

**Supplementary Table 1.**

Number of Outliers Removed per Group

Behavior or Region	aCSF			CRF		
	Male	Diestrus	Proestrus	Male	Diestrus	Proestrus
Head shakes	0	1	1	0	1	0
Burying	0	0	0	1	0	0
Grooming	0	1	0	0	0	0
Anterior Cingulate Cortex (ACC)	0	0	1	1	0	0
Prelimbic Cortex (PL)	1	1	0	0	0	1
Infralimbic Cortex (IL)	1	0	0	0	0	0
Nucleus Accumbens (NAc) Shell	1	0	0	1	0	0
Nucleus Accumbens (Nac) Core	1	0	0	0	0	0
Lateral Septum (LS)	1	1	0	0	0	1
Medial Septum (MS)	1	1	0	0	0	1
anterodorsal Bed Nucleus of the Stria Terminalis (adBNST)	0	1	0	0	0	0
oval nucleus Bed Nucleus of the Stria Terminalis (oBNST)	0	0	0	0	0	0
Basal Nucleus of Meynert (BN)	1	0	0	0	1	0
Paraventricular Nucleus (PVN)	0	0	0	0	0	0
Central Amygdala (CeA)	1	0	1	1	0	0
Basolateral Amygdala (BLA)	0	1	0	1	0	0
Hippocampus (HPC)	0	0	0	0	0	0
dorsomedial Periaqueductal Gray (dmPAG)	0	0	0	1	0	0
lateral subdivisions of the Periaqueductal Gray (lPAG)	0	1	0	1	0	1
Pedunculopontine Tegmental Nucleus (PPTg)	0	1	1	1	0	1
ventromedial Dorsal Raphe (vmDR)	0	1	0	1	0	0
lateral wing Dorsal Raphe (lwDR)	0	0	0	0	0	0
Laterodorsal Tegmental Nucleus (LDTg)	0	0	1	1	0	0
Locus Coeruleus (LC)	1	1	0	0	0	0

Supplementary Table 2

Brain Region Correlated with Grooming	Correlations						Correlation Comparisons					
	Males		Diestrus		Females		Male vs. Diestrus		Male vs. Proestrus		Diestrus vs. Proestrus	
	r-value	p-value	r-value	p-value	r-value	p-value	z-score	p-value	z-score	p-value	z-score	p-value
ACC	-0.320	0.401	-0.160	0.706	0.144	0.733	-0.282	0.778	-0.788	0.431	-0.484	0.628
PL	-0.408	0.213	-0.670	0.145	0.199	0.705	0.558	0.577	-0.938	0.348	-1.241	0.215
IL	-0.351	0.289	-0.635	0.176	0.848	<b>0.016</b>	0.564	0.573	-2.639	<b>0.008</b>	-2.616	<b>0.009</b>
NAc Shell	-0.292	0.412	-0.109	0.780	0.541	0.133	-0.344	0.731	-1.630	0.103	-1.239	0.215
NAc Core	-0.359	0.278	0.205	0.597	0.662	0.052	-1.080	0.280	-2.171	<b>0.030</b>	-1.020	0.308
LS	0.367	0.240	0.218	0.573	-0.482	0.189	0.310	0.756	1.727	0.084	1.293	0.196
MS	0.350	0.264	0.079	0.852	-0.149	0.725	0.514	0.607	0.925	0.355	0.363	0.717
adBNST	-0.260	0.573	-0.093	0.843	0.098	0.802	-0.246	0.806	-0.565	0.572	-0.296	0.767
oBNST	0.133	0.831	-0.683	0.134	0.428	0.338	1.062	0.288	-0.373	0.709	-1.692	0.091
BN	0.582	0.060	-0.213	0.582	0.395	0.229	1.634	0.102	0.496	0.620	-1.175	0.240
PVN	-0.572	0.052	-0.023	0.949	0.517	0.189	-1.245	0.213	-2.194	<b>0.028</b>	-1.018	0.309
CeA	-0.273	0.390	0.379	0.280	-0.200	0.555	-1.348	0.178	-0.159	0.874	1.164	0.244
BLA	-0.579	<b>0.049</b>	0.347	0.327	-0.059	0.863	-2.029	<b>0.042</b>	-1.239	0.215	0.813	0.416
HPC	0.120	0.778	-0.341	0.574	0.162	0.729	0.569	0.570	-0.064	0.949	-0.599	0.549
dmPAG	-0.459	0.182	-0.093	0.843	0.632	0.068	-0.643	0.520	-2.232	<b>0.026</b>	-1.299	0.194
IPAG	-0.020	0.959	-0.050	0.915	0.716	<b>0.030</b>	0.047	0.963	-1.592	0.111	-1.471	0.141
vmDR	-0.069	0.850	-0.262	0.570	0.058	0.892	0.318	0.750	-0.217	0.828	-0.487	0.626
LDTg	-0.275	0.414	-0.405	0.320	0.590	0.095	0.258	0.796	-1.776	0.076	-1.827	0.068
LC	-0.068	0.843	0.202	0.665	-0.009	0.984	-0.445	0.656	-0.104	0.917	0.318	0.751







Supplementary Table 6

z-scores comparing CRF-treated males vs. diestrus females		PL	IL	NAc Shell	NAc Core	LS	MS	adBNST	oBNST	BN	PVN	CeA	BLA	HPC	dmPAG	IPAG	vmDR	LDTg	LC
ACC	z-score p-value	0.492 0.622	-0.052 0.959	-0.224 0.823	0.652 0.514	-0.107 0.915	1.222 0.222	0.139 0.889	0.120 0.904	0.387 0.699	-0.641 0.521	0.320 0.749	0.161 0.872	-0.685 0.493	-0.799 0.424	-1.471 0.141	0.222 0.824	-1.828 0.068	-0.680 0.497
PL	z-score p-value		1.252 0.211	0.454 0.650	0.666 0.505	0.735 0.462	1.115 0.265	1.015 0.310	-1.258 0.208	0.197 0.844	0.324 0.746	1.157 0.247	0.643 0.520	0.901 0.367	-0.868 0.386	-1.112 0.266	-0.450 0.653	0.802 0.422	0.872 0.383
IL	z-score p-value			0.852 0.394	0.693 0.489	0.527 0.598	0.498 0.618	0.828 0.408	-1.038 0.299	0.603 0.547	1.259 0.208	0.486 0.627	0.551 0.581	1.911 0.056	-0.149 0.882	-0.505 0.614	0.136 0.891	0.586 0.558	0.878 0.380
NAc Shell	z-score p-value				-0.226 0.821	1.337 0.181	1.186 0.236	1.809 0.070	-0.545 0.586	0.223 0.824	0.697 0.486	0.870 0.384	-0.434 0.665	0.409 0.683	-1.487 0.137	-0.577 0.564	0.155 0.877	1.037 0.300	0.149 0.881
NAc Core	z-score p-value					-0.033 0.974	-0.885 0.376	-0.788 0.431	-0.845 0.398	-1.180 0.238	0.785 0.432	-0.425 0.671	-0.312 0.755	-0.005 0.996	0.556 0.578	1.782 0.075	1.170 0.242	0.342 0.733	0.227 0.820
LS	z-score p-value						-0.553 0.580	-1.040 0.298	0.346 0.730	1.329 0.184	2.024 0.043	-2.598 0.009	-1.986 0.047	-0.631 0.528	0.446 0.655	0.377 0.706	1.709 0.087	0.932 0.351	-0.071 0.943
MS	z-score p-value							-1.040 0.298	-0.135 0.893	0.559 0.576	1.597 0.110	-1.542 0.123	-0.758 0.448	-0.514 0.607	1.274 0.203	0.038 0.970	2.367 0.018	-0.307 0.759	-0.242 0.809
adBNST	z-score p-value								-1.229 0.219	-0.610 0.542	2.865 0.004	-1.412 0.158	0.119 0.905	-0.338 0.735	1.473 0.141	-0.080 0.936	1.524 0.128	1.256 0.209	0.204 0.838
oBNST	z-score p-value									-0.382 0.702	-0.476 0.634	1.424 0.155	-0.792 <sup>a</sup> 0.429		-0.149 0.882	0.923 0.356	0.024 0.981	-0.751 0.453	0.112 0.911
BN	z-score p-value										0.081 0.935	-0.253 0.800	0.369 0.712	-0.968 0.333	-0.133 0.894	0.522 0.602	-0.562 0.574	-0.209 0.834	-0.283 0.777
PVN	z-score p-value											1.556 0.120	-0.080 0.936	1.479 0.139	0.040 0.968	-0.733 0.464	-1.144 0.253	1.886 0.059	1.360 0.174
CeA	z-score p-value												-0.938 0.348	-2.027 0.043	-0.446 0.655	-0.491 0.623	0.846 0.398	0.170 0.865	-0.706 0.480
BLA	z-score p-value													-0.849 0.396	0.022 0.983	-1.107 0.268	1.400 0.161	0.462 0.644	0.379 0.705
HPC	z-score p-value														0.860 0.390	0.614 0.539	0.007 0.994	0.267 <sup>a</sup> 0.790	
dmPAG	z-score p-value															-0.342 0.732	-0.651 0.515	0.848 0.397	-0.098 0.922
IPAG	z-score p-value																-1.294 0.196	0.472 0.637	0.817 0.414
vmDR	z-score p-value																	0.068 0.946	-1.702 0.089
LDTg	z-score p-value																		0.221 0.825

<sup>a</sup> Insufficient data for analysis

Supplementary Table 7

Z-scores comparing CRF-treated males vs. proestrus females		PL	IL	Nac Shell	Nac Core	LS	MS	adBNST	oBNST	BN	PVN	CeA	BLA	HPC	dmPAG	IPAG	vmDR	LDTg	LC
ACC	z-score p-value	1.291 0.197	-0.055 0.956	-1.296 0.195	-1.187 0.235	-0.120 0.905	-1.184 0.236	-1.300 0.193	0.444 0.657	-0.833 0.405	0.670 0.503	-0.187 0.851	-0.498 0.618	-0.333 0.739	-0.345 0.730	-1.642 0.101	-0.513 0.608	-0.956 0.339	-1.276 0.202
PL	z-score p-value		2.340 0.019	3.276 0.001	1.267 0.205	0.653 0.513	1.018 0.309	2.125 0.034	-1.082 0.279	-0.754 0.451	-0.463 0.643	0.038 0.970	2.347 0.019	-0.406 0.685	-0.367 0.713	-1.269 <sup>a</sup> 0.204		-0.335 0.737	-0.275 0.783
IL	z-score p-value			0.434 0.664	-0.705 0.481	1.652 0.098	0.267 0.790	1.058 0.290	-1.697 0.090	-2.367 0.018	0.783 0.434	-1.653 0.098	0.543 0.587	-0.554 0.580	-1.255 0.210	-1.929 0.054	-0.094 0.925	-0.683 0.495	-0.262 0.794
Nac Shell	z-score p-value				-1.084 0.278	1.438 0.150	0.189 0.850	-0.266 0.790	-0.229 0.819	-0.107 0.915	0.728 0.466	0.548 0.584	-1.092 0.275	-0.128 0.898	-1.133 0.257	-2.088 0.037	-0.700 0.484	-0.222 0.824	-0.941 0.347
Nac Core	z-score p-value					0.577 0.564	-0.289 0.772	-1.296 0.195	-0.413 0.680	-0.727 0.467	0.606 0.544	0.091 0.927	-0.655 0.513	0.180 0.857	-0.709 0.479	-1.305 0.192	0.246 0.806	-0.094 0.925	-0.314 0.753
LS	z-score p-value						0.293 0.769	0.078 0.937	0.115 0.909	1.278 0.201	0.519 0.604	0.930 0.352	-0.636 0.524	0.623 0.533	1.482 0.138	1.411 0.158	0.633 0.527	1.084 0.824	0.222 0.824
MS	z-score p-value							-0.677 0.498	-0.039 0.969	0.311 0.756	0.864 0.388	-0.431 0.666	-1.607 0.108	0.719 0.472	0.918 0.358	-0.478 0.633	-0.320 0.749	0.163 0.870	-0.545 0.586
adBNST	z-score p-value								-0.948 0.343	-0.811 0.417	2.804 0.005	-1.133 0.257	-0.709 0.478	-0.720 0.472	0.088 0.930	-1.520 0.128	0.549 0.583	1.394 0.163	-1.545 0.122
oBNST	z-score p-value									-0.891 0.373	-0.175 0.861	0.580 0.562	-0.866 <sup>a</sup> 0.386		-0.994 0.320	-0.649 0.516	0.210 0.834	-1.379 0.168	-0.962 0.336
BN	z-score p-value										-0.126 0.900	-0.556 0.578	0.142 0.887	-0.821 0.412	-1.040 0.298	-0.573 0.567	-0.380 0.704	-1.381 0.167	-0.288 0.774
PVN	z-score p-value											0.862 0.388	0.652 0.514	1.891 0.059	0.673 0.430	-0.789 0.430	-0.679 0.497	0.767 0.443	0.555 0.579
CeA	z-score p-value												-0.242 0.809	-2.762 0.006	-2.297 0.022	-0.801 0.423	-0.156 0.876	-0.577 0.564	-0.854 0.393
BLA	z-score p-value													-0.431 0.667	-0.114 0.909	-1.031 0.303	-0.403 0.687	0.081 0.936	-1.716 0.086
HPC	z-score p-value														-0.231 0.817	-0.303 0.762	-0.499 0.618	0.448 0.654	0.033 0.973
dmPAG	z-score p-value															-1.342 0.180	-0.030 0.976	0.361 0.718	-0.567 0.570
IPAG	z-score p-value																-1.833 0.067	-2.104 0.035	-0.673 0.501
vmDR	z-score p-value																	-1.381 0.167	-2.871 0.004
LDTg	z-score p-value																		-0.384 0.701

<sup>a</sup> Insufficient data for analysis

Supplementary Table 8

Z-scores comparing CRF-treated diestrus vs. proestrus females		PL	IL	NAc Shell	NAc Core	LS	MS	adBNST	oBNST	BN	PVN	CeA	BLA	HPC	dmPAG	IPAG	vmDR	LDTg	LC
ACC	z-score p-value	0.747 0.455	0.001 0.999	-1.017 0.309	-1.679 0.093	-0.027 0.978	-2.242 0.025	-1.293 0.196	0.324 0.746	-1.294 0.196	1.224 0.221	-0.507 0.612	-0.659 0.510	0.352 0.725	0.372 0.710	-0.280 0.780	-0.668 0.504	0.692 0.489	-0.558 0.577
PL	z-score p-value		0.902 0.367	2.578 0.010	0.617 0.537	0.169 0.866	0.055 0.956	0.488 0.626	0.176 0.860	-0.824 0.410	-0.665 0.506	-0.928 0.353	1.440 0.150	-1.034 0.301	0.264 0.791	0.264 0.707	-0.376 <sup>a</sup>	-0.830 0.406	-0.868 0.386
IL	z-score p-value			-0.362 0.718	-1.211 0.226	1.040 0.298	-0.192 0.848	-0.079 0.937	-0.659 0.510	-2.558 0.011	-0.495 0.621	-1.756 0.079	-0.053 0.958	-1.948 0.051	-0.925 0.355	-1.192 0.233	-0.177 0.859	-1.036 0.300	-0.938 0.348
NAc Shell	z-score p-value				-0.826 0.409	0.177 0.859	-0.910 0.363	-2.075 0.038	0.295 0.768	-0.339 0.735	0.107 0.915	-0.311 0.756	-0.658 0.511	-0.465 0.642	0.420 0.675	-1.230 0.219	-0.765 0.444	-1.150 0.250	-0.933 0.351
NAc Core	z-score p-value					0.568 0.570	0.528 0.597	-0.508 0.611	0.393 0.695	0.487 0.626	-0.082 0.935	0.497 0.619	-0.330 0.741	0.160 0.873	-1.084 0.278	-2.754 0.006	-0.801 0.423	-0.387 0.699	-0.476 0.634
LS	z-score p-value						0.723 0.470	1.190 0.234	-0.319 0.750	-0.111 0.912	-1.049 0.294	3.300 0.001	1.262 0.207	1.120 0.263	0.908 0.364	0.953 0.340	-1.073 0.283	0.075 0.940	0.247 0.805
MS	z-score p-value							0.435 0.664	0.117 0.907	-0.230 0.818	-0.569 0.569	1.001 0.317	-0.765 0.444	1.020 0.308	-0.226 0.821	-0.490 0.624	-2.297 0.022	0.400 0.689	-0.256 0.798
adBNST	z-score p-value								0.393 0.694	-0.106 0.915	0.152 0.879	0.414 0.679	-0.918 0.359	-0.187 0.851	-1.417 0.156	-0.956 0.339	-1.136 0.256	-0.118 0.906	-1.487 0.137
oBNST	z-score p-value									-0.553 0.580	0.190 0.849	-1.044 0.297	-0.072 0.943	0.277 0.782	-0.628 0.530	-1.779 0.075	0.140 0.888	-0.556 0.578	-1.074 0.283
BN	z-score p-value										-0.196 0.845	-0.272 0.786	-0.244 0.808	0.296 0.767	-0.838 0.402	-1.145 0.252	0.204 0.838	-1.107 0.268	0.013 0.990
PVN	z-score p-value											-0.536 0.592	0.705 0.496	0.681 0.565	0.576 0.565	-0.111 0.911	0.200 0.842	-0.788 0.431	-0.615 0.539
CeA	z-score p-value												0.705 0.481	-0.181 0.856	-1.609 0.108	-0.225 0.822	-0.955 0.340	-0.695 0.487	-0.081 0.936
BLA	z-score p-value													0.487 0.626	-0.123 0.902	0.183 0.855	-1.711 0.087	-0.372 0.710	-1.852 0.064
HPC	z-score p-value														-1.006 0.314	-0.861 0.389	-0.361 0.718	0.008 <sup>a</sup> 0.994	
dmPAG	z-score p-value															-0.796 0.426	0.600 0.549	-0.512 0.608	-0.376 0.707
IPAG	z-score p-value																-0.330 0.741	-2.289 0.022	-1.325 0.185
vmDR	z-score p-value																	-1.311 0.190	-0.851 0.395
LDTg	z-score p-value																		-0.542 0.588

<sup>a</sup> Insufficient data for analysis