

**Supplementary table 1: Input regions to LC-NA and LC-GABA neurons**

Region		LC-NA		LC-GABA		Diff. %	t-test p value
		%	SEM	%	SEM		
Cortex	<b>Prefrontal (OFC+AI+Limbic+Cg)</b>	<b>0.56</b>	<b>0.29</b>	<b>1.75</b>	<b>0.22</b>	<b>1.18</b>	<b>0.029</b>
	FrA	0.00	0.00	0.29	0.08	-0.29	0.000
	Motor	0.53	0.29	0.96	0.13	0.43	0.420
	Somatosensory	0.20	0.13	0.44	0.06	0.25	0.361
	Clastrum/Dorsal endopiriform	0.13	0.09	0.12	0.04	-0.01	0.793
	Retrosplenial	0.00	0.00	0.07	0.03	0.07	0.036
	Entorhinal	0.00	0.00	0.06	0.03	0.06	0.091
	Auditory	0.04	0.04	0.20	0.11	0.16	0.256
	Visual	0.01	0.01	0.04	0.02	0.03	0.548
Basal forebrain	Tubercle	0.15	0.11	0.20	0.06	0.05	0.994
	Accumbens	0.39	0.26	0.27	0.08	-0.12	0.629
	Ventral pallidum	0.11	0.11	0.28	0.10	0.17	0.577
	External globus pallidus	0.09	0.09	0.18	0.10	0.09	0.742
	Caudoputamen	0.34	0.17	0.12	0.03	-0.23	0.333
	Diagonal band	1.53	0.63	0.21	0.08	-1.32	0.163
Amygdoloid group	<b>Bed nucleus of stria terminalis</b>	<b>5.89</b>	<b>1.28</b>	<b>1.70</b>	<b>0.19</b>	<b>-4.19</b>	<b>0.046</b>
	Central amygdala	8.55	2.71	4.71	2.66	-3.85	0.761
	Basolateral amygdala	0.00	0.00	0.09	0.04	0.09	0.028
	Basomedial amygdala	0.26	0.26	0.08	0.05	-0.18	0.714
	Interstitial nuc. of anterior comm.	0.49	0.22	0.27	0.11	-0.22	0.711
Hypothal.	Preoptic nucl.	3.02	0.87	0.97	0.30	-2.05	0.137
	Paraventricular hypo. nucl.	3.50	1.50	0.07	0.06	-3.43	0.150
	<b>Lateral hypoth. + surround</b>	<b>6.71</b>	<b>1.11</b>	<b>2.66</b>	<b>0.56</b>	<b>-4.06</b>	<b>0.043</b>
	Posterior hypothalamus	0.20	0.17	0.94	0.28	0.73	0.098
	Supramammillary nucleus	0.21	0.14	0.66	0.22	0.45	0.291
Thalamus + Subthalamus	<b>Habenula</b>	<b>0.17</b>	<b>0.13</b>	<b>0.88</b>	<b>0.25</b>	<b>0.71</b>	<b>0.037</b>
	Zona incerta	1.87	0.37	3.22	0.82	1.34	0.208
	Posterior subthalamic nucl.	3.69	1.11	2.31	0.39	-1.37	0.470
	Thalamus (other)	0.28	0.17	0.43	0.22	0.14	0.751
	<b>Suprafascicular thalamic nucl.</b>	<b>0.04</b>	<b>0.04</b>	<b>1.64</b>	<b>0.54</b>	<b>1.60</b>	<b>0.001</b>
Midbrain	Substantia nigra	1.15	0.54	4.02	1.11	2.87	0.053
	Ventral tegmental area	0.49	0.23	0.70	0.15	0.21	0.473
	Deep mesencephalic nucleus	5.15	1.49	5.76	1.20	0.61	0.852
	Occulomotor group	3.77	1.14	4.05	0.63	0.28	0.851
	Red nucleus	0.07	0.07	0.37	0.16	0.29	0.217
	Interpeduncular nucleus	0.87	0.29	0.67	0.19	-0.21	0.492
	Periaqueductal gray	4.38	0.95	3.67	0.19	-0.71	0.604
	Cuneiform nucleus	0.00	0.00	0.50	0.37	0.50	0.167
Colliculus	<b>Superior colliculus</b>	<b>2.26</b>	<b>0.61</b>	<b>10.70</b>	<b>2.77</b>	<b>8.44</b>	<b>0.009</b>
	Inferior colliculus	2.86	1.29	1.59	0.70	-1.27	0.407
Pons	Pontine reticular nucleus	15.03	4.66	2.22	0.96	-12.81	0.105
	Prepositus nucleus	2.56	0.83	4.39	1.72	1.83	0.517
Medulla	<b>Intermediate reticular nucleus</b>	<b>0.79</b>	<b>0.58</b>	<b>10.21</b>	<b>3.46</b>	<b>9.42</b>	<b>0.003</b>
	Gigantocellular reticular nucleus	7.55	2.00	8.56	1.96	1.01	0.443
	<b>Spinal trigeminal nucleus</b>	<b>1.31</b>	<b>0.38</b>	<b>3.32</b>	<b>0.52</b>	<b>2.01</b>	<b>0.008</b>
Cerebellu	Cerebellum/Purkinje	4.26	1.68	5.93	1.93	1.66	0.333
	Cerebellum/Deep nucleus	7.77	2.31	6.74	0.70	-1.03	0.670
	Other	0.32	0.21	1.02	0.36	0.69	0.287

Regions excluded from analysis: Tegmentum (PPTg, MiTg, LDTg, PDTg), Raphe, Parabrachial nucleus, Central gray of the pons, Vestibular nucleus. N= 8 and 4 mice for LC-NA and LC-GABA conditions respectively.