

Disrupting SUMOylation potentiates transactivation function and ameliorates polyglutamine AR-mediated disease

Jason P. Chua^{1,2,3}, Satya L. Reddy¹, Zhigang Yu¹, Elisa Giorgetti¹, Heather L. Montie^{4,5}, Sarmistha Mukherjee⁶, Jake Higgins⁷, Richard C. McEachin⁸, Diane M. Robins⁷, Diane E. Merry⁴, Jorge A. Iñiguez-Lluhi⁶, and Andrew P. Lieberman^{*1}

From the Departments of Pathology¹, Pharmacology⁶, Human Genetics⁷, and Computational Medicine and Bioinformatics⁸, the Neuroscience Graduate Program², the Medical Scientist Training Program³, University of Michigan, Ann Arbor, Michigan, USA 48109. Department of Biochemistry and Molecular Biology⁴, Thomas Jefferson University, Philadelphia, Pennsylvania, USA 19107.

Supplementary Table 1: Genes ligand-responsive to AR10Q, and their responsiveness to AR112Q and AR111Q-KRKR in PC12 cells

Key for p-values and log₂-fold change:

1 = (10Q+R1881) vs (10Q-R1881)

2 = (112Q+R1881) vs (112Q-R1881)

3 = (111Q-KRKR+R1881) vs (111Q-KRKR-R1881)

				p-values			log ₂ fold change		
Probe	Symbol	GenBank	UniGene	1	2	3	1	2	3
17327270	Dopey2	NM_027293	Mm.23230	0.000	0.000	0.000	1.888	1.464	1.155
17211131	Prex2	NM_029525	Mm.123247	0.000	0.402	0.000	1.434	0.373	1.571
17287361	Gadd45g	NM_011817	Mm.281298	0.000	0.003	0.000	2.033	1.424	2.394
17305685	Ddhd1	NM_001042719	Mm.121918, Mm.459394	0.000	0.001	0.000	1.038	0.946	1.045
17358119	Zfand5	NM_009551	Mm.292405, Mm.379919	0.000	0.002	0.000	1.161	0.902	1.180
17402588	Pla2g12a	NM_023196	Mm.151951	0.000	0.001	0.000	1.351	1.295	1.366
17404011	Hey1	NM_010423	Mm.29581	0.000	0.001	0.000	-1.004	-0.865	-0.952
17354992	Amd1	NM_009665	Mm.253533, Mm.317731	0.000	0.078	0.000	0.900	0.421	1.327
17357444	Fads3	NM_021890	Mm.253875	0.001	0.000	0.000	1.201	1.525	1.302
17314929	Dip2b	NM_001159361	Mm.243658	0.001	0.019	0.000	1.052	0.704	1.120
17397240	Hspa4l	NM_011020	Mm.39330	0.001	0.189	0.225	0.908	0.393	0.313
17260815	Meis1	NM_001193271	Mm.356578, Mm.445192	0.002	0.004	0.028	-0.946	-0.866	-0.550

17416325	Dhcr24	NM_053272	Mm.133370	0.002	0.001	0.151	1.000	1.069	0.411
17549152				0.002	0.062	0.199	0.782	0.464	0.299
17518780	Car12	NM_178396	Mm.277921	0.002	0.053	0.002	1.140	0.704	0.927
17216063	Bok	NM_016778	Mm.3295	0.003	0.007	0.002	-0.939	-0.830	-0.832
17215576	Agap1	NM_178119	Mm.291135	0.003	0.062	0.233	0.929	0.575	0.349
17511075	Mir181c	NR_029821		0.003	0.008	0.004	1.044	0.915	0.826
17222650	Uxs1	NM_026430	Mm.387202	0.003	0.008	0.014	0.997	0.892	0.688
17359504	Hoga1	NM_026152	Mm.24196	0.003	0.089	0.041	1.442	0.826	0.836
17492943	Mesdc1	NM_030705	Mm.272998	0.003	0.131	0.022	1.431	0.773	0.928
17314487	Ano6	NM_001253813	Mm.38087	0.003	0.025	0.003	-0.894	-0.686	-0.753
17529699	1190002N 15Rik	NM_001033145	Mm.258746	0.004	0.035	0.010	0.995	0.733	0.748
17230991	Vash2	NR_027352	Mm.22856	0.004	0.218	0.000	1.169	0.573	1.336
17335297	Ppard	NM_011145	Mm.328914	0.004	0.014	0.000	0.936	0.811	1.463
17342999	Cpne5	NM_153166	Mm.39905	0.004	0.522	0.222	1.373	0.457	0.564
17402072	Frrs1	NM_001113478	Mm.66293	0.004	0.041	0.099	-1.019	-0.747	-0.522
17456934	Mest	NM_001252292	Mm.335639	0.004	0.025	0.308	-0.713	-0.556	-0.252
17501272	Hand2	NM_010402	Mm.430844	0.004	0.050	0.000	-0.767	-0.535	-0.867
17435251	Klhl7	NM_026448	Mm.273768	0.004	0.062	0.425	1.004	0.668	0.308
17461433	Edem1	NM_138677	Mm.21596	0.004	0.040	0.001	0.817	0.609	0.871
17263511	Rasd1	NM_009026	Mm.3903	0.004	0.223	0.205	1.460	0.735	0.635
17222211	Sema4c	NM_001126047	Mm.29558	0.005	0.084	0.002	1.102	0.705	1.048
17259235	Baiap2	NM_001037754	Mm.197534	0.005	0.261	0.000	1.111	0.541	2.083
17342559	Rab11fip3	NM_001162869	Mm.41191	0.005	0.042	0.049	0.881	0.662	0.540
17494842	Lmo1	NM_057173	Mm.360145	0.005	0.103	0.001	-0.993	-0.607	-1.063
17549144				0.005	0.056	0.513	0.709	0.499	0.196
17338767	Kdm4b	NM_172132	Mm.45047	0.005	0.010	0.026	0.923	0.877	0.640

17468298	Exoc6b	NM_177077	Mm.159621	0.005	0.086	0.010	0.995	0.641	0.796
17447672	Wdr1	NM_011715	Mm.2654, Mm.406120	0.005	0.004	0.000	0.751	0.821	0.956
17213321	Bmpr2	NM_007561	Mm.391654, Mm.7106	0.008	0.264	0.006	0.794	0.413	0.711
17425276	Amd1	NM_009665	Mm.253533, Mm.317731	0.008	0.074	0.000	0.780	0.549	1.418
17454617	Gna12	NM_010302	Mm.370185	0.008	0.013	0.033	0.764	0.746	0.536
17208519				0.008	0.515	0.654	-1.671	0.627	-0.382
17469656	Srgap3	NM_080448	Mm.236401	0.008	0.124	0.022	-0.915	-0.582	-0.693
17520537	Gk5	NM_177352	Mm.213651	0.008	0.014	0.008	1.093	1.064	0.962
17240365	Amd1	NM_009665	Mm.253533, Mm.317731	0.009	0.268	0.000	0.703	0.371	1.353
17401673	Sort1	NM_019972	Mm.157119	0.009	0.062	0.000	0.774	0.581	1.114
17204331				0.010	0.769	0.584	1.483	0.378	0.398
17280310	Id2	NM_010496	Mm.34871	0.012	0.670	0.581	-1.274	-0.401	-0.349
17374669	Bahd1	NM_001045523	Mm.330487	0.012	0.742	0.014	-0.760	-0.211	-0.645
17493632	Dgat2	NM_026384	Mm.180189	0.012	0.062	0.555	0.774	0.596	0.223
17324623	Hes1	NM_008235	Mm.390859	0.015	0.683	0.425	1.192	0.376	0.432
17292390	Wnk2	NM_029361	Mm.342723	0.015	0.001	0.002	0.732	1.132	0.847
17360977	Lrp5	NM_008513	Mm.274581	0.015	0.272	0.248	0.727	0.405	0.342
17462145	8430408G 22Rik	NM_145980	Mm.38231	0.015	0.999	0.504	1.043	0.005	0.341
17355955	1810055G 02Rik	BC019471	Mm.23780	0.015	0.018	0.002	1.076	1.086	1.255
17242281	Adarb1	NR_004429	Mm.276815	0.016	0.018	0.020	1.185	1.193	0.991
17270919	Tex2	NM_198292	Mm.102407	0.017	0.147	0.072	0.759	0.512	0.510
17310673	Ank	NM_020332	Mm.265264	0.018	0.148	0.051	0.607	0.411	0.440

17213336	Bmpr2	AK138535	Mm.391654, Mm.7106	0.020	0.545	0.056	1.013	0.408	0.729
17248754	Adam19	NM_009616	Mm.89940	0.023	0.078	0.673	0.691	0.545	0.171
17267484	Rad51c	NM_053269	Mm.37376	0.023	0.096	0.001	0.890	0.672	1.219
17383886	1110008P 14Rik	NM_198001	Mm.27608	0.028	0.003	0.055	0.756	1.047	0.567
17507258	Ctxn1	NM_183315	Mm.34210	0.028	0.019	0.015	1.649	1.744	1.522
17274911	Atxn7l1	NM_028139	Mm.41540	0.029	0.181	0.002	0.738	0.501	0.869
17318312	Nrbp2	NM_144847	Mm.101946	0.029	0.145	0.001	1.060	0.763	1.445
17352439	Arhgap12	NM_001039692	Mm.239675	0.029	0.096	0.002	0.627	0.490	0.767
17451223	Sez6l	NM_001253916	Mm.143742	0.029	0.272	0.014	-0.761	-0.462	-0.720
17280571	Gpr22	NM_175191	Mm.441517	0.030	0.558	0.965	0.929	0.389	-0.035
17271632	Sdk2	NM_172800	Mm.130504, Mm.401394	0.032	0.455	0.386	-0.662	-0.322	-0.281
17429632	Mfsd2a	NM_029662	Mm.331842	0.033	0.404	0.000	0.983	0.522	1.522
17257405	Tanc2	NM_181071	Mm.22501	0.034	0.591	0.963	0.602	0.246	-0.024
17399485	Kcnn3	NM_080466	Mm.120250	0.034	0.010	0.000	-0.720	-0.873	-1.122
17539844	Ppp1r3f	NM_138605	Mm.148163	0.034	0.446	0.106	-0.804	-0.402	-0.540
17539820	Mir501	NR_030496		0.037	0.616	0.252	-0.913	-0.363	-0.480
17497904	Slc25a22	NM_026646	Mm.33729	0.037	0.139	0.290	0.839	0.631	0.419
17469183				0.038	0.929	0.252	0.666	0.097	0.354
17533690	Araf	NM_009703	Mm.220946	0.038	0.019	0.055	0.585	0.656	0.462
17373521	Chst1	NM_023850	Mm.38021	0.041	0.792	0.000	0.957	0.277	1.611
17316019				0.043	0.024	0.085	-0.670	-0.740	-0.494
17399812	S100a6	NM_011313	Mm.100144	0.043	0.954	0.911	0.789	-0.082	0.073
17436397				0.043	0.820	0.832	-1.216	-0.321	0.189
17456931				0.043	0.768	0.505	1.048	0.325	0.393
17281826	Rtn1	NM_001007596	Mm.221275	0.043	0.844	0.221	-0.683	-0.166	-0.392

17398285				0.044	0.762	0.823	0.917	0.290	-0.148
17361454	Cnih2	NM_009920	Mm.299737	0.044	0.042	0.755	0.690	0.697	0.149
17202047				0.047	0.890	0.463	1.451	0.291	-0.589
17227037	Atp2b4	NM_001167949	Mm.188617	0.047	0.095	0.014	-0.616	-0.520	-0.633
17203551				0.048	0.841	0.822	-1.467	-0.368	0.243
17303504	Cadps	NM_012061	Mm.260881	0.048	0.276	0.001	-0.595	-0.388	-0.900
17502603	Rasd2	NM_029182	Mm.179267	0.049	0.204	0.407	0.736	0.529	0.326
17298250	Tmem110	NM_028839	Mm.143025	0.050	0.096	0.901	0.772	0.653	0.081

Supplementary Table 2: Genes uniquely ligand-responsive to AR111Q-KRKR, and their responsiveness to AR10Q and AR112Q in PC12 cells

Key for p-values and log₂-fold change:

1 = (10Q+R1881) vs (10Q-R1881)

2 = (112Q+R1881) vs (112Q-R1881)

3 = (111Q-KRKR+R1881) vs (111Q-KRKR-R1881)

				p-values			log ₂ -fold change		
Probe	Symbol	GenBank	UniGene	1	2	3	1	2	3
17515921	Cdon	NM_021339	Mm.80509	0.051	0.288	0.025	-0.634	-0.413	-0.606
17458841	Adcyap1r1	NM_007407	Mm.44245	0.052	0.390	0.007	0.643	0.374	0.744
17211043	Sgk3	NM_133220	Mm.336410	0.053	0.165	0.000	0.768	0.591	1.366
17316690	Klf10	NM_013692	Mm.4292	0.056	0.185	0.004	-0.648	-0.490	-0.794
17248474	Mir218-2	NR_029799		0.056	0.503	0.002	-1.072	-0.534	-1.420
17264124	Arhgap44	NM_175003	Mm.134338	0.056	0.170	0.013	0.816	0.630	0.878
17297100	Kctd6	NM_027782	Mm.292712	0.056	0.134	0.007	-0.704	-0.579	-0.817
17236018	Polr3b	NM_027423	Mm.335007	0.059	0.326	0.010	0.620	0.398	0.704
17283940				0.059	0.456	0.020	-1.220	-0.663	1.248
17333133	Pde10a	NM_011866	Mm.87161	0.062	0.068	0.011	-0.613	-0.589	-0.688
17379938	Cebpb	NM_009883	Mm.439656	0.063	0.192	0.040	0.823	0.632	0.757
17336811	Neu1	NM_010893	Mm.8856	0.064	0.047	0.000	0.439	0.468	0.939
17202063				0.064	0.616	0.024	1.430	0.636	1.442
17511474	Cbln1	NM_019626	Mm.4880	0.065	0.115	0.002	-0.469	-0.411	-0.646
17468018	Hk2	NM_013820	Mm.255848, Mm.469167	0.066	0.062	0.011	0.571	0.576	0.652

17482332	2610020H08 Rik	NM_028129	Mm.38237	0.067	0.941	0.000	0.662	0.091	1.125
17309580	Dock9	NM_001081039	Mm.441054	0.068	0.745	0.004	0.584	0.210	0.752
17348156	Svil	NM_153153	Mm.136791	0.072	0.318	0.033	0.768	0.522	0.756
17458892	Avl9	NM_030235	Mm.105343	0.072	0.235	0.000	0.495	0.369	1.223
17335616	Zfand3	NM_148926	Mm.220972	0.072	0.078	0.010	0.559	0.540	0.658
17400103	Celf3	NM_172434	Mm.44292	0.072	0.299	0.002	-0.661	-0.461	-0.950
17468828	Plxna1	NM_008881	Mm.3789	0.073	0.414	0.010	0.619	0.381	0.739
17400599	Txnip	NM_001009935	Mm.410189	0.075	0.052	0.001	0.598	0.645	0.954
17431624	Epha8	NM_007939	Mm.1390	0.077	0.183	0.007	-0.682	-0.557	-0.850
17232734	Cdk19	NM_001168304	Mm.485810	0.077	0.272	0.000	0.554	0.405	0.990
17237094	Ppfia2	NM_001205341	Mm.391424	0.079	0.149	0.038	-0.793	-0.689	-0.783
17481651	Tub	NM_021885	Mm.439722	0.081	0.304	0.003	-0.621	-0.441	-0.863
17333686	Lix1	NM_025681	Mm.268018	0.094	0.197	0.022	-0.965	-0.804	-1.069
17465906	Creb3l2	NM_178661	Mm.169929, Mm.482172	0.120	0.526	0.040	-0.717	-0.411	-0.761
17492018	Synm	NM_201639	Mm.60526	0.142	0.794	0.000	0.581	0.218	1.426
17464367	Ppfibp1	NM_001170433	Mm.103382	0.155	0.715	0.002	0.507	0.232	0.841
17536436	Ar	NM_013476	Mm.39005, Mm.394224, Mm.439657	0.155	0.685	0.002	0.453	0.218	0.773
17513641	Slc7a5	NM_011404	Mm.27943	0.162	0.076	0.013	0.646	0.755	0.878
17409753	Agl	NM_001081326	Mm.237099	0.168	0.086	0.004	-0.469	-0.533	-0.739
17219096	Aldh9a1	NM_019993	Mm.330055, Mm.474999	0.169	0.143	0.006	0.474	0.490	0.716
17414651	Zfp618	NM_028326	Mm.26479, Mm.482416	0.171	0.469	0.027	0.772	0.519	0.954

17357981	Prune2	NM_181348	Mm.257354, Mm.489758	0.175	0.393	0.039	-0.502	-0.382	-0.587
17436877	Ablim2	NM_001177696	Mm.254446	0.184	0.631	0.015	0.606	0.334	0.831
17274919	Atxn7l1	NM_001033436	Mm.41540	0.195	0.503	0.007	0.526	0.347	0.808
17409920	Abcd3	NM_008991	Mm.399042	0.206	0.423	0.001	0.550	0.416	1.093
17335127				0.213	0.984	0.013	-0.678	0.040	0.987
17213593	Snora41	NR_028558	Mm.484706	0.217	0.463	0.002	0.753	0.538	1.441
17398082	Tiparp	NM_178892	Mm.246398	0.218	0.827	0.002	0.710	0.266	1.352
17480955	Phox2a	NM_008887	Mm.5028	0.238	0.150	0.001	-0.520	-0.576	-1.104
17249097	Rnf130	NM_021540	Mm.359004	0.238	0.225	0.003	-0.325	-0.324	-0.587
17542167	BC023829	NM_001033328	Mm.24569	0.245	0.239	0.006	0.379	0.375	0.632
17319887	Scube1	NM_022723	Mm.40393	0.251	0.911	0.008	-0.360	-0.089	-0.588
17549280				0.272	0.521	0.037	0.513	0.363	0.675
17461923	Syn2	NM_013681	Mm.441431, Mm.466323	0.283	0.593	0.001	-0.464	-0.304	-1.060
17528963	Lrrc1	NM_001146048	Mm.28534, Mm.482664	0.288	0.478	0.033	0.497	0.381	0.679
17261289	Eml6	NM_146016	Mm.445271	0.294	0.096	0.008	-0.452	-0.583	-0.773
17287984	Dapk1	NM_029653	Mm.24103	0.301	0.247	0.002	0.655	0.685	1.340
17429057	Ptprf	NM_011213	Mm.29855	0.319	0.494	0.007	0.428	0.331	0.758
17317706	Mir30b	NR_029534		0.338	0.421	0.010	0.753	0.666	1.306
17281219	Nfkb1a	NM_010907	Mm.170515	0.343	0.841	0.001	-0.439	-0.178	0.998
17507673	2610019F03 Rik	NM_173744	Mm.5727	0.344	0.806	0.001	0.618	0.288	1.390
17425466	Ctnna1	NM_018761	Mm.218891	0.359	0.324	0.020	0.502	0.513	0.811
17316197	Fam105a	NM_001242424	Mm.266485	0.371	0.979	0.020	0.399	-0.039	0.655
17495541	Syt17	NM_138649	Mm.156558	0.377	0.787	0.011	-0.412	-0.213	-0.743
17294458	Rhobtb3	NM_028493	Mm.276200	0.379	0.232	0.001	-0.303	-0.354	-0.788

17489279	Tmem147	NM_027215	Mm.27499	0.397	0.230	0.006	-0.293	-0.350	-0.591
17480036	Fzd4	NM_008055	Mm.86755	0.413	0.078	0.014	-0.401	-0.628	-0.728
17205491				0.423	0.966	0.037	0.699	-0.106	-1.108
17370455	Nek6	NM_001159631	Mm.143818	0.427	0.935	0.002	0.481	0.121	1.168
17472030	Dusp16	NM_130447	Mm.3994	0.437	0.730	0.010	0.472	0.297	0.935
17230602	Fbxo28	NM_175127	Mm.30737	0.440	0.426	0.008	0.429	0.428	0.878
17450802	Dgkq	NM_199011	Mm.260921	0.453	0.102	0.040	0.520	0.811	0.843
17264769	Efnb3	NM_007911	Mm.249637	0.455	0.868	0.043	-0.488	-0.208	-0.782
17276153	Daam1	NM_026102	Mm.474935, Mm.87417	0.468	0.271	0.026	0.525	0.653	0.930
17404329	Gyg	NM_013755	Mm.6375	0.470	0.326	0.028	0.359	0.419	0.630
17444372	Cyth3	NM_001163548	Mm.281003	0.471	0.620	0.033	-0.342	-0.269	-0.586
17313495	Ccdc134	NM_172428	Mm.440373	0.471	0.588	0.004	0.570	0.473	1.315
17391270	Kcnip3	NM_019789	Mm.315292	0.471	0.995	0.002	0.809	0.025	1.992
17447113	Fam53a	NM_178390	Mm.294695	0.476	0.299	0.014	0.493	0.602	0.966
17469136	Adamts9	NM_175314	Mm.158235, Mm.257557	0.479	0.752	0.004	-0.428	-0.270	-0.997
17531810	Pdcd6ip	NM_001164677	Mm.29816	0.491	0.581	0.010	0.316	0.271	0.662
17542419	L1cam	NM_008478	Mm.260568	0.491	0.621	0.014	-0.404	-0.325	-0.808
17233631				0.509	0.792	0.040	-0.674	-0.402	1.163
17430023	Adprhl2	NM_133883	Mm.11285	0.512	0.766	0.021	-0.445	-0.283	-0.858
17203797				0.519	0.814	0.003	0.658	-0.371	1.675
17317593	Kcnq3	NM_152923	Mm.255585	0.519	0.638	0.038	-0.505	-0.408	-0.891
17368069	Clic3	NM_027085	Mm.44194	0.524	0.122	0.014	0.613	1.000	1.262
17523231	Entpd3	NM_178676	Mm.76648	0.524	0.065	0.029	-0.350	-0.653	-0.651
17537055	Atp7a	NM_001109757	Mm.254297	0.524	0.314	0.008	-0.323	-0.408	-0.725
17353676	Nrg2	NM_001167891	Mm.380390	0.536	0.752	0.021	-0.422	-0.285	-0.848

17362595	Fads2	NM_019699	Mm.38901	0.541	0.241	0.023	0.301	0.427	0.599
17231003	Mfsd7b	NM_001081259	Mm.134053	0.542	0.913	0.000	0.327	0.114	1.071
17347948	Kcnk12	NM_199251	Mm.312046	0.547	0.930	0.010	-0.331	-0.104	0.751
17351321	Mir122a	NR_029600		0.549	0.918	0.048	-0.616	0.212	-1.096
17229454	Rgs4	NM_009062	Mm.41642	0.554	0.360	0.046	-0.391	-0.493	-0.704
17342249	Cacna1h	NM_021415	Mm.268378	0.555	0.078	0.036	0.453	0.850	0.855
17231574	Ppil4	NM_026141	Mm.38927	0.571	0.318	0.033	0.379	0.514	0.744
17449920	Paqr3	NM_198422	Mm.332505	0.584	0.327	0.016	0.491	0.668	1.094
17506824	Gnpat	NM_010322	Mm.29114	0.600	0.155	0.027	0.277	0.482	0.586
17206129				0.625	0.512	0.032	-0.722	-0.816	-1.551
17505069	Slc7a6	NM_178798	Mm.46749	0.627	0.866	0.013	-0.249	-0.136	-0.618
17399645				0.648	0.736	0.001	0.552	0.464	2.045
17424966				0.648	0.992	0.001	0.481	-0.030	1.697
17440465	Pole	NM_011132	Mm.35061	0.660	0.417	0.019	-0.288	-0.401	-0.714
17222070	Mir5103	NR_039562		0.661	0.239	0.012	-0.347	-0.591	-0.913
17262026	Lsm11	NM_028185	Mm.249827	0.683	0.420	0.041	0.294	0.418	0.657
17395499	Hrh3	NM_133849	Mm.285360	0.693	0.742	0.000	-0.232	-0.207	-0.975
17397740	Mab211	NM_010750	Mm.440209	0.697	0.111	0.000	-0.267	-0.589	-1.620
17518142	Tle3	NM_001083927	Mm.24255, Mm.469199	0.717	0.920	0.013	0.373	0.167	1.091
17499396	Fbxo25	NM_025785	Mm.37950	0.735	0.794	0.015	0.222	0.188	0.646
17543286	Spin4	NM_178753	Mm.115205	0.745	0.939	0.050	0.251	0.098	0.615
17201209				0.747	0.964	0.040	0.579	-0.151	-1.484
17479899	Mesdc2	NM_023403	Mm.117365	0.749	0.464	0.026	0.268	0.408	0.749
17335060	Itpr3	NM_080553	Mm.458106	0.762	0.983	0.034	-0.242	-0.037	-0.673
17205845				0.763	0.792	0.026	-0.430	0.406	1.264
17308734	Gtf2f2	NM_026816	Mm.20415	0.763	0.907	0.026	0.308	0.172	0.900
17377525	Gins1	NM_027014	Mm.271603	0.763	0.531	0.032	-0.213	-0.313	-0.609

17363025	Stx3	NM_152220	Mm.272264	0.769	0.686	0.002	-0.165	-0.195	0.706
17408648	Olfml3	NM_133859	Mm.211535	0.770	0.940	0.001	0.223	0.094	1.102
17304273	Ccdc66	NM_177111	Mm.247767, Mm.390701	0.781	0.937	0.034	0.233	0.105	0.682
17492051	Arrdc4	NM_001042592	Mm.251199	0.795	0.149	0.021	0.186	0.499	0.627
17487805	Atp1a3	NM_144921	Mm.44101	0.807	0.642	0.021	-0.256	-0.365	-0.889
17316392	Hrsp12	NM_008287	Mm.143977	0.809	0.643	0.043	0.276	0.396	0.849
17474067	Slc8a2	NM_148946	Mm.241147	0.809	0.564	0.045	0.243	0.393	0.746
17413107	4933409K07 Rik	NR_033123	Mm.440578	0.809	0.865	0.036	0.200	-0.167	-0.642
17216809	Rab3gap1	NM_178690	Mm.489713	0.811	0.366	0.011	0.164	0.351	0.635
17402025	Dbt	NM_010022	Mm.3636	0.818	0.710	0.033	0.217	0.290	0.734
17218209	Edem3	NM_001039644	Mm.337691	0.822	0.907	0.005	0.173	0.118	0.788
17430288	Adc	NM_172875	Mm.215814	0.823	0.924	0.049	-0.210	-0.126	-0.683
17209687				0.823	0.940	0.014	-0.361	0.182	-1.441
17314699	Prph	NM_013639	Mm.2477	0.823	0.935	0.032	-0.208	0.113	-0.730
17478301	Nav2	NM_175272	Mm.333881, Mm.471488	0.830	0.349	0.020	-0.174	-0.417	-0.683
17220373	Trp53bp2	NM_173378	Mm.287450	0.832	0.777	0.002	0.210	0.265	1.142
17405142	Setd7	NM_080793	Mm.192111	0.833	0.418	0.031	0.159	0.356	0.589
17406688	Rhbg	NM_021375	Mm.103777	0.840	0.075	0.000	-0.209	0.791	2.187
17282743	Tgfb3	NM_009368	Mm.3992	0.853	0.903	0.042	0.315	0.258	1.207
17342642	Dusp1	NM_013642	Mm.239041	0.853	0.970	0.034	-0.183	0.064	0.730
17232912	Sesn1	NM_001013370	Mm.139418	0.857	0.300	0.021	0.149	0.431	0.661
17491378	E2f8	NM_001013368	Mm.240566	0.870	0.456	0.007	-0.125	-0.327	-0.717
17404947	Ankrd50	NM_001167883	Mm.290937	0.872	0.903	0.002	0.144	0.140	1.017

17406031	Rapgef2	NM_001099624	Mm.31220, Mm.462396	0.873	0.835	0.048	0.140	-0.190	0.619
17244843	Syt1	NM_001252341	Mm.289702, Mm.489829	0.877	0.983	0.021	-0.137	0.035	-0.728
17493685	Gm4980	NM_001195529	Mm.180719	0.879	0.588	0.003	-0.160	-0.386	-1.104
17400805				0.883	0.339	0.002	-0.124	0.424	0.897
17415231	Cdh2	NM_007664	Mm.257437	0.897	0.724	0.005	0.132	0.287	0.971
17516332	Scn3b	NM_153522	Mm.290083	0.900	0.530	0.002	-0.089	-0.265	-0.736
17330684	Tagln3	NM_019754	Mm.24183	0.905	0.911	0.021	-0.099	-0.111	0.640
17368171	Bmyc	NM_023326	Mm.330057	0.905	0.457	0.033	0.111	0.382	0.663
17438438	Srp72	NM_025691	Mm.296976, Mm.461699	0.909	0.154	0.006	0.079	0.413	0.627
17245059	Lgr5	NM_010195	Mm.42103	0.914	0.935	0.028	0.113	-0.114	-0.753
17418732	Dlgap3	NM_198618	Mm.331885	0.915	0.726	0.045	-0.101	-0.257	-0.629
17479371	Fanci	NM_145946	Mm.349493	0.917	0.932	0.023	-0.085	-0.094	-0.605
17285612				0.917	0.845	0.043	-0.139	-0.257	-0.891
17219997	Kif26b	NM_001161665	Mm.138659	0.917	0.616	0.021	0.127	-0.399	-0.926
17432941	Ptchd2	NM_001083342	Mm.33873	0.919	0.832	0.023	0.118	0.234	0.852
17518298	Rpl4	NM_024212	Mm.280083	0.919	1.000	0.046	-0.092	0.002	0.591
17255352	Dlx3	NM_010055	Mm.5194	0.920	0.999	0.012	-0.090	0.005	-0.731
17487633				0.920	0.984	0.023	-0.093	0.029	-0.692
17440653	1700028D13 Rik	NR_045377	Mm.243721	0.925	0.940	0.012	0.124	0.134	-1.068
17383825	Fam78a	BC137951	Mm.250441	0.928	0.909	0.002	-0.111	-0.160	-1.266
17277212	Zfp410	NM_144833	Mm.255150	0.942	0.486	0.021	0.082	0.397	0.770
17327465	Ets2	NM_011809	Mm.290207	0.942	0.868	0.026	-0.076	-0.172	0.703
17427312	Jun	NM_010591	Mm.275071	0.942	0.476	0.041	-0.130	0.645	1.106
17358486	Cdc3711	NM_025950	Mm.78875	0.942	0.537	0.043	0.070	0.319	0.592

17289986	Cdc20b	XM_138861		0.943	0.998	0.034	0.067	0.005	-0.597
17270888	Ern1	NM_023913	Mm.340943	0.945	0.427	0.014	0.071	0.398	0.757
17394366	Cdh22	NM_174988	Mm.151819	0.945	0.753	0.045	0.069	0.234	-0.606
17367436	Gm13363	NR_002688	Mm.389003	0.946	0.973	0.038	-0.062	-0.047	0.595
17400799	Sec22b	NM_011342	Mm.2551, Mm.486379	0.955	0.568	0.008	-0.048	0.260	0.651
17234718	Gm2696	NM_001205009	Mm.486155	0.957	0.446	0.014	0.056	-0.380	0.739
17350171	Stk32a	NM_178749	Mm.150401	0.958	0.947	0.033	-0.067	-0.106	-0.783
17367642				0.958	0.841	0.043	0.074	0.246	0.836
17313418	Csdc2	NM_145473	Mm.22524	0.961	0.443	0.032	0.051	-0.373	-0.634
17202131				0.964	0.966	0.032	-0.210	0.260	-2.781
17442909	Gbas	NM_008095	Mm.12468	0.965	0.632	0.046	-0.051	0.304	0.637
17400804				0.966	0.430	0.014	0.042	0.337	0.640
17228656	Fam5b	NM_207583	Mm.329579	0.966	0.913	0.037	0.054	-0.136	-0.719
17402283	Gclm	NM_008129	Mm.292676	0.970	1.000	0.042	-0.045	0.003	0.650
17501408	Sh3rf1	NM_021506	Mm.27949	0.974	0.969	0.003	0.044	0.067	1.054
17206327				0.979	0.994	0.050	-0.103	-0.043	1.952
17322063	Krt76	NM_001033177	Mm.195788	0.983	0.456	0.041	-0.031	-0.412	-0.686
17526683	Rbm7	NR_037589	Mm.76911	0.985	0.970	0.012	0.023	-0.047	0.665
17463718	Cdkn1b	NM_009875	Mm.2958	0.986	0.967	0.022	0.035	0.080	0.927
17286487	Bphl	NM_026512	Mm.140243	0.987	0.993	0.021	0.021	-0.015	0.656
17276985				0.993	0.704	0.002	0.011	0.241	0.853
17506356	Zfpm1	NM_009569	Mm.390068	0.993	0.877	0.030	-0.016	0.226	-0.946
17330708	Phldb2	NM_001252442	Mm.211477	0.994	0.887	0.042	-0.014	0.225	0.938
17400807				0.998	0.978	0.021	0.006	0.056	0.899

Supplementary Table 3: Differentially expressed androgen-responsive genes in wild type versus AR113Q and wild type versus AR113Q-KRKR quadriceps muscle

<u>gene symbol</u>	<u>NCBI ID</u>	<u>113Q vs. WT</u>			<u>113Q_KRKR vs. WT</u>			<u>differential expression</u>
		<u>log₂(FC)</u>	<u>p-value</u>	<u>q-value</u>	<u>log₂(FC)</u>	<u>p-value</u>	<u>q-value</u>	
Odc1	18263	-1.38	0.00005	0.00095	-0.30	0.02050	0.04737	113Q only (down)
Lpin1	14245	-0.75	0.00005	0.00095	-0.38	0.00315	0.00954	113Q only (down)
Me1	17436	-0.61	0.00005	0.00095	0.18	0.17145	0.27029	113Q only (down)
Csrp3	13009	1.97	0.00005	0.00095	0.24	0.16695	0.26473	113Q only (up)
G0s2	14373	0.96	0.00005	0.00095	-0.50	0.00170	0.00557	113Q only (up)
Cebpa	12606	0.77	0.00005	0.00095	-0.55	0.00160	0.00528	113Q only (up)
Cd74	16149	0.76	0.00005	0.00095	-0.11	0.40955	0.52881	113Q only (up)
Ccl9	20308	0.71	0.00075	0.00955	-0.02	0.92400	0.94852	113Q only (up)
Lum	17022	0.69	0.00005	0.00095	0.32	0.01540	0.03727	113Q only (up)
Grb14	50915	0.63	0.00015	0.00248	0.55	0.00010	0.00045	113Q only (up)
Lyz1	17110	0.61	0.00455	0.03964	0.40	0.03660	0.07714	113Q only (up)
Dkk3	50781	-1.91	0.00005	0.00095	-4.09	0.00005	0.00024	shared (down)
Smox	228608	-3.22	0.00005	0.00095	-4.09	0.00005	0.00024	shared (down)
Itgb1bp3	69564	-3.02	0.00005	0.00095	-3.72	0.00005	0.00024	shared (down)
Pfkfb3	170768	-2.38	0.00005	0.00095	-3.34	0.00005	0.00024	shared (down)
Car3	12350	-2.02	0.00005	0.00095	-3.07	0.00005	0.00024	shared (down)
Slc30a2	230810	-2.08	0.00005	0.00095	-2.88	0.00005	0.00024	shared (down)
Golm1	105348	-1.99	0.00005	0.00095	-2.81	0.00005	0.00024	shared (down)
Spns2	216892	-2.20	0.00005	0.00095	-2.79	0.00005	0.00024	shared (down)
Cuzd1	16433	-1.40	0.00005	0.00095	-2.66	0.00005	0.00024	shared (down)
Mchr1	207911	-1.17	0.00005	0.00095	-2.53	0.00005	0.00024	shared (down)
Pvalb	19293	-1.45	0.00005	0.00095	-2.45	0.00005	0.00024	shared (down)
Actr3b	242894	-1.00	0.00005	0.00095	-2.40	0.00005	0.00024	shared (down)
Tnnt1	21955	-1.68	0.00005	0.00095	-2.37	0.00005	0.00024	shared (down)
Pla2g7	27226	-1.32	0.00005	0.00095	-2.35	0.00005	0.00024	shared (down)
Tnni2	21953	-1.22	0.00005	0.00095	-2.34	0.00005	0.00024	shared (down)
Rnaset2b	68195	-1.50	0.00005	0.00095	-2.31	0.00005	0.00024	shared (down)
Mlf1	17349	-1.18	0.00005	0.00095	-2.23	0.00005	0.00024	shared (down)
Zmynd17	74843	-1.22	0.00005	0.00095	-2.11	0.00005	0.00024	shared (down)
Myl2	17906	-1.34	0.00005	0.00095	-2.10	0.00005	0.00024	shared (down)
Wnt4	22417	-1.00	0.00005	0.00095	-2.03	0.00005	0.00024	shared (down)
Tpm2	22004	-1.13	0.00005	0.00095	-2.03	0.00005	0.00024	shared (down)
Igfbp5	16011	-1.47	0.00005	0.00095	-1.99	0.00005	0.00024	shared (down)
Gpd1	14555	-1.05	0.00005	0.00095	-1.94	0.00005	0.00024	shared (down)
Asb10	117590	-1.09	0.00005	0.00095	-1.85	0.00005	0.00024	shared (down)
Cd24a	12484	-0.72	0.00005	0.00095	-1.79	0.00005	0.00024	shared (down)
Fasn	14104	-0.78	0.00005	0.00095	-1.76	0.00005	0.00024	shared (down)
Actn3	11474	-1.13	0.00015	0.00248	-1.76	0.00005	0.00024	shared (down)
Smtnl2	276829	-1.21	0.00005	0.00095	-1.76	0.00005	0.00024	shared (down)
Aldoa	11674	-1.15	0.00010	0.00175	-1.74	0.00005	0.00024	shared (down)

Slc38a4	69354	-1.34	0.00005	0.00095	-1.50	0.00005	0.00024	shared (down)
Mmd	67468	-0.99	0.00005	0.00095	-1.50	0.00005	0.00024	shared (down)
Nudt4	71207	-0.84	0.00005	0.00095	-1.45	0.00005	0.00024	shared (down)
Slc2a4	20528	-0.80	0.00005	0.00095	-1.41	0.00005	0.00024	shared (down)
Asb5	76294	-1.03	0.00005	0.00095	-1.40	0.00005	0.00024	shared (down)
Csda	56449	-1.01	0.00005	0.00095	-1.39	0.00005	0.00024	shared (down)
Slc40a1	53945	-0.90	0.00005	0.00095	-1.38	0.00005	0.00024	shared (down)
Setd8	67956	-0.80	0.00005	0.00095	-1.35	0.00005	0.00024	shared (down)
Mkl1	223701	-0.80	0.00005	0.00095	-1.34	0.00005	0.00024	shared (down)
Pfn1	18643	-0.67	0.00005	0.00095	-1.30	0.00005	0.00024	shared (down)
Tob1	22057	-0.72	0.00005	0.00095	-1.28	0.00005	0.00024	shared (down)
Slc41a3	71699	-0.84	0.00005	0.00095	-1.26	0.00005	0.00024	shared (down)
Ldha	16828	-1.02	0.00005	0.00095	-1.26	0.00005	0.00024	shared (down)
Tpi1	21991	-0.70	0.00010	0.00175	-1.22	0.00005	0.00024	shared (down)
Chac1	69065	-1.92	0.00005	0.00095	-1.20	0.00005	0.00024	shared (down)
Ptpmt1	66461	-0.61	0.00005	0.00095	-1.20	0.00005	0.00024	shared (down)
Smyd2	226830	-0.97	0.00005	0.00095	-1.20	0.00005	0.00024	shared (down)
Myl1	17901	-1.68	0.00005	0.00095	-1.19	0.00005	0.00024	shared (down)
Ank1	11733	-0.72	0.00005	0.00095	-1.17	0.00005	0.00024	shared (down)
Pfn2	18645	-0.69	0.00005	0.00095	-1.11	0.00005	0.00024	shared (down)
Cnksr1	194231	-0.76	0.00005	0.00095	-1.01	0.00005	0.00024	shared (down)
Calm1	12313	-0.65	0.00005	0.00095	-0.97	0.00005	0.00024	shared (down)
Gpd2	14571	-0.89	0.00005	0.00095	-0.96	0.00005	0.00024	shared (down)
Cyb5b	66427	-0.69	0.00005	0.00095	-0.94	0.00005	0.00024	shared (down)
Nr6a1	14536	-0.78	0.00025	0.00383	-0.91	0.00005	0.00024	shared (down)
Rab2a	59021	-0.61	0.00005	0.00095	-0.83	0.00005	0.00024	shared (down)
Sim2	20465	-1.09	0.00005	0.00095	-0.80	0.00005	0.00024	shared (down)
Gpc1	14733	-0.62	0.00005	0.00095	-0.76	0.00005	0.00024	shared (down)
Msrb3	320183	-0.60	0.00005	0.00095	-0.72	0.00005	0.00024	shared (down)
Mat2a	232087	-0.65	0.00005	0.00095	-0.70	0.00005	0.00024	shared (down)
Slc4a4	54403	-0.59	0.00030	0.00442	-0.70	0.00005	0.00024	shared (down)
Amotl1	75723	-0.71	0.00005	0.00095	-0.65	0.00005	0.00024	shared (down)
Gapdh	14433	-1.74	0.00005	0.00095	6.79	0.00005	0.00024	shared (113Q down, 113Q_KRKR up)
Erdr1	170942	-1.75	0.00010	0.00175	1.61	0.00005	0.00024	shared (113Q down, 113Q_KRKR up)
Hipk2	15258	-0.64	0.00005	0.00095	0.69	0.00005	0.00024	shared (113Q down, 113Q_KRKR up)
Cidec	14311	0.61	0.00080	0.01011	-2.26	0.00005	0.00024	shared (113Q up, 113Q_KRKR down)
Fcna	14133	0.73	0.00180	0.01956	-1.24	0.00005	0.00024	shared (113Q up, 113Q_KRKR down)
Retnla	57262	0.87	0.00005	0.00095	-1.12	0.00005	0.00024	shared (113Q up, 113Q_KRKR down)
Ddc	13195	3.42	0.00010	0.00175	3.42	0.00005	0.00024	shared (up)
Hsp90aa1	15519	0.82	0.00005	0.00095	3.29	0.00005	0.00024	shared (up)

Hspb1	15507	0.96	0.00005	0.00095	2.24	0.00005	0.00024	shared (up)
Gstm2	14863	0.95	0.00005	0.00095	2.02	0.00005	0.00024	shared (up)
Sytl2	83671	1.73	0.00005	0.00095	2.01	0.00005	0.00024	shared (up)
A930003A15Rik	68162	1.85	0.00005	0.00095	1.88	0.00005	0.00024	shared (up)
Bhlhb9	70237	1.46	0.00005	0.00095	1.82	0.00005	0.00024	shared (up)
Zbp1	58203	1.68	0.00235	0.02405	1.75	0.00050	0.00192	shared (up)
Tceal7	100040972	1.57	0.00005	0.00095	1.73	0.00005	0.00024	shared (up)
Dpp6	13483	1.65	0.00005	0.00095	1.69	0.00005	0.00024	shared (up)
Casq2	12373	0.83	0.00005	0.00095	1.69	0.00005	0.00024	shared (up)
Armcx4	100503043	0.99	0.00005	0.00095	1.68	0.00005	0.00024	shared (up)
Peg3	18616	0.68	0.00005	0.00095	1.34	0.00005	0.00024	shared (up)
B4galt6	56386	1.22	0.00005	0.00095	1.31	0.00005	0.00024	shared (up)
Angpt1	11600	0.91	0.00005	0.00095	1.31	0.00005	0.00024	shared (up)
Arrdc3	105171	0.76	0.00005	0.00095	1.25	0.00005	0.00024	shared (up)
Plagl1	22634	0.75	0.00235	0.02405	1.21	0.00005	0.00024	shared (up)
Bag3	29810	0.79	0.00005	0.00095	1.19	0.00005	0.00024	shared (up)
Atp1b4	67821	0.70	0.00020	0.00317	1.18	0.00005	0.00024	shared (up)
Cdkn1a	12575	0.90	0.00005	0.00095	1.07	0.00005	0.00024	shared (up)
Sox9	20682	0.75	0.00615	0.04957	1.04	0.00005	0.00024	shared (up)
Hsph1	15505	0.81	0.00005	0.00095	1.00	0.00005	0.00024	shared (up)
Gadd45a	13197	1.15	0.00005	0.00095	0.91	0.00005	0.00024	shared (up)
Trafd1	231712	0.95	0.00005	0.00095	0.90	0.00005	0.00024	shared (up)
Egf	13645	0.68	0.00005	0.00095	0.83	0.00005	0.00024	shared (up)
Srebf2	20788	0.61	0.00010	0.00175	0.76	0.00005	0.00024	shared (up)
Myog	17928	1.24	0.00005	0.00095	0.72	0.00025	0.00103	shared (up)
App	11820	0.71	0.00005	0.00095	0.65	0.00005	0.00024	shared (up)
Dhrs7	66375	0.64	0.00005	0.00095	0.62	0.00005	0.00024	shared (up)
Acsm3	20216	0.06	1.00000	1.00000	-3.48	0.01115	0.02835	113Q_KRKR only (dowr
Rbp4	19662	-0.63	0.02330	0.12766	-3.00	0.00005	0.00024	113Q_KRKR only (dowr
H2-Q10	15007	-0.32	0.32430	0.61798	-2.89	0.00005	0.00024	113Q_KRKR only (dowr
Cdo1	12583	-0.17	0.38405	0.66832	-2.70	0.00005	0.00024	113Q_KRKR only (dowr
Pck1	18534	0.29	0.15140	0.41075	-2.64	0.00005	0.00024	113Q_KRKR only (dowr
Retn	57264	0.05	0.80575	0.93024	-2.33	0.00005	0.00024	113Q_KRKR only (dowr
Adipoq	11450	0.29	0.11040	0.34246	-2.23	0.00005	0.00024	113Q_KRKR only (dowr
Hp	15439	0.33	0.06365	0.24609	-2.12	0.00005	0.00024	113Q_KRKR only (dowr
Crip3	114570	-0.04	0.91390	0.97487	-2.06	0.00140	0.00469	113Q_KRKR only (dowr
A530016L24Rik	319942	0.10	0.74595	0.90348	-2.03	0.00005	0.00024	113Q_KRKR only (dowr
Inmt	21743	0.03	0.85935	0.95364	-1.96	0.00005	0.00024	113Q_KRKR only (dowr
Dbp	13170	-0.36	0.01480	0.09405	-1.92	0.00005	0.00024	113Q_KRKR only (dowr
Nog	18121	-0.48	0.03060	0.15273	-1.71	0.00005	0.00024	113Q_KRKR only (dowr
Pon1	18979	0.31	0.39220	0.67621	-1.69	0.00140	0.00469	113Q_KRKR only (dowr
Cbr2	12409	-0.40	0.00880	0.06465	-1.66	0.00005	0.00024	113Q_KRKR only (dowr
Ptger3	19218	-1.15	1.00000	1.00000	-1.63	0.00185	0.00599	113Q_KRKR only (dowr
Elovl6	170439	-0.75	1.00000	1.00000	-1.61	0.00005	0.00024	113Q_KRKR only (dowr
Snca	20617	-0.67	0.13260	0.38240	-1.57	0.00455	0.01309	113Q_KRKR only (dowr
Tkt	21881	-0.48	0.00260	0.02618	-1.55	0.00005	0.00024	113Q_KRKR only (dowr

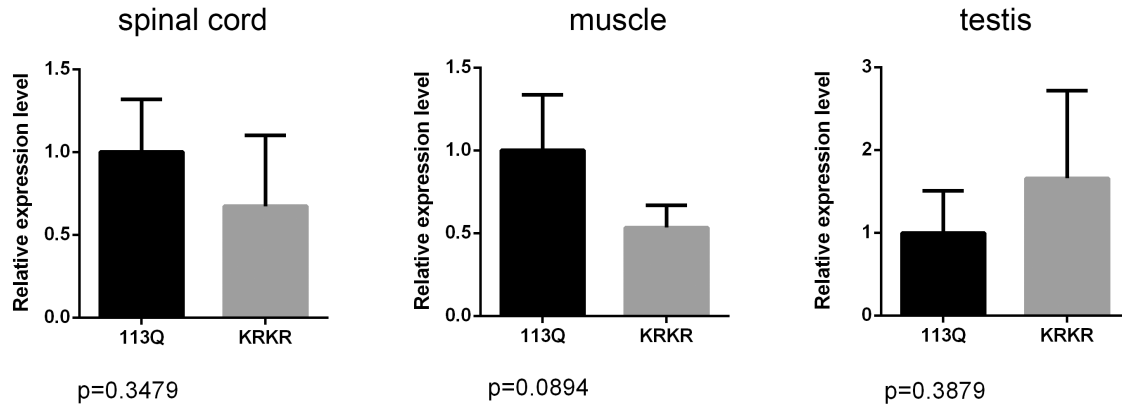
C3	12266	-0.10	0.47325	0.73945	-1.54	0.00005	0.00024	113Q_KRKR only (dowr
Aldh1a7	26358	0.04	0.91500	0.97507	-1.53	0.00105	0.00366	113Q_KRKR only (dowr
Gpx3	14778	-0.31	0.03230	0.15787	-1.53	0.00005	0.00024	113Q_KRKR only (dowr
Selp	20344	-0.56	0.09590	0.31491	-1.48	0.00010	0.00045	113Q_KRKR only (dowr
Slc25a1	13358	-0.37	0.05375	0.22080	-1.48	0.00005	0.00024	113Q_KRKR only (dowr
Spp1	20750	-0.14	0.70725	0.88493	-1.41	0.00135	0.00455	113Q_KRKR only (dowr
Mgst1	56615	-0.14	0.36905	0.65471	-1.41	0.00005	0.00024	113Q_KRKR only (dowr
Gsn	227753	-0.10	0.54215	0.78675	-1.36	0.00005	0.00024	113Q_KRKR only (dowr
Echdc1	52665	0.03	0.92830	0.97803	-1.35	0.00220	0.00697	113Q_KRKR only (dowr
Scd1	20249	-0.43	0.01225	0.08196	-1.34	0.00005	0.00024	113Q_KRKR only (dowr
Pemt	18618	-0.92	0.00790	0.05964	-1.33	0.00030	0.00121	113Q_KRKR only (dowr
Car5b	56078	0.23	0.38370	0.66821	-1.32	0.00010	0.00045	113Q_KRKR only (dowr
2310015B20Rik	69563	-0.50	0.00020	0.00317	-1.29	0.00005	0.00024	113Q_KRKR only (dowr
Nmb	68039	-0.27	0.27860	0.57383	-1.27	0.00005	0.00024	113Q_KRKR only (dowr
Gstt2	14872	-0.08	0.69605	0.87886	-1.26	0.00005	0.00024	113Q_KRKR only (dowr
Gsta3	14859	-0.32	0.43600	0.71407	-1.25	0.00680	0.01855	113Q_KRKR only (dowr
Lrg1	76905	-0.56	0.00065	0.00848	-1.23	0.00005	0.00024	113Q_KRKR only (dowr
Dusp1	19252	-0.36	0.01135	0.07726	-1.19	0.00005	0.00024	113Q_KRKR only (dowr
Dpep1	13479	0.24	0.11945	0.36009	-1.13	0.00005	0.00024	113Q_KRKR only (dowr
Serpina3n	20716	0.04	0.88760	0.96376	-1.12	0.00025	0.00103	113Q_KRKR only (dowr
Phlda3	27280	-0.53	0.00015	0.00248	-1.11	0.00005	0.00024	113Q_KRKR only (dowr
Zfp503	218820	-0.41	0.00925	0.06687	-1.11	0.00005	0.00024	113Q_KRKR only (dowr
Lpl	16956	-0.35	0.02790	0.14402	-1.10	0.00005	0.00024	113Q_KRKR only (dowr
Pnmt	18948	-0.63	0.09725	0.31766	-1.09	0.00535	0.01509	113Q_KRKR only (dowr
Adhfe1	76187	-0.25	0.08210	0.28663	-1.08	0.00005	0.00024	113Q_KRKR only (dowr
Mybph	53311	-0.08	0.60170	0.82630	-1.08	0.00005	0.00024	113Q_KRKR only (dowr
Pdss1	56075	-0.46	0.18055	0.45469	-1.07	0.00400	0.01172	113Q_KRKR only (dowr
Gcat	26912	-0.22	0.21250	0.49700	-1.04	0.00005	0.00024	113Q_KRKR only (dowr
Plip	67801	-0.31	1.00000	1.00000	-1.03	0.00995	0.02575	113Q_KRKR only (dowr
Crif1	12931	-0.43	0.09740	0.31780	-1.03	0.00010	0.00045	113Q_KRKR only (dowr
Fabp4	11770	0.14	0.36315	0.65020	-1.01	0.00005	0.00024	113Q_KRKR only (dowr
Chchd10	103172	-0.33	0.02510	0.13403	-0.99	0.00005	0.00024	113Q_KRKR only (dowr
Pparg	19016	0.28	0.20860	0.49183	-0.98	0.00005	0.00024	113Q_KRKR only (dowr
Unc119	22248	-0.24	0.20400	0.48512	-0.95	0.00005	0.00024	113Q_KRKR only (dowr
Sepw1	20364	-0.27	0.09625	0.31552	-0.95	0.00005	0.00024	113Q_KRKR only (dowr
Pygl	110095	-0.34	0.12405	0.36765	-0.92	0.00005	0.00024	113Q_KRKR only (dowr
Brp44	70456	-0.26	0.06840	0.25653	-0.91	0.00005	0.00024	113Q_KRKR only (dowr
Cyc1	66445	-0.25	0.09125	0.30501	-0.91	0.00005	0.00024	113Q_KRKR only (dowr
Acy1	109652	-0.23	0.24665	0.53786	-0.90	0.00005	0.00024	113Q_KRKR only (dowr
Ubc	22190	-0.44	0.00205	0.02168	-0.90	0.00005	0.00024	113Q_KRKR only (dowr
Hsd11b1	15483	0.11	0.53705	0.78312	-0.89	0.00005	0.00024	113Q_KRKR only (dowr
1500011K16Rik	67885	-0.22	0.10755	0.33760	-0.89	0.00005	0.00024	113Q_KRKR only (dowr
Cisd1	52637	-0.27	0.04750	0.20410	-0.88	0.00005	0.00024	113Q_KRKR only (dowr
F2rl3	14065	-0.67	0.01225	0.08196	-0.87	0.00070	0.00258	113Q_KRKR only (dowr
Ndufb10	68342	-0.33	0.01845	0.10939	-0.87	0.00005	0.00024	113Q_KRKR only (dowr
Dcn	13179	-0.03	0.85350	0.95091	-0.87	0.00005	0.00024	113Q_KRKR only (dowr

Ndufa5	68202	-0.29	0.03280	0.15919	-0.87	0.00005	0.00024	113Q_KRKR only (dowr
Mrpl30	107734	-0.30	0.02750	0.14277	-0.86	0.00005	0.00024	113Q_KRKR only (dowr
Agt	11606	-0.08	0.63925	0.84738	-0.86	0.00005	0.00024	113Q_KRKR only (dowr
Bdh1	71911	-0.34	0.04450	0.19586	-0.86	0.00005	0.00024	113Q_KRKR only (dowr
Mcam	84004	-0.46	0.00235	0.02405	-0.84	0.00005	0.00024	113Q_KRKR only (dowr
Cst6	73720	-0.41	0.00815	0.06098	-0.83	0.00005	0.00024	113Q_KRKR only (dowr
Hint1	15254	-0.27	0.05415	0.22221	-0.83	0.00005	0.00024	113Q_KRKR only (dowr
Folr2	14276	0.51	0.00485	0.04163	-0.82	0.00015	0.00066	113Q_KRKR only (dowr
Egln2	112406	-0.36	0.00935	0.06739	-0.81	0.00005	0.00024	113Q_KRKR only (dowr
Kdr	16542	-0.26	0.07465	0.27049	-0.81	0.00005	0.00024	113Q_KRKR only (dowr
Sdc1	20969	-0.58	0.01595	0.09854	-0.80	0.00060	0.00226	113Q_KRKR only (dowr
Fst	14313	-0.10	0.66435	0.86214	-0.80	0.00050	0.00192	113Q_KRKR only (dowr
Scd2	20250	-0.47	0.00070	0.00903	-0.80	0.00005	0.00024	113Q_KRKR only (dowr
Apoe	11816	0.37	0.00750	0.05728	-0.79	0.00005	0.00024	113Q_KRKR only (dowr
Slc25a10	27376	-0.13	0.50145	0.75871	-0.79	0.00005	0.00024	113Q_KRKR only (dowr
Ndufb9	66218	-0.18	0.23010	0.51792	-0.79	0.00005	0.00024	113Q_KRKR only (dowr
Ehhadh	74147	-0.27	0.13150	0.38072	-0.79	0.00005	0.00024	113Q_KRKR only (dowr
Pde3b	18576	-0.11	0.62980	0.84238	-0.78	0.00045	0.00175	113Q_KRKR only (dowr
St3gal5	20454	-0.35	0.01065	0.07373	-0.76	0.00005	0.00024	113Q_KRKR only (dowr
Slc1a5	20514	0.20	0.19460	0.47278	-0.76	0.00005	0.00024	113Q_KRKR only (dowr
Ppm1a	19042	-0.37	0.00925	0.06687	-0.76	0.00005	0.00024	113Q_KRKR only (dowr
Serpine2	20720	-0.27	0.05290	0.21906	-0.76	0.00005	0.00024	113Q_KRKR only (dowr
Tspan8	216350	-0.39	0.00415	0.03711	-0.75	0.00005	0.00024	113Q_KRKR only (dowr
Clec3b	21922	0.26	0.06880	0.25770	-0.75	0.00005	0.00024	113Q_KRKR only (dowr
Ndufb2	68198	-0.22	0.10835	0.33896	-0.75	0.00005	0.00024	113Q_KRKR only (dowr
0910001L09Rik	66096	-0.11	0.44715	0.72168	-0.74	0.00005	0.00024	113Q_KRKR only (dowr
Pcx	18563	-0.55	0.00015	0.00248	-0.73	0.00005	0.00024	113Q_KRKR only (dowr
Cyp27a1	104086	-0.35	0.01145	0.07771	-0.73	0.00005	0.00024	113Q_KRKR only (dowr
Sdhb	67680	-0.14	0.34920	0.63875	-0.73	0.00005	0.00024	113Q_KRKR only (dowr
Mfng	17305	-0.35	0.11690	0.35520	-0.72	0.00110	0.00381	113Q_KRKR only (dowr
Slc8a1	20541	-0.55	0.00010	0.00175	-0.71	0.00005	0.00024	113Q_KRKR only (dowr
Acly	104112	-0.51	0.00125	0.01461	-0.71	0.00005	0.00024	113Q_KRKR only (dowr
Etfb	110826	-0.07	0.62710	0.84061	-0.70	0.00005	0.00024	113Q_KRKR only (dowr
Vegfa	22339	-0.42	0.00285	0.02795	-0.70	0.00005	0.00024	113Q_KRKR only (dowr
Neu2	23956	-0.02	0.92145	0.97620	-0.70	0.00005	0.00024	113Q_KRKR only (dowr
B230118H07Rik	68170	-0.29	0.03710	0.17279	-0.70	0.00005	0.00024	113Q_KRKR only (dowr
Ccng1	12450	-0.42	0.01085	0.07467	-0.70	0.00005	0.00024	113Q_KRKR only (dowr
Myh2	17882	-0.25	0.17755	0.45054	-0.70	0.00005	0.00024	113Q_KRKR only (dowr
Ndufa7	66416	-0.04	0.79605	0.92549	-0.70	0.00005	0.00024	113Q_KRKR only (dowr
Lsm4	50783	-0.07	0.61080	0.83143	-0.70	0.00005	0.00024	113Q_KRKR only (dowr
Capza2	12343	-0.47	0.00060	0.00796	-0.69	0.00005	0.00024	113Q_KRKR only (dowr
Pttg1	30939	-0.02	0.89855	0.96903	-0.68	0.00005	0.00024	113Q_KRKR only (dowr
Trf	22041	0.27	0.06670	0.25404	-0.68	0.00005	0.00024	113Q_KRKR only (dowr
Pla2g16	225845	-0.14	0.32525	0.61880	-0.68	0.00005	0.00024	113Q_KRKR only (dowr
Mrpl51	66493	-0.39	0.00390	0.03544	-0.67	0.00005	0.00024	113Q_KRKR only (dowr
Hist1h1c	50708	-0.02	0.86945	0.95682	-0.65	0.00005	0.00024	113Q_KRKR only (dowr

Irx3	16373	-0.12	0.56110	0.79869	-0.65	0.00185	0.00599	113Q_KRKR only (dowr
Trdn	76757	-0.52	0.00190	0.02042	-0.65	0.00005	0.00024	113Q_KRKR only (dowr
Khdrbs3	13992	-0.20	0.28740	0.58187	-0.65	0.00015	0.00066	113Q_KRKR only (dowr
Akr7a5	110198	-0.22	0.12375	0.36713	-0.65	0.00005	0.00024	113Q_KRKR only (dowr
Ghr	14600	-0.42	0.01520	0.09587	-0.64	0.00005	0.00024	113Q_KRKR only (dowr
Nudt19	110959	-0.23	0.10055	0.32368	-0.64	0.00005	0.00024	113Q_KRKR only (dowr
Serpine1	18787	-0.18	0.37275	0.65789	-0.64	0.00120	0.00412	113Q_KRKR only (dowr
Ubqln4	94232	-0.40	0.00265	0.02659	-0.64	0.00005	0.00024	113Q_KRKR only (dowr
Vapb	56491	-0.25	0.07170	0.26403	-0.63	0.00005	0.00024	113Q_KRKR only (dowr
Eif5a	276770	-0.36	0.01065	0.07373	-0.63	0.00005	0.00024	113Q_KRKR only (dowr
2900064A13Rik	73024	-0.30	0.03510	0.16630	-0.63	0.00005	0.00024	113Q_KRKR only (dowr
Rap1gap	110351	0.00	0.98895	0.99669	-0.62	0.00135	0.00455	113Q_KRKR only (dowr
Sap30l	50724	-0.26	0.06530	0.25049	-0.62	0.00005	0.00024	113Q_KRKR only (dowr
Wipf3	330319	-0.35	0.01995	0.11566	-0.61	0.00005	0.00024	113Q_KRKR only (dowr
Faf1	14084	-0.38	0.00540	0.04501	-0.61	0.00005	0.00024	113Q_KRKR only (dowr
Ube2r2	67615	-0.14	0.31715	0.60988	-0.60	0.00005	0.00024	113Q_KRKR only (dowr
D8Ert738e	101966	0.07	0.58550	0.81468	-0.60	0.00005	0.00024	113Q_KRKR only (dowr
Cltb	74325	-0.37	0.00740	0.05677	-0.60	0.00005	0.00024	113Q_KRKR only (dowr
Pxmp2	19301	0.12	0.41265	0.69339	-0.59	0.00005	0.00024	113Q_KRKR only (dowr
2310016M24Rik	66379	0.07	0.59605	0.82187	-0.59	0.00005	0.00024	113Q_KRKR only (dowr
Mstn	17700	-0.44	0.00150	0.01688	-0.59	0.00005	0.00024	113Q_KRKR only (dowr
Dbt	13171	-0.17	0.23835	0.52854	-0.59	0.00005	0.00024	113Q_KRKR only (dowr
Maf	17132	-0.33	0.01940	0.11325	-0.59	0.00005	0.00024	113Q_KRKR only (dowr
Rpl8	26961	-0.09	0.49900	0.75726	-0.59	0.00005	0.00024	113Q_KRKR only (dowr
Nedd8	18002	0.00	0.98330	0.99505	-0.59	0.00005	0.00024	113Q_KRKR only (dowr
Ppa1	67895	-0.25	0.07305	0.26733	-0.59	0.00005	0.00024	113Q_KRKR only (dowr
Sc4mol	66234	-0.19	0.35970	0.64730	-0.59	0.00445	0.01285	113Q_KRKR only (dowr
Rpl27	19942	-0.36	1.00000	1.00000	8.38	0.00005	0.00024	113Q_KRKR only (up)
Rpl28	19943	-0.23	0.63885	0.84736	8.36	0.00005	0.00024	113Q_KRKR only (up)
Rpl12	269261	-1.53	0.02745	0.14269	8.16	0.00005	0.00024	113Q_KRKR only (up)
Rpl9	20005	-1.51	0.01440	0.09206	8.00	0.00005	0.00024	113Q_KRKR only (up)
Rpl10	110954	-0.96	0.03335	0.16093	7.92	0.00005	0.00024	113Q_KRKR only (up)
Rps29	20090	-0.72	0.12630	0.37096	7.76	0.00005	0.00024	113Q_KRKR only (up)
Rps28	54127	0.02	0.93975	0.98136	7.67	0.00005	0.00024	113Q_KRKR only (up)
Rpl11	67025	-0.19	0.60580	0.82855	7.32	0.00005	0.00024	113Q_KRKR only (up)
Eno1	13806	-1.48	1.00000	1.00000	7.29	0.01320	0.03281	113Q_KRKR only (up)
Rps23	66475	-0.83	0.05535	0.22556	7.13	0.00005	0.00024	113Q_KRKR only (up)
Rpl5	100503670	0.42	0.49130	0.75180	6.41	0.00005	0.00024	113Q_KRKR only (up)
Uba52	22186	0.09	0.71075	0.88704	6.01	0.00005	0.00024	113Q_KRKR only (up)
Rpl37a	19981	-0.16	0.51160	0.76662	4.89	0.00005	0.00024	113Q_KRKR only (up)
Rpl19	19921	-0.15	0.45715	0.72745	4.67	0.00005	0.00024	113Q_KRKR only (up)
Tpt1	22070	-0.27	0.05510	0.22485	4.49	0.00005	0.00024	113Q_KRKR only (up)
Cycs	13063	-0.34	0.02525	0.13465	4.06	0.00005	0.00024	113Q_KRKR only (up)
Rpl3	27367	0.10	0.65020	0.85500	4.00	0.00005	0.00024	113Q_KRKR only (up)
Hspa8	15481	0.40	0.00330	0.03130	3.77	0.00005	0.00024	113Q_KRKR only (up)
Pgam1	18648	0.71	0.01865	0.11019	3.68	0.00005	0.00024	113Q_KRKR only (up)

Cox7c	12867	0.03	0.82750	0.94013	3.66	0.00005	0.00024	113Q_KRKR only (up)
Rplp2	67186	-0.27	0.12190	0.36403	3.58	0.00005	0.00024	113Q_KRKR only (up)
Stmn1	16765	0.97	0.06160	0.24165	3.44	0.00005	0.00024	113Q_KRKR only (up)
Tyms	22171	-0.31	1.00000	1.00000	3.40	0.00005	0.00024	113Q_KRKR only (up)
Idi1	319554	0.49	0.09525	0.31365	3.20	0.00005	0.00024	113Q_KRKR only (up)
Rps3a	20091	-0.10	0.49445	0.75388	3.09	0.00005	0.00024	113Q_KRKR only (up)
Hadhb	231086	0.04	0.77025	0.91409	2.85	0.00005	0.00024	113Q_KRKR only (up)
Cd63	12512	-0.07	0.64885	0.85389	2.06	0.00005	0.00024	113Q_KRKR only (up)
Rps4x	20102	-0.14	0.30585	0.59952	1.92	0.00005	0.00024	113Q_KRKR only (up)
Rps26	27370	-0.29	0.05625	0.22812	1.84	0.00005	0.00024	113Q_KRKR only (up)
Fdps	110196	-0.03	0.88085	0.96077	1.76	0.00005	0.00024	113Q_KRKR only (up)
Slc15a2	57738	0.57	0.05295	0.21912	1.73	0.00010	0.00045	113Q_KRKR only (up)
Tomm20	67952	0.15	0.28780	0.58188	1.66	0.00005	0.00024	113Q_KRKR only (up)
Rps24	20088	-0.16	0.26070	0.55372	1.63	0.00005	0.00024	113Q_KRKR only (up)
1190007F08Rik	68859	0.14	0.75810	0.90773	1.57	0.00030	0.00121	113Q_KRKR only (up)
Rian	75745	0.15	0.39995	0.68284	1.54	0.00005	0.00024	113Q_KRKR only (up)
Eif3m	98221	0.08	0.59000	0.81816	1.35	0.00005	0.00024	113Q_KRKR only (up)
Gbp6	100702	0.39	0.05475	0.22381	1.24	0.00005	0.00024	113Q_KRKR only (up)
Ctgf	14219	0.37	0.03115	0.15441	1.24	0.00005	0.00024	113Q_KRKR only (up)
S100a11	20195	0.09	0.62725	0.84061	1.22	0.00005	0.00024	113Q_KRKR only (up)
Ywhaz	22631	0.14	0.32225	0.61558	1.21	0.00005	0.00024	113Q_KRKR only (up)
Pcbd1	13180	0.62	0.14390	0.39952	1.20	0.00250	0.00780	113Q_KRKR only (up)
Glr3	30926	-0.20	0.17430	0.44565	1.19	0.00005	0.00024	113Q_KRKR only (up)
Pdlim1	54132	-0.06	0.72120	0.89111	1.13	0.00005	0.00024	113Q_KRKR only (up)
Tuba1b	22143	0.39	0.01540	0.09682	1.10	0.00005	0.00024	113Q_KRKR only (up)
Psmd11	69077	0.11	0.44410	0.71972	1.09	0.00005	0.00024	113Q_KRKR only (up)
Ncf2	17970	0.09	1.00000	1.00000	1.08	0.00080	0.00290	113Q_KRKR only (up)
Rps20	67427	-0.25	0.06805	0.25651	1.00	0.00005	0.00024	113Q_KRKR only (up)
Scp2	20280	0.12	0.38895	0.67305	0.99	0.00005	0.00024	113Q_KRKR only (up)
Bcar3	29815	0.52	0.01085	0.07467	0.99	0.00005	0.00024	113Q_KRKR only (up)
F2r	14062	0.18	0.38720	0.67121	0.93	0.00005	0.00024	113Q_KRKR only (up)
Bnip3l	12177	0.00	0.99805	0.99893	0.92	0.00005	0.00024	113Q_KRKR only (up)
Sesn1	140742	0.57	0.00005	0.00095	0.89	0.00005	0.00024	113Q_KRKR only (up)
Slc25a25	227731	0.46	0.00525	0.04401	0.86	0.00005	0.00024	113Q_KRKR only (up)
Ptges3	56351	-0.17	0.23810	0.52842	0.83	0.00005	0.00024	113Q_KRKR only (up)
Fabp5	16592	-0.02	0.93115	0.97849	0.78	0.00015	0.00066	113Q_KRKR only (up)
Ap2b1	71770	0.35	0.01250	0.08293	0.78	0.00005	0.00024	113Q_KRKR only (up)
Rab33b	19338	0.48	0.00480	0.04139	0.77	0.00005	0.00024	113Q_KRKR only (up)
Npr3	18162	0.13	0.57130	0.80503	0.76	0.00005	0.00024	113Q_KRKR only (up)
Foxo1	56458	0.13	0.41050	0.69155	0.76	0.00005	0.00024	113Q_KRKR only (up)
Mdk	17242	0.59	0.07720	0.27591	0.75	0.01065	0.02728	113Q_KRKR only (up)
Ndufs3	68349	-0.37	0.00610	0.04934	0.75	0.00005	0.00024	113Q_KRKR only (up)
Lsm6	78651	0.29	0.03990	0.18180	0.75	0.00005	0.00024	113Q_KRKR only (up)
Ccni	12453	0.41	0.00285	0.02795	0.74	0.00005	0.00024	113Q_KRKR only (up)
Kcna5	16493	-0.02	0.93000	0.97830	0.74	0.00005	0.00024	113Q_KRKR only (up)
Uck1	22245	0.21	0.40035	0.68316	0.73	0.00245	0.00766	113Q_KRKR only (up)

Postn	50706	0.51	0.00305	0.02967	0.73	0.00005	0.00024	113Q_KRKR only (up)
Atg4a	666468	-0.07	0.65545	0.85737	0.71	0.00005	0.00024	113Q_KRKR only (up)
Hspa2	15512	0.48	0.01980	0.11485	0.70	0.00040	0.00157	113Q_KRKR only (up)
Fndc3b	72007	0.26	0.09315	0.30925	0.70	0.00005	0.00024	113Q_KRKR only (up)
Pdia4	12304	0.56	0.00065	0.00848	0.70	0.00005	0.00024	113Q_KRKR only (up)
Hsp90ab1	15516	0.34	0.03750	0.17410	0.69	0.00005	0.00024	113Q_KRKR only (up)
Sat1	20229	0.45	0.00670	0.05281	0.66	0.00010	0.00045	113Q_KRKR only (up)
Ddx5	13207	-0.06	0.66870	0.86382	0.65	0.00005	0.00024	113Q_KRKR only (up)
Lrrc8a	241296	0.16	0.34090	0.63312	0.65	0.00005	0.00024	113Q_KRKR only (up)
Odz3	23965	0.03	0.83030	0.94120	0.65	0.00005	0.00024	113Q_KRKR only (up)
St13	70356	0.42	0.00225	0.02339	0.65	0.00005	0.00024	113Q_KRKR only (up)
Rad50	19360	0.39	0.02490	0.13351	0.63	0.00025	0.00103	113Q_KRKR only (up)
Armcx2	67416	0.44	0.02940	0.14876	0.63	0.00090	0.00322	113Q_KRKR only (up)
Slc22a4	30805	0.55	0.04040	0.18337	0.62	0.00995	0.02575	113Q_KRKR only (up)
Sp100	20684	0.23	0.24390	0.53468	0.62	0.00040	0.00157	113Q_KRKR only (up)
Macf1	11426	-0.07	0.61425	0.83323	0.60	0.00005	0.00024	113Q_KRKR only (up)
Cebpd	12609	-0.03	0.89415	0.96694	0.59	0.00180	0.00585	113Q_KRKR only (up)
Col3a1	12825	0.46	0.00260	0.02618	0.59	0.00005	0.00024	113Q_KRKR only (up)



Supplementary Figure 1: AR113Q and AR113Q-KRKR expression in spinal cord, quadriceps muscle and testis.

AR signals shown in Figure 7A from IP and western blots of quadriceps muscle and spinal cord, and in Figure 7B from western blot of testis were quantified relative to loading controls. Data are mean $\pm$ SEM. $P > 0.05$ by Student's t-test, with p values for each comparison shown beneath the graph.