

Supplemental Table 1. Genes Regulated in the VTA by Morphine or Cocaine

GENES DOWNREGULATED BY MORPHINE			
Ref Seq	Gene Symbol	Fold Change	p adj. value
NM_024283	1500015O10Rik	-1.41	0.05
NM_027510	3830403N18Rik	-1.30	1.82E-03
NM_009610	Actg2	-1.47	9.47E-12
NM_134149	Al837181	-1.02	0.03
NM_007442	Alx4	-1.41	2.83E-03
NM_007504	Atp2a1	-0.98	0.01
NM_016675	Cldn2	-1.82	2.99E-03
NM_007884	Epyc	-0.96	0.03
NM_010262	Gbx2	-2.19	4.70E-07
NR_003596	Gm6455	-1.13	2.13E-04
NM_010433	Hipk2	-0.85	2.17E-04
NM_016671	Il27ra	-0.93	4.52E-03
NM_011832	Insrr	-1.33	3.95E-05
NM_134110	Kcne2	-2.65	3.01E-03
NM_013823	Kl	-1.32	0.01
NM_014194	Klra7	-1.70	0.04
NM_001025565	Lhx9	-1.42	0.03
NM_178440	Myo1g	-0.91	1.57E-03
NM_001011764	Olf106	-1.74	0.03
NM_011103	Prkcd	-1.27	2.08E-08
NM_053256	Pth2	-2.56	4.12E-03
NM_019511	Ramp3	-1.26	4.24E-03
NM_173184	Rln3	-1.31	3.12E-03
NM_013665	Shox2	-1.47	2.11E-03
NM_178387	Spata18	-1.46	2.37E-03
NM_027029	Spata3	-1.45	9.34E-03
NM_080451	Synpo2	-0.94	0.01
NM_177363	Tarm1	-1.43	0.02
NM_001142924	Tcf7l2	-1.04	8.52E-05
NM_026469	Tex13a	-1.66	0.03
NM_011618	Tnnt1	-1.26	4.43E-03
NM_022312	Tnr	-0.72	6.35E-03
NM_013697	Ttr	-4.04	6.92E-158
NM_172515	Zbbx	-1.30	1.63E-03
NM_009573	Zic1	-0.84	0.04
GENES UPREGULATED BY MORPHINE			
Ref Seq	Gene Symbol	Fold Change	p adj. value
NM_025818	1200014J11Rik	0.64	0.03
NM_028096	2010300C02Rik	1.50	2.01E-19
NM_029809	2310014L17Rik	2.19	1.05E-33
NR_027901	2900060B14Rik	1.76	5.11E-05
NM_178399	3110035E14Rik	0.73	0.02
NM_001163356	6530418L21Rik	0.81	0.04
NM_175398	6530418L21Rik	0.80	0.04

Ref Seq	Gene Symbol	Fold Change	p adj. value
NM_033268	Actn2	1.31	1.64E-05
NM_009630	Adora2a	4.20	1.07E-80
NM_007418	Adra2c	1.01	1.57E-03
NM_001101471	Akap5	1.14	8.63E-09
NM_027496	Ankrd33b	2.05	1.77E-12
NM_183173	Ankrd43	1.07	3.67E-05
NM_025404	Arl4d	0.86	0.01
NM_028755	Arpp21	3.17	3.65E-134
NM_007492	Arx	1.84	4.09E-04
NM_130862	Baiap2	1.43	7.64E-22
NR_003364	BC018473	2.88	4.20E-132
NM_016707	Bcl11a	0.92	0.02
NM_021399	Bcl11b	2.41	1.27E-34
NM_009792	Camk2a	0.98	4.49E-06
NM_145621	Camkv	0.83	1.27E-03
NM_178396	Car12	1.04	0.01
NM_013488	Cd4	2.11	9.47E-12
NM_033567	Cecr6	0.99	6.01E-03
NM_007698	Chrm1	1.61	7.88E-16
NM_007699	Chrm4	1.93	7.00E-15
NM_009933	Col6a1	1.23	3.69E-08
NM_146223	Cplx3	1.97	7.96E-07
NM_153166	Cpne5	1.02	6.05E-06
NM_016669	Crym	3.55	8.05E-67
NM_183315	Ctxn1	1.05	4.80E-07
NM_172928	Dclk3	1.51	4.15E-14
NM_001013741	Ddn	3.58	8.39E-154
NM_010054	Dlx2	2.67	1.25E-04
NM_198854	Dlx5	3.73	2.03E-06
NM_010057	Dlx6	2.40	1.55E-06
NR_015388	Dlx6os1	3.36	4.62E-08
NM_010076	Drd1a	3.33	2.56E-36
NM_018781	Egr3	2.78	4.11E-21
NM_020596	Egr4	1.82	4.54E-04
NM_001164225	Fbxl16	0.86	3.77E-04
NM_001081243	Filip1	1.03	0.01
NM_001160112	Foxg1	3.03	3.33E-05
NM_008072	Gabrd	1.58	1.71E-08
NM_010266	Gda	1.70	1.14E-20
NM_001081971	Gm1337	7.20	5.93E-103
NR_002173	Gm5775	1.38	4.47E-08
NM_001101584	Gm6813	0.74	5.43E-04
NM_001038655	Gng7	1.89	6.69E-33
NM_001146330	Gpr52	1.30	4.30E-03
NM_199058	Gpr6	3.44	2.15E-35
NM_001146005	Gpr77	1.49	5.71E-04
NM_022427	Gpr88	3.97	8.90E-91
NM_001130419	Hpca	0.88	1.98E-04

Ref Seq	Gene Symbol	Fold Change	p adj. value
NM_174998	Hpcal4	0.86	1.42E-04
NM_007545	Hrk	0.93	0.01
NM_008319	Icam5	2.09	3.12E-24
NM_001161541	Islr2	1.16	3.63E-05
NM_146125	Itpka	2.42	9.49E-26
NM_010601	Kcnh3	2.70	5.54E-27
NM_030716	Kcnp2	1.22	1.67E-03
NM_008427	Kcnj4	4.33	3.27E-80
NM_026200	Kcnv1	1.33	1.56E-04
NM_134112	Kctd1	0.75	0.05
NM_201255	Krt9	2.91	1.07E-18
NM_001083125	Lhx6	1.29	0.03
NM_001013758	Lingo3	0.77	0.03
NM_201529	Lmo7	0.87	5.47E-03
NM_008509	Lpl	0.87	0.02
NM_001111140	Lrrc10b	3.13	6.48E-27
NM_028977	Lrrc17	0.97	5.74E-09
NM_199364	Lzts1	1.44	1.70E-06
NM_001159569	Meis2	1.01	5.83E-06
NR_030456	Mir685	1.08	0.03
NM_010865	Myoc	2.20	2.92E-10
NM_001111314	Ngef	1.00	2.84E-06
NM_010916	Nhlh1	1.57	0.05
NM_023456	Npy	1.95	1.37E-08
NM_022029	Nrgn	1.72	1.90E-28
NM_145598	Nxn1	2.11	6.13E-24
NM_146832	Olf134	3.95	4.20E-03
NM_153565	Pcsk9	1.42	0.04
NM_011866	Pde10a	1.17	6.31E-12
NM_008800	Pde1b	0.69	0.02
NM_001008548	Pde2a	0.89	1.31E-04
NM_018863	Pdyn	2.25	1.07E-13
NM_001002927	Penk	1.74	8.09E-24
NM_001005748	Phactr1	0.80	1.05E-03
NM_012045	Pla2g2f	1.83	1.82E-04
NM_020568	Plin4	0.87	4.02E-03
NM_152804	Plk2	0.80	3.92E-03
NM_144828	Ppp1r1b	2.35	2.05E-164
NM_172498	Ptk2b	2.04	1.35E-46
NM_139147	Rab40b	1.20	2.24E-03
NM_011243	Rarb	0.93	0.01
NM_029182	Rasd2	1.21	9.74E-13
NM_011246	Rasgrp1	1.18	5.10E-09
NM_080726	Rem2	1.54	6.40E-06
NM_016758	Rgs14	1.96	1.75E-18
NM_011268	Rgs9	1.34	1.93E-11
NM_145495	Rin1	1.96	6.71E-17
NR_001460	Rmrp	1.18	1.51E-11

Ref Seq	Gene Symbol	Fold Change	p adj. value
NR_002865	Rnu11	2.85	6.84E-14
NR_004432	Rnu12	2.12	7.63E-67
NR_024200	Rnu1b2	1.90	3.58E-71
NR_002142	Rpph1	1.24	5.81E-12
NM_001033212	Rprml	2.51	3.45E-30
NM_009107	Rxrg	0.87	0.03
NM_011681	Scgb1a1	1.25	0.04
NM_027997	Serpina9	1.58	3.82E-05
NM_001161849	Sgk1	1.19	2.08E-14
NM_172966	Sh3rf2	2.71	2.65E-13
NM_182993	Slc17a7	2.17	4.69E-49
NM_029529	Slc35d3	1.32	1.11E-05
NR_029412	Snora16a	1.77	0.01
NR_028571	Snora17	1.57	0.04
NR_028078	Snora21	2.20	9.43E-05
NR_033168	Snora28	2.69	1.97E-14
NR_028079	Snora3	1.58	0.01
NR_002898	Snora65	1.74	1.36E-05
NR_002901	Snora68	1.76	2.56E-03
NR_002899	Snora70	2.27	1.25E-10
NR_002905	Snora74a	1.64	5.11E-08
NR_028515	Snora78	1.45	0.05
NR_028546	Snora7a	1.56	8.60E-05
NR_030703	Snord104	1.84	1.79E-23
NR_028548	Snord16a	2.36	1.76E-17
NR_030762	Snord17	1.24	1.62E-03
NR_004445	Snord22	1.35	2.66E-08
NR_001277	Snord33	1.66	3.47E-03
NR_028550	Snord49a	2.09	3.96E-10
NR_030704	Snord55	1.36	5.34E-04
NR_002903	Snord61	3.55	0.01
NR_028553	Snord67	1.96	1.63E-04
NR_028542	Snord8	1.82	8.30E-09
NR_028282	Snord83b	1.66	9.08E-04
NR_028555	Snord89	1.46	0.03
NM_030176	Spata2L	1.11	3.05E-03
NM_009215	Sst	0.81	5.80E-04
NM_001109975	Synpo	1.05	9.01E-04
NM_001163032	Synpr	0.89	5.66E-04
NM_009311	Tac1	1.10	8.99E-06
NM_009322	Tbr1	2.89	3.02E-22
NM_001002267	Tmem158	1.32	9.38E-12
NM_001033334	Tmem90a	0.85	2.51E-03
NM_021278	Tmsb4x	0.60	0.01
NR_027885	Vaultrc5	2.20	2.51E-19
NM_011703	Vipr1	1.22	0.01
NM_011716	Wfs1	0.88	4.58E-04
NM_001167861	Wipf3	0.96	1.85E-04

Ref Seq	Gene Symbol	Fold Change	p adj. value
NM_001099328	Zfp831	1.77	1.91E-06

GENES DOWNREGULATED BY COCAINE

Ref Seq	Gene Symbol	Fold Change	p adj. value
NR_027901	2900060B14Rik	-3.34	1.33E-04
NR_003364	BC018473	-2.09	9.39E-16
NM_008072	Gabrd	-1.36	2.68E-03
NM_010262	Gbx2	-1.72	4.92E-05
NM_008117	Gh	-1.97	4.29E-15
NM_175654	Hist1h4d	-2.52	0.02
NM_134110	Kcne2	-2.12	0.01
NM_001110227	Kcnj13	-1.66	0.03
NM_013823	Kl	-1.35	0.01
NR_030456	Mir685	-1.87	1.33E-03
NM_011103	Prkcd	-1.12	6.89E-06
NM_019511	Ramp3	-1.69	4.51E-07
NM_173184	Rln3	-1.85	2.15E-09
NR_001460	Rmrp	-2.21	5.28E-25
NR_004432	Rnu12	-2.21	1.68E-08
NR_024200	Rnu1b2	-1.80	2.86E-17
NR_002142	Rpph1	-1.72	1.38E-10
NR_028576	Scarna13	-2.18	1.61E-04
NM_182993	Slc17a7	-1.44	3.77E-07
NR_030703	Snord104	-2.02	9.76E-08
NR_030762	Snord17	-2.29	1.52E-05
NR_004445	Snord22	-1.75	5.74E-06
NR_030704	Snord55	-2.45	2.85E-04
NR_028542	Snord8	-3.01	4.47E-07
NM_080451	Synpo2	-0.94	0.03
NM_001142924	Tcf7l2	-0.90	5.48E-03
NM_013697	Ttr	-5.43	9.67E-165
NM_009573	Zic1	-1.21	7.24E-04

GENES UPREGULATED BY COCAINE

Ref Seq	Gene Symbol	Fold Change	p adj. value
NM_028977	Lrrc17	0.63	0.02
NM_010865	Myoc	2.03	1.08E-08
NM_012045	Pla2g2f	1.58	6.13E-03
NM_020568	Plin4	0.85	0.01
NM_011361	Sgk1	0.72	0.02