

Supplementary Information

Expression of feeding-related neuromodulatory signalling molecules in the mouse central olfactory system

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Fazley Rabbi Sha², Chiori Ijichi¹, Masahiro Yamaguchi²

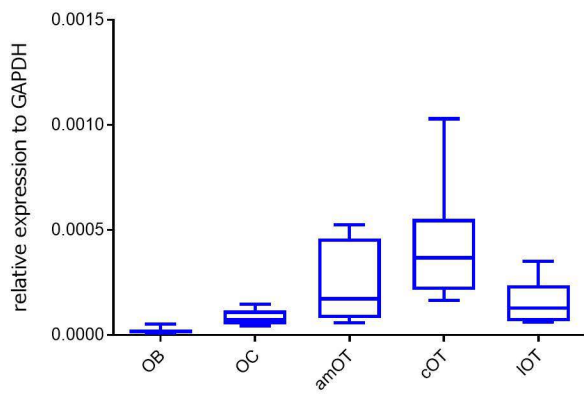
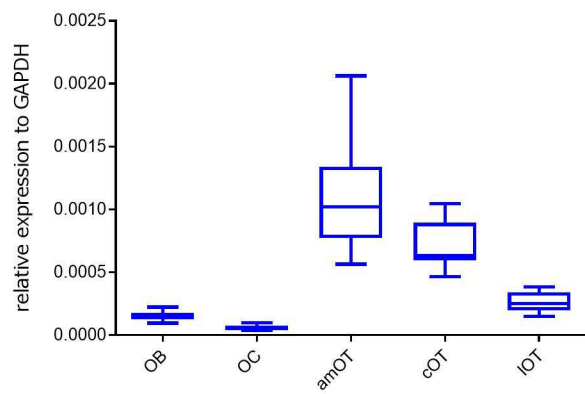
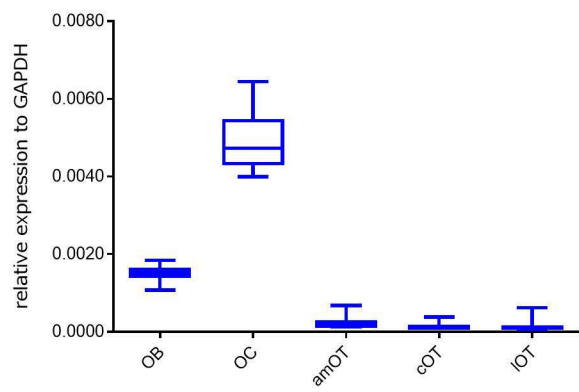
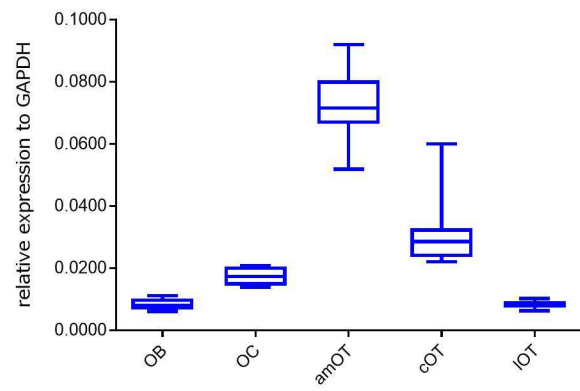
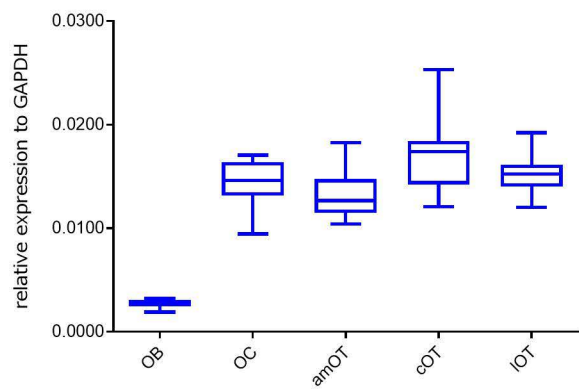
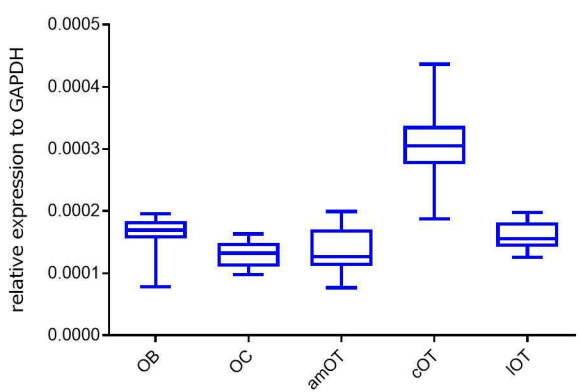
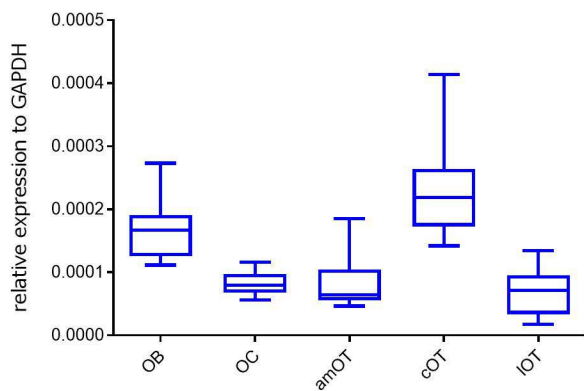
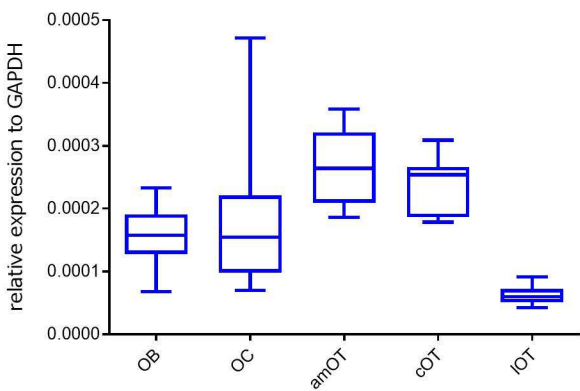
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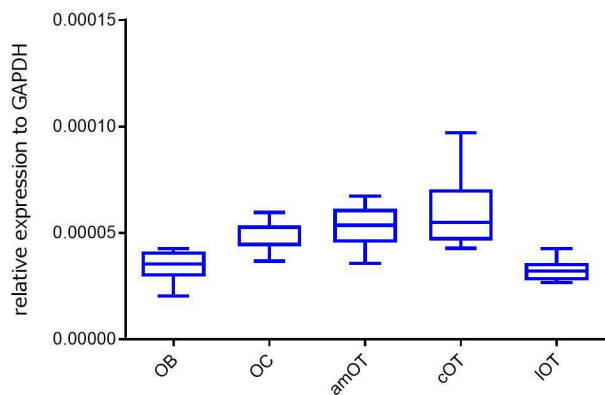
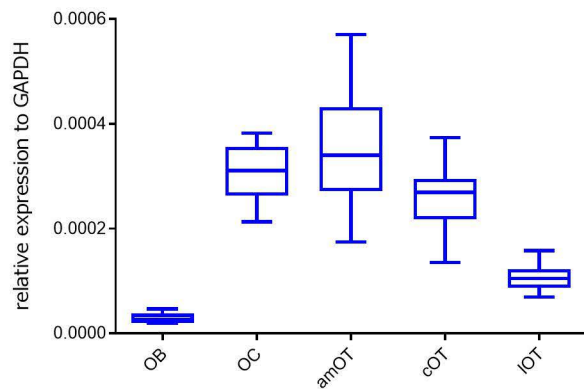
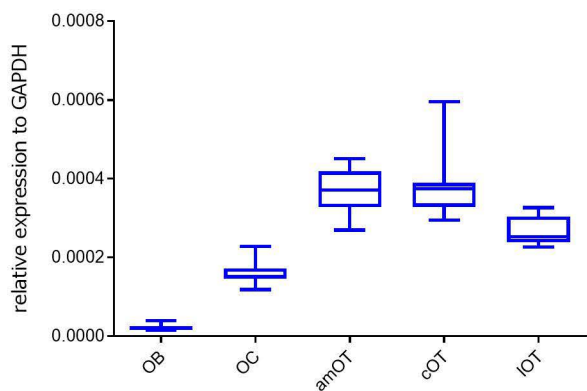
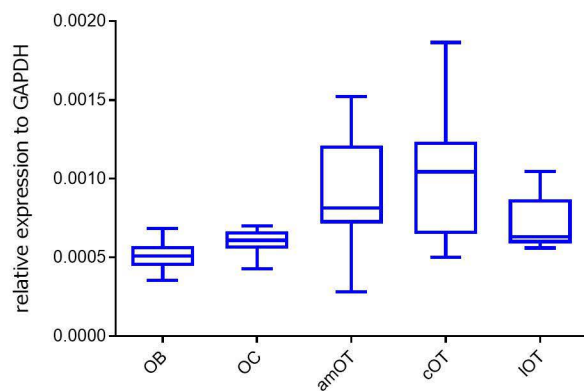
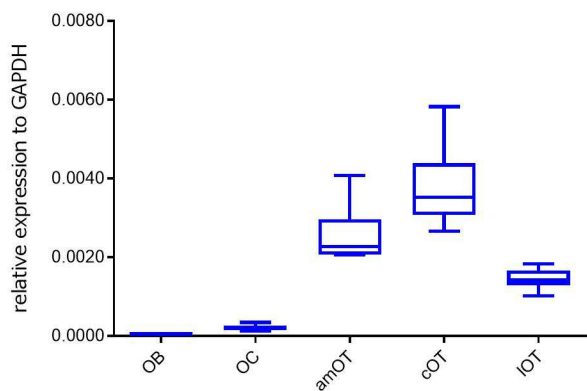
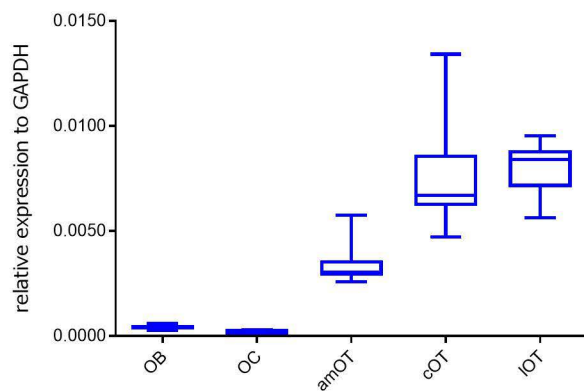
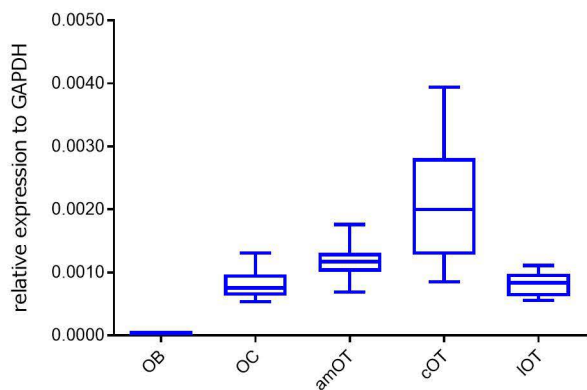
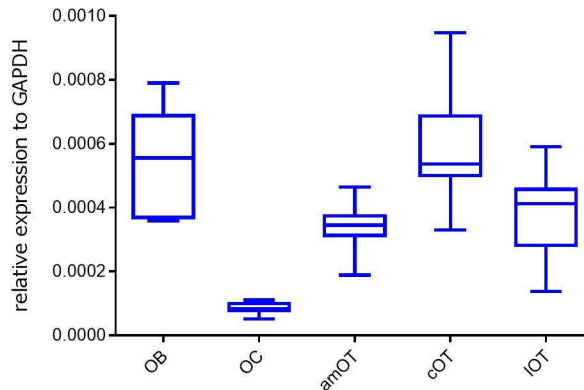
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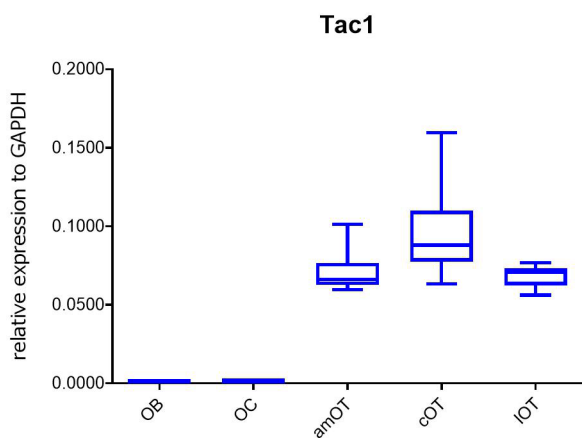
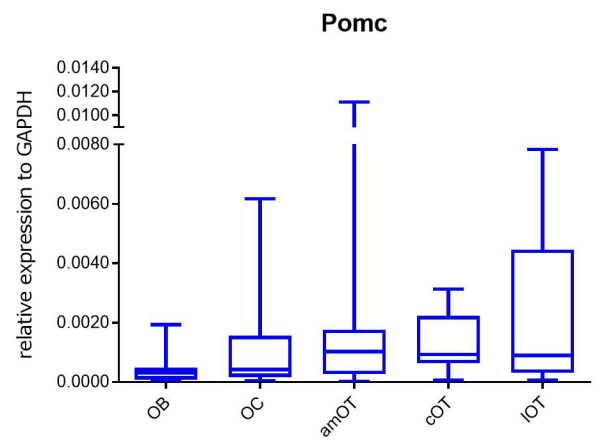
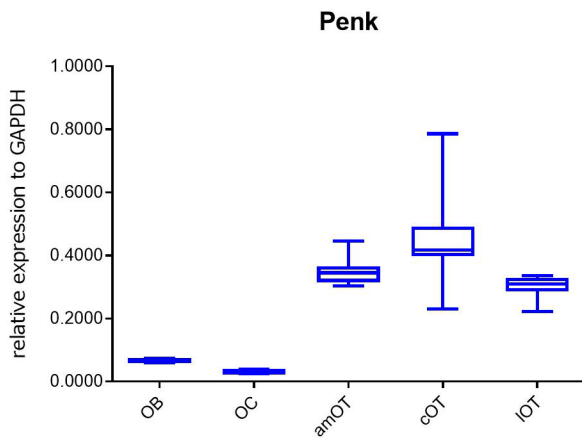
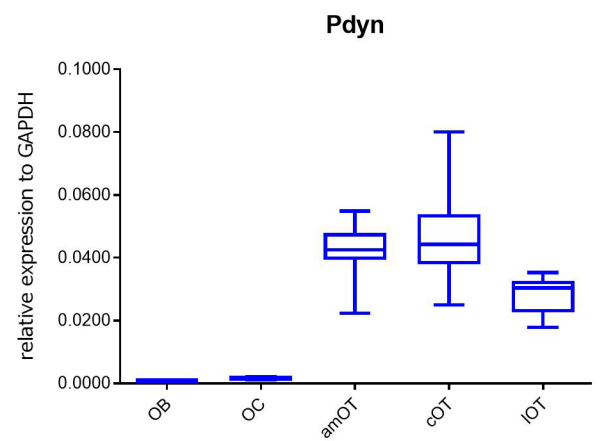
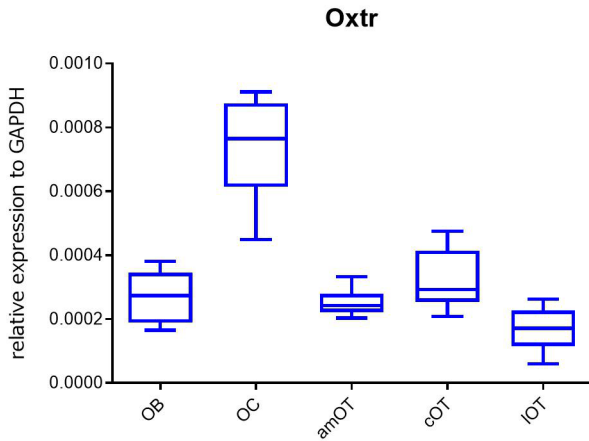
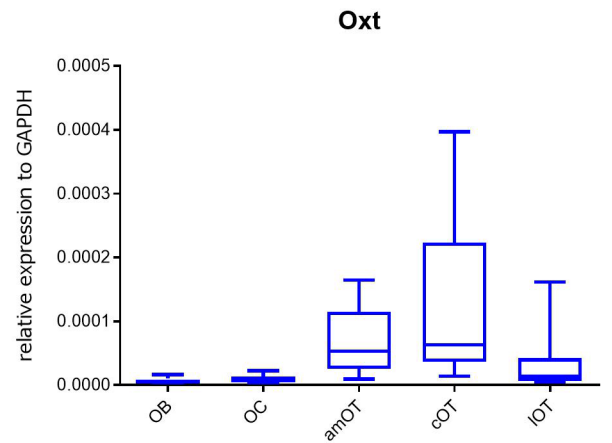
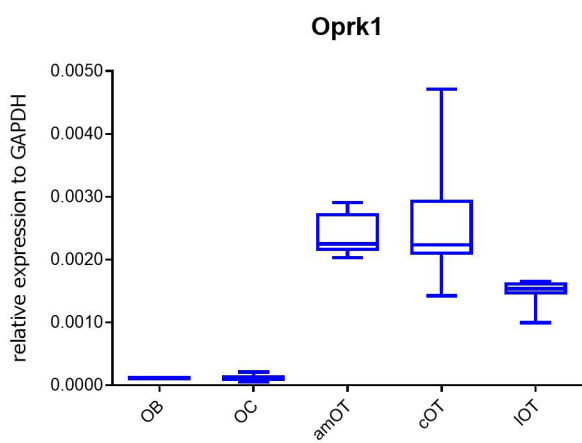
Supplementary Table S1. F and p values for molecular expression in five olfactory areas.

$n = 7-9$ for each area (one-way ANOVA)

genes	F and degrees of freedom	p
Avp	$F_{(4,40)} = 10.28$	$p < 0.0001$
Avpr1a	$F_{(4,40)} = 31.29$	$p < 0.0001$
Bdnf	$F_{(4,40)} = 242.89$	$p < 0.0001$
Cartpt	$F_{(4,40)} = 116.44$	$p < 0.0001$
Cnr1	$F_{(4,40)} = 47.41$	$p < 0.0001$
Cnr2	$F_{(4,40)} = 29.31$	$p < 0.0001$
Ghrl	$F_{(4,38)} = 16.95$	$p < 0.0001$
Ghsr	$F_{(4,38)} = 11.60$	$p < 0.0001$
Hcrt	$F_{(4,40)} = 9.76$	$p < 0.0001$
Hcrtr1	$F_{(4,40)} = 35.28$	$p < 0.0001$
Hcrtr2	$F_{(4,40)} = 64.09$	$p < 0.0001$
Lepr	$F_{(4,40)} = 5.51$	$p = 0.0013$
Mc4r	$F_{(4,40)} = 74.96$	$p < 0.0001$
Mme	$F_{(4,40)} = 67.39$	$p < 0.0001$
Npy2r	$F_{(4,40)} = 21.53$	$p < 0.0001$
Oprd1	$F_{(4,40)} = 20.59$	$p < 0.0001$
Oprk1	$F_{(4,40)} = 59.65$	$p < 0.0001$
Oxt	$F_{(4,38)} = 4.05$	$p = 0.0079$
Oxtr	$F_{(4,40)} = 42.47$	$p < 0.0001$
Pdyn	$F_{(4,40)} = 58.41$	$p < 0.0001$
Penk	$F_{(4,40)} = 58.86$	$p < 0.0001$
Pomc	$F_{(4,35)} = 0.80$	$p = 0.5351$
Tac1	$F_{(4,40)} = 81.00$	$p < 0.0001$

Avp**Avpr1a****Bdnf****Cartpt****Cnr1****Cnr2****Ghrl****Ghsr**

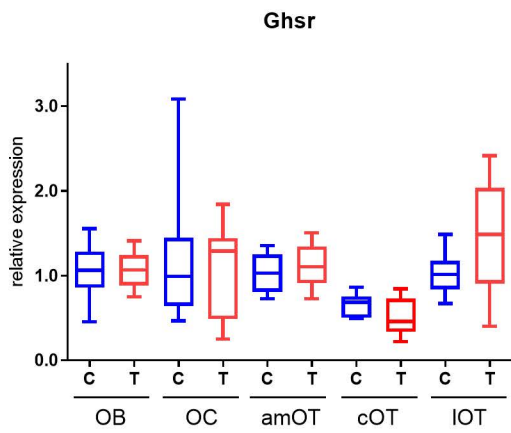
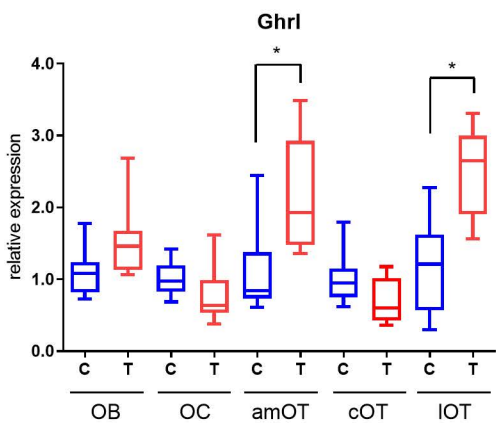
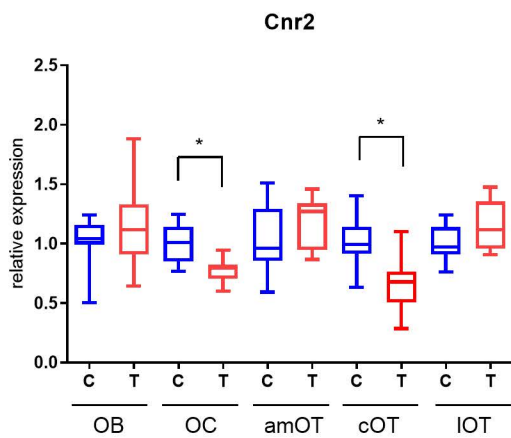
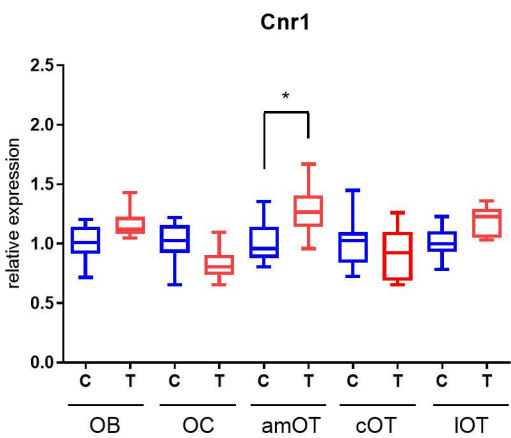
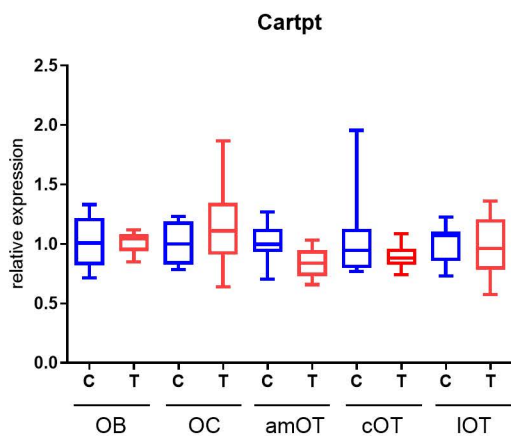
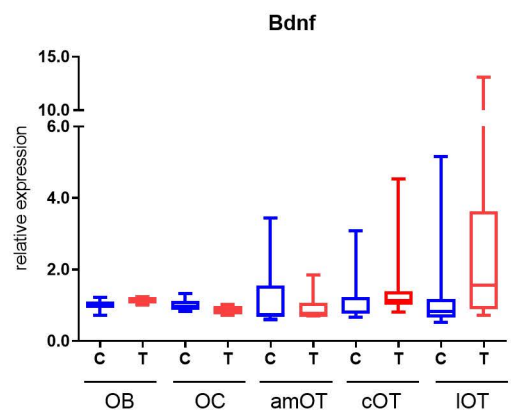
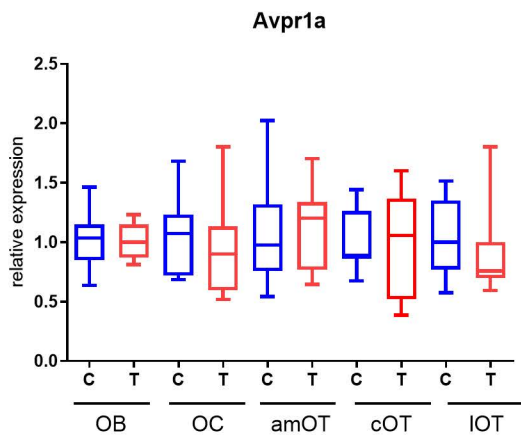
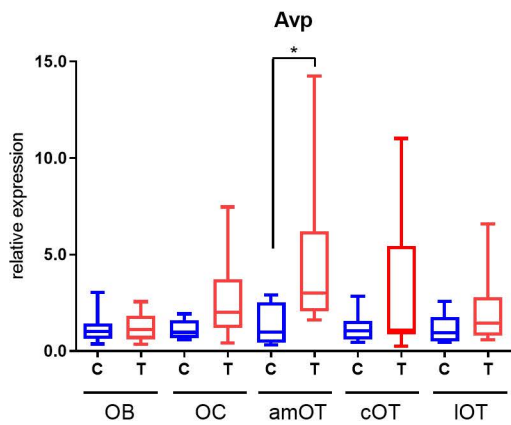
Hcrt**Hcrtr1****Hcrtr2****Lepr****Mc4r****Mme****Npy2r****Oprd1**

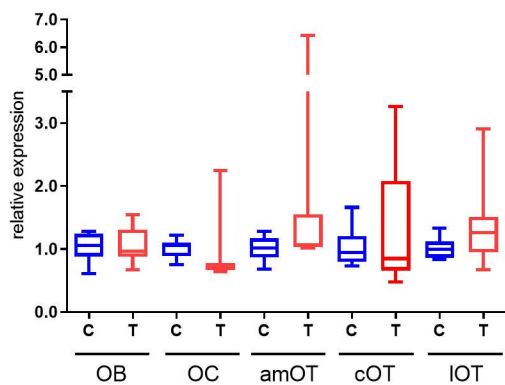
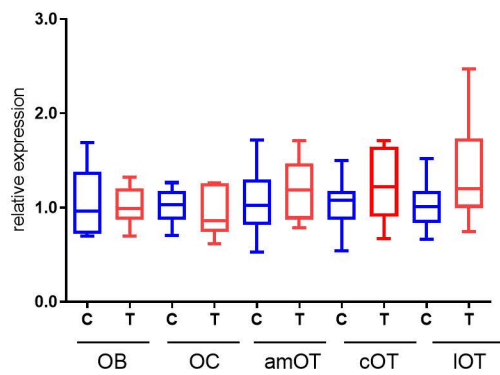
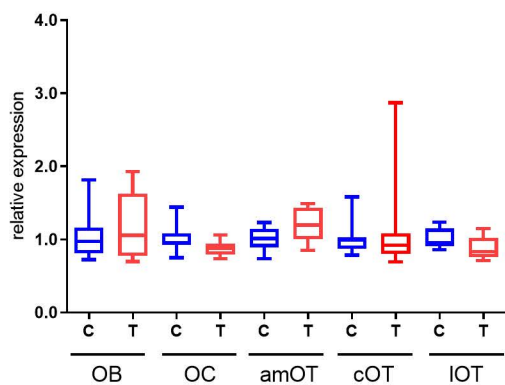
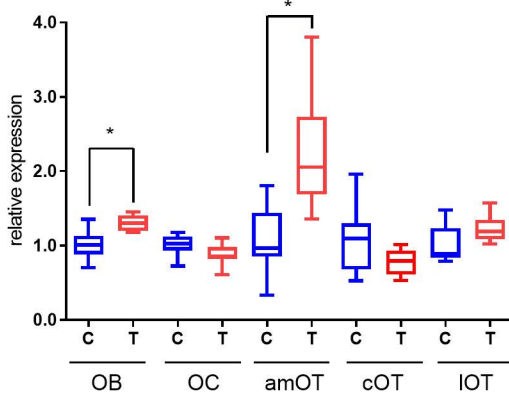
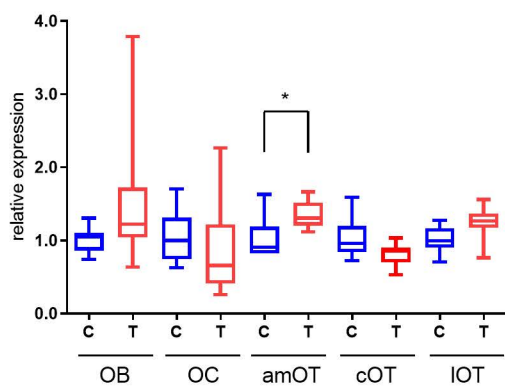
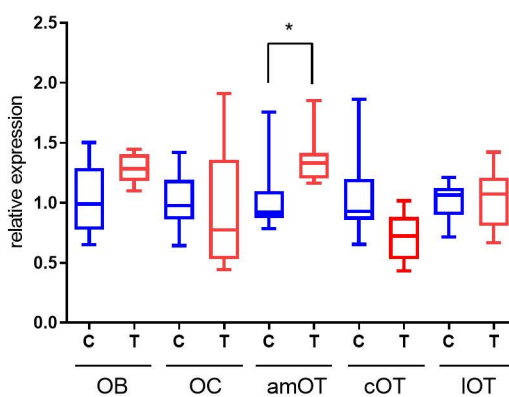
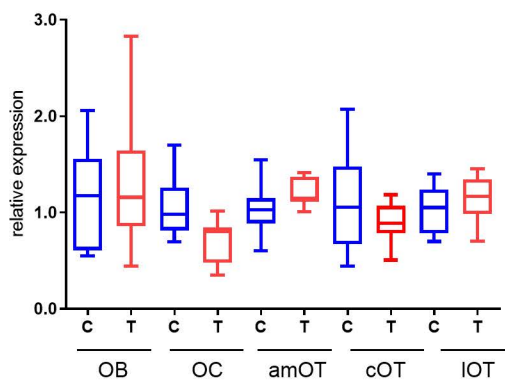
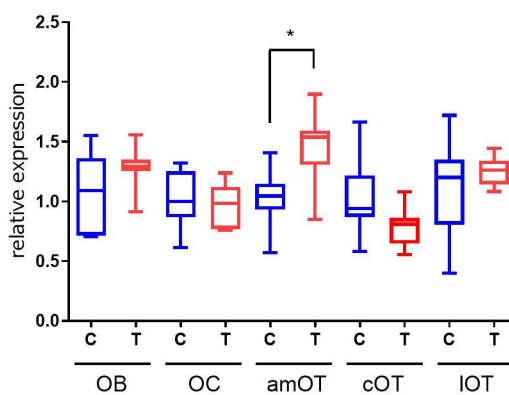


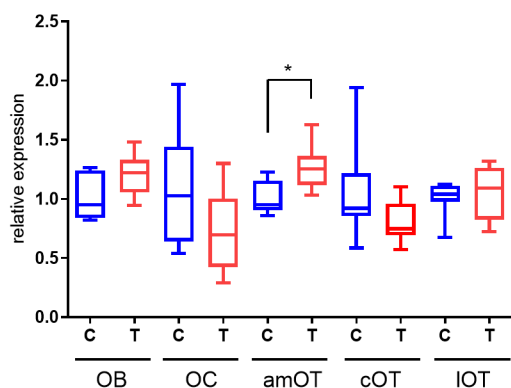
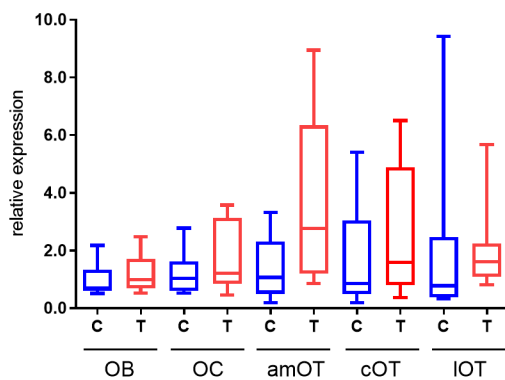
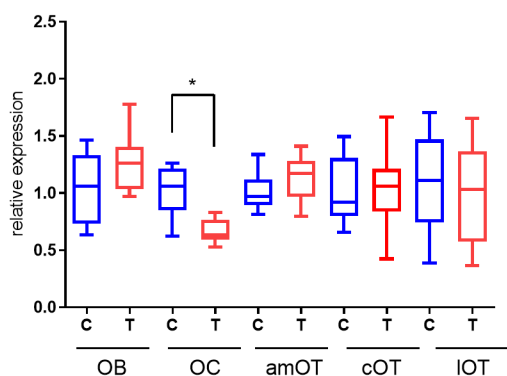
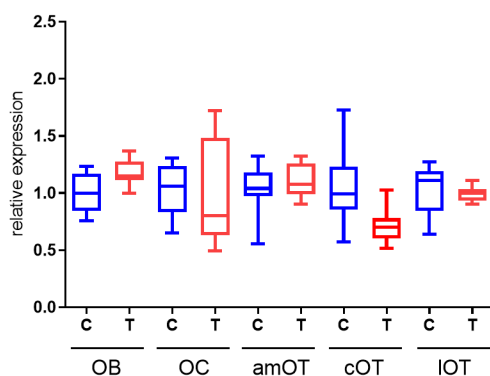
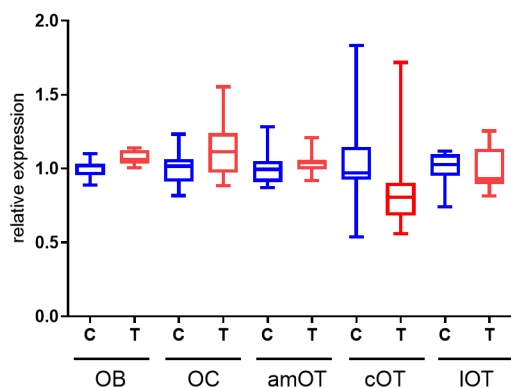
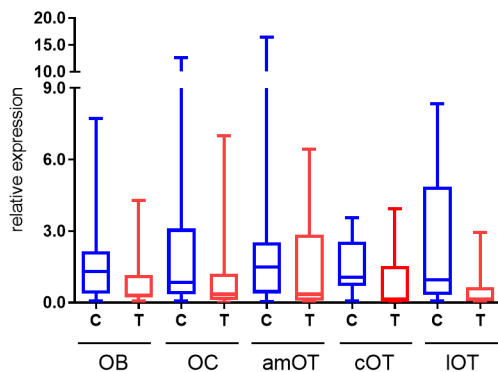
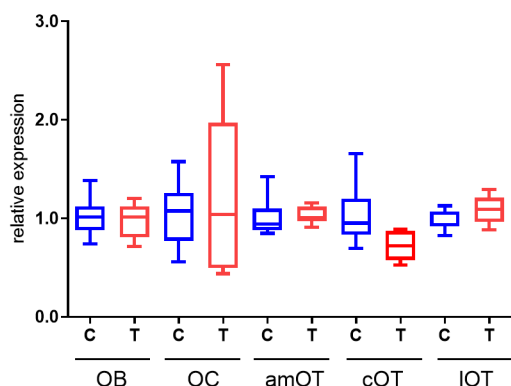
Supplementary Figure S1.

Boxplot analysis of the expression of all neuromodulatory molecules in various olfactory areas.

Boxes indicate the 25th and 75th percentiles, whiskers show the minimum and maximum values, and lines inside the boxes indicate the median. n = 7 - 9 for all molecules.



Hcrt**Hcrt1****Hcrt2****Lepr****Mc4r****Mme****Npy2r****Oprd1**

Oprk1**Oxt****Oxtr****Pdyn****Penk****Pomc****Tac1****Supplementary Figure S2.****Comparison of the expression of all neuromodulatory molecules in various olfactory areas between control and trained mice.**

The relative expression levels in control and trained mice were calculated based on the averaged ΔCt of control mice. Data for control (blue) and trained (red) mice are shown.

Boxes indicate the 25th and 75th percentiles, whiskers show the minimum and maximum values, and lines inside the boxes indicate the median.

*, $p < 0.05$ (Storey-adjusted p values).

$n = 7 - 9$ for all molecules.

Supplementary Table S2. P values for the comparisons of molecular expression between control and trained mice.

Unadjusted p values of t-test and Storey-adjusted p values are indicated.

Bold-black letters indicate $p < 0.05$. Plain-black letters indicate $0.05 < p < 0.1$ for adjusted p values. Gray letters indicate higher p values.

Upward arrows indicate increased expression and downward arrows decreased expression in trained mice.

Bold arrows with gray background represent data whose adjusted p values are below 0.05.

Plain arrows represent data whose adjusted p values are $0.05 < p < 0.1$.

	OB		OC		amOT		cOT		IOT	
	unadjusted	adjusted	unadjusted	adjusted	unadjusted	adjusted	unadjusted	adjusted	unadjusted	adjusted
Avp	0.824	0.526	0.049	0.093 ↑	0.003	0.028 ↑	0.298	0.266	0.232	0.247
Avpr1a	0.925	0.559	0.482	0.368	0.711	0.477	0.499	0.376	0.307	0.271
Bdnf	0.042	0.090 ↑	0.036	0.089 ↓	0.603	0.432	0.276	0.261	0.134	0.165
Cartpt	0.985	0.579	0.408	0.329	0.027	0.084 ↓	0.295	0.266	0.612	0.432
Cnr1	0.040	0.090 ↑	0.020	0.066 ↓	0.007	0.038 ↑	0.327	0.284	0.014	0.057 ↑
Cnr2	0.463	0.361	0.002	0.019 ↓	0.275	0.261	0.005	0.036 ↓	0.084	0.126
Ghr1	0.036	0.089 ↑	0.056	0.099 ↓	0.002	0.019 ↑	0.046	0.091 ↓	0.002	0.019 ↑
Ghsr	0.710	0.477	0.769	0.501	0.365	0.298	0.073	0.119	0.350	0.293
Hcrt	0.874	0.545	0.135	0.165	0.118	0.152	0.872	0.545	0.150	0.177
Hcrtr1	0.993	0.579	0.447	0.352	0.357	0.295	0.258	0.261	0.131	0.165
Hcrtr2	0.553	0.408	0.056	0.099 ↓	0.080	0.122	0.919	0.559	0.094	0.126
Lepr	0.002	0.019 ↑	0.092	0.126	0.001	0.019 ↑	0.117	0.152	0.042	0.090 ↑
Mc4r	0.089	0.126	0.174	0.198	0.006	0.036 ↑	0.052	0.097 ↓	0.043	0.090 ↑
Mme	0.029	0.084 ↑	0.289	0.265	0.006	0.036 ↑	0.015	0.057 ↓	0.983	0.579
Npy2r	0.577	0.421	0.015	0.057 ↓	0.058	0.100	0.482	0.368	0.330	0.284
Oprd1	0.064	0.107	0.689	0.471	0.006	0.036 ↑	0.036	0.089 ↓	0.147	0.177
Oprk1	0.037	0.089 ↑	0.080	0.122	0.003	0.028 ↑	0.090	0.126	0.726	0.479
Oxt	0.619	0.432	0.275	0.261	0.028	0.084 ↑	0.258	0.261	0.251	0.261
Oxtr	0.092	0.126	0.000	0.019 ↓	0.189	0.211	0.878	0.545	0.618	0.432
Pdyn	0.036	0.089 ↑	0.533	0.397	0.286	0.265	0.017	0.059 ↓	0.892	0.549
Penk	0.015	0.057 ↑	0.163	0.188	0.441	0.352	0.219	0.241	0.803	0.518
Pomc	0.336	0.285	0.980	0.579	0.270	0.261	0.080	0.122	0.044	0.090 ↓
Tac1	0.729	0.479	0.769	0.501	0.647	0.448	0.013	0.057 ↓	0.265	0.261

Images of immunoblots for Figure 1E

