14) = 1.06, p = 0.3
Hippocampus	0.43 ± 0.02	0.51 ± 0.04	F(1,13) = 2.49, p = 0.1
Hypothalamus	0.28 ± 0.03	0.29 ± 0.02	F(1,13) = 0.09, p = 0.8