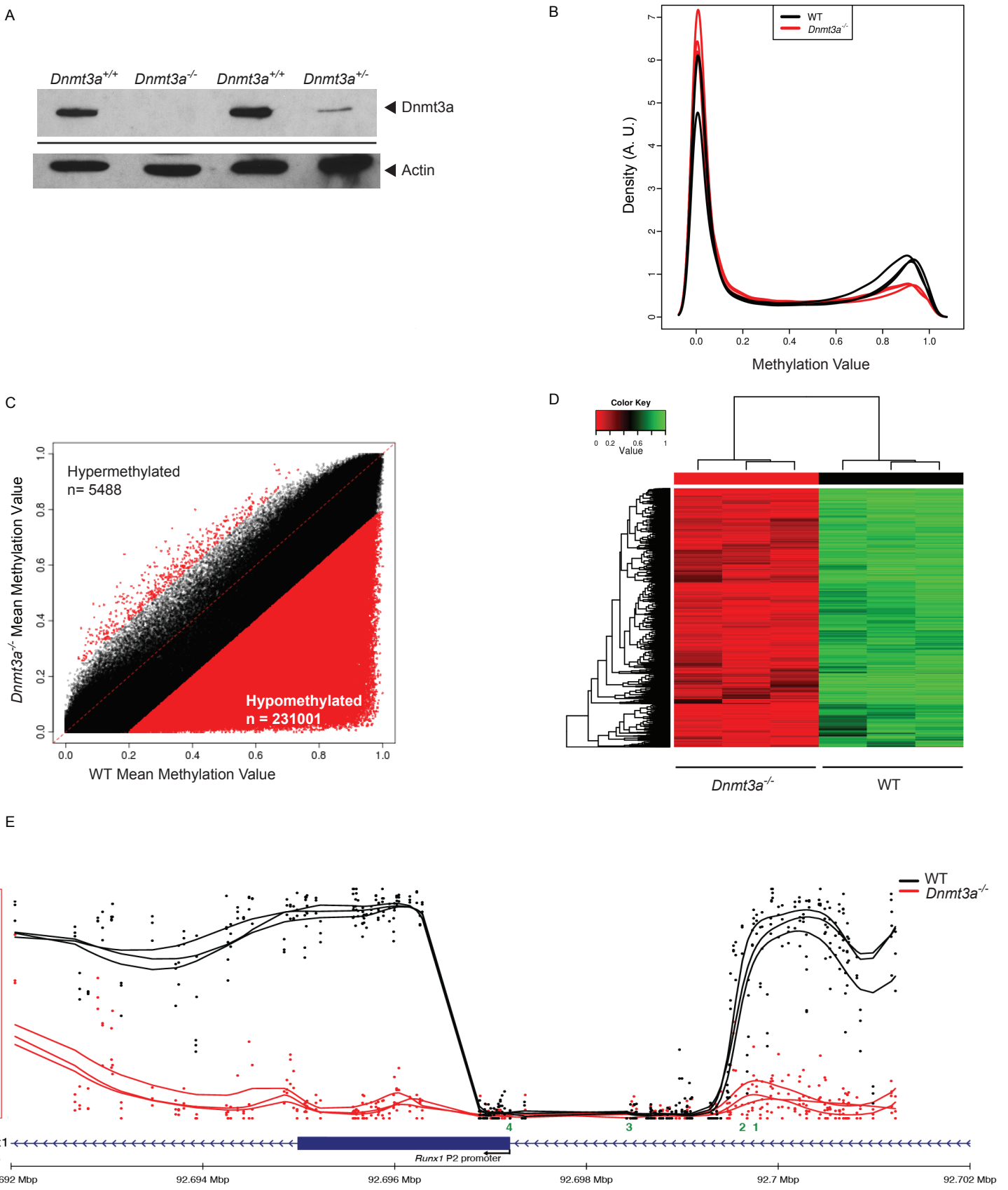
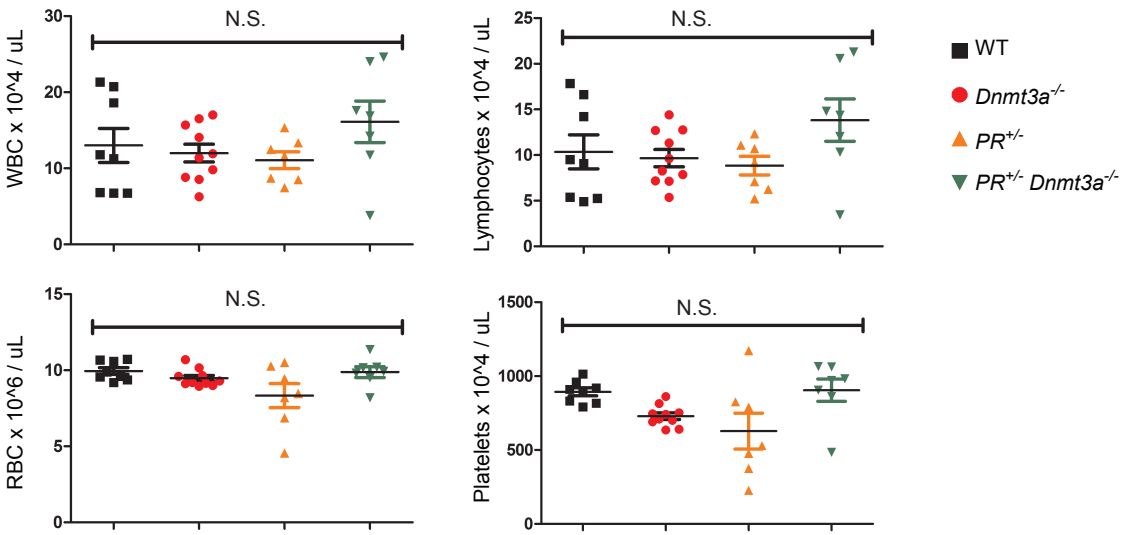
Cole et al. Supplemental Figure S1



Cole et al. Supplemental Figure S2

A



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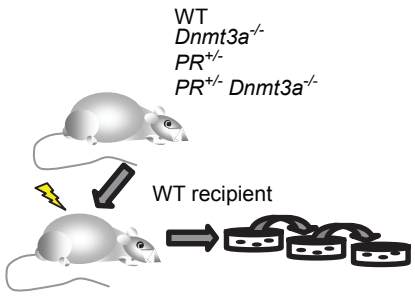

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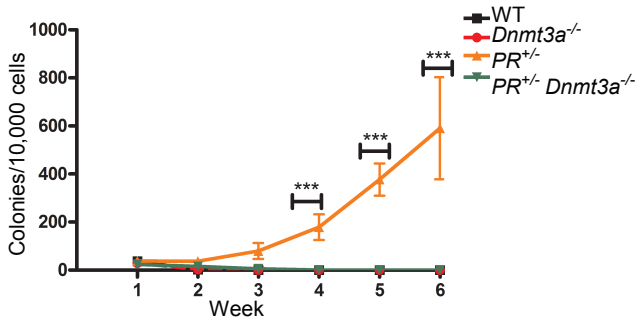
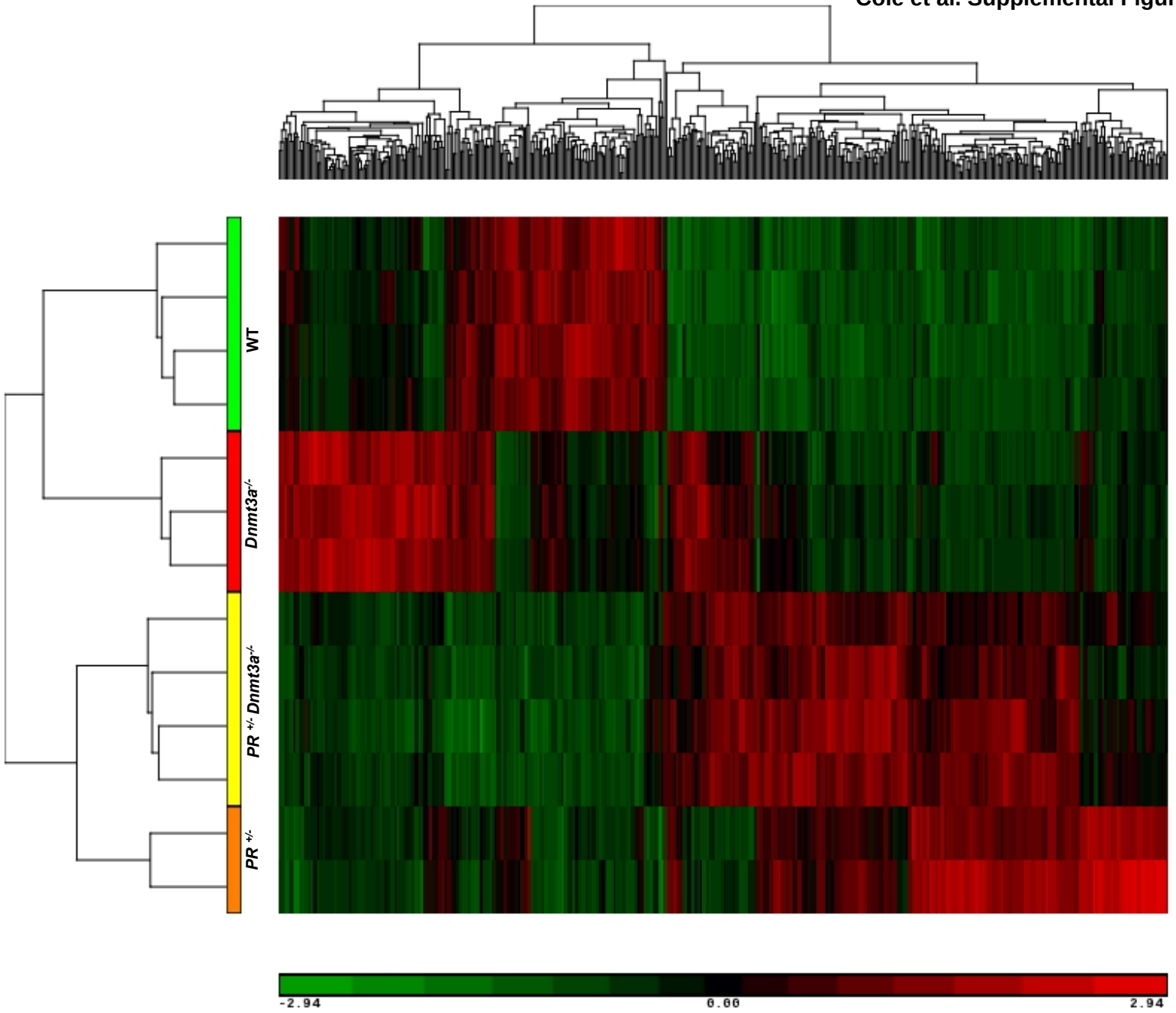
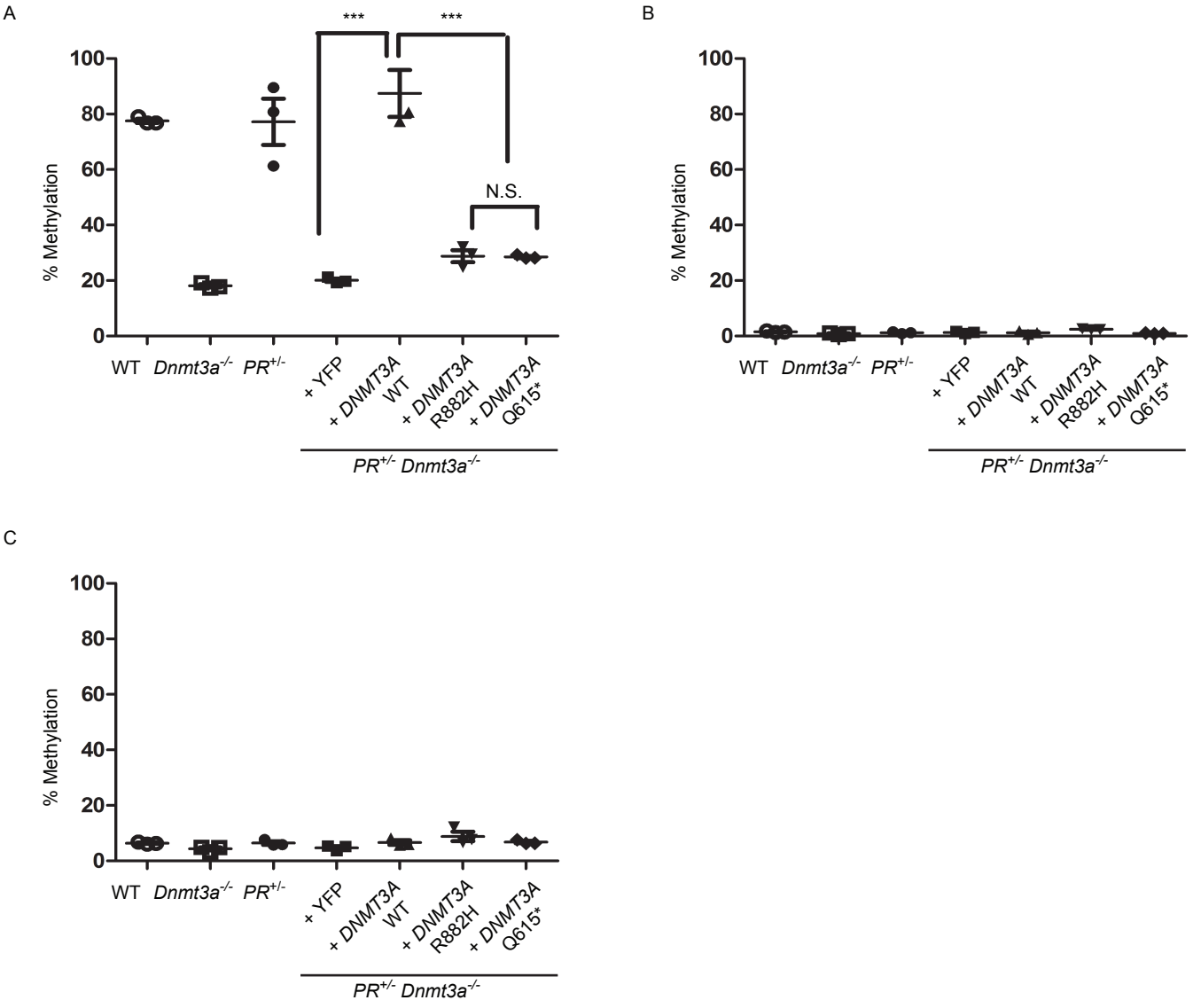


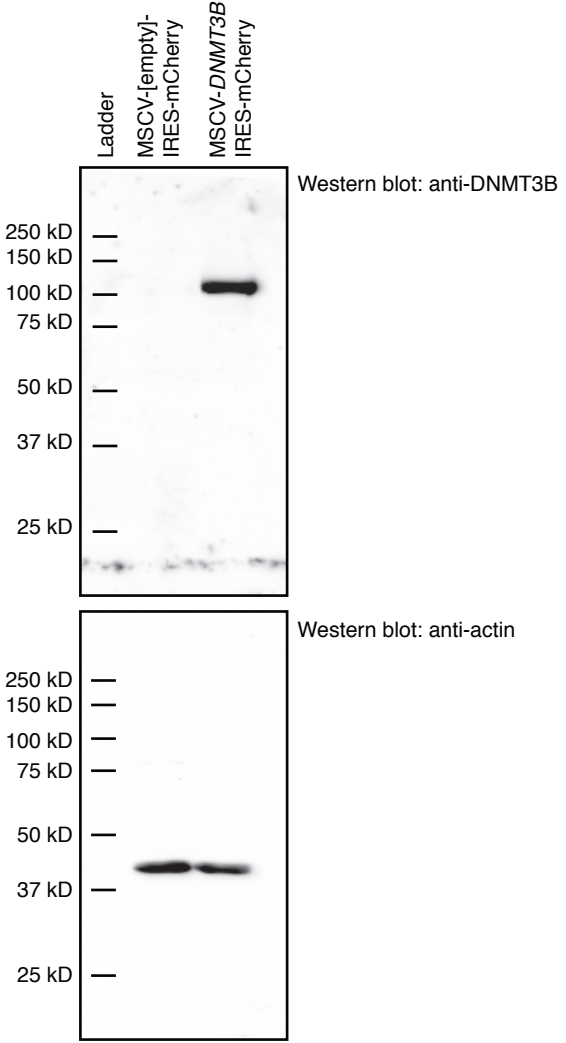
Cole et al. Supplemental Figure S3



Cole et al. Supplemental Figure S4



Cole et al. Supplemental Figure S5



Supplemental Figure S1

(**A**) Western blot of total protein extracts from E18.5 embryos using an antibody directed against the N-terminus. *Dnmt3a* genotypes are indicated. (**B)** Total bone marrow cells from 18 day old WT or Dnmt3a null mice was harvested and transplanted into lethally transplanted recipient mice. Bone marrow from three independent recipients was then harvested 8 weeks later, and DNA was prepared for CpG capture and bisulfite sequencing. Genome wide distribution of DNA methylation demonstrates a decrease in the fraction of methylated CpGs (green arrow) and a corresponding increase in unmethylated CpGs (red arrow) in *Dnmt3a-/-* bone marrow cells. **(C)** Plot of percent methylation of individual CpGs in wild-type vs *Dnmt3a-/-* bone marrow cells. The data represents the average values from three independent mice. CpGs with differential methylation between the two genotypes (adjusted p-value <.05) are highlighted in red. Of the differentially methylated CpGs, 240,000 were significantly hypomethylated in *Dnmt3a* null bone marrow, and 5,400 were more methylated compared to wild-type cells. **(D)** Specific CpGs are recurrently hypomethylated in *Dnmt3a* null marrow. Unsupervised clustering of the 10,000 most differentially methylated CpGs demonstrates that nearly all are hypomethylated in all three *Dnmt3a* null samples relative to all wild-type samples. **(E)** Example of the *Runx1* locus on chromosome 16 containing two regions that are entirely dependent on *Dnmt3a* for their methylation as well as additional regions that are *Dnmt3a*-independent. Schematic of *Runx1* exons is shown below the graph. Numbers 1-4 denote regions interrogated in methylation assay in Figure 4F and Supplemental Figure S3.

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Supplemental Figure S2

(A) Bone marrow from 2-2.5 week old WT and *Dnmt3a-/-* mice was transplanted into wildtype recipients and allowed to engraft for 16 weeks to assess the ability of *Dnmt3*-null marrow to engraft and contribute to peripheral blood cells of all lineages. At 16 weeks post-transplant, no differences were observed in numbers of leukocytes, lymphocytes, red blood cells, or platelets, regardless of the presence or absence of Dnmt3a. (**B**) Design of experiment in (**C**). Bone marrow from 2-2.5 week old mice of the indicated genotypes was transplanted into lethally irradiated wildtype recipients and allowed to engraft for 10 weeks before being harvested and plated in methocult media as in Figure 3**.** (**C)** Quantification of colony numbers from transplanted bone marrow demonstrates that the replating deficit in *PR+/- Dnmt3a-/-* bone marrow cells is intrinsic to the bone marrow compartment. *** $P<0.001$ for *PR+/-* vs all other genotypes by two-way ANOVA.

Supplemental Figure S3

Unsupervised hierarchical clustering of differentially expressed genes in sorted GMPs from stably engrafted recipients of of WT, *PR*$^{+/-}$, *PR*$^{+/-}$ *Dnmt3a*$^{-/-}$, and *Dnmt3a*$^{-/-}$ bone marrow. The list of genes with significant variation in expression level was generated by using a fold change of 2 and a 0.05 FDR criterion as a significant cutoff as described in the Methods.

Supplemental Figure S4

(**A-C)** Bone marrow from WT, *Dnmt3a-/-*, *PR+/-*, and *PR+/-, Dnmt3a-/-* mice was harvested and transduced with control YFP vectors, *DNMT3A*, or *DNMT3A* mutants from AML patients before methocult plating and HpaII methylation assay was performed as in Figure 4F. Locations of CpGs 2,3, and 4 in *Runx1* are shown in Figure 1E. (**A**) Region 2 is hypomethylated in *Dnmt3a-/-* and *PR+/-, Dnmt3a-/-* cells and methylation is restored to *PR+/-, Dnmt3a-/-* cells by expression of *DNMT3A* but not methylation-deficient mutants R882H or Q615*. (**B)** Methylation canyon at region 3 is largely unmethylated in all genotype and virus combinations, demonstrating the specificity of *DNMT3A* methylation activity and ability of HpaII to digest the unmethylated DNA. (**C**) Methylation canyon at region 4 likewise demonstrates specificity of *DNMT3A* methylation and effectiveness of HpaII digest. *** P<0.001.

Supplemental Figure S5

Western blot demonstrating overexpression of human DNMT3B protein in mouse bone marrow cells. Wildtype bone marrow was transduced with MSCV-[empty]-IRES-mCherry or MSCV-DNMT3B1-mCherry and cells were harvested 48 hours post-transduction and sorted by FACS.

Supplemental Table 1: Regions Targeted for Methylation Sequencing

Site Classification	Number of Targets	Total Bases Covered
CpG Islands	16,027	10,512,276
Tissue-specific DMRs	33,456	10,452,692
-CpG shores and shelves (+/-		
4kb)		
-DNAse I hypersensitive sites		
-Histone modifications		
-Transcription factor binding		
sites		
Ensembl Regulatory	171,796	91,799,015
Features		
-Promoters		
-Enhancers		
-Transcription factor binding		
sites		
-Regulatory polymorphisms		
Open Regulatory Annotation	14,951	9,983,957
(ORegAnno)		
Total Merged Intervals	201,788	109,147,819

Supplemental Table S2: Methylation CaptureSequencing Coverage Statistics

	Total reads	Mapped	Unmapped	Unique	Duplicates	Evaluable CpGs (covg ≥10x)
			WT			
Sample 1	287,531,796	262,118,600	25,413,196	201,034,895	61,083,705	1,905,480
Sample 2	254,844,017	234,214,689	20,629,328	148,123,163	86,091,526	1,968,501
Sample 3	296,499,642	235,445,004	61,054,638	196,443,171	39,001,833	1,417,412
			Dnmt3a $^{-/-}$			
Sample 1	315,543,260	283,235,229	32,308,031	84,657,623	198,577,606	1,948,089
Sample 2	289,287,027	265,512,324	23,774,703	166,570,302	98,942,022	1,570,078
Sample 3	278,063,657	248,994,906	29,068,751	72,220,154	176,774,752	1,477,859

Supplemental Table S3: Differentially Expressed Genes PR GMP vs WT GMP

ColumnID	GeneSymbol	p-value(ID)	p-value(mCG-PR GMP vs. WT GMP)	MeanRatio(mCG-PR GMP vs. WT GMP)	FoldChange(mCG-PR GMP vs. WT GMP)	FoldChange(mCG-PR GMP vs. WT GMP) (Description)	F(ID)	SS(ID)	SS(Error)	F(Error)	WT.1	WT.2	WT.3	WT.4	PR$^{+/-}$.1	PR$^{+/-}$.2	PR$^{+/-}$ Dnmt3a$^{-/-}$.1	PR$^{+/-}$ Dnmt3a$^{-/-}$.2	PR$^{+/-}$ Dnmt3a$^{-/-}$.3	PR$^{+/-}$ Dnmt3a$^{-/-}$.4	Dnmt3a$^{-/-}$.1	Dnmt3a$^{-/-}$.2	Dnmt3a$^{-/-}$.3	FoldChange (PR $^{+/-\ b}$ vs WT)	FoldChange (PR$^{+/-\ b}$ Dnmt3a$^{-/-}$ vs WT)	FoldChange (Dnmt3a$^{-/-}$ vs WT)	FoldChange >2 (PR $^{+/-\ b}$ vs WT), same direction of change	FoldChange (PR$^{+/-\ b}$ Dnmt3a$^{-/-}$ vs WT), same direction of change
5184346	Slc20a1	0.0002065	0.000206531	0.141059	-7.08925	mCG-PR GMP down vs WT GMP	63.6558	20943.8	1974.1	1	38.1048	16.4309	20.9896	9.0207	104.536	23.5847	68.8142	10.2158	59.3506	41.2851	53.0495	32.0754	22.9712	2.64654	2.04307	1.98868	N	N
5072653	Abcb1b	0.0007982	0.000798245	0.153878	-6.49864	mCG-PR GMP down vs WT GMP	38.6805	6074.63	942.279	1	7.4829	44.1081	42.5094	16.8833	7.50897	27.2476	4.98107	5.67247	25.7048	11.7462	28.6843	7.3792	12.811	-1.72088	-2.28917	-1.64375	N	Y
5167282	Fam78a	0.0005442	0.000544161	0.169006	-5.91695	mCG-PR GMP down vs WT GMP	44.6555	57047.8	7665.06	1	141.927	66.8902	37.6864	34.0821	30.3939	76.5173	72.758	41.3136	48.3136	59.6128	28.4723	64.6128	24.2628	-1.49601	-1.31293	-1.29861	N	N
5014338	Tubb6	4.45E-05	4.45E-05	0.180128	-5.55161	mCG-PR GMP down vs WT GMP	109.65	38725.2	2119.03	1	147.314	285.999	84.1099	75.2752	9.43536	32.2606	21.4192	43.4567	82.3691	42.1591	116.745	85.4617	201.836	-7.37978	-3.11691	-1.12419	Y	Y
4657407	Irf8	0.0001323	0.000132336	0.183325	-5.45481	mCG-PR GMP down vs WT GMP	74.6695	285542	22944.5	1	372.628	143.344	309.277	226.147	54.1201	83.4464	5.30003	52.6269	44.2604	6.32348	171.98	133.673	77.8871	-4.14527	-9.73893	-1.18839	Y	Y
4479545	Csf1r	0.0007047	0.000704658	0.190181	-5.25816	mCG-PR GMP down vs WT GMP	40.5418	146357	21660.2	1	248.879	542.216	153.887	161.943	35.6239	81.4016	42.342	20.9046	50.2905	46.1807	133.351	93.4006	70.9942	-5.22694	-6.99302	-3.68525	Y	Y
5392334	Vdr	0.000172	0.000172043	0.223249	-4.4793	mCG-PR GMP down vs WT GMP	67.9797	86458.2	7630.94	1	55.1655	244.564	89.5728	51.0609	4.9182	25.468	73.6014	25.6381	19.8688	31.5465	35.6068	42.4289	29.9869	-8.05476	-2.84833	-2.16368	Y	Y
5373932	Jmy	3.79E-05	3.79E-05	0.235729	-4.24216	mCG-PR GMP down vs WT GMP	115.925	30222.5	1564.24	1	15.6956	45.1122	25.7832	51.9241	18.7491	37.3096	64.7776	41.1402	48.7437	23.4014	56.7835	65.7171	35.103	-1.30145	1.24938	1.30947	N	N
5318797	Arhgap18	0.0004866	0.000486567	0.238155	-4.19895	mCG-PR GMP down vs WT GMP	46.5491	491908	63405	1	77.2395	724.138	195.749	217.369	243.777	254.517	96.7765	194.601	334.804	144.193	387.99	210.795	222.767	-1.32742	-1.58219	1.17292	N	N
4634414	Irf8	0.0001231	0.000123091	0.240198	-4.16323	mCG-PR GMP down vs WT GMP	76.6211	161700	12662.3	1	118.406	103.997	261.258	241.929	77.1701	83.2071	32.3151	69.4849	39.5366	31.2095	112.905	138.9	121.937	-2.76481	-4.48631	-1.00188	Y	Y
5095229	Ifi44	0.0005888	0.000588849	0.243619	-4.10477	mCG-PR GMP down vs WT GMP	43.3615	1064.04	147.233	1	2.75232	2.33843	37.0915	5.37522	6.84401	10.3699	2.27269	3.12006	3.48146	2.15832	6.35649	16.0968	3.21503	-1.42955	-4.30341	1.04761	N	Y
5488238	Fam188b	0.0001459	0.000145927	0.243688	-4.1036	mCG-PR GMP down vs WT GMP	72.1084	51015.6	4244.91	1	36.4035	113.918	41.9718	46.4536	31.289	38.8179	121.831	65.8863	39.9288	42.194	54.1443	47.9364	49.8809	-1.85159	1.08071	-1.00955	N	N
5405411	Irf8	2.95E-05	2.95E-05	0.246123	-4.063	mCG-PR GMP down vs WT GMP	126.57	6.12E+06	290124	1	1610.55	1318.42	1469.55	1569.59	122.017	420.814	162.499	286.888	379.573	205.332	576.915	567.832	524.221	-5.93322	-5.76556	-1.46253	Y	Y
4502306	Plcb4	0.0004275	0.000427537	0.252135	-3.96613	mCG-PR GMP down vs WT GMP	48.8282	3750.23	460.827	1	44.8247	8.56974	7.31745	16.9562	3.03538	6.00854	18.0953	2.58736	22.8892	38.4245	18.0079	16.7106	16.3629	-4.26001	-1.01399	-1.03401	Y	N
5173296	Atp2b4	0.0009159	0.000915881	0.253444	-3.94565	mCG-PR GMP down vs WT GMP	36.7164	167731	27409.6	1	199.073	142.388	177.351	214.721	82.221	70.2025	85.3699	97.0914	182.591	23.9616	100.943	179.795	168.98	-2.77233	-1.92842	-1.31922	Y	N
5195994	Dpysl2	0.0005685	0.000568461	0.257858	-3.87811	mCG-PR GMP down vs WT GMP	43.935	32804.9	4480.02	1	76.6512	20.7171	69.9588	60.221	127.665	52.1474	47.6633	72.9062	50.0104	63.3268	60.2022	48.6435	44.6975	1.3576	1.004	1.0119	N	N
4660907	Sik1	0.0008598	0.000859844	0.26508	-3.77245	mCG-PR GMP down vs WT GMP	37.6072	117653	18770.8	1	201.508	110.295	162.462	113.795	32.6667	79.2858	226.702	66.3414	199.591	101.684	121.915	122.758	117.943	-2.97484	-1.02546	-1.4895	Y	N
4857532	Usp37	0.0007603	0.000760336	0.265431	-3.76746	mCG-PR GMP down vs WT GMP	39.3975	12045.1	1834.4	1	5.17237	154.054	17.9375	72.3136	41.3877	5.74749	21.7657	23.3826	34.9065	65.6839	80.1284	96.9432	6.37303	-2.86279	-1.75828	1.08963	Y	N
4975162	Irf8	0.0001061	0.000106099	0.277068	-3.60922	mCG-PR GMP down vs WT GMP	80.7753	1.04E+07	769046	1	2018.61	2146.11	1998.59	2349.81	277.221	635.064	83.299	338.499	296.536	187.443	917.24	967.221	882.008	-5.0207	-9.26349	-1.31313	Y	Y
5426970	Csf1r	0.0009423	0.000942322	0.278632	-3.58897	mCG-PR GMP down vs WT GMP	36.321	635156	104924	1	476.617	424.369	240.376	267.635	57.3657	107.691	183.487	69.2868	98.5057	60.0918	237.378	239.536	175.58	-4.6663	-3.62854	-2.09889	Y	Y
5598827	Irf8	6.04E-05	6.04E-05	0.281442	-3.55312	mCG-PR GMP down vs WT GMP	98.5313	3.37E+06	205187	1	1639.49	1149.8	1204.27	1511.04	241.962	403.221	133.221	187.925	253.008	125.98	386.814	547.554	452.795	-4.49987	-7.74061	-1.81949	Y	Y
4780916	Fgd2	0.0006236	0.000623648	0.283198	-3.5311	mCG-PR GMP down vs WT GMP	42.4413	27863.3	3939.08	1	109.008	136.547	121.538	89.8968	23.5598	34.0232	30.6961	36.6554	12.459	29.0243	70.0934	69.6489	79.7491	-4.57699	-4.3525	1.04288	Y	Y
4581032	Rasa4	0.0001648	0.000164834	0.28328	-3.53008	mCG-PR GMP down vs WT GMP	69.0315	145190	12619.5	1	260.351	96.1807	224.406	121.888	20.2855	18.8196	14.6496	19.0494	147.369	35.1698	60.2395	69.3094	47.8738	-11.2222	-3.1721	-1.86954	Y	Y
4970266	Slc38a9	7.60E-05	7.60E-05	0.283894	-3.52244	mCG-PR GMP down vs WT GMP	90.8995	6296.45	415.609	1	11.4171	6.40669	21.2303	27.917	25.6149	14.8952	24.2253	6.76523	17.7693	34.9609	43.8324	30.5472	20.2659	1.07686	1.1873	1.85241	N	N
5195742	Coro2a	0.0005421	0.000542098	0.284836	-3.51079	mCG-PR GMP down vs WT GMP	44.7186	828114	111110	1	228.23	175.739	194.749	205.082	198.554	183.999	339.702	168.841	102.147	105.332	242.851	216.693	214.101	-1.19773	-1.19069	1.10829	N	N
4509200	Tmcc2	0.0002542	0.000254182	0.285807	-3.49887	mCG-PR GMP down vs WT GMP	59.0521	22734.1	2309.9	1	41.6937	104.989	40.9509	67.6839	13.3116	40.0955	13.7218	45.2554	30.4524	18.7482	34.0209	26.1804	40.8742	-2.6378	-2.53029	-1.67121	Y	Y
4577974	Atp2b4	0.0009845	0.000984493	0.286599	-3.48919	mCG-PR GMP down vs WT GMP	35.7199	93415.6	15691.3	1	69.5158	42.073	103.295	108.212	13.3648	66.0807	54.2244	44.0898	21.563	26.7205	93.8229	75.6747	91.2009	-2.26548	-2.34425	-1.42908	Y	Y
5048322	5730494M16Rik	0.0001339	0.000133948	0.292479	-3.41905	mCG-PR GMP down vs WT GMP	74.3478	791736	63894.5	1	270.647	536.073	467.925	381.101	304.304	545.425	546.74	402.11	290.267	440.823	318.656	345.082	339.971	-1.06105	-1.01889	-1.19609	N	N
4854191	Dusp18	8.03E-05	8.03E-05	0.29266	-3.41693	mCG-PR GMP down vs WT GMP	89.1593	23733.5	1597.16	1	68.1346	32.4766	78.9247	40.0971	32.5947	39.044	12.304	54.9276	80.0418	14.2031	20.5287	62.5603	60.8877	-1.69411	-1.39345	-1.41997	N	N
5324325	Cep72	0.0004719	0.000471889	0.293006	-3.4129	mCG-PR GMP down vs WT GMP	47.08	48813	6220.86	1	72.9221	171.489	126.867	106.575	128.311	86.2587	143.332	92.284	224.054	131.064	103.922	134.425	156.515	-1.18465	1.22448	1.05689	N	N
5068450	Plcb4	0.0008718	0.00087177	0.300111	-3.33211	mCG-PR GMP down vs WT GMP	37.4113	3653.56	585.956	1	30.8962	9.25916	9.59399	8.31902	3.57496	14.0929	11.3366	13.5798	11.196	12.7783	10.0331	13.4489	7.60682	-1.78453	-1.21957	-1.56088	N	N
4638310	Csf1r	0.000463	0.000463042	0.302499	-3.3058	mCG-PR GMP down vs WT GMP	47.4107	1.25E+06	158437	1	640.11	1224.61	487.739	552.739	213.332	145.98	159.314	153.814	192.995	161.332	380.777	286.406	270.314	-4.14431	-4.25506	-2.73698	Y	Y
4456996	Cd93	0.0001353	0.000135296	0.304368	-3.28549	mCG-PR GMP down vs WT GMP	74.0827	2.49E+06	201944	1	853.647	664.591	578.758	790.776	66.1439	216.721	65.8329	244.9	269.548	129.816	617.573	515.647	513.814	-5.57126	-4.15378	-1.28269	Y	Y
4819096	Haao	0.0005727	0.000572706	0.307067	-3.25661	mCG-PR GMP down vs WT GMP	43.8133	137964	18893.4	1	452.874	640.022	215.591	360.332	96.2168	266.753	35.5933	129.633	22.4205	126.601	187.591	231.3	171.327	-2.5357	-5.50628	-1.80373	Y	Y
5477665	Atp2b4	0.0001384	0.000138393	0.308042	-3.24631	mCG-PR GMP down vs WT GMP	73.4867	212859	17379.4	1	173.406	193.98	230.999	310.24	71.3876	136.851	169.147	148.777	129.628	65.7395	139.369	228.48	141.832	-2.4877	-1.86299	-1.28202	Y	N
4970706	Abcb1b	0.0002941	0.000294087	0.308364	-3.24292	mCG-PR GMP down vs WT GMP	56.0038	21802.5	2335.83	1	12.6299	131.286	58.6284	93.6098	29.9853	34.4257	45.9802	26.6806	27.3777	51.3691	53.8911	49.073	26.7897	-2.65006	-2.08381	-1.03977	Y	Y
4533077	Met	0.00015	0.000150042	0.31279	-3.19704	mCG-PR GMP down vs WT GMP	71.395	32860.8	2761.61	1	123.557	106.758	184.925	101.789	43.0084	81.2036	30.16	32.5086	41.8104	34.7538	93.0477	67.0386	56.1362	-2.36259	-3.88744	-2.05392	Y	Y
5548501	F730047E07Rik	0.000214	0.000214043	0.313715	-3.1876	mCG-PR GMP down vs WT GMP	62.8407	5992.89	572.198	1	30.5943	13.4154	15.9607	33.9018	18.3255	64.9054	11.0278	42.9875	17.5202	28.0729	53.5467	23.1106	10.989	1.50282	-1.00799	-1.31546	N	N
5163942	Fam149b	0.0001061	0.000106086	0.316231	-3.16225	mCG-PR GMP down vs WT GMP	80.7788	167473	12439.4	1	172.739	410.11	79.4617	74.4015	73.5382	129.647	87.1284	93.8784	180.073	126.202	140.452	112.017	125.536	-1.97547	-1.52742	-1.20189	N	N
5004966	Wdr77	0.0003368	0.000336792	0.317175	-3.15284	mCG-PR GMP down vs WT GMP	53.2994	447729	50401.5	1	246.943	401.795	254.128	293.314	117.906	193.647	240.573	223.684	424.795	276.462	367.573	397.091	215.462	-2.14512	-1.05761	-1.01316	Y	N
5133591	Mlkl	0.0009308	0.000930769	0.324297	-3.08359	mCG-PR GMP down vs WT GMP	36.4919	137041	22532.3	1	215.315	358.167	123.389	84.0948	105.638	97.8151	66.0633	66.0358	24.0501	65.6177	84.4708	109.656	122.298	-2.10739	-3.65088	-1.85237	Y	Y
5049053	Naa15	0.0002307	0.000230711	0.326278	-3.06487	mCG-PR GMP down vs WT GMP	61.1609	6759.46	663.116	1	9.53521	22.4556	58.5914	41.5607	40.9795	56.1284	5.79218	33.0259	46.275	69.3682	74.0709	29.8594	29.0143	1.24984	1.11515	1.47793	N	N
4637880	Atp2b4	0.0004294	0.000429384	0.329892	-3.03129	mCG-PR GMP down vs WT GMP	48.7506	99497.4	12245.7	1	72.8091	76.5684	146.18	187.851	122.721	53.3832	60.661	100.165	110.452	86.198	167.805	84.2351	151.448	-1.57721	-1.44623	1.13737	N	N
4771007	Kri1	0.0007088	0.000708763	0.330745	-3.02348	mCG-PR GMP down vs WT GMP	40.4533	47911.5	7106.19	1	145.277	203.221	102.332	108.666	81.7719	119.957	29.7076	111.517	52.1318	84.2582	175.332	208.851	145.739	-1.55385	-2.11621	1.15844	N	Y
4446709	Pikfyve	9.93E-05	9.93E-05	0.331691	-3.01486	mCG-PR GMP down vs WT GMP	82.7008	24026.7	1743.15	1	20.3585	49.0723	105.805	107.676	63.6385	63.084	53.3803	94.4343	91.8131	78.3321	130.721	108.314	43.1494	-1.21132	1.08792	1.1265	N	N
5363823	Ncf4	0.0004252	0.000425205	0.333711	-2.9966	mCG-PR GMP down vs WT GMP	48.9268	100708	12350	1	304.997	226.369	400.536	312.406	326.395	331.721	29.7151	291.534	85.7193	160.701	296.276	350.295	379.795	-1.06913	-2.26899	-1.14858	N	Y
5421678	Lrmp	0.000123	0.000122997	0.334009	-2.99393	mCG-PR GMP down vs WT GMP	76.642	15164.1	1187.14	1	29.873	34.018	54.0543	70.2025	34.3883	39.0914	35.0917	31.0563	97.7951	22.5	155.647	99.6839	173.277	-1.43863	-1.03779	1.85038	N	N
5106188	Itpk1	0.0008494	0.000849388	0.343193	-2.91381	mCG-PR GMP down vs WT GMP	37.7821	12597.6	2000.57	1	21.8506	32.8307	55.7085	52.4247	19.8706	51.3731	58.5358	48.848	24.9234	38.7434	70.8414	96.3876	67.8876	-1.359	-1.00239	1.31598	N	N
5166442	Samhd1	0.0008888	0.000888783	0.34371	-2.90943	mCG-PR GMP down vs WT GMP	37.1378	1.20E+06	193382	1	612.323	577.703	443.665	469.675	248.036	318.897	346.128	419.841	522.693	348.286	639.49	478.795	539.351	-2.02556	-1.3113	1.25391	Y	N
5300482	Lcp2	0.0008198	0.000819833	0.344881	-2.89955	mCG-PR GMP down vs WT GMP	38.2921	30611.8	4796.56	1	144.897	44.9016	111.656	103.156	177.082	126.527	60.4062	144.647	99.3043	88.508	136.795	83.971	141.777	1.31338	-1.09603	1.11809	N	N
5221212	Fnbp1l	0.0001686	0.0001686	0.353075	-2.83226	mCG-PR GMP down vs WT GMP	68.4746	115622	10131.2	1	156.067	283.536	144.261	191.591	43.8909	78.8691	126.602	102.84	53.4631	33.4562	196.48	222.623	85.0728	-3.52532	-2.60352	1.24803	Y	Y
5355943	Rufy3	0.0006391	0.000639138	0.357447	-2.79762	mCG-PR GMP down vs WT GMP	42.0535	11852.9	1691.13	1	27.3323	9.96832	55.8292	35.6437	26.1758	24.3083	27.7178	30.5941	25.2705	37.1546	28.6704	30.6918	29.4079	-1.36307	-1.12179	-1.09669	N	N
4507222	Abcb8	0.0002841	0.000284142	0.358434	-2.78992	mCG-PR GMP down vs WT GMP	56.7096	231940	24539.8	1	195.309	327.327	176.309	206.425	92.1439	80.8652	44.2711	164.753	204.258	179.906	146.438	137.994	239.772	-2.75505	-1.53441	-1.3271	Y	N
4720089	Cd93	0.000441	0.000441041	0.359139	-2.78443	mCG-PR GMP down vs WT GMP	48.2712	367342	45659.8	1	207.597	215.667	277.426	285.505	76.258	77.3321	24.6472	129.801	44.7427	64.5358	211.448	237.833	196.486	-3.52668	-3.91674	-1.33368	Y	Y
5453816	Paqr4	0.0009146	0.00091462	0.360952	-2.77045	mCG-PR GMP down vs WT GMP	36.7357	323912	52904.2	1	196.74	458.814	523.758	373.999	553.758	10080.4	484.702	469.073	1397.78	471.295	373.665	488.443	396.073	13.4161	1.7594	1.63363	Y	N
5614319	Cd93	0.0007639	0.000763924	0.361927	-2.76299	mCG-PR GMP down vs WT GMP	39.3276	4.33E+06	660140	1	860.906	1258.02	1484.46	1649.55	308.962	572.703	78.7766	547.791	290.351	528.036	908.48	1236.67	1172.94	-3.23601	-3.70078	-1.30933	Y	Y
5391532	Ly86	0.0007366	0.000736586	0.363912	-2.74792	mCG-PR GMP down vs WT GMP	39.8714	2.19E+06	329151	1	1210.89	1740.72	944.814	1053.8	158.536	196.277	100.388	114.202	186.61	118.851	455.008	485.48	427.693	-7.57639	-9.46144	-2.0996	X	Y
5329647	Coro2a	0.0006563	0.000656311	0.368314	-2.71507	mCG-PR GMP down vs WT GMP	41.6379	340502	49066.3	1	230.42	80.6978	190.716	97.2019	181.457	90.295	272.443	171.827	389.758	77.3321	125.383	136.554	164.957	-1.23313	1.45486	1.0062	N	N
4731735	Rassf4	0.0001185	0.000118502	0.372082	-2.68758	mCG-PR GMP down vs WT GMP	77.6641	26095.9	2016.06	1	19.2093	119.462	129.165	94.4247	34.6099	75.0912	55.9431	50.4988	52.5728	48.6469	50.4988	57.6839	32.8786	-1.82862	-1.81506	-1.70345	N	N
4321651	Prkce	6.51E-05	6.51E-05	0.372101	-2.68744	mCG-PR GMP down vs WT GMP	95.9914	19207.4	1200.57	1	55.1027	44.8333	63.4914	55.5655	28.2671	33.2631	69.9987	51.3105	68.7692	56.1491	45.8699	84.9173	37.2015	-2.06169	1.05318	-1.33391	Y	N
4894400	Abca3	0.0006007	0.000600733	0.373963	-2.67406	mCG-PR GMP down vs WT GMP	43.0393	10006.8	1395.03	1	114.862	4.30657	40.5926	56.9608	35.6786	39.8296	37.1399	39.0327	85.4247	32.3867	47.4858	35.9568	36.1632	-1.68136	-1.19466	-1.16406	N	N
4432462	Gtpbp4	0.0008718	0.000871789	0.376371	-2.65696	mCG-PR GMP down vs WT GMP	37.411	252428	40484.6	1	115.54	129.12	143.258	73.4033	107.814	101.955	186.72	126.151	144.238	133.655	199.543	174.053	164.777	-1.26759	1.21088	1.26223	N	N
4929453	Sema4b	0.0008807	0.000880683	0.38118	-2.62343	mCG-PR GMP down vs WT GMP	37.2672	6926.31	1115.13	1	75.7137	195.048	71.3321	42.4002	37.8881	42.3182	30.6362	48.1706	40.5729	39.0299	72.3818	56.5746	44.878	-2.63406	-2.45777	-1.77943	Y	Y
4899992	Pikfyve	0.0004571	0.000457053	0.384702	-2.59941	mCG-PR GMP down vs WT GMP	47.6395	7929.28	998.661	1	77.8124	45.7946	30.3214	42.2018	29.6345	40.2075	11.3751	14.5716	5.1337	30.6911	80.7025	32.7034	28.9966	-1.49471	-3.15157	-1.02436	N	Y
5164136	Eng	0.0002492	0.000249231	0.384811	-2.59868	mCG-PR GMP down vs WT GMP	59.4748	3749.17	378.227	1	22.2089	16.8135	9.00573	25.9559	56.9432	10.3699	2.27269	2.0367	46.2025	4.42209	24.9626	4.52365	43.4988	1.60494	-1.36691	-1.27205	N	N
5058634	Mthfd2	0.0006126	0.000612641	0.387689	-2.57939	mCG-PR GMP down vs WT GMP	42.7248	41724.5	5859.52	1	179.071	258.517	181.684	158.645	163.441	120.494	122.756	133.279	83.3307	110.479	130.254	101.516	124.624	-1.55067	-1.82655	-1.87858	N	N
4472083	Nup54	0.0002301	0.000230058	0.38996	-2.56436	mCG-PR GMP down vs WT GMP	61.2237	171620	16819	1	112.74	480.758	183.758	210.184	173.888	224.832	203.962	155.851	238.517	273.702	195.61	258.962	174.777	-1.3859	-1.16261	-1.19924	N	N
4361283	Trim37	0.0003449	0.000344938	0.390893	-2.55824	mCG-PR GMP down vs WT GMP	52.8353	26665.3	3028.12	1	93.9154	76.2858	97.3506	70.3136	116.351	83.7025	47.5233	66.5543	67.2395	79.758	143.165	98.0358	71.221	1.03866	-1.33413	-1.14952	N	N
5566748	Csf1r	0.0008209	0.000820941	0.391263	-2.55582	mCG-PR GMP down vs WT GMP	38.2726	848069	132952	1	944.888	1367.4	650.684	640.091	231.369	259.212	298.628	289.832	291.101	201.11	335.925	379.397	400.582	-4.04073	-3.41815	-2.82762	Y	Y
5203863	Adcy7	0.0005749	0.000574903	0.391729	-2.55278	mCG-PR GMP down vs WT GMP	43.7508	451015	61852.3	1	306.288	144.675	360.26	279.205	120.351	269.603	214.242	278.621	258.89	237.638	295.02	257.86	253.823	-1.58389	-1.15058	-1.16153	N	N
5416516	Arhgap21	0.0006396	0.000639566	0.391747	-2.55267	mCG-PR GMP down vs WT GMP	42.0429	46676.1	6661.21	1	130.749	123.693	106.388	89.9432	122.101	64.4062	127.147	104.398	234.749	99.2025	142.415	108.702	162.369	-1.33706	1.2173	-1.0252	N	N
5472475	Nup93	0.0006069	0.00060689	0.395179	-2.5305	mCG-PR GMP down vs WT GMP	42.8756	8806.31	1232.35	1	42.9377	93.4753	49.6011	33.1708	47.6697	58.607	13.9671	49.9957	36.8368	50.4865	58.7551	58.2139	38.5403	-1.12095	-1.48998	-1.20353	N	N
4869161	Oxa1l	0.0003712	0.000371193	0.398682	-2.50826	mCG-PR GMP down vs WT GMP	51.4336	19628.1	2289.72	1	63.4343	81.5358	37.0034	16.7574	37.9763	78.5437	15.4393	17.0053	7.12206	16.4628	66.2891	43.8613	37.3512	1.02378	-3.56846	1.06929	N	Y
5291019	NA	0.0007301	0.000730107	0.401612	-2.48996	mCG-PR GMP down vs WT GMP	40.0043	40815.1	6121.62	1	91.2925	281.367	75.7467	88.4247	70.5682	50.6304	115.682	23.5156	340.128	36.6403	76.7781	88.274	50.9761	-2.32517	-1.03685	-1.59204	Y	N
5017964	Tada2a	0.000187	0.000187026	0.402677	-2.48338	mCG-PR GMP down vs WT GMP	65.9708	62963.1	5726.45	1	76.0358	124.786	78.6703	86.3938	66.8904	116.558	112.008	98.1099	193.536	61.4706	85.1128	79.0049	91.8132	-1.04572	1.22921	-1.22601	N	N
5114119	Epsti1	0.0002012	0.000201233	0.402949	-2.48171	mCG-PR GMP down vs WT GMP	64.2549	17041.9	1591.34	1	12.1766	27.6679	41.7691	34.7912	19.2	10.9125	208.925	18.9843	24.5896	15.9932	71.471	63.0913	55.7506	-2.27211	2.16313	1.51937	Y	Y
4859297	Dnase2a	0.0004739	0.000473884	0.403509	-2.47826	mCG-PR GMP down vs WT GMP	47.0065	395283	50454.7	1	330.573	248.767	317.943	303.795	262.712	312.397	272.138	149.758	252.526	227.406	324.721	271.814	433.425	-1.13358	-1.37224	1.00905	N	N
4828859	Cyp4v3	0.0008216	0.000821587	0.40664	-2.45918	mCG-PR GMP down vs WT GMP	38.2612	36220.5	5679.99	1	141.121	52.8506	75.9362	96.6865	44.8009	61.3926	57.8244	76.8119	43.5976	62.1813	114.751	75.0173	176.121	-1.81567	-1.58918	1.35823	N	N
4979066	Unc93b1	0.000819	0.000819042	0.408983	-2.44509	mCG-PR GMP down vs WT GMP	38.3061	9.82E+06	1.54E+06	1	2641.07	1817.63	2724.96	2964.11	1174.28	1218.04	596.517	1188.42	874.554	1021.15	1769.13	1857.16	1906.32	-2.18823	-2.77375	-1.36508	Y	Y
5543427	Klrb1f	0.0005046	0.000504643	0.415803	-2.40499	mCG-PR GMP down vs WT GMP	45.9239	38129	4981.59	1	390.118	178.758	216.184	268.073	195.724	120.443	112.224	58.9617	46.6968	97.2798	99.0728	149.155	55.3539	-1.88821	-3.46678	-2.51896	N	Y
5498336	Ncf1	0.0007657	0.000765726	0.420608	-2.37751	mCG-PR GMP down vs WT GMP	39.2926	1.00E+06	153408	1	794.054	1123.74	1101.3	1087.38	456.656	675.036	252.78	737.221	320.693	431.721	980.24	1120.36	1253.52	-1.91826	-2.36598	-1.10218	N	Y
5087716	Csf1r	0.0003282	0.000328182	0.422704	-2.36572	mCG-PR GMP down vs WT GMP	53.8065	2.02E+06	225339	1	865.536	1427.74	1551.67	1275.05	471.721	628.35	222.165	877.184	518.702	503.091	1022.26	1048.96	926.925	-2.48431	-2.43364	-1.60118	Y	Y
4879128	Trim30a	0.0006372	0.000637152	0.42578	-2.34863	mCG-PR GMP down vs WT GMP	42.1025	39932.3	5690.72	1	63.4296	30.2695	51.8624	53.0724	43.3754	66.3352	40.0039	72.5875	43.9062	54.3595	106.66	62.8232	83.0914	-1.0124	1.0032	1.51377	N	N
4682926	H2-DMa	0.0002991	0.000299114	0.427496	-2.3392	mCG-PR GMP down vs WT GMP	55.659	372684	40175.1	1	425.758	365.508	527.082	565.045	188.184	327.471	43.2674	178.962	133.508	201.11	519.786	481.721	574.934	-2.0733	-3.60531	1.43252	Y	Y
5379307	Cd24a	1.63E-05	1.63E-05	0.429052	-2.33072	mCG-PR GMP down vs WT GMP	155.422	2.55E+06	98592.9	1	1418.28	721.628	774.443	774.295	435.517	868.684	483.091	870.517	897.906	467.017	1516.5	1222.31	1700.91	-1.5006	-1.37327	1.27894	N	N
5557160	Eml4	0.0001114	0.000111385	0.429142	-2.33023	mCG-PR GMP down vs WT GMP	79.3929	462198	34930	1	490.462	500.036	409.628	495.554	308.628	374.133	424.74	304.457	278.605	302.087	307.202	457.471	330.79	-1.50896	-1.48374	-1.38481	N	N
4740006	NA	0.0007039	0.000703903	0.43057	-2.3225	mCG-PR GMP down vs WT GMP	40.5581	22822.8	3376.31	1	41.9778	27.4557	45.9636	68.5926	32.2841	37.4068	54.0187	90.7593	101.573	90.1085	54.4814	54.6656	39.4592	-1.42512	1.76741	-1.0086	N	N
4831958	Csf1r	0.0005459	0.000545899	0.431256	-2.31881	mCG-PR GMP down vs WT GMP	44.6026	326162	43875.8	1	278.795	438.74	564.425	415.61	111.351	207.665	56.6418	228.277	131.415	126.778	359.859	340.174	273.156	-2.97932	-3.31395	-1.79312	Y	Y
4804980	Comt1	0.0009862	0.000986211	0.432019	-2.31471	mCG-PR GMP down vs WT GMP	35.6962	162387	27294.9	1	224.057	301.999	168.166	187.306	259.425	294.165	185.997	211.075	352.184	206.215	205.473	138.001	204.349	1.17396	1.07649	-1.49735	N	N

4857681	NA	0.0009864	0.000986375	0.435616	-2.2956	mCG-PR GMP down vs WT GMP	35.6939	7121.64	1197.12	1	23.311	50.4054	57.2429	67.229	42.2544	44.3133	23.6594	44.0139	34.7978	68.7251	38.9195	46.2437	18.557	-1.3081	-1.25306	-1.25149	N	N
4551186	NA	0.0009986	0.00099858	0.439752	-2.27401	mCG-PR GMP down vs WT GMP	35.5268	32174.5	5433.84	1	230.351	353.235	232.11	163.792	139.808	116.872	39.1085	132.069	183.42	138.199	206.573	158.443	204.425	-2.09547	-1.97661	1.23985	Y	N
4334544	Nup210	0.0001625	0.000162466	0.441144	-2.26683	mCG-PR GMP down vs WT GMP	69.3904	88553.2	7656.95	1	141.082	310.119	181.156	88.2488	20.9394	125.851	68.1748	121.971	77.4372	89.8876	83.721	109.656	136.73	-2.743	-2.0961	-1.87534	Y	Y
4722329	Cd97	0.0002268	0.000226758	0.445104	-2.24667	mCG-PR GMP down vs WT GMP	61.5443	268546	26180.8	1	648.596	141.388	574.684	538.689	419.869	606.545	173.517	562.462	391.267	369.758	957.684	886.499	1155.71	-1.01882	-1.30623	1.9669	N	N
5012247	Nol6	0.0003279	0.000327885	0.447365	-2.23531	mCG-PR GMP down vs WT GMP	53.8243	829468	92463.9	1	389.864	683.309	388.466	213.943	361.383	353.605	514.554	365.388	563.332	419.42	429.735	333.67	454.439	-1.24895	1.08622	-1.00633	N	N
5212438	Nbn	0.0008664	0.000866446	0.44883	-2.22801	mCG-PR GMP down vs WT GMP	37.4983	82356.5	13177.6	1	97.8877	282.684	176.74	122.222	184.096	119.49	119.999	168.24	176.388	159.378	146.138	175.374	176.013	-1.22297	-1.11059	-1.13254	N	N
5465894	Specc1l	1.93E-05	1.93E-05	0.449947	-2.22248	mCG-PR GMP down vs WT GMP	146.482	230979	9461.05	1	980.573	294.851	176.906	188.119	263.712	187.156	236.638	201.24	279.443	162.082	213.212	202.49	132.128	-1.99571	-1.86625	-1.573	N	N
5597009	Opa1	0.0005873	0.000587265	0.451238	-2.21612	mCG-PR GMP down vs WT GMP	43.4051	94871.1	13114.3	1	125.906	266.017	209.165	170.869	125.277	231.128	170.869	187.573	98.7951	224.647	228.165	254.128	154.943	-1.22116	-1.2031	-1.0342	N	N
5184960	Nek9	0.0004859	0.000485929	0.452277	-2.21104	mCG-PR GMP down vs WT GMP	46.5717	45063.6	5805.71	1	43.3661	95.9802	143.703	122.702	141.944	124.643	99.5173	103.314	134.411	135.98	122.036	111.499	77.2032	1.16276	1.11586	-1.13554	N	N
5104695	Htt	0.0001947	0.000194673	0.454118	-2.20207	mCG-PR GMP down vs WT GMP	65.0264	142794	13175.6	1	123.082	191.221	171.128	139.221	94.7231	135.536	258.638	185.527	72.4062	161.48	181.101	193.721	217.566	-1.74695	1.0344	1.06336	N	N
5484236	Trim37	0.0004154	0.000415429	0.454567	-2.1999	mCG-PR GMP down vs WT GMP	49.348	129158	15703.7	1	102.994	154.883	160.92	221.573	206.332	272.753	299.772	260.67	202.855	248.42	167.309	202.198	180.758	1.30716	1.4861	-1.07574	N	N
4306194	Ubr2	0.0008227	0.000822734	0.455244	-2.19662	mCG-PR GMP down vs WT GMP	38.241	10534.7	1652.89	1	54.9394	57.8099	50.4394	55.5173	30.3726	39.3448	95.1777	46.6235	68.8832	74.3258	66.5148	39.495	40.89	-1.86693	1.23957	-1.2654	N	N
4350779	Phtf2	0.0005394	0.000539397	0.463222	-2.15879	mCG-PR GMP down vs WT GMP	44.8018	10220.4	1368.76	1	54.9255	42.947	26.8263	92.4572	42.1072	23.5084	27.1032	38.7678	26.6277	59.4107	53.9235	38.23	65.6755	-1.89906	-1.48055	-1.01917	N	N
4448286	Igh-6	0.0001053	0.00010533	0.464086	-2.15477	mCG-PR GMP down vs WT GMP	80.9841	5.89E+06	436332	1	2438.13	3109.27	1751.67	1476.05	523.962	1147.21	416.684	529.091	586.851	275.702	1256.94	1267.36	1015.61	-2.65176	-4.7211	-1.48945	Y	Y
4940144	Vps54	0.0004867	0.00048673	0.4655	-2.14823	mCG-PR GMP down vs WT GMP	46.5433	325718	41989.1	1	389.388	782.489	321.165	320.675	230.314	243.721	273.462	170.267	498.841	281.61	472.036	414.795	382.915	-2.08619	-1.50136	1.08302	Y	N
5511140	Nup188	0.0002508	0.000250765	0.46631	-2.1445	mCG-PR GMP down vs WT GMP	59.3426	350866	35475.3	1	240.906	81.6564	361.109	331.345	338.529	427.255	507.369	333.999	495.916	342.054	260.278	216.832	269.94	1.37716	1.58615	-1.1401	N	N
4988090	Mfng	0.00059	0.000590001	0.468288	-2.13544	mCG-PR GMP down vs WT GMP	43.3299	53857.4	7457.77	1	119.202	315.351	124.554	131.105	338.485	257.198	113.96	208.402	178.48	205.096	273.665	244.892	249.702	1.54448	-1.01247	1.45298	N	N
5109166	Tacc1	0.0004306	0.000430629	0.469306	-2.13081	mCG-PR GMP down vs WT GMP	48.6986	43727.5	5387.52	1	223.369	239.443	104.758	137.054	169.48	132.628	384.277	139.295	350.054	188.851	201.277	134.795	180.999	-1.39442	1.47763	-1.02275	N	N
4874397	Nsun2	0.0001382	0.000138228	0.469718	-2.12894	mCG-PR GMP down vs WT GMP	73.518	80837.6	6597.37	1	166.656	224.638	164.878	126.869	123.545	159.11	150.223	162.878	166.349	213.601	174.375	158.614	184.021	-1.36949	-1.01183	-1.09319	N	N
4834119	Wdr33	0.0001302	0.000130233	0.469775	-2.12868	mCG-PR GMP down vs WT GMP	75.0972	19777	1580.11	1	24.2264	78.411	77.4781	46.4997	66.8892	78.1332	58.3471	58.2073	92.3502	77.6266	38.7847	72.7258	47.4249	1.11779	1.2293	1.09725	N	N
4501228	Ddx10	0.0008818	0.000881815	0.470378	-2.12595	mCG-PR GMP down vs WT GMP	37.249	14095.2	2270.42	1	89.8787	110.364	48.1258	34.3487	43.0783	72.1474	36.231	45.6131	44.2209	85.2905	51.8321	41.511	42.6935	-1.3769	-1.39779	-1.49429	N	N
5121235	H2afy	0.0002446	0.000244608	0.470722	-2.1244	mCG-PR GMP down vs WT GMP	59.8796	3.88E+06	388407	1	1844.73	1360.44	1781.56	1811.42	631.138	898.883	764.351	941.443	599.805	805.212	1010.86	1354.8	1245.23	-2.32911	-2.2053	-1.50659	Y	Y
4343758	Trim37	0.0003051	0.000305102	0.475585	-2.10267	mCG-PR GMP down vs WT GMP	55.2583	167930	18234	1	144.591	158.554	251.605	282.702	301.161	343.48	267.184	291.054	231.351	205.309	283.406	231.994	219.92	1.3681	1.14134	1.00815	N	N
4436731	Igh-6	0.0008257	0.000825715	0.479322	-2.08628	mCG-PR GMP down vs WT GMP	38.1887	3.36E+06	528046	1	1895.96	2294.5	1059.28	988.684	253.165	811.98	267.962	334.61	539.758	278.369	884.712	844.702	789.036	-3.04878	-4.33153	-1.53235	Y	Y
5128624	Cyp4v3	0.0007037	0.000703704	0.480195	-2.08249	mCG-PR GMP down vs WT GMP	40.5624	30684.2	4538.81	1	280.48	74.5543	157.884	167.147	100.68	115.458	80.0304	111.786	15.3364	41.0103	151.786	95.6909	162.184	-1.78194	-2.96338	1.0362	N	Y
5558870	Mtpap	0.0006101	0.000610124	0.480285	-2.08209	mCG-PR GMP down vs WT GMP	42.7906	53527.5	7505.5	1	119.906	153.628	190.883	250.564	142.749	137.536	138.804	256.545	141.128	171.341	272.73	283.165	184.633	-1.42524	-1.04853	1.14384	N	N
4643666	Mtap	0.0003137	0.000313657	0.485391	-2.06019	mCG-PR GMP down vs WT GMP	54.7036	111007	12175.5	1	177.245	201.054	290.61	149.485	320.933	181.343	80.7695	192.885	81.379	228.628	255.202	261.933	211.11	1.10003	-1.49087	1.17128	N	N
4523254	Eif2b5	0.0004001	0.000400093	0.485514	-2.05967	mCG-PR GMP down vs WT GMP	50.0361	188206	22568.5	1	134.426	228.51	171.655	181.351	176.831	201.299	254.906	209.059	193.393	218.61	211.867	203.554	191.94	-1.04849	1.18494	-1.01828	N	N
5436475	Mbd6	0.0002414	0.0002414	0.486077	-2.05729	mCG-PR GMP down vs WT GMP	60.1667	152769	15234.5	1	237.74	260.929	467.503	379.73	242.869	231.022	128.064	340.878	229.726	317.281	643.892	465.04	431.022	-1.59828	-1.39157	1.46849	N	N
5188815	Prkdc	0.000799	0.000798971	0.48983	-2.04152	mCG-PR GMP down vs WT GMP	38.6672	55494.5	8611.1	1	62.8721	71.0997	108.129	130.036	165.308	109.295	91.1295	103.062	37.7662	77.093	100.795	117.611	64.3137	1.25797	-1.2951	1.11897	N	N
4313679	Agpat5	0.000533	0.00053297	0.490529	-2.03861	mCG-PR GMP down vs WT GMP	45.0019	1.51E+06	201680	1	781.096	765.036	792.128	541.832	548.536	768.925	463.078	799.726	452.633	729.596	608.128	552.485	643.953	-1.14468	-1.17665	-1.37148	N	N
4868651	Zdhhc21	0.0006576	0.000657633	0.491592	-2.03421	mCG-PR GMP down vs WT GMP	41.6065	12974	1870.96	1	69.0913	37.3587	107.775	116.515	62.0154	90.5543	81.6265	64.7951	29.6951	131.517	96.2025	130.647	60.4043	-1.24726	-1.15565	1.05449	N	N
4678792	Bzw2	0.0005971	0.000597102	0.491944	-2.03275	mCG-PR GMP down vs WT GMP	43.1368	42830.3	5957.36	1	54.3784	112.452	118.841	58.0173	18.4214	70.7673	55.8136	58.971	79.3136	89.1284	244.388	170.017	136.952	-2.33942	-1.30806	1.7727	Y	N
4606329	Dfna5	0.0004632	0.000463183	0.493669	-2.02565	mCG-PR GMP down vs WT GMP	47.4054	42072.5	5325.02	1	120.869	132.542	202.258	164.444	96.007	116.128	81.5179	140.193	84.1756	130.64	206.393	168.449	204.092	-1.60913	-1.47148	1.30901	N	N
4352710	Ppa1	0.0002854	0.000285408	0.494352	-2.02285	mCG-PR GMP down vs WT GMP	56.6179	79017.8	8373.8	1	241.962	296.721	176.184	139.314	84.6673	138.11	118.165	141.758	140.258	167.425	160.277	165.24	131.888	-2.15873	-1.56677	-1.66325	Y	N
4670678	Zfp113	0.0007836	0.000783585	0.497585	-2.00971	mCG-PR GMP down vs WT GMP	38.9522	16124.2	2483.68	1	51.6036	62.1036	80.9432	80.8259	29.3334	109.943	57.0851	41.2273	97.1407	81.437	84.6652	108.591	44.6777	-1.12554	-1.0343	1.34555	N	N
5062271	Casp7	7.21E-05	7.21E-05	0.4985	-2.00602	mCG-PR GMP down vs WT GMP	92.6036	122922	7964.38	1	396.934	320.971	190.61	281.087	415.073	343.527	187.462	426.165	155.684	254.175	278.003	259.443	438.388	1.16086	-1.21419	1.02592	N	N
5215993	Pak1	0.0002932	0.000293192	0.499124	-2.00351	mCG-PR GMP down vs WT GMP	56.066	246540	26383.9	1	327.054	402.295	222.962	165.443	201.74	221.425	95.4802	134.888	137.443	152.943	422.943	359.24	363.499	-1.47883	-2.19926	1.44194	N	Y
4587772	Adrbk2	0.0008487	0.000848714	2.03885	2.03885	mCG-PR GMP up vs WT GMP	37.7934	933833	148253	1	869.216	294.684	576.818	634.911	829.54	507.462	1467.11	886.503	686.522	795.299	583.647	630.596	351.6	1.0555	1.56372	1.22281	N	N
5294304	Ddx26b	0.0001577	0.000157674	2.03976	2.03976	mCG-PR GMP up vs WT GMP	70.1387	533211	45613.4	1	336.74	331.869	368.073	408.74	455.832	483.332	536.61	434.943	393.388	589.332	344.11	414.628	167.943	1.19247	1.29798	1.04391	N	N
4646141	Lmo4	0.0008152	0.000815213	2.09456	2.09456	mCG-PR GMP up vs WT GMP	38.3741	3.65E+06	570545	1	845.897	1035.43	750.851	483.184	1754.59	1606.79	1748.55	1956.74	1917.89	2204.57	1286.06	1470.99	1245.34	2.206	2.65019	1.72233	Y	Y
5306172	Fut8	0.0008101	0.000810127	2.14243	2.14243	mCG-PR GMP up vs WT GMP	38.465	1.86E+06	290504	1	408.221	345.415	513.175	414.267	1059.54	995.906	1095.31	796.351	575.156	842.239	523.24	567.665	521.008	2.28209	1.88887	1.14303	Y	N
4586176	Pld3	0.0008395	0.000839471	2.17783	2.17783	mCG-PR GMP up vs WT GMP	37.9505	374030	59134.4	1	301.017	186.457	193.568	138.925	881.939	752.184	957.865	417.073	489.628	638.851	225.087	283.054	207.827	3.66667	2.91289	-1.199	Y	Y
5017173	Blnk	0.0002874	0.000287368	2.20698	2.20698	mCG-PR GMP up vs WT GMP	56.4771	323.408	34.3582	1	9.34964	38.8508	9.63478	4.37569	5.88993	4.4683	4.94739	4.60051	11.8936	5.65465	6.5237	15.9829	5.97016	-3.03587	-2.27633	-1.18058	Y	Y
4684423	Hist1h1e	0.0009561	0.000956134	2.2122	2.2122	mCG-PR GMP up vs WT GMP	36.1202	31148.9	5174.21	1	122.425	64.1908	65.6566	60.9988	190.408	160.075	426.554	118.888	230.258	171.443	169.742	108.777	139.851	1.93309	2.81622	-1.00167	N	Y
4667749	Ets1	0.0008461	0.000846078	2.30867	2.30867	mCG-PR GMP up vs WT GMP	37.838	13872.2	2199.73	1	73.397	80.5173	57.53	50.6103	161.712	214.593	146.99	155.73	136.934	194.852	152.48	198.712	114.815	2.4908	2.27334	1.39715	Y	Y
5352102	Dhx16	0.0004017	0.000401733	2.33526	2.33526	mCG-PR GMP up vs WT GMP	49.9608	10209.5	1226.11	1	30.7512	97.0798	48.4167	66.0358	60.5618	51.6386	46.0646	81.2668	67.1747	65.6441	51.6905	49.6186	76.5914	-1.29439	1.00325	1.04084	N	N
4310032	Nudcd3	0.0003872	0.000387152	2.39152	2.39152	mCG-PR GMP up vs WT GMP	50.6446	52439.4	6212.63	1	83.3877	75.0594	84.3136	138.684	103.601	159.61	116.596	113.239	114.971	58.5775	114.114	88.1839	122.985	1.20193	1.00542	-1.32727	N	N
5165247	Osbpl5	0.0008367	0.0008367	2.39431	2.39431	mCG-PR GMP up vs WT GMP	37.9981	12193.7	1925.41	1	51.0389	46.5995	17.2373	39.3121	132.554	115.756	127.583	97.0455	108.591	115.675	30.2321	31.2584	38.8293	2.86135	2.69774	-1.19393	Y	Y
5061437	Hvcn1	0.0002293	0.000229261	2.40467	2.40467	mCG-PR GMP up vs WT GMP	61.3006	182027	17816.5	1	385.499	111.832	191.258	156.147	729.258	563.128	238.017	394.036	177.61	348.036	207.073	239.054	338.332	2.81146	1.3063	-1.06636	Y	N
4352266	Vit	0.0003107	0.000310686	2.43784	2.43784	mCG-PR GMP up vs WT GMP	54.8939	30675.1	3352.84	1	39.3135	12.2319	35.0222	45.4039	153.901	67.3517	84.2511	57.6402	33.5095	61.4247	53.9168	31.6859	34.8092	2.89432	1.60874	1.0932	Y	N
4653206	Trerf1	0.0008003	0.000800306	2.47137	2.47137	mCG-PR GMP up vs WT GMP	38.6428	216072	33549.2	1	51.2758	88.4802	121.939	119.161	91.2163	76.7719	104.536	122.383	217.758	163.772	101.536	81.3367	102.415	-1.30403	1.52297	1.16525	N	N
4687581	Camk2b	0.0001725	0.00017245	2.49128	2.49128	mCG-PR GMP up vs WT GMP	67.9222	19904.9	1758.33	1	38.0874	28.8676	37.2888	15.7174	159.11	87.9407	96.737	132.626	73.5444	124.091	25.7457	44.4247	34.6319	3.5893	3.31069	1.096	Y	Y
4432097	Lpcat2	0.000922	0.000921961	2.52752	2.52752	mCG-PR GMP up vs WT GMP	36.6242	46405.1	7602.38	1	88.5254	68.1735	52.6177	52.2539	319.914	220.554	307.377	137.628	141.636	203.499	96.9235	94.0821	114.951	3.63625	2.82998	1.19365	Y	Y
4599138	Spata17	0.0003623	0.000362284	2.53703	2.53703	mCG-PR GMP up vs WT GMP	51.894	274685	31759.2	1	262.277	203.737	165.258	244.554	457.004	345.996	456.276	337.703	481.019	390.073	137.297	221.351	328.625	1.70475	1.83314	1.01567	N	N
4886211	Tcf7	0.0004107	0.000410663	2.58517	2.58517	mCG-PR GMP up vs WT GMP	49.5581	274896	33281.7	1	157.869	183.873	97.1654	119.52	806.428	459.132	683.018	263.425	508.113	466.999	143.943	141.646	140.237	4.1493	3.26338	1.22306	Y	Y
4721547	Lpcat2	0.0001769	0.000176906	2.60552	2.60552	mCG-PR GMP up vs WT GMP	67.303	116513	10387.1	1	194.573	69.5029	75.1125	77.8691	801.573	361.806	625.906	281.795	241.24	281.647	184.758	117.388	149.758	5.00166	3.22507	1.12078	Y	Y
5468928	Cd244	0.0001357	0.000135741	2.61353	2.61353	mCG-PR GMP up vs WT GMP	73.9959	11413.8	925.493	1	16.4883	29.4395	25.0502	47.3381	165.462	66.9857	75.9505	66.7839	74.4005	61.9006	66.3506	49.9357	56.7381	3.25111	2.18876	1.53903	Y	Y
4643003	9030409G11Rik	0.0001698	0.000169829	2.70206	2.70206	mCG-PR GMP up vs WT GMP	68.2964	29655.4	2605.3	1	55.9518	51.1284	61.5231	20.5773	68.758	30.6397	87.1737	30.465	44.8886	78.0416	127.467	51.2849	53.2395	-1.1733	1.21611	1.85595	N	N
4676439	Cdh1	0.0002577	0.000257743	2.70612	2.70612	mCG-PR GMP up vs WT GMP	58.7548	52148.2	5325.33	1	66.7989	47.9177	79.1382	85.0933	507.115	242.091	215.647	129.906	147.197	167.258	71.7852	78.0543	108.448	4.74715	2.23666	1.07289	Y	Y
5122113	Atrn	0.0003669	0.000366949	2.72095	2.72095	mCG-PR GMP up vs WT GMP	51.6511	395719	45968.3	1	177.503	111.693	297.661	331.415	487.517	450.939	383.105	354.073	266.42	344.29	242.92	299.207	240.864	1.85275	1.40499	1.00504	N	N
5076727	Lmo4	0.0001965	0.000196489	2.76243	2.76243	mCG-PR GMP up vs WT GMP	64.8094	1.36E+07	1.26E+06	1	1035.56	1494.95	837.739	592.888	3160.13	2889.22	3823.11	2909.15	2939.22	3138.92	1679.11	1500.39	1285.65	2.87408	3.08994	1.34562	Y	Y
4676991	Oaf	9.41E-05	9.41E-05	2.80087	2.80087	mCG-PR GMP up vs WT GMP	84.2754	240993	17157.5	1	77.9772	179.299	163.946	175.184	509.591	367.591	464.591	239.972	331.184	390.425	160.251	152.538	146.356	2.65058	2.28858	1.07775	Y	Y
5018807	Lmo4	0.0002089	0.00020893	2.82733	2.82733	mCG-PR GMP up vs WT GMP	63.3912	1.04E+07	980380	1	671.865	1273.59	549.865	341.443	2315.44	2316.31	2870.35	2116.91	3078	2555.62	1226.36	1085.48	841.976	3.09902	3.63029	1.32429	Y	Y
4458385	Chd7	0.0008194	0.000819438	2.82928	2.82928	mCG-PR GMP up vs WT GMP	38.2991	91948.8	14404.8	1	170.678	73.758	146.771	134.378	128.586	168.517	261.48	230.938	106.092	140.591	102.677	152.314	201.919	1.01755	1.32495	-1.11872	N	N
5059025	Slc24a3	4.69E-05	4.69E-05	2.84185	2.84185	mCG-PR GMP up vs WT GMP	107.705	43953.8	2448.58	1	66.7981	26.3956	70.4159	28.0484	218.943	260.957	239.56	147.066	119.753	341.048	100.307	80.5074	66.292	4.28398	4.07314	1.62116	Y	Y
5532705	Tec	0.0002875	0.000287478	2.91722	2.91722	mCG-PR GMP up vs WT GMP	56.4692	312573	33211.7	1	141.814	249.332	183.295	191.976	533.369	355.888	645.036	344.628	338.628	600.906	189.939	272.165	160.61	2.08337	2.38604	1.00573	Y	Y
4553724	Lmo4	0.0001942	0.000194186	2.92942	2.92942	mCG-PR GMP up vs WT GMP	65.0852	1.50E+07	1.38E+06	1	923.221	1431.65	685.628	546.61	3123.04	2721.52	4074.55	2605.04	4107.57	3427.74	1174.46	1241.02	825.74	3.12315	3.85068	1.08504	Y	Y
5390704	Tgm1	0.0009792	0.000979222	2.9447	2.9447	mCG-PR GMP up vs WT GMP	35.7932	38233.4	6409.06	1	50.8874	83.5174	49.452	49.4329	307.193	82.8409	168.168	91.233	111.388	117.174	49.7568	56.8418	45.0094	2.90516	1.97895	-1.13522	Y	N
5419461	Il2rg	0.0009202	0.000920217	2.96252	2.96252	mCG-PR GMP up vs WT GMP	36.6505	1.36E+06	222938	1	193.295	170.554	165.036	175.499	688.313	456.11	683.888	448.98	789.665	500.406	274.98	241.554	205.832	2.9487	3.27701	1.27286	Y	Y
4824027	Clec2i	0.000454	0.000454006	2.97053	2.97053	mCG-PR GMP up vs WT GMP	47.7574	528691	66422.1	1	226.17	131.892	378.517	398.633	458.253	274.911	269.392	155.832	272.55	259.054	118.587	210.48	112.096	1.1556	-1.23795	-1.91269	N	N
5020973	Fstl1	7.36E-06	7.36E-06	3.03702	3.03702	mCG-PR GMP up vs WT GMP	204.068	51690.5	1519.81	1	99.5514	45.7441	57.1146	40.1875	478.014	165.149	433.037	109.237	295.848	252.54	40.7348	41.1996	49.2997	4.7227	4.25692	-1.18237	Y	Y
4961127	Emilin2	0.0002002	0.00020015	3.0601	3.0601	mCG-PR GMP up vs WT GMP	64.3799	2.32E+06	216091	1	212.721	752.443	368.128	352.999	1527.41	1229.98	1774.18	980.98	1170.52	1587.72	511.202	457.999	423.351	3.08298	3.16963	1.1499	Y	Y
5517577	Atp8a2	0.0003248	0.000324831	3.12776	3.12776	mCG-PR GMP up vs WT GMP	54.0087	27460.1	3050.63	1	88.0543	5.01112	47.3253	41.684	116.869	101.369	128.406	184.832	643.869	112.721	90.0728	110.696	32.8174	2.09347	5.67149	-1.03455	Y	Y
5413561	Il2rg	8.18E-06	8.18E-06	3.2793	3.2793	mCG-PR GMP up vs WT GMP	196.874	5.87E+06	178987	1	332.351	305.203	300.24	332.499	1523.8	1297.99	2123.44	981.851	1345.24	1777.04	427.61	494.221	390.406	4.11733	4.69663	1.22459	Y	Y
4721218	Il2rg	0.000719	0.000718956	3.30712	3.30712	mCG-PR GMP up vs WT GMP	40.2367	3.40E+06	506887	1	290.147	250.832	185.054	228.239	1166.79	906.258	1354.13	855.684	931.351	1131.3	441.851	363.443	275.314	4.0751	4.31973	1.17483	Y	Y
5262349	Hvcn1	0.000636	0.000636023	3.39003	3.39003	mCG-PR GMP up vs WT GMP	42.1304	81264.2	11573.2	1	154.406	67.3691	86.3296	53.8783	408.552	313.406	96.3136	180.163	84.6465	147.341	96.1654	102.443	182.978	3.54506	1.32345	-1.02975	Y	N
4540092	Hdc	0.0009456	0.000945602	3.44201	3.44201	mCG-PR GMP up vs WT GMP	36.2729	3.76E+06	622518	1	344.434	337.202	466.434	509.823	1791.17	1461.31	2641.27	1140.79	1441.05	1346.4	491.777	598.915	545.101	3.6415	3.76058	1.13347	Y	Y
4545178	Stx3	4.48E-06	4.48E-06	3.46497	3.46497	mCG-PR GMP up vs WT GMP	241.742	601843	14937.6	1	61.4803	169.865	36.7136	21.1963	471.165	289.999	622.48	190.093	536.814	341.036	173.758	184.696	114.16	4.90282	5.74697	1.59727	Y	Y
5003394	Rgnef	1.99E-06	1.99E-06	3.47272	3.47272	mCG-PR GMP up vs WT GMP	318.215	29063.5	547.996	1	16.7826	60.4911	29.5981	33.885	116.238	93.1323	193.243	67.535	118.752	85.4802	27.8454	36.8816	79.5102	2.64302	3.21118	1.10003	Y	Y
5175957	Il15	6.54E-06	6.54E-06	3.60538	3.60538	mCG-PR GMP up vs WT GMP	212.485	872066	24624.8	1	111.346	149.92	221.462	131.091	571.29	504.652	601.633	314.263	387.193	470.341	178.837	206.318	126.517	3.1292	2.70813	1.03147	Y	Y
4774555	Lpcat2	4.93E-05	4.93E-05	3.6074	3.6074	mCG-PR GMP up vs WT GMP	105.804	711508	40348.7	1	97.6608	109.253	88.096	75.4988	845.661	580.013	1116.77	380.341	435.365	587.184	178.42	197.272	203.67	7.11407	6.46326	1.34523	Y	Y
5006539	Lmo4	0.0004042	0.000404211	3.65712	3.65712	mCG-PR GMP up vs WT GMP	49.8479	1.99E+07	2.39E+06	1	831.665	726.652	1016.89	674.226	3427.65	3134.7	4014.44	2826.04	2766.05	3672.35	1527.63	1373.23	1322.34	3.89752	3.98247	1.33836	Y	Y
5584690	Il15	0.0004508	0.000450844	3.68514	3.68514	mCG-PR GMP up vs WT GMP	47.8809	116857	14643.5	1	61.0358	112.781	100.202	81.9432	414.48	323.369	178.036	169.832	73.1886	288.925	144.485	131.925	92.721	3.70563	1.87275	1.16178	Y	N
5387174	Ikzf2	2.36E-05	2.36E-05	3.70751	3.70751	mCG-PR GMP up vs WT GMP	136.709	1.81E+06	79261.1	1	31.353	86.2395	82.0394	76.7025	684.74	536.855	1646.61	459.675	912.925	885.837	265.318	269.536	66.7814	7.96415	13.0813	2.12413	Y	Y
5242223	Mrgpra2a	0.0006211	0.000621059	3.74929	3.74929	mCG-PR GMP up vs WT GMP	42.5074	3.36E+06	474824	1	450.054	484.351	632.758	688.851	2673.96	1848.2	2239.07	2590.89	2035.68	2226.52	1609.35	1869.74	1444.27	3.77655	3.86642	2.60096	Y	Y
4401603	Il15	2.57E-05	2.57E-05	3.86772	3.86772	mCG-PR GMP up vs WT GMP	132.766	1.60E+06	72428.7	1	112.36	88.8865	163.841	133.915	752.313	597.475	411.591	241.457	260.633	296.073	231.938	242.392	152.152	4.93536	2.30717	1.3502	Y	Y
4708983	Rgnef	2.43E-05	2.43E-05	3.87657	3.87657	mCG-PR GMP up vs WT GMP	135.251	75115	3332.26	1	48.3335	62.7562	51.2631	36.2945	143.534	77.5376	228.051	96.295	45.0736	61.258	41.9983	38.5561	70.1858	1.86127	2.02289	-1.09384	N	Y
4467302	Far2	0.0006589	0.000658891	3.99926	3.99926	mCG-PR GMP up vs WT GMP	41.5767	62778.3	9059.64	1	43.0752	127.277	65.7883	41.4417	373.406	339.591	161.277	136.98	41.4912	134.832	127.61	98.2025	67.1158	4.71522	1.6101	1.08625	Y	N
4644852	Atp6v0a1	0.0004218	0.000421821	4.0467	4.0467	mCG-PR GMP up vs WT GMP	49.0711	872279	106655	1	184.61	93.9432	187.943	217.577	769.999	639.276	1848.78	576.925	325.466	795.573	239.573	226.851	208.54	3.81958	4.91113	1.05161	Y	Y
4614494	Il15	0.0001254	0.000125403	4.18425	4.18425	mCG-PR GMP up vs WT GMP	76.1151	970041	76466.4	1	149.24	248.175	244.638	239.99	583.351	614.221	831.462	376.017	480.712	536.851	248.573	259.147	207.332	2.51441	2.42519	-1.02693	Y	Y
4969595	Atp6v0a1	0.0001753	0.000175289	4.37853	4.37853	mCG-PR GMP up vs WT GMP	67.5252	6.59E+06	585746	1	485.925	269.772	275.869	202.684	1456.24	1085.07	1495.3	926.276	920.721	1504.59	388.624	375.698	299.925	3.93424	3.85142	1.11408	Y	Y
4498133	Atp6v0a1	0.0004298	0.000429754	4.38705	4.38705	mCG-PR GMP up vs WT GMP	48.7352	2.32E+06	285897	1	342.596	359.059	176.462	150.406	1030.67	797.406	1123.89	578.517	969.202	693.906	282.221	290.202	208.739	3.40543	3.22949	1.03812	Y	Y
5016356	Dgkg	0.000388	0.00038799	4.40605	4.40605	mCG-PR GMP up vs WT GMP	50.6044	348453	41314.9	1	299.3	103.165	135.147	110.559	229.295	119.239	167.777	198.276	185.763	218.758	156.948	166.702	117.226	-1.04876	1.14658	-1.07984	N	N
5392388	Fstl1	0.0002018	0.000201812	4.41488	4.41488	mCG-PR GMP up vs WT GMP	64.1883	24031.9	2246.38	1	17.9757	11.6198	12.8569	15.4931	513.036	154.633	478.897	33.7089	90.9159	194.323	4.45338	18.0032	33.4908	19.7452	12.2605	1.16152	Y	Y
4473882	Mcpt8	0.0001192	0.000119197	4.49432	4.49432	mCG-PR GMP up vs WT GMP	77.5028	3.43E+07	2.65E+06	1	2199.74	2697.31	1987.62	1616.76	4348.59	3905.79	3363.67	4030.76	3572.67	3591.41	3864.93	3808.81	3556.79	1.89812	1.68547	1.58095	N	N
4874292	Far2	0.0006139	0.000613882	4.50899	4.50899	mCG-PR GMP up vs WT GMP	42.6925	2.09E+06	293439	1	271.105	444.703	585.184	405.772	2252.91	1722.7	626.3	1198.68	191.332	1172.34	820.591	924.721	747.388	4.30829	1.79887	1.50326	Y	N
5174853	Tcf7	0.0001895	0.000189489	4.59222	4.59222	mCG-PR GMP up vs WT GMP	65.6611	1.35E+06	123675	1	269.517	180.914	192.414	271.561	1324.7	1002.46	1439.48	471.255	679.758	881.184	235.24	188.896	97.9368	4.59392	3.52259	-1.18625	Y	Y
4697700	S100a6	0.0004802	0.000480182	4.63814	4.63814	mCG-PR GMP up vs WT GMP	46.7774	2.35E+06	301092	1	688.017	552.536	928.364	600.314	5830.98	3491.07	2202.55	2265.29	1101.57	3885.07	3309.2	2104.6	1769.07	6.47671	3.28679	3.88754	Y	Y

4747382	Ikzf2	6.88E-05	6.88E-05	4.73373	4.73373	mCG-PR GMP up vs WT GMP	94.1541	603616	38465.6	1	78.7104	96.8818	100.158	37.1873	673.807	338.744	839.281	320.054	411.324	459.226	180.004	171.559	80.4617	6.0045	6.30675	1.36169	Y	Y
4391268	Atp6v0a1	0.0005849	0.000584921	4.97347	4.97347	mCG-PR GMP up vs WT GMP	43.4699	2.71E+06	374506	1	240.128	192.332	260.184	378.184	1154.85	992.591	1996.07	796.276	1209.89	1467.11	479.554	451.277	233.943	3.71946	4.84423	1.47867	Y	Y
4544788	Dab2	0.0001699	0.000169855	5.08949	5.08949	mCG-PR GMP up vs WT GMP	68.2927	78113.3	6862.81	1	7.28056	27.9807	90.83	18.846	109.612	90.4226	155.834	40.4667	152.017	52.4015	21.6854	31.26	36.5919	2.40417	2.67556	-1.30719	Y	Y
5161261	Lpcat2	0.0005073	0.000507297	5.10611	5.10611	mCG-PR GMP up vs WT GMP	45.8346	1.70E+06	223137	1	276.698	125.235	104.832	106.615	1101.81	786.874	1167.22	526.929	623.115	783.536	296.009	292.159	272.698	5.70889	4.81301	1.43078	Y	Y
4848579	Cpa3	8.88E-05	8.88E-05	5.2176	5.2176	mCG-PR GMP up vs WT GMP	86.0264	6.77E+07	4.72E+06	1	529.054	1434.97	985.11	464.591	5914.87	5282.18	4687.13	4442.67	4840	5544.39	2884.2	2378.1	2063.76	6.39191	5.53475	2.4219	Y	Y
4475161	Ms4a2	0.0009234	0.00092335	5.26812	5.26812	mCG-PR GMP up vs WT GMP	36.6032	5.15E+06	844313	1	155.869	308.406	244.74	286.017	1239.35	1496.74	1724.81	1506.68	1226.67	2361.63	1172.67	1141.28	872.147	5.09626	6.52865	3.40332	Y	Y
4448551	Cpa3	1.92E-07	1.92E-07	5.36985	5.36985	mCG-PR GMP up vs WT GMP	700.456	1.04E+08	891365	1	1581.07	1417.96	1393.25	1375.42	7438.48	6777.07	7673.09	5522.04	6836.21	8423.13	2225.23	2426.45	1572.38	4.91443	4.82581	1.29963	Y	Y
4470311	Atp6v0a1	0.0009217	0.000921691	5.44812	5.44812	mCG-PR GMP up vs WT GMP	36.6282	8.60E+06	1.41E+06	1	507.494	476.226	390.216	420.61	1812.72	1612.02	2362.09	1170.09	1978.35	1396.24	408.114	412.911	393.524	3.57913	3.68896	-1.1931	Y	Y
4507249	Far2	9.41E-05	9.41E-05	5.54161	5.54161	mCG-PR GMP up vs WT GMP	84.2818	2.40E+06	170499	1	647.018	298.201	537.054	493.128	2211.44	1932.15	975.999	1047.83	604.369	990.758	535.091	780.628	777.443	3.94747	1.778	1.05239	N	N
5158215	Il6	1.55E-05	1.55E-05	5.6633	5.6633	mCG-PR GMP up vs WT GMP	158.061	62072.2	2356.27	1	44.6651	78.3423	40.8107	63.9285	166.199	237.013	157.421	114.717	111.814	226.217	73.3129	65.9477	59.2714	3.08716	2.52659	1.1322	Y	Y
5342798	Olr1	0.0003708	0.000370828	5.69612	5.69612	mCG-PR GMP up vs WT GMP	51.4522	39832.8	4645.03	1	123.091	164.323	59.6293	30.2864	153.647	138.481	105.628	144.61	34.8304	93.8886	133.388	115.453	69.2693	1.33638	-1.0558	-1.03053	N	N
4519922	Far2	0.0001664	0.000166359	5.79973	5.79973	mCG-PR GMP up vs WT GMP	68.804	190760	16635.1	1	67.4502	78.8901	147.08	107.316	413.483	430.406	157.036	205.443	52.2626	172.742	172.075	185.758	85.6663	3.7691	1.36965	1.113	Y	N
5269990	Far2	0.0009151	0.000915096	5.91313	5.91313	mCG-PR GMP up vs WT GMP	36.7284	1.18E+06	192138	1	349.161	353.645	338.735	332.471	1580.47	1155.58	789.709	698.693	362.73	544.376	306.696	361.598	420.728	3.7017	1.66762	-1.30169	Y	N
4583996	Far2	0.0006537	0.000653719	5.91626	5.91626	mCG-PR GMP up vs WT GMP	41.6996	997562	143535	1	315.911	193.628	282.124	155.179	1147.22	703.628	370.559	439.855	229.147	497.281	277.888	308.642	212.522	3.53505	1.53784	-1.13523	Y	N
5576995	Far2	0.000146	0.000146049	5.99523	5.99523	mCG-PR GMP up vs WT GMP	72.0868	4.71E+06	392090	1	785.17	444.916	698.559	524.202	2786.22	2187.65	1391.74	1357.78	962.911	1038.41	734.102	854.411	972.628	3.80675	1.88072	1.01401	Y	N
4534300	Mcpt8	0.0005333	0.000533335	6.0412	6.0412	mCG-PR GMP up vs WT GMP	44.9904	4.38E+07	5.84E+06	1	2340.82	3713.1	1824.3	1283.67	5573.36	4924.08	6069.11	5598.36	4867.46	6242.3	4620.89	4466.66	3938.07	2.27504	2.46331	1.71116	Y	Y
5170698	Abca8b	0.0004495	0.000449458	6.19571	6.19571	mCG-PR GMP up vs WT GMP	47.9354	1.19E+06	148978	1	195.411	247.351	88.6886	95.633	909.152	750.522	376.11	630.744	567.596	779.485	196.948	214.11	158.04	4.94029	3.6564	-1.09943	Y	Y
4544679	Ccdc109b	0.0005029	0.000502854	6.2776	6.2776	mCG-PR GMP up vs WT GMP	45.9844	88702.1	11573.8	1	56.112	83.9235	74.3506	65.8808	445.275	298.258	203.201	152.814	130.757	363.777	74.9075	56.6358	56.6861	4.63454	2.81643	-1.23605	Y	Y
5327614	Olr1	0.0007732	0.000773198	6.30126	6.30126	mCG-PR GMP up vs WT GMP	39.1489	63350.4	9709.13	1	94.5024	53.3081	181.445	132.648	277.297	231.445	188.682	209.075	40.8347	165.816	104.204	99.1306	105.095	1.94687	1.22236	-1.36795	N	N
5438941	Atp6v0a1	0.0006365	0.000636512	7.04354	7.04354	mCG-PR GMP up vs WT GMP	42.1183	616945	87887.5	1	29.8831	66.3327	102.351	56.9248	440.832	352.425	594.943	229.443	135.278	466.277	121.814	135.555	99.1093	5.35371	5.00601	1.19299	Y	Y
5409122	Tcf7	4.67E-06	4.67E-06	7.08961	7.08961	mCG-PR GMP up vs WT GMP	238.342	454034	11429.8	1	96.2184	53.8166	83.8971	131.357	737.274	376.506	552.783	172.934	178.434	317.857	59.4686	65.3418	47.2316	5.41817	3.09661	-1.54865	Y	Y
5025075	Clec2i	4.84E-05	4.84E-05	7.34162	7.34162	mCG-PR GMP up vs WT GMP	106.506	2.77E+06	156074	1	48.7769	88.0913	29.9531	65.5728	530.406	376.869	975.239	205.684	447.869	396.425	48.5366	39.3734	33.0305	6.909	8.08514	-1.47672	Y	Y
5317388	Cpa3	4.20E-06	4.20E-06	7.43286	7.43286	mCG-PR GMP up vs WT GMP	247.137	2.98E+07	722322	1	256.925	814.258	367.203	175.74	3810.82	3031.11	3805.61	2686.54	3067.82	3976.57	1382.42	917.536	644.888	8.14886	8.15937	2.05523	Y	Y
4569476	Cpa3	4.69E-06	4.69E-06	7.7093	7.7093	mCG-PR GMP up vs WT GMP	237.943	4.33E+07	1.09E+06	1	362.999	830.851	483.434	290.601	5041.75	3887.93	3644.95	3077.35	3694.31	4442.67	1474.43	1053.17	803.906	8.63695	7.18231	1.92918	Y	Y
4730198	Cpa3	2.23E-05	2.23E-05	7.81538	7.81538	mCG-PR GMP up vs WT GMP	139.483	6.79E+07	2.92E+06	1	249.184	900.314	747.499	329.314	6983.96	5134.83	5228.28	4510.52	4208.87	6222.2	1970.46	1552.48	1304.33	10.6754	8.77927	2.34843	Y	Y
5566676	Cpa3	8.60E-06	8.60E-06	8.33511	8.33511	mCG-PR GMP up vs WT GMP	193.507	6.12E+07	1.90E+06	1	298.721	427.517	284.703	180.332	5011.11	3624.65	4285.72	2332.18	3654.2	4347.13	849.888	708.665	652.147	13.6754	11.6235	2.09703	Y	Y
4312716	Abca8b	0.0002045	0.000204512	8.41106	8.41106	mCG-PR GMP up vs WT GMP	63.8816	39133.8	3675.59	1	10.4034	8.8594	32.3016	6.32259	70.491	35.3444	16.8273	51.1579	20.0377	32.8283	19.2159	19.248	5.23861	3.19254	1.97834	-1.41316	Y	N
4473127	Tcf7	6.05E-06	6.05E-06	8.46798	8.46798	mCG-PR GMP up vs WT GMP	218.258	254632	6999.92	1	25.0785	35.0367	24.7616	19.5679	384.348	204.869	466.792	50.9874	174.455	226.369	21.4591	8.68684	24.7056	9.94481	8.29957	-1.27213	Y	Y
5089278	Mcpt8	0.0007393	0.000739339	9.21473	9.21473	mCG-PR GMP up vs WT GMP	39.8155	5.98E+06	901578	1	205.128	764.222	462.295	257.017	2509.67	2318.55	3242.5	2884.07	1285.52	3359.7	1818.96	1791.68	1266.01	5.40901	6.16564	3.29951	Y	Y
5298792	Cpa3	8.81E-06	8.81E-06	10.2403	10.2403	mCG-PR GMP up vs WT GMP	191.884	5.74E+07	1.80E+06	1	328.184	662.291	583.772	248.24	5772.7	4317.5	3806.68	3171.35	3785.2	4899.07	1436.18	1232.85	882.703	10.2248	7.92182	2.08137	Y	Y
5149011	Abp1	1.84E-05	1.84E-05	10.6785	10.6785	mCG-PR GMP up vs WT GMP	149.014	85909.3	3459.11	1	13.0496	14.8211	15.5432	9.60553	940.076	392.299	397.336	83.3358	228.243	279.539	3.48312	9.70029	14.3055	42.3955	16.444	-1.35429	Y	Y
5107493	Nt5e	0.0001401	0.00014012	12.5806	12.5806	mCG-PR GMP up vs WT GMP	73.1621	207955	17054.3	1	16.0641	16.8135	27.3852	51.9364	742.11	385.628	925.517	151.11	317.443	325.647	26.1057	29.6652	21.0234	17.6335	13.9331	-1.28398	Y	Y
4899368	Cpa3	0.00021	0.000209968	12.9178	12.9178	mCG-PR GMP up vs WT GMP	63.278	1.97E+07	1.87E+06	1	102.517	353.314	186.017	115.941	3928.66	3296.69	2166.29	2156.33	1558.37	3077.96	765.758	517.11	525.943	17.8223	11.2567	2.48262	Y	Y
5125773	Cpa3	0.0002766	0.00027655	13.4216	13.4216	mCG-PR GMP up vs WT GMP	57.271	9.61E+06	1.01E+06	1	44.8373	188.443	81.4189	75.9741	1791.42	1468.39	1257.81	841.591	950.647	1169.44	263.517	195.221	149.017	15.3724	10.1798	1.53568	Y	Y
5524069	Cpa3	9.81E-06	9.81E-06	13.7226	13.7226	mCG-PR GMP up vs WT GMP	184.934	1.11E+07	358662	1	68.7395	194.962	49.4729	35.64	2039.24	1565.41	1401.3	1020.57	1099.11	1816.83	423.165	251.869	153.832	19.4963	14.9383	2.48572	Y	Y
4757278	Nt5e	0.0008949	0.000894933	13.7621	13.7621	mCG-PR GMP up vs WT GMP	37.0407	421456	68269.1	1	28.0848	12.7591	28.9613	33.9007	605.555	249.24	617.018	117.202	235.954	283.166	37.0986	23.8985	16.8897	14.7619	11.3311	1.14957	Y	Y
4670975	Cpa3	1.12E-05	1.12E-05	13.8829	13.8829	mCG-PR GMP up vs WT GMP	176.805	2.22E+07	754838	1	115.814	224.147	142.776	59.1654	2759.68	1709.81	1723.01	1153.67	1589.6	1554.99	433.156	417.128	238.786	15.5568	10.5696	1.99305	Y	Y
4489514	Cdh1	0.0005016	0.000501606	15.762	15.762	mCG-PR GMP up vs WT GMP	46.0268	1.44E+06	188161	1	27.4533	26.8992	24.9704	26.408	1276.48	690.239	810.628	275.814	389.017	713.41	64.817	75.1654	46.5919	34.0058	19.5031	1.78248	Y	Y
4711141	Cdh1	0.0001593	0.000159326	16.4129	16.4129	mCG-PR GMP up vs WT GMP	69.8774	5.29E+06	453859	1	84.9293	183.492	61.8418	87.3455	2347.42	1130.46	2611.49	507.827	948.781	1389.12	149.554	193.554	85.6145	15.006	11.9791	1.1083	Y	Y
5458125	Tcf7	7.87E-06	7.87E-06	18.3453	18.3453	mCG-PR GMP up vs WT GMP	199.48	727726	21888.7	1	22.3429	18.1546	27.7236	17.369	801.721	512.48	754.314	91.2765	208.425	360.777	9.84484	21.5709	16.4699	27.8132	15.48	-1.51621	Y	Y
5513877	Cdh1	0.0003672	0.000367152	18.4641	18.4641	mCG-PR GMP up vs WT GMP	51.6406	3.42E+06	397806	1	69.3122	109.128	52.1109	69.0124	1706.91	1140.98	1157.57	492.314	461.201	863.036	157.218	118.695	93.3307	17.3738	9.337	1.278	Y	Y
4887066	Cdh1	5.61E-06	5.61E-06	21.0891	21.0891	mCG-PR GMP up vs WT GMP	223.966	2.10E+07	563394	1	107.647	167.74	148.999	159.087	3747.94	3018.52	3965.22	1603.05	2153.56	2989.35	393.321	460.976	229.702	21.3139	17.1032	1.90801	Y	Y
4463258	Cdh1	3.28E-05	3.28E-05	21.5315	21.5315	mCG-PR GMP up vs WT GMP	121.956	4.97E+06	244383	1	73.9987	92.3876	66.7766	20.5313	2539.54	1589.68	1816.78	681.184	763.962	1414.22	174.045	158.888	55.4432	29.944	17.3377	1.681	Y	Y
4310407	Abp1	3.96E-05	3.96E-05	21.5729	21.5729	mCG-PR GMP up vs WT GMP	114.251	74256.3	3899.65	1	13.3175	21.3263	17.7232	8.35579	1032.12	390.268	334.231	84.9432	127.128	229.379	11.936	11.0366	3.3445	39.9363	11.1817	-2.31283	Y	Y
5528372	Cdh1	0.0003447	0.000344723	31.6234	31.6234	mCG-PR GMP up vs WT GMP	52.8474	1.30E+06	147075	1	10.2599	18.9656	19.3936	9.60429	788.684	503.073	720.851	266.721	333.851	544.069	33.9255	48.1284	22.0539	41.0255	30.7154	2.02552	Y	Y
4529729	Cdh1	0.0008224	0.000822387	42.0247	42.0247	mCG-PR GMP up vs WT GMP	38.2471	3.91E+06	614079	1	34.0387	9.28093	39.4806	33.9339	2179.31	1213.12	1411.66	567.08	721.21	1096.21	85.706	103.451	69.0543	49.2799	28.489	1.99153	Y	Y
4967048	Cdh1	0.0007343	0.000734295	45.896	45.896	mCG-PR GMP up vs WT GMP	39.9182	3.20E+06	480467	1	10.3334	23.0795	63.9108	12.2652	1701.95	1017.87	1103.61	523.297	528.536	987.871	97.2858	79.721	59.9252	45.2902	26.9904	2.25783	Y	Y
4829586	Cdh1	0.000124	0.000124	47.3312	47.3312	mCG-PR GMP up vs WT GMP	76.4209	1.73E+07	1.35E+06	1	84.1773	63.5838	156.332	63.6184	2965.41	2030.33	3367.78	960.98	1396.41	2455.57	251.295	299.147	258.869	24.7516	20.6474	2.49367	Y	Y
5496763	Cdh1	0.0009955	0.000995487	53.8953	53.8953	mCG-PR GMP up vs WT GMP	35.5689	1.40E+06	235930	1	23.7552	18.1256	17.8018	5.73728	1067.87	575.702	707.554	217.147	213.11	524.462	22.9458	45.2066	31.8253	51.5382	26.8321	1.88637	Y	Y
4999412	Cdh1	0.0002044	0.000204365	59.234	59.234	mCG-PR GMP up vs WT GMP	63.8982	1.79E+07	1.68E+06	1	97.7581	30.1995	147.091	79.295	3548.74	2590.44	4143.79	1144.18	2123.2	2263.05	300.258	289.73	158.036	30.8989	24.7032	1.84896	Y	Y
4571129	Cdh1	0.0003592	0.000359232	63.5472	63.5472	mCG-PR GMP up vs WT GMP	52.0552	9.49E+06	1.09E+06	1	31.2613	53.7405	43.6182	22.9793	2375.84	1494.71	2262.23	695.527	1094.93	1565.43	163.647	159.156	78.1099	46.3992	34.3268	2.62917	Y	Y

Supplemental Table S4: Differentially expressed probesets in GMP cells from transplanted WT vs. PR+/- vs. Dnmt3a-/- vs. PR+/- Dnmt3a-/- by ANOVA

Probeset.ID	seqname	start	stop	strand	Gene.Symbol	WT.1	WT.2	WT.3	WT.4	$PR^{+/-}$.1	$PR^{+/-}$.2	$PR^{+/-}$ $Dnmt3a^{-/-}$ .1	$PR^{+/-}$ $Dnmt3a^{-/-}$ .2	$PR^{+/-}$ $Dnmt3a^{-/-}$ .3	$PR^{+/-}$ $Dnmt3a^{-/-}$ .4	$Dnmt3a^{-/-}$.1	$Dnmt3a^{-/-}$.2	$Dnmt3a^{-/-}$.3	WT Average	$PR^{+/-}$ Average	$PR^{+/-}$ $Dnmt3a^{-/-}$ Average	$Dnmt3a^{-/-}$ Average	FoldChange $Dnmt3a^{-/-}$ and $PR^{+/-}$ and $PR^{+/-}$ $Dnmt3a^{-/-}$ vs. WT
5279642	chr18	38413955	38413988	+	0610009O20Rik	695.702	403.314	700.202	713.184	1703.48	1222.79	1525.26	1171.2	1345.22	1584.59	602.391	633.462	717.684	628.1005	1463.135	1406.5675	651.179	1.86853
5555565	chr4	107567483	107567543	+	0610037L13Rik	489.573	586.841	551.434	479.119	458.656	455.489	372.776	400.999	431.517	476.471	653.026	632.999	721.258	526.74175	457.0725	420.44075	669.0943333	-1.02174
5043907	chr11	20726481	20726510	-	1110067D22Rik	408.314	553.74	441.48	506.934	104.767	199.638	244.082	328.878	428.952	298.221	656.221	559.749	596.341	477.617	152.2025	325.03325	604.1036667	-1.32507
4310624	chr11	20729302	20729329	-	1110067D22Rik	185.082	144.934	179.128	210.24	49.9832	118.814	94.1191	134.795	186.471	165.249	312.999	278.804	335.962	179.846	84.3986	145.158525	309.255	-1.00135
5497354	chr16	32100062	32100154	+	1500031L02Rik	55.0499	110.221	105.096	103.948	260.911	242.971	248.448	197.818	201.726	244.073	109.064	90.4432	153.591	93.578725	251.941	223.01625	117.6994	2.11108
5174269	chr16	32847939	32848075	-	1700021K19Rik	236.545	208.522	181.864	266.693	105.564	100.073	123.702	142.499	134.077	151.425	126.36	128.369	105.189	223.406	102.8185	137.92575	119.9726667	-1.85802
4910298	chr7	51747957	51748022	-	2310044H10Rik	165.568	166.888	156.647	180.205	381.999	321.642	245.698	180.205	247.11	186.777	158.128	181.705	191.006	167.327	351.8205	214.9475	176.9463333	1.48156
4522129	chr12	102109772	102110449	+	9030617O03Rik	324.69	318.967	218.338	270.398	187.128	197.161	71.0636	109.327	143.165	72.5311	124.698	128.61	114.727	283.09825	192.1445	99.021675	122.6783333	-2.05221
5170698	chr11	109799037	109799081	-	Abca8b	198.844	237.175	87.8784	100.878	848.372	694.915	356.591	576.952	598.193	752.693	190.378	201.786	150.397	156.19385	771.6435	571.10725	180.8536667	3.25152
4691248	chr11	109799753	109799798	-	Abca8b	90.3861	40.5743	79.4623	43.8318	472.552	433.405	212.33	137.601	293.265	251.739	76.9319	99.6839	56.7951	63.563625	452.9785	223.73375	77.80363333	3.95674
5408821	chr11	109797676	109797736	-	Abca8b	28.3159	25.0744	38.8322	43.3507	500.113	547.724	289.351	266.483	378.777	462.517	148.261	97.6129	60.7795	33.8933	523.9185	349.282	102.2178	9.59302
5188688	chr7	86439414	86439492	+	Abhd2	203.161	107.054	180.721	133.943	217.031	270.869	265.804	288.786	234.323	203.036	358.476	379.175	354.855	156.21975	243.95	247.98725	364.1686667	1.82671
5033355	chr6	48859108	48859159	+	Abp1	8.94987	13.41	34.256	15.9094	2419.35	1424.81	714.258	250.906	267.74	1041.44	10.8186	17.5997	30.2182	18.1313175	1922.08	568.586	19.5455	46.1487
5602926	chr11	69703124	69703214	-	Acap1	457.966	390.314	555.466	457.503	911.485	774.318	675.758	640.17	715.04	670.818	554.758	590.522	620.133	465.31225	842.9015	675.4465	588.471	1.50925
4637668	chr11	69698321	69698367	-	Acap1	231.86	185.439	174.262	206.742	397.598	342.042	351.403	319.119	293.277	317.19	243.869	289.542	244.124	199.57575	369.82	320.24725	259.1783333	1.58544
5553219	chr14	55265573	55265669	-	Acin1	620.962	596.443	641.026	563.064	513.517	534.804	323.443	420.628	358.582	374.712	493.462	549.406	532.841	605.37375	524.1605	369.34125	525.2363333	-1.2801
4718330	chr1	179714201	179714225	-	Adss	1518.13	1293.13	1429.83	1778.09	783.314	919.351	799.128	619.906	818.98	898.388	1063.87	996.351	1058.09	1504.795	851.3325	784.1005	1039.437	-1.6877
4794633	chr7	134235806	134236064	+	AI467606	45.4257	72.4617	87.8499	74.7393	278.647	225.962	81.5165	56.7202	60.1282	126.294	126.046	138.591	166.999	70.11915	252.3045	81.164725	143.8786667	2.26922
5572821	chr17	35307937	35307988	-	Aif1	146.639	250.241	275.443	302.352	11.0021	43.3455	26.7362	20.0264	36.0549	63.0913	307.277	291.536	202.819	243.66875	27.1738	36.4772	267.2106667	-2.2094
4484534	chr19	4114591	4114781	-	Aip	549.073	507.258	653.026	659.263	1448.51	1409.33	798.471	738.619	1196.61	1005.37	728.429	759.929	785.489	592.155	1428.92	934.7675	757.949	1.75722
4977125	chr6	116373168	116373287	-	Alox5	135.392	65.653	164.673	101.191	259.058	197.071	135.389	147.221	172.333	178.852	369.978	303.182	403.036	116.72725	228.0645	158.44875	358.732	2.12817
4582049	chr6	116365416	116365558	-	Alox5	55.2588	58.5233	72.0191	42.897	129.723	127.445	52.3109	58.9413	106.76	64.9803	215.945	190.101	186.434	57.17455	128.584	70.748125	197.4933333	2.31353
4754927	chr6	116410894	116411000	-	Alox5	299.721	369.922	314.638	201.392	966.196	933.862	458.168	605.008	534.103	368.925	593.01	654.867	638.348	296.41825	950.029	491.551	628.7416667	2.32815
5405855	chr6	116404160	116404332	-	Alox5	90.8345	80.3871	94.7197	110.52	269.369	242.906	263.239	186.031	172.554	169.107	231.162	254.646	220.646	94.115325	256.1375	197.73275	235.4846667	2.44152
4910226	chr6	116370291	116370402	-	Alox5	86.8085	80.0728	97.5324	112.925	339.758	286.24	92.2765	80.4068	201.888	208.943	435.147	366.795	375.851	94.334675	312.999	145.878575	392.5976667	3.0087
4386394	chr6	116377197	116377267	-	Alox5	88.7836	42.6335	72.0212	74.1147	228.994	266.512	161.699	96.0129	157.079	147.698	260.48	329.92	209.962	69.38825	247.753	140.622225	266.7873333	3.14732
5343955	chr5	115249394	115249493	+	Ankrd13a	1362.16	1298.59	1591.43	1430.9	1823.45	1860.6	2408.58	2135.01	1962.43	2054.35	1369.09	1599.19	1613.67	1420.77	1842.025	2140.0925	1527.316667	1.29259
4438212	chr7	36421577	36421621	+	Ankrd27	187.49	284.48	185.443	247.017	591.98	729.258	502.795	380.693	357.758	372.702	214.869	243.934	189.915	226.1075	660.619	403.487	216.2393333	1.88752
4565961	chr7	36393367	36393460	+	Ankrd27	111.304	71.7302	92.7302	74.7302	178.156	203.851	236.601	214.897	228.675	179.971	120.184	120.397	77.4525	87.62365	191.0035	215.036	106.0111667	1.94791
4708102	chr17	28195240	28195387	+	Anks1	233.712	179.684	211.406	163.971	105.841	100.897	152.749	109.082	144.388	123.045	215.943	246.332	253.027	197.19325	103.369	132.316	238.434	-1.24775
5151709	chr18	38141631	38141780	-	Arap3	67.0905	81.609	106.969	78.5359	137.684	176.331	211.609	220.646	177.424	162.887	103.554	125.334	121.035	83.5511	157.0075	193.1415	116.641	1.86229
5103563	chr18	38143888	38144026	-	Arap3	79.4062	76.0543	89.8047	75.5578	259.23	234.814	420.295	256.156	270.934	350.74	165.915	210.99	143.045	80.20575	247.022	324.53125	173.3166667	3.09566
4894384	chr7	130449915	130449970	-	Arhgap17	634.795	464.814	624.795	694.295	273.314	256.925	230.758	318.61	264.665	186.443	239.61	328.832	248.388	604.67475	265.1195	250.119	272.2766667	-2.30348
4461462	chr6	87409540	87409733	-	Arhgap25	435.925	488.054	476.276	537.401	496.758	474.48	722.147	646.938	682.832	660.202	590.517	649.531	671.735	484.414	485.619	678.02975	637.261	1.23923
5444384	chr1	36376347	36376964	+	Arid5a	204.499	180.536	170.438	153.985	357.24	324.573	243.017	156.694	193.702	197.814	154.888	158.036	186.703	177.3645	340.9065	197.80675	166.5423333	1.32543
4628202	chr11	97851028	97851340	-	Arl5c	269.6	293.559	326.804	401.128	74.1654	103.1	22.9797	74.4346	110.952	22.2788	170.559	187.115	135.216	322.77275	88.6327	57.661275	164.2966667	-3.11767
5599574	chr11	70251465	70251524	+	Arrb2	340.226	386.702	272.795	267.128	650.443	540.24	523.966	640.263	572.059	676.721	837.11	728.665	675.147	316.71275	595.3415	603.25225	746.974	2.04767
4479464	chr15	63999266	63999364	-	Asap1	496.091	475.314	705.522	712.175	724.744	754.744	951.614	1025.21	973.133	1180.45	1007.7	1105.32	1090.73	597.2755	739.744	1032.60175	1067.916667	1.58512
5194887	chr4	9566353	9566420	-	Asph	218.351	225.202	407.869	453.795	998.962	918.633	948.466	1007.76	813.04	934.406	536.943	711.059	376.239	326.30425	958.7975	925.918	541.4136667	2.47839
4828636	chr11	120539743	120539811	+	Aspscr1	82.7765	61.2395	88.1479	102.925	194.647	202.758	129.573	98.2765	119.968	135.054	96.3506	134.777	97.5543	83.772225	198.7025	120.717875	109.5606333	1.70693
4312528	chr15	57937118	57937188	-	Atad2	895.934	898.943	807.888	948.971	686.665	661.897	645.21	619.656	645.036	653.091	698.276	721.517	635.888	887.934	674.281	640.74825	685.227	-1.33173
4689967	chr4	140548080	140548124	+	Atp13a2	76.2904	78.1052	52.9062	49.8368	202.499	179.272	157.272	129.513	108.777	130.332	65.2163	96.6978	78.4761	64.28465	190.8855	131.4735	80.13006667	2.08701
4461983	chr4	140548276	140548417	+	Atp13a2	156.147	103.462	138.184	148.202	441.638	332.517	356.008	405.295	290.883	354.559	174.443	181.346	211.054	136.49875	387.0775	351.68625	188.9476667	2.26549
4385979	chr1	135636492	135636665	-	Atp2b4	142.684	159.729	220.943	194.717	48.5543	45.6062	58.9794	37.9067	75.2844	39.8526	94.4099	123.388	78.9029	179.51825	47.08025	53.005775	98.90026667	-2.70649
4496267	chr18	78018677	78018715	+	Atp5a1	209.624	287.675	275.786	256.119	199.221	238.091	143.851	184.573	237.573	221.588	404.647	454.073	439.665	257.301	218.656	196.89625	432.795	1.09903
5535783	chrX	71546673	71546697	+	Atp6ap1	639.721	463.239	766.647	599.128	1149.65	1098.13	514.869	466.091	587.721	519.61	474.61	480.647	558.906	617.18375	1123.89	522.07275	504.721	1.16156
4981503	chrX	71545961	71546052	+	Atp6ap1	220.332	252.785	273.47	221.933	516.74	440.684	269.665	258.507	315.11	265.147	285.748	262.777	268.525	242.13	478.712	277.10725	272.35	1.41545
4470311	chr11	100899509	100899564	+	Atp6v0a1	498.087	457.443	384.531	439.628	1688.41	1496.46	2163.78	1917.09	1123.89	1360.44	409.221	402.684	378.664	444.92225	1592.435	1641.3	396.8563333	2.72002
4969595	chr11	100924532	100924741	+	Atp6v0a1	461.332	266.846	264.054	215.147	1364.39	1010.67	1386.13	910.591	887.313	1466.09	384.494	367.401	284.962	301.84475	1187.53	1162.531	345.619	2.97689
4316397	chr11	100888738	100888793	+	Atp6v0a1	202.61	91.4803	187.888	228.165	753.091	545.61	1107.13	837.536	623.314	854.054	291.61	352.115	154.999	177.535825	649.3505	855.5085	266.2413333	3.32534
5452031	chr11	100924894	100925010	+	Atp6v0a1	444.786	360.406	706.98	416.23	2708.69	1994.97	1368.16	1679.68	1945.19	2386.15	1105.23	1090.93	732.601	482.1005	2351.83	1844.795	976.2536667	3.57662
4741881	chr11	100873097	100873134	+	Atp6v0a1	113.54	18.0727	148.684	118.077	655.309	515.689	484.651	677.573	395.772	559.003	164.115	198.559	184.457	99.593425	585.499	529.24975	182.377	4.3414
5604130	chr11	100905165	100905266	+	Atp6v0a1	41.1659	39.3824	44.5692	45.2397	360.591	304.846	363.957	160.332	235.013	299.202	84.1978	103.953	68.2534	42.5893	332.7185	264.626	85.46806667	5.34416
4473959	chr11	100873142	100873206	+	Atp6v0a1	72.8691	21.7782	97.4432	67.6469	781.962	497.24	501.017	592.276	363.369	461.61	122.041	163.989	139.239	64.93435	639.601	479.568	141.7563333	6.47282
4723308	chr10	79336922	79336964	-	BC005764	149.439	111.86	126.156	110.564	81.2534	62.0682	62.3506	39.4648	67.5867	82.4201	144.05	177.865	206.531	124.50475	71.6608	62.95555	176.1486667	-1.20192
4940567	chr19	4057601	4057714	-	BC021614	2.82057	43.8294	33.6099	47.9231	72.1957	111.914	328.39	340.11	266.869	506.721	77.7951	92.898	117.038	32.0457425	92.05485	360.5225	95.91036667	5.70525
4722742	chr5	138703504	138703533	-	BC037034	394.276	391.517	522.415	406.226	693.591	665.165	676.462	689.925	737.869	645.452	565.42	599.619	543.29	428.6085	679.378	687.427	569.443	1.50584
5209907	chr11	48981979	48982551	-	Btnl9	403.425	317.165	283.536	331.758	785.647	733.98	860.832	814.943	639.073	745.258	581.702	695.925	488.74	333.971	759.8135	765.0265	588.789	2.10959
5577111	chrX	35984472	35985252	-	C1galt1c1	864.638	536.23	901.499	922.999	343.943	380.175	155.397	97.6099	286.054	205.693	370.758	387.064	241.832	806.3415	362.059	186.188475	333.218	-2.74432
4991701	chr2	84217122	84217156	-	Calcrl	284.777	208.249	187.939	170.777	169.202	159.165	421.156	384.795	351.573	377.827	573.665	400.832	424.564	212.9355	164.1835	383.83775	466.3536667	1.58792
4439519	chr11	5872648	5872699	-	Camk2b	13.8865	22.6243	33.9256	27.1242	243.624	177.621	256.411	166.906	144.492	190.888	34.8304	65.8227	20.1441	24.39015	210.6225	189.67425	40.26573333	6.02104
4778093	chr3	14872023	14872316	+	Car3	88.221	86.7492	105.175	128.897	54.9527	55.3784	63.8048	93.3969	62.7395	86.3691	258.147	212.823	228.369	102.26055	55.16555	76.577575	233.113	1.1893
4339683	chrX	13132005	13132066	-	Cask	113.443	123.993	140.579	167.295	345.101	319.73	222.073	298.091	208.017	251.582	153.388	156.86	208.536	136.3275	332.4155	244.94075	172.928	1.83451
5590716	chr8	47723307	47723418	+	Casp3	186.832	151.795	137.341	78.5358	404.471	399.74	481.758	477.925	610.008	757.693	244.73	192.193	162.573	138.62595	402.1055	581.846	199.832	2.84647
4985842	chr13	101457065	101457090	+	Ccdc125	291.036	270.295	223.462	234.61	214.869	212.184	262.665	280.702	214.221	265.11	354.314	385.425	388.11	254.85075	213.5265	255.6745	375.9496667	1.10542
5365520	chr16	87491652	87491677	-	Cct8	197.795	190.073	183.795	238.128	135.443	193.388	159.091	122.98	170.184	115.758	279.369	322.147	347.702	202.44775	164.4155	142.00325	316.406	1.02549
4914844	chr5	144759426	144759452	-	Ccz1	204.351	224.499	150.314	131.536	433.98	325.314	340.017	292.573	373.388	358.647	164.314	201.684	161.054	177.675	379.647	341.15625	175.684	1.68188
5525324	chr13	103495689	103496401	+	Cd180	772.184	1015.55	643.179	666.087	89.4247	74.4018	104.244	281.661	91.3321	190.98	434.772	593.832	423.684	774.25	81.91325	167.054275	484.096	-3.16856
4365414	chr13	103492813	103492918	+	Cd180	497.832	673.591	621.832	516.915	110.202	122.573	31.5571	202.202	73.258	90.5543	460.878	469.008	391.156	577.5425	116.3875	99.39285	440.3473333	-2.64069
4632360	chr13	103483822	103483860	+	Cd180	967.536	700.448	887.402	836.054	247.573	295.758	231.314	297.202	288.943	193.948	644.726	697.3	566.61	847.86	271.6655	252.85175	636.212	-2.19137
4532781	chr11	114762621	114762904	+	Cd300a	194.57	200.344	179.231	163.252	70.8691	149.894	55.9617	74.3876	118.961	60.1588	222.48	224.073	237.054	184.34925	110.38155	77.367275	227.869	-1.33067
4731073	chr3	106566130	106566182	-	Cd53	1173.9	1066.92	1172.42	1174.15	2189.68	1896.39	1972.29	2061.25	1314.42	1795.67	906.017	979.378	788.388	1146.8475	2043.035	1785.9075	891.261	1.37193
4730989	chr18	60971984	60972010	+	Cd74	446.091	437.388	295.425	299.536	200.017	404.462	419.906	333.091	458.61	311.462	1144.91	1288.05	1494.65	369.61	302.2395	380.76725	1309.203333	1.79668
4548533	chr18	60967576	60967723	+	Cd74	41.1664	19.3093	54.5778	50.1827	26.7977	57.9844	43.9559	78.1258	64.2766	97.2765	232.795	191.718	224.462	41.30905	42.39105	70.9087	216.325	2.65982

4610632	chr18	60968682	60968717	+	Cd74	64.1709	21.7557	46.4081	44.6284	15.8998	62.0913	23.5764	75.5733	74.9658	26.6397	365.814	335.665	392.554	44.240775	38.99555	50.1888	364.6776667	3.41963
5274154	chr18	60969654	60969725	+	Cd74	18.1424	46.3419	26.1986	4.20773	5.66019	40.7951	11.0647	29.8012	21.4409	27.5933	175.758	212.351	219.943	23.7226575	23.227645	22.475025	202.684	3.49014
4489759	chr18	60967902	60967963	+	Cd74	67.0173	23.5173	60.1287	72.3876	36.1559	82.2034	76.6654	78.3506	91.3136	89.5728	352.388	503.147	509.962	55.762725	59.17965	83.9756	455.1656667	3.57658
5528013	chr18	60972101	60972133	+	Cd74	174.153	186.906	65.6904	82.1143	77.0916	198.417	87.4565	175.87	212.332	168.917	1227.2	1026.81	1222.52	127.215925	137.7543	161.143875	1158.843333	3.8196
5290744	chr18	60963591	60963664	+	Cd74	20.51	21.2058	18.2649	34.7654	9.3685	44.1046	25.4031	42.9618	41.6463	26.522	219.665	246.477	228.351	23.686525	26.73655	34.1333	231.4976667	4.1144
4353500	chr18	60972235	60972263	+	Cd74	49.0589	67.3136	179.369	104.128	82.5681	281.939	107.513	145.79	390.814	289.059	1384.28	2009.26	1757.9	99.967375	182.25355	233.294	1717.146667	7.11129
4450738	chr6	125444622	125444657	-	Cd9	215.239	91.4987	195.545	288.425	818.832	884.739	666.591	523.36	762.814	707.684	625.286	464.61	352.388	197.676925	851.7855	665.11225	480.7613333	3.36856
4456996	chr2	148266587	148266976	-	Cd93	823.814	635.851	575.777	809.24	62.2458	193.054	63.7957	276.638	221.11	123.298	637.276	508.517	494.017	711.1705	127.6499	171.210425	546.6033333	-2.52348
4720089	chr2	148267366	148268750	-	Cd93	211.171	211.639	277.305	305.795	73.5601	69.0543	25.5367	47.1349	121.949	62.2024	212.235	230.842	187.102	251.4775	71.3072	64.20575	210.0596667	-2.18314
5497719	chr8	86253177	86253202	-	Cd97	453.869	245.054	483.091	443.999	266.684	405.499	220.443	366.721	393.888	387.795	1137.59	864.388	1374.31	406.50325	336.0915	342.21175	1125.429333	1.47906
5513877	chr8	109188158	109188282	+	Cdh1	72.2635	107.591	52.9997	72.6042	1594.81	1058.68	1077.99	471.301	466.184	836.591	152.81	115.451	87.0968	76.3646	1326.745	713.0165	118.4526	9.42065
4887066	chr8	109192348	109192482	+	Cdh1	110.036	164.776	149.11	168.65	3503.63	2811.39	3635.15	2076.54	1527.8	2895.39	390.983	450.261	216.943	148.143	3157.51	2533.72	352.729	13.5994
4967048	chr8	109192915	109193572	+	Cdh1	11.0389	22.841	64.687	13.3457	1589.56	944.712	1029.66	536.239	495.675	958.99	102.138	76.3136	55.9816	27.97815	1267.136	755.141	78.1444	25.0245
4795029	chr8	109189311	109189396	+	Cdh1	12.7113	10.425	34.9228	15.4258	1052.82	683.101	759.545	404.119	334.795	704.064	75.4672	71.532	41.2909	18.371225	867.9605	550.63075	62.76336667	26.8781
4757676	chr5	102243441	102243539	+	Cds1	188.591	195.184	236.633	236.633	242.925	232.17	87.8978	78.1154	118.3	112.091	125.739	170.702	190.554	214.26025	237.5475	99.10105	162.3316667	-1.28819
5054778	chr18	68022074	68022171	+	Cep192	297.392	373.591	354.971	351.777	183.04	168.892	281.24	209.892	239.457	253.064	192.61	231.628	175.212	344.43275	175.966	245.91325	199.8166667	-1.66207
4436123	chr3	105950549	105950770	-	Chi3l3	405.814	266.735	276.013	214.726	876.929	969.351	84.2197	88.74	669.11	479.115	2440.55	1577.92	2398.23	290.822	923.14	330.296175	2138.9	3.88821
4840016	chr10	87936457	87937997	-	Chpt1	102.443	161.022	141.119	107.3	308.059	329.406	135.133	141.916	176.763	206.888	184.874	185.781	154.999	127.971	318.7325	165.175	175.218	1.71686
4727738	chr6	122884542	122884612	+	Clec4a1	11.7448	14.2732	74.312	25.1331	15.6458	17.0994	8.70451	8.93882	27.164	24.6314	123.559	220.475	185.854	31.365775	16.3726	17.3596825	176.6293333	2.23557
5007020	chr10	79457230	79457313	+	Cnn2	189.795	165.221	300.397	264.156	568.388	578.165	290.98	252.638	339.36	279.073	363.591	361.462	349.369	229.89225	573.2765	290.51275	358.1406667	1.77174
4926921	chr1	45389830	45389855	+	Col3a1	148.073	81.0358	67.258	144.017	360.202	261.628	372.739	267.184	337.832	243.443	63.798	42.9432	109.519	110.09595	310.915	305.2995	72.08673333	2.08394
5610806	chr19	4150098	4150187	+	Coro1b	494.073	426.332	541.48	586.906	1138.5	1050.04	865.443	1024.87	896.851	811.536	610.962	617.147	677.369	512.19775	1094.27	899.675	635.1593333	1.71099
4448551	chr3	20128939	20129005	-	Cpa3	1493.78	1333.86	1383.98	1395.11	7303.02	6473.93	6912.11	6466.41	5336.67	8341.81	2385.07	2420.55	1504.85	1401.6825	6888.475	6764.25	2103.49	3.74697
4848579	chr3	20115582	20115700	-	Cpa3	520.776	1353.56	978.406	484.313	5658.13	5006.94	4311.83	4573.6	4228.68	5355.65	3038.36	2404.07	1982.94	834.26375	5332.535	4617.44	2475.123333	4.96449
4569476	chr3	20123139	20123194	-	Cpa3	361.036	792.017	491.406	316.554	4806.11	3662.48	3343.76	3523.83	2923.96	4293.05	1539.23	1086.73	774.74	490.25325	4234.295	3521.15	1133.566667	6.04382
5317388	chr3	20124987	20125065	-	Cpa3	257.517	777.036	365.221	187.147	3601.38	2864.42	3537.4	2969.12	2584.62	3857.13	1467.85	915.388	621.517	396.73025	3232.9	3237.0675	1001.585	6.2776
5298792	chr3	20122037	20122167	-	Cpa3	342.383	651.702	598.758	289.753	5528.05	4096.49	3505.94	3623.26	3030.11	4754.28	1553.98	1252.53	879.327	470.649	4812.27	3728.3975	1228.612333	6.91901
4730198	chr3	20119654	20119732	-	Cpa3	248.888	857.943	742.295	345.092	6819.24	4892.79	4782.81	4005.18	4346.26	6129.39	2096.28	1555.48	1260.11	548.5545	5856.015	4815.91	1637.29	7.47978
5125773	chr3	20141834	20141885	-	Cpa3	46.2076	183.61	82.2136	80.4754	1653.64	1363.24	1145.3	934.693	789.536	1126.12	263.064	188.962	140.202	98.12665	1508.44	998.91225	197.4093333	9.18799
5566676	chr3	20139475	20139577	-	Cpa3	300.916	412.008	283.869	191.943	4723.6	3404.64	3917.91	3489.53	2210.19	4199.61	888.665	700.341	630.712	297.184	4064.12	3454.31	739.906	9.26287
4670975	chr3	20142007	20142070	-	Cpa3	118.017	218.647	130.508	64.1284	2544.33	1588.33	1522.55	1540.25	1050.92	1501.92	435.193	409.091	214.212	132.8251	2066.33	1403.91	352.832	9.59424
4899368	chr3	20115804	20115874	-	Cpa3	104.74	342.536	185.832	123.528	3679.1	3063.38	1955.29	1522.37	2053.33	2986.22	784.906	508.388	504.74	189.159	3371.24	2129.3025	599.3446667	10.7491
5228164	chr3	20115729	20115771	-	Cpa3	43.5358	126.573	124.499	25.9062	1567.76	1235.2	680.054	865.61	1007.68	1325.5	418.239	256.836	201.314	80.1285	1401.48	969.711	292.1296667	11.0794
5524069	chr3	20127092	20127142	-	Cpa3	67.458	187.198	50.1345	38.7643	1898.36	1450.66	1296.79	1094.94	976.888	1763.51	430.318	243.628	141.494	85.8887	1674.51	1283.032	271.8133333	12.5331
5312594	chr8	97075125	97075231	+	Cpne2	255.272	461.536	331.536	358.402	894.772	718.073	857.369	721.202	625.142	807.925	484.05	520.906	507.554	351.6865	806.4225	752.9095	504.17	1.95581
4349281	chr8	97072271	97072442	+	Cpne2	599.425	735.962	554.999	504.684	1318.87	1258.02	1376.65	1390.24	1133.8	1314.89	963.777	1129.2	1371.59	598.7675	1288.445	1303.895	1154.855667	2.08606
4923600	chr3	107559548	107559588	-	Csf1	32.5535	149.889	32.0005	52.1676	458.783	232.592	848.332	775.775	484.294	707.98	129.702	189.566	111.857	66.65265	345.6875	704.09525	143.7083333	5.9687
5344107	chr18	61288641	61288761	+	Csf1r	277.999	227.029	174.702	277.462	53.4122	73.3508	64.4339	46.3885	101.287	71.2813	90.9466	161.399	113.68	239.298	63.3815	70.847675	122.0085333	-2.80167
5122115	chr18	61269285	61269483	+	Csf1r	1030.18	968.462	909.952	777.684	307.193	316.462	300.795	434.489	334.554	251.61	496.156	590.091	798.202	921.5695	311.8275	330.362	628.1496667	-2.17636
5406392	chr15	78175838	78175973	+	Csf2rb	322.193	265.582	298.443	273.415	685.999	647.647	1091.8	761.739	628.73	1075.17	228.008	266.258	250.656	289.90825	666.823	889.35975	248.3073333	2.07478
4864767	chr15	78178658	78178685	+	Csf2rb	578.716	420.077	560.309	534.027	1157.19	1232.23	1827.31	2038.82	1121.96	1759.42	809.92	524.554	646.665	523.28225	1194.71	1686.8775	660.3796667	2.25625
5145087	chr15	78118323	78118468	-	Csf2rb2	57.9175	75.0359	110.181	71.8287	367.462	197.209	484.702	560.295	333.869	571.758	108.777	84.8525	99.7454	78.740775	282.3355	487.656	97.79163333	3.67358
4605174	chr14	56721237	56721265	-	Ctsg	3376.18	3396.94	3955.28	3829.15	3434.26	3270.35	373.462	2287.92	60.3691	154.388	4364.11	4035.44	3917.02	3639.3875	3352.305	719.034775	4105.523333	-1.33525
5123206	chr14	56720443	56720536	-	Ctsg	4073.64	3993.18	4318.16	4505.86	4392.08	3800.06	181.017	2666.16	76.0193	98.3826	5376.72	5041.73	4866.99	4222.71	4096.07	755.394725	5095.146667	-1.27361
4961375	chr3	95360009	95360102	+	Ctss	839.351	601.628	717.642	706.425	112.165	270.314	59.3877	81.8506	228.128	267.925	850.087	774.221	578.128	716.2615	191.2395	159.322825	734.1453333	-1.98098
4443946	chr3	95349325	95349475	+	Ctss	249.702	170.378	212.693	238.017	79.9617	93.993	116.072	97.2021	90.2395	91.519	287.721	259.48	235.351	217.6975	86.97735	98.75815	260.8506667	-1.46241
5322776	chr3	95360161	95360290	+	Ctss	827.443	713.064	677.138	659.61	254.925	407.128	126.628	138.777	264.406	399.369	1072.7	1078.13	829.851	719.31375	331.0265	232.295	993.5603333	-1.38607
5449033	chr8	124948695	124948719	-	Cyba	1005.83	1302.54	1274.68	1142.05	1270.68	1243.61	591.24	781.832	1265.87	879.943	2466.94	2085.09	2363.46	1181.275	1257.145	879.72125	2305.163333	1.25346
4837305	chr17	43804569	43804649	+	Cyp39a1	33.4424	45.4064	49.2158	38.2303	247.72	170.332	69.6773	26.5039	47.8696	89.1892	36.4283	48.4062	47.5167	41.573725	209.026	58.31	44.11706667	2.49719
4673536	chr10	77632356	77632436	-	D10Jhu81e	217.925	212.49	199.758	181.804	248.712	254.851	192.499	178.091	173.675	169.758	148.749	157.221	181.628	202.99425	251.7815	178.50575	162.5326667	-1.02727
4479713	chr1	65156451	65156500	-	D630023F18Rik	92.9988	63.7126	103.689	81.2646	53.5981	75.481	180.962	158.517	263.814	167.665	329.295	301.906	394.814	85.41625	64.53955	192.7395	342.005	2.33868
4742526	chr14	98239379	98239441	-	Dach1	283.499	321.045	418.406	307.239	508.906	550.758	511.471	614.841	596.536	622.341	669.415	736.082	796.999	332.54725	529.832	586.29725	734.1653333	1.85467
5470286	chr17	34049533	34049575	+	Daxx	97.0609	192.851	261.888	183.925	480.017	419.591	572.943	375.962	515.443	552.536	237.369	132.795	190.147	183.931225	449.804	504.221	186.7703333	2.06743
5163642	chr14	87228919	87228961	-	Diap3	128.781	120.61	116.041	162.985	140.536	136.485	226.425	196.24	194.517	197.244	102.24	120.054	103.999	132.10425	138.5105	203.6065	108.7643333	1.13769
4333615	chr17	30911917	30912049	+	Dnahc8	215.48	208.591	151.536	221.702	252.721	266.443	673.369	539.027	668.98	491.452	445.397	467.851	482.064	199.32725	259.582	593.207	465.104	2.2039
5159285	chr17	30809223	30809297	+	Dnahc8	165.971	129.184	90.3876	75.1654	106.443	93.2765	462.147	303.347	356.165	333.332	299.082	362.452	253.37	115.177	99.85975	363.74775	304.968	2.22433
4381684	chr17	30896524	30896604	+	Dnahc8	86.3969	107.841	119.11	141.615	134.855	158.554	361.24	347.425	371.726	380.374	289.263	313.777	262.3	113.740725	146.7045	365.19125	288.4466667	2.34551
4323887	chr17	30793532	30793604	+	Dnahc8	152.684	118.314	108.443	217.286	128.462	150.073	606.036	503.943	482.596	429.503	397.952	529.888	303.212	149.18175	139.2675	505.5195	410.3506667	2.35761
4616370	chr17	30859891	30859990	+	Dnahc8	71.4826	85.9411	103.588	75.4881	111.702	87.0883	342.348	327.147	295.551	303.811	220.335	244.533	191.903	84.12495	99.39515	317.21425	218.9236667	2.51821
4813889	chr17	30915974	30916118	+	Dnahc8	68.8816	67.3321	179.215	107.129	184.206	119.332	345.184	311.369	426.758	320.41	264.295	339.147	304.966	105.639425	151.769	350.93025	302.8026667	2.54167
5141494	chr17	31012138	31012204	+	Dnahc8	81.667	60.9802	93.8136	72.1706	84.2322	124.799	169.11	95.3876	208.536	245.423	348.721	302.795	289.573	77.15785	104.5156	179.61415	313.6963333	2.58269
5495715	chr17	30863746	30863817	+	Dnahc8	99.1654	91.3506	231.314	190.314	259.073	156.612	525.74	704.888	611.628	610.11	362.593	396.816	338.909	153.036	207.8425	613.0915	366.106	2.58553
4880940	chr17	30895236	30895334	+	Dnahc8	77.5173	79.5173	122.881	122.647	178.091	166.443	316.077	356.318	333.369	338.573	315.577	276.425	268.221	100.64065	172.267	336.08425	286.741	2.63343
5454732	chr17	30884129	30884283	+	Dnahc8	3.89723	102.857	52.4745	35.1144	73.9958	58.7281	169.453	233.487	203.702	237.165	129.814	112.906	116.267	48.5857825	66.36195	210.95175	119.6623333	2.72354
4691036	chr17	30823342	30823445	+	Dnahc8	82.4062	122.647	239.406	227.165	235.902	285.716	731.476	569.054	708.985	735.309	542.29	600.091	492.878	167.90605	260.809	686.206	545.0863333	2.96217
5371251	chr17	30820589	30820642	+	Dnahc8	78.221	116.073	365.749	242.184	291.952	252.786	826.425	706.619	946.184	802.045	777.415	778.878	579.165	200.55675	272.369	820.31825	711.8193333	2.99916
4380785	chr17	30800248	30800361	+	Dnahc8	81.667	136.888	145.61	102.554	150.999	226.832	411.235	560.851	462.036	585.351	446.499	394.031	267.462	116.67975	188.9155	504.86825	369.3306667	3.03713
4692153	chr17	30865122	30865202	+	Dnahc8	59.6471	15.0844	98.0173	56.2231	49.2765	86.644	154.383	215.457	210.323	206.42	264.225	291.98	217.202	57.242975	67.96025	196.64575	257.8023333	3.04205
4521320	chr17	30921053	30921131	+	Dnahc8	54.8888	88.1588	81.1533	115.378	118.925	94.1869	290.956	289.688	401.234	350.447	438.082	353.73	282.882	84.894725	106.55595	333.08125	358.2313333	3.13277
5151842	chr17	30899586	30899613	+	Dnahc8	136.888	59.4617	150.767	195.059	291.98	249.508	578.54	645.837	689.128	568.184	527.98	534.675	343.314	135.543925	270.744	620.42225	468.6563333	3.34411
4431323	chr17	31011790	31011977	+	Dnahc8	76.1284	103.943	93.8321	122.48	266.414	142.795	360.647	258.11	347.425	420.628	530.258	446.369	396.202	99.095875	204.6045	346.7025	457.6096667	3.39374
4601765	chr17	30950099	30950168	+	Dnahc8	39.073	16.149	55.4804	65.4802	88.7395	96.9856	239.314	160.299	188.814	238.517	140.689	185.8	132.42	44.04565	92.86255	206.736	152.9696667	3.42499
4976035	chr17	30845251	30845402	+	Dnahc8	62.4618	37.4114	124.073	144.966	229.48	190.962	389.98	448.934	476.267	464.425	345.138	431.591	215.374	92.22805	210.221	444.9015	330.701	3.56299
4388117	chr17	30944188	30944243	+	Dnahc8	35.2054	45.8188	72.1839	52.9614	140.28	105.452	271.573	273.943	234.028	241.462	159.917	242.647	148.369	51.542375	122.866	255.2515	183.6443333	3.63301
5132784	chr17	30952577	30952638	+	Dnahc8	46.1474	92.7025	59.1148	79.795	116.073	79.4062	347.869	320.411	304.758	491.295	318.467	262.147	324.318	69.439925	97.7396	366.08325	301.644	3.67448
5500356	chr17	30899655	30899714	+	Dnahc8	58.8379	26.0615	33.8323	24.0929	54.6469	80.9294	136.832	116.137	178.355	153.725	219.392	169.892	179.128	35.70615	67.78815	146.26225	189.4706667	3.76705
5543849	chr17	30897951	30898068	+	Dnahc8	128.795	57.5728	112.499	139.128	289.179	226.591	535.462	685.702	614.517	459.499	498.309	501.777	338.189	109.4987	257.885	573.795	446.0916667	3.88976
5309793	chr17	30814042	30814164	+	Dnahc8	44.2025	81.5728	148.295	109.869	207.777	151.887	569.517	370.795	566.017	599.628	504.758	467.017	324.471	95.984825	179.832	526.48925	432.082	3.95341
4449419	chr17	30764088	30764126	+	Dnahc8	48.2424	171.165	101.814	54.8516	285.702	58.7541	544.962	440.073	471.147	593.999	403.554	394.814	505.091	94.01825	172.22805	512.54525	434.4863333	3.96823
5050989	chr17	30970515	30970590	+	Dnahc8	5.83881	70.3506	89.3691	84.8077	171.714	79.6526	435.048	433.369	357.869	402.807	341.381	327.678	248.841	62.5915525	125.6833	407.27325	305.9666667	4.46771
5506856	chr17	30988574	30988675	+	Dnahc8	1.74869	147.647	30.2163	46.653	192.462	80.2766	433.814	269.314	354.165	413.295	382.161	336.499	350.295	56.5662475	136.3693	367.647	356.3183333	5.06977

4783125	chr17	31008274	31008359	+	Dnahc8	40.2084	37.4601	49.7952	34.5049	160.665	100.221	350.943	279.758	326.314	296.591	363.684	324.351	253.739	40.49215	130.443	313.4015	313.9246667	6.23799
5421207	chr12	3904141	3904171	+	Dnmt3a	466.807	665.983	465.337	509.853	202.374	255.582	3.15108	32.1005	22.3178	9.59602	13.6363	32.0929	17.6112	526.995	228.978	16.79135	21.11346667	-5.9239
4644655	chr12	3907748	3907776	+	Dnmt3a	2394.1	2641.07	1713.87	1731.59	723.142	1117.38	133.29	225.434	100.24	147.425	248.716	248.457	89.9576	2120.1575	920.261	151.59725	195.7102	-5.01786
5459494	chr12	3907633	3907739	+	Dnmt3a	388.002	339.165	310.165	265.61	129.03	226.48	22.2863	64.7642	31.34	30.6544	28.6349	41.1676	22.2484	325.7355	177.755	37.261225	30.68363333	-3.97724
5018981	chr12	3905606	3905662	+	Dnmt3a	756.369	883.105	699.184	906.202	393.642	496.795	86.4756	51.1052	142.101	76.2349	130.337	140.929	85.721	811.215	445.2185	88.979175	118.9956667	-3.72577
4513447	chr12	3902689	3902812	+	Dnmt3a	275.437	299.022	219.332	378.573	182.554	200.258	62.7017	40.0448	56.2373	47.5609	45.6244	44.0147	50.9948	293.091	191.406	51.636175	46.87796667	-3.03281
5035195	chr12	3909972	3910040	+	Dnmt3a	383.017	462.017	350.869	438.37	246.591	259.98	77.5737	119.213	65.8328	83.8506	82.5365	96.3606	66.518	408.56825	253.2855	86.617525	81.80503333	-2.90653
4859793	chr12	3912576	3913375	+	Dnmt3a	304.495	294.396	349.925	357.647	195.74	300.292	38.6954	61.7168	57.4062	39.6486	65.9019	49.721	43.8361	326.61575	248.016	49.36675	53.153	-2.79529
4937484	chr12	3908470	3908822	+	Dnmt3a	263.069	265.402	350.869	342.98	299.017	403.869	45.9454	29.2486	34.9154	37.7342	54.4802	75.0688	27.8387	305.58	351.443	36.9609	52.46256667	-2.07941
5225026	chr19	25246034	25246117	+	Dock8	574.651	547.698	595.48	605.952	683.499	720.929	799.79	880.392	759.276	882.596	585.814	582.337	452.04	580.94525	702.214	830.5135	540.0636667	1.18932
4373374	chr19	25221795	25221922	+	Dock8	1113.5	1267.83	1326.18	1250.9	1800.92	1525.59	2300.89	2062.79	1819.36	1973.26	1682.07	1575.98	1571.98	1239.6025	1663.255	2039.075	1610.01	1.4285
4331613	chr7	128001860	128001898	+	Eef2k	354.24	121.962	284.591	259.128	731.869	655.369	552.48	517.11	472.962	578.295	309.327	416.29	448.388	254.98025	693.619	530.21175	391.335	2.11149
4969988	chr13	75908581	75908634	+	Ell2	229.795	106.128	219.758	86.2426	519.202	581.869	739.628	536.962	578.943	762.239	549.684	514.313	539.925	160.4809	550.5355	654.443	534.6406667	3.61334
4839249	chr3	151163069	151163186	+	Eltd1	315.383	350.98	219.443	184.869	94.5913	125.98	144.832	193.05	163.036	212.888	430.022	400.976	464.679	267.66875	110.28565	178.4515	431.8923333	-1.11431
4894097	chr17	71601856	71601939	-	Emilin2	372.059	590.985	337.406	250.573	1474.72	1039.83	1133.15	1149.57	877.536	1028.89	567.226	422.128	305.017	387.75575	1257.275	1047.2865	431.457	2.35201
4844282	chr17	71660066	71660118	-	Emilin2	363.601	187.897	107.777	172.992	1079.54	821.962	801.573	567.425	510.388	768.221	169.906	230.48	177.128	208.06675	950.751	661.90175	192.5046667	2.89195
5500664	chr17	71623364	71623852	-	Emilin2	167.671	177.184	159.726	207.999	947.966	701.735	869.628	715.67	589.115	890.776	192.851	266.628	291.772	178.145	824.8505	766.29725	250.417	3.44581
5504610	chr17	71659523	71659580	-	Emilin2	210.638	323.383	103.091	167.198	1136.15	824.499	940.351	650.939	556.309	857.068	387.332	302.758	367.763	201.0775	980.3245	751.16675	352.6176667	3.4549
5412105	chr17	71630024	71630170	-	Emilin2	371.036	348.277	170.61	177.925	1521.8	1237.44	1202.33	1031.41	799.462	1166.07	425.888	379.165	281.073	266.962	1379.62	1049.818	362.042	3.48549
5292982	chr17	71659581	71659610	-	Emilin2	487.591	333.309	185.216	202.388	1725.98	1369.45	1355.83	1141.55	889.073	1459.51	503.962	462.235	265.846	302.126	1547.715	1211.49075	410.681	3.49731
4489276	chr2	32537229	32537420	+	Eng	168.238	204.369	139.445	163.443	30.8544	44.3857	46.8957	73.5352	101.355	41.4373	155.986	133.206	134.951	168.87375	37.62005	65.8058	141.381	-2.06948
4681467	chr10	127957984	127958086	-	Esyt1	276.971	136.027	182.156	233.693	445.999	436.86	245.582	194.082	238.314	268.656	118.277	162.452	132.684	207.21175	441.4295	236.6585	137.8043333	1.31249
5166649	chr10	127949420	127949510	-	Esyt1	232.749	168.888	170.795	247.73	426.591	394.388	340.212	267.258	268.064	306.878	187.175	192.915	149.841	205.0405	410.4895	295.603	176.6436667	1.43506
5176265	chr10	127959307	127959375	-	Esyt1	113.612	147.451	177.11	124.295	287.054	345.37	207.055	214.906	220.24	234.007	136.833	107.353	90.3136	140.617	316.212	219.052	111.4998667	1.53316
4844338	chr9	32503969	32504046	+	Ets1	70.345	33.516	77.4442	111.522	345.239	268.814	297.684	163.429	292.888	244.591	300.48	293.647	286.721	73.2068	307.0265	249.648	293.616	3.87163
4631118	chr13	37008770	37008801	-	F13a1	1310.94	1472.59	1280.11	1525.78	1191.39	884.314	679.777	697.536	690.369	683.184	559.165	708.554	580.999	1397.355	1037.852	687.7165	616.2393333	-1.7901
5465067	chr13	37035810	37035895	-	F13a1	1510.17	1317.91	1481.67	1738.83	1479.81	963.462	859.666	624.23	658.675	630.267	567.74	656.277	702.11	1512.145	1221.636	693.2095	642.0423333	-1.7742
5592677	chr13	37063846	37063900	-	F13a1	287.545	414.628	404.369	395.61	320.536	251.878	128.767	192.619	146.017	132.415	209.749	209.073	226.026	375.538	286.207	149.9545	214.9493333	-1.7303
4866234	chr1	166084479	166084545	+	F5	47.8819	96.1834	68.6838	81.0181	230.961	242.184	73.0595	85.0356	163.498	121.221	293.128	203.11	317.573	73.4418	236.5725	110.703525	271.2703333	2.80742
4957011	chr1	153542848	153542887	+	Fam129a	124.286	160.522	114.823	105.295	418.587	398.568	329.332	352.392	328.98	505.763	219.749	204.249	172.448	126.2315	408.5775	379.11675	198.8153333	2.60502
4835949	chr1	153488577	153488686	+	Fam129a	26.6012	6.5141	21.6862	10.9892	218.869	134.647	146.814	152.202	159.221	230.739	65.3691	41.8328	28.6862	16.447675	176.758	172.244	45.29603333	7.99095
5269990	chr6	148114109	148114256	+	Far2	348.342	344.937	337.138	349.684	1478.04	1076.32	740.485	375.11	665.295	520.596	301.199	351.041	401.208	345.02525	1277.18	575.3715	351.1493333	2.12902
5576995	chr6	148122430	148122524	+	Far2	760.189	428.188	695.059	544.851	2593.11	2028.83	1291.26	962.096	1303.07	1010.5	759.836	851.707	942.98	607.07175	2310.97	1141.7315	851.5076667	2.36337
4507249	chr6	148121923	148122026	+	Far2	623.935	285.229	537.962	513.98	2071.39	1799.31	910.517	614.036	1001.59	960.703	547.702	787.128	748.795	490.2765	1935.35	871.7115	694.5416667	2.3807
4363591	chr6	148107449	148107558	+	Far2	87.5069	126.869	99.258	89.4617	464.814	413.925	232.425	44.1489	201.332	180.332	144.204	154.814	164.038	100.7739	439.3695	164.559475	154.352	2.50819
4467302	chr6	148108197	148108256	+	Far2	41.9176	125.499	65.5407	40.7888	340.425	304.962	154.017	40.1511	123.156	123.434	122.61	93.9432	62.8681	68.436525	322.6935	110.189525	93.14043333	2.5621
5041461	chr6	148123753	148124234	+	Far2	215.068	321.049	310.375	255.388	1521.38	1192.96	554.554	397.045	691.499	681.165	446.005	544.999	342.091	275.47	1357.17	581.06575	444.365	2.88307
4987692	chr19	45653615	45653671	-	Fbxw4	547.443	418.499	465.351	494.869	350.425	397.128	239.147	250.036	250.777	217.48	271.499	285.356	320.684	481.5405	373.7765	239.36	292.513	-1.59512
4940828	chr7	31604335	31604800	-	Ffar2	35.3718	67.9529	112.146	120.753	766.462	463.42	303.824	166.679	208.091	295.053	99.4763	132.454	170.101	84.055925	614.941	243.41175	134.0104333	3.93533
4716885	chr17	29498052	29498080	+	Fgd2	210.832	195.147	142.554	157.925	39.4817	23.1413	69.6098	22.6599	73.721	53.0401	103.388	119.796	128.741	176.6145	31.3115	54.7577	117.3083333	-2.60522
4914507	chr16	16454150	16454230	-	Fgd4	266.054	248.739	210.314	240.332	121.799	55.1209	76.1211	61.2325	56.2512	54.7808	112.897	150.318	72.2276	241.35975	88.45995	62.0964	111.8142	-2.75976
5583565	chr16	16504190	16504306	-	Fgd4	338.832	282.601	407.351	408.425	294.369	324.758	186.23	215.054	233.702	170.739	434.008	400.017	465.425	359.30225	309.5635	201.43125	433.15	-1.14168
5356944	chr19	7052370	7052399	-	Fkbp2	2517.94	2464.59	2708.92	2530.24	2429.1	2516.96	2292.85	2178.28	2681.79	2559.12	3546.63	3792.82	3303.89	2555.4225	2473.03	2428.01	3547.78	1.10208
4588515	chr17	35967611	35967717	+	Flot1	163.74	168.045	218.749	229.999	359.573	393.638	284.091	281.36	330.045	291.851	257.184	219.823	282.462	195.13325	376.6055	296.83675	253.1563333	1.58285
4619128	chr1	71659046	71659211	-	Fn1	248.202	249.564	164.463	186.665	19.9912	30.351	51.2124	31.0286	38.4974	35.9495	404.017	375.073	381.314	212.2235	25.1711	39.171975	386.8013333	-1.41124
4401495	chr1	71674647	71674706	-	Fn1	327.836	105.165	227.803	314.692	84.2247	49.3598	22.4396	48.4333	36.3017	4.22424	406.684	460.322	509.229	243.874	66.79225	27.84971	458.745	-1.32208
5348411	chr1	71665207	71665238	-	Fn1	181.888	331.369	157.665	255.513	123.392	96.2081	71.8124	32.1466	68.6474	31.8995	328.096	424.202	450.999	231.60875	109.80005	51.126475	401.099	-1.23629
4360670	chr1	71648898	71649064	-	Fn1	287.017	389.333	219.462	165.182	122.474	76.4204	72.3161	60.9485	27.1226	49.479	472.811	568.351	447.943	265.2485	99.4472	52.46655	496.3683333	-1.22747
4630426	chr1	71657522	71657560	-	Fn1	206.159	60.3136	220.332	124.178	44.131	36.624	50.6894	89.1039	35.6085	62.1099	356.03	349.215	311.196	152.74565	40.3775	59.377925	338.8136667	-1.04485
4504922	chr1	71647779	71647862	-	Fn1	133.962	60.9779	59.6322	78.3953	41.3507	50.6067	45.2629	39.5278	36.3136	23.8416	162.106	211.81	188.699	83.24185	45.9787	36.236475	187.5383333	1.0802
5221168	chr1	71646873	71647036	-	Fn1	204.42	41.5784	99.3907	126.865	40.1286	38.851	27.7293	33.8622	29.6699	53.1839	284.883	316.476	323.402	118.063525	39.4898	36.111325	308.2536667	1.08375
4539202	chr1	71672558	71672745	-	Fn1	184.841	52.9877	122.573	148.202	88.6779	52.114	18.6797	40.2105	10.443	29.9557	306.462	377.443	337.499	127.150925	70.39595	24.822225	340.468	1.14217
4546738	chr1	71633415	71633506	-	Fn1	127.416	86.1935	115.073	94.4075	82.9665	69.5805	89.5966	55.2133	78.6615	21.4389	174.869	245.898	259.49	105.7725	76.2735	61.227575	226.7523333	1.14791
4391857	chr1	71632433	71632716	-	Fn1	82.6341	63.8241	49.5358	83.3692	44.1332	19.8167	15.9469	12.9111	7.95624	11.2201	195.573	216.777	182.128	69.8408	31.97495	12.008585	198.1593333	1.15569
4590710	chr1	71632787	71632844	-	Fn1	129.499	55.5549	76.8955	84.5543	37.3075	47.6284	25.4385	12.8038	24.3965	29.9557	228.1	249.628	237.276	86.625925	42.46795	23.148625	238.3346667	1.16959
5537783	chr1	71636684	71636776	-	Fn1	90.9226	70.6383	71.5368	49.0498	40.7746	18.7974	41.3521	8.62031	11.9386	12.6693	194.79	223.46	198.29	70.536875	29.786	18.6450775	205.5133333	1.20005
4917436	chr1	71654479	71654593	-	Fn1	186.979	35.6826	64.2319	67.7909	76.0299	32.0125	6.03365	25.6622	15.2109	14.5872	266.98	302.388	344.276	88.6711	54.0212	15.3734875	304.548	1.40573
5590854	chr1	71651570	71651621	-	Fn1	72.6238	129.561	149.689	89.2353	78.5614	70.8019	15.0478	39.639	36.0265	24.1725	413.999	407.675	355.073	110.277275	74.68165	28.72145	392.249	1.4982
5590701	chr1	71652484	71652607	-	Fn1	176.332	109.995	177.258	222.258	135.95	123.587	62.2909	127.117	129.114	141.146	439.814	568.628	650.369	171.46075	129.7685	114.916975	552.937	1.55064
4582490	chr1	71653334	71653413	-	Fn1	113.735	70.186	218.698	154.444	109.382	118.185	5.13952	74.1474	59.4012	64.9449	528.494	523.049	527.42	139.26575	113.7835	50.908255	526.321	1.65394
5486974	chr1	71632117	71632149	-	Fn1	154.655	195.351	195.636	140.002	131.618	71.2334	2.24689	49.5767	28.2341	15.063	954.073	607.628	750.258	171.411	101.4257	23.7801725	770.653	1.74212
4324503	chr3	116602089	116602159	+	Frrs1	427.425	557.48	565.425	517.203	279.443	235.591	291.351	406.869	279.721	310.128	284.202	281.869	266.221	516.88325	257.517	322.01725	277.4306667	-1.80947
4805101	chr4	135481478	135481583	+	Fuca1	227.351	325.388	289.253	304.763	692.832	564.841	377.087	280.207	408.962	400.346	359.8	371.642	399.082	286.68875	628.8365	366.6505	376.8413333	1.59561
4589898	chr7	135125312	135125344	+	Fus	1138.09	1465.03	1298.3	1142.63	777.221	935.684	1194.94	1085.8	1306.53	1441.52	2219.49	2063.41	1812.93	1261.0125	856.4525	1257.1975	2031.943333	1.09584
5535897	chr12	78551208	78551247	+	Fut8	65.5736	162.684	101.337	125.202	401.554	344.073	268.11	353.999	271.851	315.036	187.388	163.258	115.89	113.69915	372.8135	302.249	155.512	2.435
4403917	chr2	65931744	65931774	-	Galnt3	96.3506	10.8871	73.7765	109.693	165.971	175.749	244.749	238.064	207.304	196.064	129.267	115.823	111.823	72.6768	170.86	221.54525	118.971	2.34543
4632279	chr2	65940532	65940633	-	Galnt3	32.9116	48.6654	69.7687	46.8209	156.61	133.983	192.554	173.98	133.536	211.906	85.2361	85.6703	53.295	49.54165	145.2965	177.994	74.7338	2.67804
5521566	chr15	100550498	100550664	-	Galnt6	76.8284	99.221	101.439	93.758	333.517	282.017	325.999	294.832	188.462	322.758	172.564	112.943	105.073	92.8116	307.767	283.01275	130.1933333	2.58938
5527160	chr3	129529847	129529892	-	Gar1	137.128	183.98	165.758	124.091	120.499	127.499	125.869	115.239	138.61	147.091	280.017	347.128	269.647	152.73925	123.999	131.70225	298.9306667	1.21041
5408510	chr11	67475634	67475668	+	Gas7	120.846	133.42	103.195	131.557	321.202	274.843	135.809	119.013	162.891	196.111	142.073	170.443	173.306	122.2545	298.0225	153.456	161.9406667	1.67252
5524282	chr11	67466361	67466385	+	Gas7	94.4988	119.61	146.536	127.462	387.536	381.906	241.054	198.906	330.24	152.462	115.388	128.61	114.536	122.0267	384.721	230.6655	119.5113333	2.00748
5362447	chr6	88150225	88150409	+	Gata2	82.258	72.9154	60.1347	73.1439	374.943	232.49	318.286	317.712	234.869	305.128	124.557	121.165	77.1099	72.113	303.7165	293.99875	107.6106333	3.26028
5061633	chr6	88152420	88152558	+	Gata2	148.869	215.443	37.3166	91.4988	651.684	418.202	930.091	781.591	553.906	890.888	338.277	356.499	217.443	123.28185	534.943	789.119	304.073	4.4022
4805966	chr6	88150607	88150787	+	Gata2	332.758	362.165	294.314	151.591	1763.57	1214.35	1876.05	1953.51	1139.4	1735.5	854.925	951.068	541.351	285.207	1488.96	1676.115	782.448	4.61363
5422152	chr6	88154580	88154678	+	Gata2	360.258	397.721	167.74	257.425	1764.35	1262.96	2615.2	2497.71	1314.05	2182.25	480.309	481.388	359.758	295.786	1513.655	2152.3025	440.485	4.62771
4388455	chr5	3646839	3646899	-	Gatad1	475.564	479.897	581.897	537.203	1022.6	993.915	1035.62	978.582	693.138	910.054	624.721	634.628	617.573	518.64025	1008.2575	904.3485	625.6406667	1.63135
5355069	chr6	122559817	122559978	-	Gdf3	58.2117	20.1881	41.4268	79.4506	199.434	176.98	325.508	281.388	378.49	348.527	617.193	483.286	632.536	49.8193	188.207	333.47825	577.6716667	7.35562
4496239	chr6	122556616	122557046	-	Gdf3	38.5624	33.3122	36.7255	52.4244	300.073	163.337	570.665	321.156	566.11	346.082	547.554	673.406	727.267	40.256125	231.705	451.00325	649.409	11.0303
4477130	chr2	28470814	28470871	-	Gfi1b	164.11	156.415	163.508	181.462	188.795	191.749	245.471	232.249	239.573	239.277	204.767	195.86	160.804	166.37375	190.272	239.1425	187.1436667	1.23529
4712176	chr3	95043899	95044016	-	Gm128	26.7485	46.8319	92.1647	70.7395	27.8456	14.9931	294.918	180.588	275.146	398.977	346.517	372.751	448.551	59.12115	21.41935	287.40725	389.273	3.93598
5006452	chr10	61533783	61533808	+	Gm5424	479.24	411.702	478.851	415.721	168.277	169.665	172.425	231.388	170.74	177.314	260.999	314.795	296.314	446.3785	168.971	187.96675	290.7026667	-2.06772

4660446	chr16	22295060	22295090	+	Gng5	547.647	508.267	504.425	565.758	943.61	830.369	598.564	569.943	759.554	663.027	521.397	531.397	555.054	531.52425	886.9895	647.772	535.9493333	1.2986
4906634	chr8	97531170	97531209	+	Gpr56	472.962	539.665	261.369	220.61	1019.29	855.401	1245.32	993.188	825.55	1111.91	426.98	390.98	407.795	373.6515	937.3455	1043.992	408.585	2.13204
5147790	chr8	97537649	97538044	+	Gpr56	1832.42	1410.39	1168.19	848.017	4164.41	3242.71	3512.22	3885.65	3106.66	3476.37	2418.36	2233.45	1815.42	1314.75425	3703.56	3495.225	2155.743333	2.37168
4486884	chr8	97536764	97536848	+	Gpr56	606.61	843.628	493.795	274.925	2576.39	1941.71	2864.77	2533.84	1869.55	1935.05	1011.98	940.091	1238.57	554.7395	2259.05	2300.8025	1063.547	3.379
4526827	chr8	97529696	97529792	+	Gpr56	122.224	188.332	78.7025	67.4803	495.957	418.128	611.036	485.346	365.073	622.55	290.721	211.091	178.314	114.1847	457.0425	521.00125	226.7086667	3.51697
4664652	chrX	39025493	39025625	+	Gria3	1979.42	1985.97	2047.61	2298.67	1163.46	730.925	773.045	769.543	653.888	629.758	1026.04	1202.44	658.425	2077.9175	947.1925	706.5585	962.3016667	-2.38289
4696140	chr17	34421330	34421480	-	H2-Aa	149.573	3.12347	18.2544	3.80334	18.5301	31.4876	16.1843	2.5126	21.7858	14.713	306.671	452.11	336.101	43.6885525	25.00885	13.798925	364.9606667	3.08065
4353190	chr17	34420135	34420180	-	H2-Aa	47.4742	19.425	51.5991	12.3641	33.1139	59.4163	56.6602	45.6409	47.4824	59.078	220.28	398.645	312.202	32.7156	46.2651	52.215375	310.3756667	4.16576
5489966	chr17	34419724	34419867	-	H2-Aa	152.11	7.27325	105.759	47.3321	6.56476	176.702	44.7396	233.351	202.091	160.721	1494.07	1604.41	1465.24	78.1185875	91.63338	160.22565	1521.24	7.56584
4727575	chr17	34420570	34420745	-	H2-Aa	39.7603	4.03803	20.4075	18.9614	17.1407	69.6839	5.58634	28.0338	65.7241	42.4444	377.851	549.517	504.425	20.7918075	43.4123	35.44716	477.2643333	8.91574
4978038	chr17	34406054	34406187	+	H2-Ab1	305.147	197.906	174.758	187.591	118.295	346.814	159.832	136.777	375.61	368.24	768.258	741.036	1005.33	216.3505	232.5545	260.11475	838.208	2.05049
5063400	chr17	34404888	34404973	+	H2-Ab1	158.193	121.128	126.425	105.601	130.277	196.212	76.721	89.1839	255.906	250.239	493.98	542.564	637.23	127.83675	163.2445	168.012475	557.9246667	2.31853
5043351	chr17	34274853	34275121	+	H2-DMa	527.415	455.138	507.175	525.008	87.2771	240.897	68.6165	136.972	125.064	146.508	412.286	478.267	454.554	503.684	164.08705	119.290125	448.369	-2.065
4682926	chr17	34275368	34275430	+	H2-DMa	414.892	354.73	521.249	581.638	168.684	282.892	32.1147	130.54	166.888	189.832	519.786	472.314	547.05	468.12725	225.788	129.843675	513.05	-1.61668
4540368	chr17	34452964	34452997	+	H2-Eb1	75.1459	98.0404	70.7637	60.1591	90.3812	152.895	54.4301	68.4583	185.599	150.136	692.761	797.853	993.094	76.027275	121.6381	114.65585	827.9026667	4.66585
4898617	chr17	34452866	34452910	+	H2-Eb1	41.0613	41.3773	33.0114	19.476	32.6015	45.777	18.0592	9.76598	52.1099	45.6192	380.005	464.13	436.593	33.7315	39.18925	31.38857	426.9093333	4.91614
4316366	chr17	34453051	34453110	+	H2-Eb1	84.721	35.2179	46.3661	76.6469	73.6068	135.869	40.6298	156.144	182.496	197.07	1033.81	1049.72	1433.16	60.737975	104.7379	144.08495	1172.23	7.79881
5121235	chr13	56184482	56184549	-	H2afy	1747.37	1291.72	1779.48	1839.37	596.577	832.712	718.221	613.855	901.61	785.383	1067.5	1364.37	1214.54	1664.485	714.6445	754.76725	1215.47	-1.85984
4907164	chr13	56185560	56185632	-	H2afy	1579.68	2236.14	1861.21	1938.67	778.443	1066.93	742.096	872.962	1082.13	941.411	1450.63	1175.32	1439.84	1903.925	922.6865	909.64975	1355.263333	-1.79188
4474834	chr13	56175622	56175748	-	H2afy	3671.62	4049	3399.51	3396.75	1777.13	1970.3	1961.25	2049.97	2510.34	2604.77	3114.49	2918.17	2801.1	3629.22	1873.715	2281.5825	2944.586667	-1.5335
5505841	chr14	55161234	55161279	-	Haus4	410.702	344.61	274.587	308.554	73.8367	116.693	5.02403	76.5358	4.01447	3.89438	311.517	215.795	178.207	334.61325	95.26485	22.36717	235.173	-2.84531
5520233	chr2	126419817	126420261	-	Hdc	715.48	866.337	701.874	502.883	2199.13	1774.57	1910.86	1309.98	1366.56	1671.41	936.277	900.962	981.703	696.6435	1986.85	1564.7025	939.6473333	2.14897
5078661	chr2	126428709	126428763	-	Hdc	455.943	354.633	487.652	342.05	1541.5	1173.09	1333.42	1009.67	1044.83	1269.44	545.253	512.115	575.638	410.0695	1357.295	1164.34	544.3353333	2.49223
5050850	chr2	126423629	126423689	-	Hdc	443.545	435.98	773.341	601.638	2306.11	1725.17	1804.39	1425.08	1572.92	1820.47	702.23	674.813	804.499	563.626	2015.64	1655.715	727.1806667	2.60133
4982682	chr2	126433034	126433113	-	Hdc	186.577	213.054	286.226	350.786	935.165	869.448	938.226	718.573	657.591	1058.84	331.318	372.823	329.781	259.16075	902.3065	843.3075	344.6406667	2.68849
4457170	chr2	126429633	126429697	-	Hdc	141.425	255.758	231.082	223.675	798.499	808.647	750.314	528.98	578.554	728.165	309.054	315.527	357.573	212.985	803.573	646.50325	327.3846667	2.78182
5458322	chr12	75038643	75038763	+	Hif1a	455.327	359.966	566.869	497.707	791.943	805.888	837.128	794.318	772.244	762.517	527.758	444.503	370.258	469.96725	798.9155	791.55175	447.5063333	1.44547
5324359	chr5	124445928	124445962	+	Hip1r	88.781	73.6282	59.0217	52.9848	122.513	142.383	212.702	229.665	173.642	168.596	122.258	115.61	108.128	68.603925	132.448	196.15125	115.332	2.15697
5409748	chr6	38693124	38693206	-	Hipk2	287.776	296.906	301.489	307.036	285.332	269.721	247.999	306.193	254.925	278.295	433.369	470.776	437.721	298.30175	277.5265	271.853	447.2886667	1.11371
4347501	chr13	23647452	23647589	+	Hist1h1d	250.332	189.803	343.934	248.027	831.369	697.258	505.832	495.814	426.517	428.829	513.008	372.644	544.258	258.024	764.3135	464.248	476.6366667	2.20289
5150337	chr13	23838694	23838738	+	Hist1h2bb	337.499	164.915	278.564	177.267	816.026	739.267	291.554	326.239	332.221	449.054	550.591	437.758	632.091	239.56125	777.6465	349.767	540.1466667	2.3203
4594073	chr11	100941628	100941770	+	Hsd17b1	323.852	372.374	504.591	319.684	898.202	881.851	711.707	567.665	689.721	843.503	383.851	452.425	490.605	380.12525	890.0265	703.149	442.2936667	1.78491
4788731	chr7	134945772	134945870	+	Hsd3b7	65.9988	47.0093	43.7823	27.2844	219.28	163.835	128.65	131.191	82.3056	141.991	26.346	61.2395	27.3975	46.0187	191.5575	121.0344	38.32766667	2.54186
4552609	chr5	122683429	122683683	+	Hvcn1	207.135	114.39	203.635	181.776	828.024	609.246	235.11	192.857	367.765	220.628	206.554	259.591	325.184	176.734	718.635	254.09	263.7763333	2.33213
4704692	chr1	133168358	133168443	-	Ikbke	844.017	882.615	870.277	878.295	450.596	403.04	144.702	438.929	487.147	265.147	646.98	655.61	713.888	868.801	426.818	333.98125	672.1593333	-1.8189
4401603	chr8	84926201	84926274	-	Il15	114.582	88.7951	164.712	140.545	701.814	553.332	389.61	275.888	227.73	280.277	229.277	236.295	142.591	127.158525	627.573	293.37625	202.721	2.94559
5457730	chr14	30809859	30810124	-	Il17rb	23.4665	84.4988	61.324	52.5941	181.017	174.38	300.351	237.557	163.917	200.462	17.5364	26.8557	43.3931	55.47085	177.6985	225.57175	29.26173333	2.59915
4756335	chr1	40518617	40518893	+	Il1rl1	37.5545	28.5363	40.931	32.3707	65.6106	103.256	233.793	133.628	212.777	231.61	71.0919	66.4414	57.4247	34.848125	84.4333	202.952	64.986	3.37054
5351805	chrX	98460196	98460251	-	Il2rg	355.221	324.24	423.147	294.869	1412.85	1069.45	1455.18	1434.44	1014.04	1358.8	804.165	558.276	405.647	349.36925	1241.15	1315.615	589.3626667	3.00172
4415796	chrX	98459842	98460102	-	Il2rg	508.281	646.462	580.999	422.814	2092.76	1821.68	2420.13	2486.98	1423.21	2116.54	1140.92	859.388	775.147	539.639	1957.22	2111.715	925.1516667	3.08483
4721218	chrX	98460977	98461042	-	Il2rg	290.073	244.24	184.888	242.184	1095.42	863.452	1256.52	932.98	836.49	1126.93	446.295	354.277	261.202	240.34625	979.436	1038.23	353.9246667	3.28913
5413561	chrX	98461562	98461667	-	Il2rg	330.573	295.74	299.091	348.888	1420.59	1202.75	1953.46	1328.37	966.193	1736.86	430.888	486.036	372.739	318.573	1311.67	1496.22075	429.8876667	3.38779
5616805	chr13	113284790	113284939	+	Il6st	513.263	410.332	398.943	452.425	119.536	111.707	285.054	165.406	182.874	190.207	182.369	242.911	142.369	443.74075	115.6215	205.88525	189.2163333	-2.60655
5182755	chr13	113287502	113287594	+	Il6st	368.267	389.971	351.832	309.656	118.545	130.573	209.443	205.721	122.647	179.462	87.5173	145.128	141.675	354.9315	124.559	179.31825	124.7734333	-2.48406
5409463	chr14	121343059	121343109	+	Ipo5	744.401	742.258	618.781	676.327	420.763	516.832	487.814	500.628	472.193	498.17	461.827	427.587	526.832	695.44175	468.7975	489.70125	472.082	-1.45838
4980269	chr7	87944743	87944835	-	Iqgap1	622.11	667.351	549.531	552.499	861.67	901.425	802.999	906.813	857.591	872.911	849.443	763.536	752.411	597.87275	881.5475	860.0785	788.4633333	1.4106
5598827	chr8	123278291	123278400	+	Irf8	1549.31	1111.8	1210.2	1531.02	235.24	365.036	127.628	275.128	175.721	119.443	418.777	538.758	442.758	1350.5825	300.138	174.48	466.7643333	-4.30404
5405411	chr8	123278989	123279074	+	Irf8	1521.05	1253	1458.54	1589.63	109.425	381.221	155.221	392.128	268.147	194.332	610.48	567.48	501.351	1455.555	245.323	252.457	559.7703333	-4.12904
4975162	chr8	123279252	123280135	+	Irf8	1861.76	1988.83	1974.89	2345.78	251.684	562.073	80.1534	305.832	317.906	178.202	926.165	941.249	841.202	2042.815	406.8785	220.52335	902.872	-4.00481
5290711	chr8	123277254	123277516	+	Irf8	423.054	355.795	427.554	559.517	94.721	210.869	58.8321	53.7765	105.591	21.6443	108.832	194.943	179.258	441.48	152.795	59.960975	161.011	-3.54349
4845249	chr7	134443255	134443318	+	Itgal	316.213	258.499	316.998	322.786	650.324	553.703	560.184	740.61	528.665	507.647	328.666	269.054	249.565	303.624	602.0135	584.2765	282.4283333	1.61243
4463240	chr4	100861721	100861787	-	Jak1	179.517	256.554	258.888	219.406	478.314	414.425	445.425	387.147	421.277	468.443	438.573	384.915	337.314	228.59125	446.3695	430.573	386.934	1.84299
5543431	chr1	36425967	36426021	-	Kansl3	285.535	271.325	256.416	277.462	420.041	387.276	260.932	259.564	288.179	264.952	265.012	267.29	299.226	272.6845	403.6585	268.40675	277.176	1.16036
5337802	chr4	151765332	151766838	-	Kcnab2	86.1888	121.647	152.434	139.925	305.73	286.545	128.851	172.24	212.786	205.11	119.36	124.573	139.499	125.0487	296.1375	179.74675	127.8106667	1.60922
4590228	chr7	107332810	107332942	+	Kcne3	32.681	36.3485	17.2633	38.7169	457.594	273.673	283.165	216.284	187.599	300.851	70.6315	69.4434	42.7679	31.252425	365.6335	246.97475	60.9476	7.18403
5304000	chr2	127291596	127291697	-	Kcnip3	239.212	168.323	200.545	204.613	101.538	130.693	63.2502	102.536	99.8043	71.4961	184.286	196.397	207.138	203.17325	116.1155	84.27165	195.9403333	-1.53792
5444352	chr5	114820068	114820235	-	Kctd10	313.906	354.823	458.943	438.939	1038.02	890.619	845.897	682.239	888.406	826.957	649.883	576.828	722.61	391.65275	964.3195	810.87475	649.7736667	2.06387
5383352	chr15	68923815	68923915	+	Khdrbs3	273.111	265.926	245.102	225.98	22.2792	142.176	26.9518	11.9039	86.4169	78.8876	145.36	135.639	128.893	252.52975	82.2276	51.04005	136.6306667	-2.80695
4577409	chr19	37477976	37478122	+	Kif11	692.017	771.017	811.554	864.286	946.98	984.036	1041.31	1026.29	892.73	1083.3	679.351	554.184	568.073	784.7185	965.508	1010.9075	600.536	1.09464
5302864	chr9	122888891	122888955	+	Kif15	948.036	930.702	904.813	863.702	708.999	684.554	630.258	486.388	663.11	683.48	652.647	617.425	568.424	911.81325	696.7765	615.809	612.832	-1.4207
5316067	chr6	129006535	129007137	+	Klrb1f	438.101	490.675	406.795	470.647	244.712	159.258	110.443	82.5728	97.633	124.966	139.582	219.73	108.985	451.5545	201.985	103.9037	156.099	-2.93225
4702311	chr11	97023889	97023913	-	Kpnb1	1098.2	1144.24	1023.5	1142.05	625.536	796.758	944.906	970.832	789.499	898.388	740.906	741.054	695.202	1101.9975	711.147	900.90625	725.7206667	-1.41416
5082287	chr18	42372171	42372250	-	Lars	184.554	169.73	160.156	140.601	112.471	90.6568	159.397	169.61	136.638	175.263	231.411	271.888	243.716	163.76025	101.5639	160.227	249.005	1.03972
4707640	chr19	41620366	41620457	+	Lcor	233.721	293.851	247.045	265.452	97.6654	124.851	261.267	207.758	254.777	179.332	372.702	363.888	303.962	260.01725	111.2582	225.7835	346.8506667	-1.14061
4646141	chr3	143851534	143851707	-	Lmo4	725.869	865.314	746.184	502.61	1638.11	1494.39	1612.96	1899.76	1865.44	2148.33	1321.76	1362.94	1221.18	709.99425	1566.25	1881.6225	1301.96	2.22998
5076727	chr3	143856914	143857015	-	Lmo4	1028.08	1458.12	832.832	611.073	2954.68	2693.04	3499.67	2833.76	2767.63	3042.72	1768.19	1516.54	1274.76	982.52625	2823.86	3035.945	1519.83	2.50362
4553724	chr3	143857415	143857467	-	Lmo4	888.665	1348.63	681.054	566.11	2905.97	2535.27	3735.98	3913.54	2469.25	3298.75	1241.61	1226.99	798.739	871.11475	2720.62	3354.38	1089.113	2.74136
5018807	chr3	143857371	143857413	-	Lmo4	661.846	1210.22	549.679	358.573	2159.52	2148.61	2620.96	2967.85	2022.3	2482.25	1303.7	1088.11	818.425	695.0795	2154.065	2523.34	1070.078333	2.75627
4568912	chr3	143864803	143864920	-	Lmo4	652.869	704.351	342.165	325.591	1933.28	1543.31	2590.46	2164.29	1448.31	1987.87	607.443	521.24	428.536	506.244	1738.295	2047.7325	519.073	2.83466
5006539	chr3	143852120	143852248	-	Lmo4	799.184	667.74	1009.07	679.61	3211.13	2938.39	3681.59	2649.72	2689.09	3546.7	1573.79	1346.96	1248.96	788.901	3074.76	3141.775	1389.903333	3.21394
5081672	chr3	143867786	143867820	-	Lmo4	33.5139	40.5482	45.7495	20.6731	209.142	180.533	235.362	157.624	108.422	193.529	65.2751	70.2779	72.6099	35.121175	194.8375	173.7425	69.38763333	4.15665
5351282	chr8	95433093	95433164	+	Lpcat2	67.2324	215.947	85.0083	78.4775	615.745	515.467	657.004	417.875	422.449	505.374	164.536	159.022	182.11	111.6663	565.606	500.6755	168.556	3.68609
4694520	chr8	95413173	95413281	+	Lpcat2	46.0425	47.7426	37.3691	27.9183	433.221	290.091	331.425	197.795	211.554	326.999	85.8321	58.5913	46.3323	39.768125	361.656	266.94325	63.58523333	5.80183
4619950	chr7	149674795	149674826	+	Lsp1	324.74	375.531	306.503	306.48	265.374	156.091	66.5543	93.7025	112.61	95.1284	563.388	414.665	356.388	328.3135	210.7325	91.9988	444.8136667	-1.31757
4560435	chr7	149676474	149676546	+	Lsp1	314.813	323.869	313.493	297.131	183.906	209.203	83.9618	102.192	137.999	118.184	455.684	358.091	430.702	312.3265	196.5545	110.5842	414.8256667	-1.29782
5059284	chr7	149680230	149680474	+	Lsp1	461.906	385.536	492.017	399.48	388.721	348.693	67.7394	77.297	223.693	180.815	750.767	622.341	735.749	434.73475	368.707	137.3861	702.9523333	-1.07871
5477444	chr13	37466847	37466913	+	Ly86	1337.46	1765.11	1493.44	1317.05	152.017	314.642	58.0037	69.7809	107.099	47.5096	353.897	480.748	357.749	1478.265	233.3295	70.5983	397.4646667	-6.32285
5423725	chr13	37507368	37507407	+	Ly86	1588.65	2922.98	1895.3	1883.87	200.888	488.666	176.554	203.647	172.702	159.591	601.573	649.249	663.851	2072.7	344.777	178.1235	638.2243333	-5.35524
5391532	chr13	37510513	37510663	+	Ly86	1152.42	1641.24	936.795	1103.25	142.962	176.036	96.5728	194.462	107.073	112.777	478.638	476.406	434.434	1208.42625	159.499	127.7212	463.1593333	-4.83126
5017370	chr13	37437323	37437416	+	Ly86	1065.26	1071.48	751.814	1110.41	95.795	301.832	192.647	187.165	117.054	132.147	253.721	318.647	278.128	999.741	198.8135	157.25325	283.4986667	-4.68948
5128888	chr13	37510431	37510483	+	Ly86	1175.31	2305.42	1505.41	1469.5	243.36	420.712	191.304	244.49	184.082	209.952	524.712	598.045	470.869	1613.91	332.036	207.457	531.2086667	-4.52202

5126712	chr13	13750943	13751021	+	Lyst	87.7765	111.665	72.2765	90.9437	36.9248	65.8508	14.0988	47.9071	80.4608	61.9988	228.406	198.369	152.999	90.665425	51.3878	51.116375	193.258	1.08737
5223961	chr8	87614991	87615100	+	Man2b1	68.5404	104.707	145.767	96.8182	395.054	302.577	157.022	131.341	201.226	172.841	143.814	98.4293	143.985	103.95815	348.8155	165.6075	128.7427667	2.06226
4938167	chr14	34224063	34224159	-	Mapk8	228.764	279.625	203.057	196.736	126.24	101.74	190.085	151.202	182.523	193.718	396.82	303.283	306.573	227.0455	113.99	179.382	335.5586667	-1.08301
4372165	chr1	132952999	132953096	-	Mapkapk2	968.221	1022.57	1025.17	1060.84	852.193	807.249	874.851	867.888	818.128	766.017	926.601	946.295	922.258	1019.20025	829.721	831.721	931.718	-1.1791
5192631	chr9	107191472	107191584	-	Mapkapk3	1131.72	1339.68	1098.59	1077.5	1008.18	1022.67	510.128	741.425	812.962	714.554	1184.09	1258.81	1196.74	1161.8725	1015.425	694.76725	1213.213333	-1.19232
4358113	chr18	68498712	68499023	+	Mc5r	167.758	236.554	226.147	157.073	369.429	369.855	413.925	419.202	340.226	446.244	254.999	284.851	219.277	196.883	369.642	404.89925	253.0423333	1.73975
4473882	chr14	56701018	56701055	-	Mcpt8	2066	2555.59	1952.4	1618.84	4099.24	3676.24	3084.4	3403.57	3822.98	3497.85	4121.68	3745.85	3425.58	2048.2075	3887.74	3452.2	3764.37	1.80716
4735053	chr14	56701775	56701947	-	Mcpt8	1081.39	1816.15	1786.54	868.98	4966.54	5093.63	5855.67	3896.52	6353.13	6241.57	3787.98	4194	2920.13	1388.265	5030.085	5586.7225	3634.036667	3.42174
4661069	chr14	56702661	56702784	-	Mcpt8	456.017	790.832	496.212	253.693	2332.78	1974.99	2517.26	1986.2	2692.03	2347.23	1855.61	1762.06	1268.69	499.1885	2153.885	2385.68	1628.786667	4.11892
4567269	chr6	17499038	17499116	+	Met	276.388	274.788	399.149	405.159	96.4457	127.415	32.2242	127.285	57.0105	74.7659	82.2679	115.193	83.6812	338.871	111.93035	72.8214	93.71403333	-3.65077
5444728	chr6	17483912	17484011	+	Met	644.999	565.425	636.165	793.165	375.737	489.276	141.636	181.42	197.957	183.786	173.107	265.735	128.295	659.9385	432.5065	176.19975	189.0456667	-2.48175
4322232	chr7	86278655	86279151	-	Mfge8	99.7693	190.054	164.369	174.165	578.805	572.453	372.591	279.721	399.675	530.814	165.851	131.573	240.777	157.089325	575.629	395.70025	179.4003333	2.44177
4502025	chr4	115542916	115542945	+	Mknk1	285.61	226.957	247.091	266.258	177.976	189.531	298.517	340.55	372.179	335.402	232.809	271.11	261.888	256.479	183.7535	336.662	255.269	1.00812
5056068	chr8	113835933	113835975	-	Mlkl	733.925	854.841	884.156	745.128	386.61	539.98	317.193	404.462	522.647	378.628	570.314	524.175	526.999	804.5125	463.295	405.7325	540.496	-1.71231
4598740	chr7	54720299	54720325	-	Mrgpra2a	475.721	432.943	799.758	864.647	2523.83	1981.72	1966.61	1852.54	2439.2	2192.72	1937.28	1674.76	2362.17	643.26725	2252.775	2112.7675	1991.403333	3.29409
5242223	chr7	54719897	54720200	-	Mrgpra2a	441.739	464.758	628.888	704.814	2513.35	1716.76	2055.46	1981.05	2464.81	2160.24	1721.32	1867.02	1429.76	560.04975	2115.055	2165.39	1672.7	3.54322
5447074	chr7	54719584	54719791	-	Mrgpra2a	317.462	225.129	262.962	274.517	1180.81	783.61	721.332	702.948	988.999	1083.52	1205.52	1107.11	1074.92	270.0175	982.21	874.19975	1129.183333	3.68567
4946965	chr8	124960953	124961118	-	Mvd	187.545	199.406	160.428	209.558	161.304	179.591	115.323	84.1284	120.188	102.354	155.684	159.869	155.725	189.23425	170.4475	105.49835	157.0926667	-1.31098
4833055	NA	NA	NA	NA	NA	140.616	127.264	223.894	238.709	34.6324	69.721	3.25848	8.32607	5.72603	6.36592	19.3647	17.8495	7.58181	182.62075	52.1767	5.919125	14.93200333	-7.50211
4325886	NA	NA	NA	NA	NA	493.373	525.184	428.128	525.207	63.6408	91.6401	95.0215	67.4625	84.6013	59.7054	77.2395	92.7822	155.67	492.973	77.64045	76.697675	108.5639	-5.62537
4895752	NA	NA	NA	NA	NA	524.156	691.841	623.452	675.045	64.934	104.814	37.3133	118.277	52.647	50.094	419.286	349.452	340.656	628.6235	84.874	64.582825	369.798	-3.63188
4650007	NA	NA	NA	NA	NA	324.025	268.247	363.154	400.173	27.6925	108.889	89.9141	101.074	107.937	120.209	119.115	141.556	114.086	338.89975	68.29075	104.783525	124.919	-3.41182
4944486	chr12	114660884	114660924	-	NA	652.869	593.61	497.017	491.184	182.147	377.295	198.369	215.128	134.147	177.665	301.462	363.74	278.777	558.67	279.721	181.32725	314.6596667	-2.16062
4490630	chr4	117027537	117027599	-	NA	515.684	454.795	495.999	479.165	294.554	276.721	480.295	469.471	467.295	498.767	483.545	459.989	451.536	486.41075	285.6375	478.957	465.0233333	-1.18674
4922337	chr4	59559021	59559054	-	NA	197.61	299.934	303.582	243.267	195.221	208.582	244.378	302.341	255.008	300.915	535.23	508.804	402.804	261.09825	201.9015	275.6605	482.2793333	1.22539
4554325	NA	NA	NA	NA	NA	118.832	112.605	83.4293	103.128	33.01	71.1284	82.8923	176.61	75.0358	116.091	286.096	341.17	388.337	104.498575	52.0692	112.657275	338.5343333	1.60532
4384563	NA	NA	NA	NA	NA	90.8506	75.1234	54.9988	62.8506	50.4174	82.9619	154.74	88.8691	80.1839	85.5173	266.552	214.41	241.515	70.95585	66.68965	102.327575	240.8256667	1.92534
5553443	NA	NA	NA	NA	NA	136.665	104.795	81.258	91.5728	345.276	241.24	367.962	315.684	319.151	414.095	191.758	211.073	216.48	103.5727	293.258	354.223	206.437	2.74821
5370032	NA	NA	NA	NA	NA	36.2508	25.0497	47.371	35.2254	81.4062	96.4858	179.647	189.74	143.888	253.499	72.9802	67.1284	81.3876	35.974225	88.946	191.6935	73.83206667	3.28449
5043807	NA	NA	NA	NA	NA	43.0173	106.036	88.8877	70.9201	198.92	263.189	584.628	490.906	363.295	411.203	165.073	132.628	163.258	77.215275	231.0545	462.508	153.653	3.65737
4695013	NA	NA	NA	NA	NA	40.25	28.4037	9.28963	21.17	84.5018	103.149	288.147	134.553	264.554	295.332	61.4032	21.5353	59.1651	24.7783325	93.8254	245.6465	47.36786667	5.204
4306535	chr10	127098051	127098658	-	Nab2	132.202	98.8691	93.4062	82.9461	131.925	98.4257	105.665	95.1099	169.702	138.684	227.425	262.647	303.591	101.85585	115.17535	127.290225	264.5543333	1.65927
4757911	chr10	110935061	110935170	+	Nap1l1	2814.61	3135.55	2638.76	2856.04	1465.37	1774.78	2245.44	2329.26	2055.05	2360.09	2593.05	2402.28	2143.05	2861.24	1620.075	2247.46	2379.46	-1.37406
5345578	chr9	107485910	107486173	+	Nat6	135.702	337.503	405.314	245.61	659.615	687.892	736.207	595.855	619.286	697.374	568.591	523.702	570.74	281.03225	673.7535	662.1805	554.3443333	2.24206
5276098	chr11	115044553	115044579	-	Nat9	89.758	131.388	162.017	176.795	377.128	354.684	180.536	165.425	240.165	209.98	222.202	279.61	255.314	139.9895	365.906	199.0265	252.3753333	1.94612
4415323	chr9	49354266	49354392	-	Ncam1	215.137	196.036	223.332	286.933	425.562	421.896	393.525	402.312	326.647	398.729	321.035	309.025	370.674	230.3595	423.729	380.30325	333.578	1.64614
5085871	chr9	72586860	72586919	+	Nedd4	571.346	411.388	449.814	442.036	768.128	756.068	1152.68	977.985	1037.77	1157.26	814.744	697.091	700.499	468.646	762.098	1081.42375	737.4446667	1.83576
5317964	chr9	72594950	72594983	+	Nedd4	629.258	792.661	846.216	696.383	1295.37	1328.02	1557.27	1617.65	1421.72	1818.81	1493.94	1194.63	1253.54	741.1295	1311.695	1603.8625	1314.036667	1.90232
5111277	chr9	72595261	72596581	+	Nedd4	412.221	734.184	527.202	362.721	1095.46	1015.07	1236.94	1061.26	1048.98	1269.01	845.258	876.068	815.827	509.082	1055.265	1154.0475	845.7176667	2.00035
4357343	chr12	71141750	71141829	-	Nin	885.24	1057.02	774.091	873.75	433.705	439.725	568.536	524.054	406.047	473.033	725.713	884.843	699.795	897.52525	436.715	492.9175	770.117	-1.5841
4642184	chr13	54687181	54687232	-	Nop16	568.388	614.943	562.814	532.184	324.11	346.573	399.073	448.814	491.091	456.86	558.267	514.471	566.304	569.58225	335.3415	448.9595	546.3473333	-1.28415
5457498	chr2	25037876	25038790	+	Nrarp	7.19569	10.3509	17.6568	29.7497	319.165	219.536	101.073	67.3644	171.517	158.951	7.73999	8.7578	6.68111	16.2382725	269.3505	124.72635	7.7263	8.24806
4692100	chr9	55069131	55069165	-	Nrg4	70.795	84.7499	125.62	96.7765	206.943	177.054	170.213	130.777	274.054	232.957	657.856	523.406	927.004	94.48535	191.9985	202.00025	702.7553333	3.86922
4488305	chr7	52754123	52754274	-	Nucb1	330.906	410.277	400.86	300.943	773.369	785.591	613.832	638.276	680.184	654.036	507.147	555.573	709.054	360.7465	779.48	646.582	590.5913333	1.86341
5355095	chr6	91012744	91012907	-	Nup210	529.054	711.054	552.073	705.397	309.397	330.619	373.73	279.406	334.082	276.749	407.758	420.128	411.064	624.3945	320.008	315.99175	412.9833333	-1.78572
4693476	chr6	90967437	90967515	-	Nup210	791.017	726.425	782.943	789.517	552.351	548.165	627.258	680.462	578.073	662.369	804.591	778.98	708.684	772.4755	550.258	637.0405	764.085	-1.18758
5599470	chr15	41648631	41648749	+	Oxr1	180.24	133.388	275.425	214.091	567.943	463.326	454.98	454.165	360.091	384.591	262.332	281.425	237.221	200.786	515.6345	413.45675	260.326	1.9746
5482413	chr4	140505132	140505240	+	Padi2	135.119	150.573	180.165	140.526	433.119	303.332	283.628	289.712	338.434	332.101	203.147	175.147	164.929	151.59575	368.2255	310.96875	181.0743333	1.89158
4765155	chr4	140507034	140508111	+	Padi2	139.665	94.2395	65.8321	33.5634	263.277	275.073	382.795	289.702	346.239	461.388	185.962	230.314	171.74	83.325	269.175	370.031	196.0053333	3.34118
5108497	chr1	173104535	173104653	-	Pcp4l1	194.26	203.077	137.922	168.144	129.702	134.403	43.7551	45.5701	49.375	78.5403	106.466	108.718	88.5887	175.85075	132.0525	54.310125	101.2575667	-1.8342
4722810	chr19	53987338	53987412	+	Pdcd4	1605.74	1723.62	1564.41	1372.23	896.073	1158.74	1219.95	1425.99	1292.1	1134.9	2010.16	1889.47	1755.65	1566.5	1027.4065	1268.235	1885.093333	-1.12409
5590833	chr19	53981942	53981992	+	Pdcd4	334.294	281.563	442.499	325.12	268.303	252.591	103.389	298.2	292.774	218.536	768.719	602.776	617.98	345.869	260.447	228.22475	663.1583333	1.11008
4725084	chr1	88439983	88440065	-	Pde6d	665.294	465.24	616.468	566.371	1673.92	1239.24	968.943	929.24	1155.72	1344.35	660.479	665.818	593.369	578.34325	1456.58	1099.56325	639.8886667	1.84206
5285613	chr1	88443300	88443344	-	Pde6d	353.906	222.443	266.281	193.721	820.184	594.647	579.165	460.24	459.017	552.499	343.966	319.277	299.226	259.08775	707.4155	512.73025	320.823	1.98256
4780002	chr18	61238187	61238299	+	Pdgfrb	105.554	41.0728	118.795	71.4004	775.425	473.332	290.45	333.517	254.665	498.314	73.2025	63.5913	66.721	84.20555	624.3785	344.2365	67.83826667	4.10287
4497207	chr18	61238536	61238645	+	Pdgfrb	86.4988	35.8565	61.5914	43.2763	650.184	378.74	364.721	394.428	251.48	372.687	39.8507	25.9206	35.5181	56.80575	514.462	345.829	33.76313333	5.24626
5013780	chr18	61239966	61240025	+	Pdgfrb	27.7744	11.8479	19.604	37.3895	338.273	217.699	190.755	167.086	153.53	249.162	25.3906	29.5878	11.1124	24.15395	277.986	190.13325	22.03026667	6.76424
4331044	chr18	61219807	61219836	+	Pdgfrb	9.90967	27.8767	20.2532	8.15731	270.06	186.483	115.246	103.113	83.6869	147.079	23.8338	6.71615	8.22265	16.54922	228.2715	112.281225	12.9242	7.7197
5545247	chr10	18575488	18575644	+	Perp	18.7805	14.2177	21.0009	20.57	454.215	259.977	181.029	112.758	92.4554	156.069	26.5107	11.5184	13.5103	18.642275	357.096	135.57785	17.1798	9.11643
4758100	chr10	18575759	18576741	+	Perp	20.8633	21.1734	14.2625	11.0891	873.888	509.647	520.036	310.748	191.739	337.61	19.0483	25.4959	35.6474	16.847075	691.7675	340.03325	26.73053333	20.9439
4911848	chr17	29462859	29462925	+	Pi16	78.7582	44.9617	106.102	104.824	406.287	256.62	127.435	103.713	104.147	136.221	101.727	67.1703	65.497	83.661475	331.4535	117.879	78.13143333	2.10158
5148643	chr6	136560628	136560676	-	Plbd1	255.943	36.5553	194.332	95.0728	490.702	615.091	45.6781	329.073	535.277	423.24	2112.15	1243.5	1381.65	145.475775	552.8965	333.317025	1579.1	5.64885
5348459	chr4	151487996	151488504	+	Plekhg5	31.9997	41.2121	69.6143	84.0466	370.817	230.554	431.539	321.428	295.033	396.521	92.4406	94.0854	83.5394	56.718175	300.6855	361.13025	90.0218	4.41855
4325716	chr15	82967901	82967978	-	Poldip3	1284.55	1092.63	1415.39	1322.17	1782.82	1926.09	1565.02	1661.07	1567.67	1711.94	1461.41	1461.98	1445.74	1278.685	1854.455	1626.425	1456.376667	1.28706
5037034	chr5	136191758	136191923	+	Por	52.7016	80.6007	103.184	109.591	220.3	220.054	251.337	273.781	248.462	274.411	284.763	218.138	263.244	86.519325	220.177	261.99775	255.3816667	2.84158
4626551	chr13	105007194	105007337	-	Ppwd1	304.184	264.531	245.204	301.167	190.574	152.079	271.412	227.264	214.702	210.758	126.962	158.42	120.184	278.7715	171.3265	231.034	135.1886667	-1.55579
5463469	chr17	33778113	33778192	+	Pram1	1079.24	915.183	731.304	997.536	360.536	547.109	303.699	401.421	500.137	349.342	1198.13	1025.72	1288.11	930.81575	453.8225	388.64975	1170.653333	-1.38712
5491071	chr17	33782374	33782400	+	Pram1	197.054	189.462	260.017	253.684	67.8321	147.98	64.758	43.4988	170.684	136.98	713.239	496.017	697.054	225.05425	107.90605	103.9802	635.4366667	1.25499
5308847	chr17	33779075	33779146	+	Pram1	42.7951	52.3692	73.5913	115.281	33.2555	40.4314	19.8945	35.7302	70.7684	30.4897	238.466	229.639	198.787	71.00915	36.84345	39.2207	222.2973333	1.40058
4977877	chr17	33782551	33782635	+	Pram1	191.962	161.577	307.036	287.314	174.999	195.832	65.9445	100.963	168.579	118.006	942.091	551.702	743.11	236.97225	185.4155	113.373125	745.6343333	1.46912
5552380	chr17	85465490	85465620	-	Prepl	99.3878	103.411	155.313	123.184	215.795	235.647	207.559	218.147	167.869	204.911	126.14	124.48	120.647	120.32395	225.721	199.6215	123.9136667	1.5216
5413836	chr3	97476359	97476916	+	Prkab2	275.897	357.351	285.156	266.758	105.883	73.7765	93.4802	90.0358	99.2907	122.554	147.536	158.266	123.665	296.2905	89.82975	101.340175	143.1556667	-2.6587
4892988	chr14	31414947	31415032	-	Prkcd	573.943	598.897	471.378	541.851	336.767	316.351	274.86	229.693	315.156	331.73	372.073	383.156	325.425	546.51725	326.559	287.85975	360.218	-1.68222
5081422	chr17	25436431	25436541	+	Prss34	1676.99	2119.86	2272.28	1893.18	534.823	1144.2	342.545	718.906	624.286	471.74	5463.54	5462.42	4367.29	1990.5775	839.5115	539.36925	5097.75	1.08455
5529086	chr17	25436756	25436915	+	Prss34	1065.78	1732.78	2030.83	1335.2	409.721	1025.61	271.017	300.351	507.036	354.703	4428.13	4756.87	3490.59	1541.1475	717.6655	358.27675	4225.196667	1.14658
4635995	chr17	25436076	25436293	+	Prss34	794.943	1192.54	1002.05	886.388	331.258	535.499	98.2393	267.417	232.617	180.355	2940.31	3984.7	2667.63	968.98025	433.3785	194.657075	3197.546667	1.31602
4531166	chr17	25436949	25437066	+	Prss34	713.943	1033.63	1766.37	852.869	575.221	907.332	198.443	205.406	416.258	358.536	4616.28	3797.46	2965.18	1091.703	741.2765	294.66075	3792.973333	1.47443
4877671	chr17	25435681	25435741	+	Prss34	541.415	277.939	715.619	660.295	330.351	390.693	169.638	229.138	252.179	164.36	1960.96	2572.17	1509.94	548.817	360.522	203.82875	2014.356667	1.56622
5251679	chr17	25435485	25435511	+	Prss34	694.128	379.499	1054.31	946.684	455.98	525.943	204.499	323.758	194.98	211.832	3191.5	3661.17	2697.24	768.65525	490.9615	233.76725	3183.303333	1.69475
4832119	chr17	25435746	25435828	+	Prss34	470.933	415.517	571.295	468.896	235.211	309.758	70.2498	237.194	133.684	119.361	2132.02	2708.9	1891.8	481.66025	272.4845	140.1222	2244.24	1.83867
5276246	chr17	25435342	25435432	+	Prss34	396.888	166.506	445.499	280.832	174.036	161.192	59.3372	144.647	76.8321	72.7961	1981.46	2085.94	1169.31	322.43125	167.614	88.4031	1745.57	2.06926

4425278	chr10	59765109	59765154	-	Psap	3390.95	3688.69	4099.2	4543.7	2447.72	2754.24	1345.72	1970.78	2540.67	1748.39	4052.09	4295.67	4076.06	3930.635	2600.98	1901.39	4141.273333	-1.36423
4961609	chr10	59765168	59765195	-	Psap	429.897	400.48	503.962	429.545	253.267	250.98	138.508	169.314	307.314	307.934	885.804	940.74	720.61	440.971	252.1235	230.7675	849.0513333	1.00682
5389178	chr2	24258392	24258431	+	Psd4	299.591	233.999	338.337	319.406	441.721	463.355	554.017	531.031	555.429	543.295	222.939	375.888	310.304	297.83325	452.538	545.943	303.0436667	1.45666
5399102	chr4	58986420	58986538	-	Ptgr1	268.71	292.229	300.686	282.71	290.537	397.888	243.304	180.434	287.378	231.321	458.149	469.869	426.795	286.08375	344.2125	235.60925	451.6043333	1.20178
5390579	chr17	56558147	56558246	-	Ptprs	112.115	88.7184	107.346	69.48	130.48	143.79	267.591	190.851	235.073	236.198	159.277	161.314	154.754	94.41485	137.135	232.42825	158.4483333	1.86415
4364488	chr6	115569306	115569424	-	Raf1	149.554	139.758	181.92	217.573	219.735	274.957	368.314	321.198	284.647	331.61	171.777	164.902	169.327	172.20125	247.346	326.44225	168.6686667	1.43719
5427248	chr15	97580701	97580787	-	Rapgef3	62.5528	33.091	115.221	108.147	357.164	258.406	170.715	142.309	162.425	124.271	102.756	127.771	135.697	79.75295	307.785	149.93	122.0746667	2.42327
4385878	chr6	116595144	116595239	-	Rassf4	780.79	754.406	844.438	946.758	439.091	522.087	434.073	260.105	266.462	186.814	347.406	417.239	311.383	831.598	480.589	286.8635	358.676	-2.21537
5228302	chr2	172848836	172848882	+	Rbm38	1439.05	1427.62	1460.27	1153.99	988.091	941.365	685.314	852.61	803.61	575.795	1207.68	1151	1006.49	1370.2325	964.728	729.33225	1121.723333	-1.45988
5277125	chr7	135517413	135517527	-	Rgs10	376.726	512.439	544.3	533.091	394.179	377.332	91.3923	163.411	179.948	238.999	540.161	454.221	448.652	491.639	385.7555	168.437575	481.0113333	-1.42476
4509640	chr7	135517175	135517327	-	Rgs10	2471.49	2360.35	2096.94	2180.13	1622.92	1375.83	807.666	1144.92	1432.33	1037.05	2273.09	2286.85	2164.72	2277.2275	1499.375	1105.4915	2241.553333	-1.40964
4969183	chr7	148045339	148045482	+	Ric8	107.491	85.0557	87.2779	111.537	228.48	187.179	135.513	139.8	108.105	131.261	129.536	104.096	116.427	97.8404	207.8295	128.66975	116.6863333	1.54396
4859600	chr4	59488438	59489729	-	Rod1	2244.12	2086.93	2194.58	2172.69	2406.83	2352.99	2458.04	2513.89	2380.65	2616.77	2629.37	2795.06	2605.17	2174.58	2379.91	2492.3375	2676.533333	1.15712
4984094	chr8	93810165	93810192	-	Rpgrip1l	110.351	87.7327	111.573	137.906	285.684	265.165	87.6469	148.684	128.202	68.7478	133.314	76.0173	80.4617	111.890675	275.4245	108.320175	96.59766667	1.43099
4525356	chr2	27615084	27615170	+	Rxra	72.0265	154.712	113.249	94.4895	591.989	429.36	369.175	266.267	280.026	352.545	114.952	103.906	167.517	108.61925	510.6745	317.00325	128.7916667	2.93523
4921963	chr11	88785461	88785939	-	Scpep1	350.152	506.022	451.022	377.388	184.11	141.601	35.3083	63.9887	132.406	104.082	251.999	207.443	150.48	421.146	162.8555	83.94625	203.3073333	-2.80696
4924409	chr2	26276894	26276976	-	Sec16a	214.702	182.091	188.295	186.713	131.851	118.61	153.054	128.14	149.832	121.077	71.9247	122.017	89.4803	192.95025	125.2305	138.02575	94.474	-1.61812
4720508	chr1	79793407	79793484	-	Serpine2	128.992	59.8742	146.517	140.945	505.165	495.647	607.665	414.665	365.591	449.925	225.27	252.048	356.221	119.08205	500.406	459.4615	277.8463333	3.46459
5334753	chr19	6375892	6375956	+	Sf1	104.834	61.1416	75.7214	82.5556	110.945	117.679	123.647	123.131	98.3691	115.39	213.964	176.927	160.536	81.06315	114.312	115.134275	183.809	1.69931
4313373	chr14	60244589	60244621	+	Shisa2	163.257	148.036	122.275	179.073	238.925	260.61	147.702	179.312	157.684	154.61	109.294	121.517	131.313	153.16025	249.7675	159.827	120.708	1.15413
5041452	chr7	50607788	50607816	+	Siglec5	47.1052	25.9844	40.6672	59.9922	215.011	142.499	65.2393	45.659	65.3255	51.7775	49.3512	55.4551	41.548	43.43725	178.755	57.000325	48.78476667	2.18353
4512642	chr12	83412351	83412378	+	Sipa1l1	292.073	403.716	341.48	345.503	779.582	643.323	838.202	1111.75	763.693	907.763	504.823	564.54	487.786	345.693	711.4525	905.352	519.0496667	2.05949
5326701	chr12	83538769	83538909	+	Sipa1l1	194.832	96.8506	140.61	118.888	471.147	363.61	446.147	448.675	473.351	651.758	289.323	317.832	355.319	137.79515	417.3785	504.98275	320.8246667	3.00733
5371892	chr15	9054830	9054959	-	Skp2	347.758	349.036	349.61	425.193	269.943	297.128	257.582	198.878	271.934	232.138	152.554	184.508	167.545	367.89925	283.5355	240.133	168.2023333	-1.59524
4743581	chr19	59348993	59349021	+	Slc18a2	213.253	252.068	319.425	356.48	656.679	618.332	736.165	533.499	648.605	780.716	408.814	474.827	340.814	285.3065	637.5055	674.74625	408.1516667	2.01
4484202	chr19	59351046	59351070	+	Slc18a2	84.6839	59.9432	22.6877	41.4247	212.832	211.165	344.165	249.054	234.832	337.128	157.388	104.091	157.091	52.184875	211.9985	291.29475	139.5233333	4.10602
5021548	chr19	59337447	59337776	+	Slc18a2	44.6316	89.7479	82.8136	75.2025	272.669	358.475	468.295	456.537	452.934	627.314	315.888	285.517	127.277	73.0989	315.572	501.27	242.894	4.83243
4849061	chr10	60183619	60183732	-	Slc29a3	443.971	490.573	406.351	457.036	204.36	245.092	229.888	282.24	289.212	225.943	248.971	280.99	349.814	449.48275	224.726	256.82075	293.2583333	-1.74037
4532820	chr4	102885778	102885819	-	Slc35d1	128.925	73.758	86.763	70.9819	140.212	135.133	300.443	248.128	337.739	216.462	104.133	128.24	52.9622	90.106975	137.6725	275.693	95.11173333	1.88101
4868200	chr4	102886536	102886562	-	Slc35d1	220.406	303.202	268.591	290.369	646.906	421.851	1118.78	837.388	743.702	758.758	331.591	278.777	382.721	270.642	534.3785	864.657	331.0296667	2.13081
5425039	chr4	102886664	102886691	-	Slc35d1	104.851	134.459	152.763	154.723	279.112	282.945	488.758	464.186	347.573	361.649	172.485	214.54	257.277	136.699	281.0285	415.5415	214.7673333	2.22225
4995416	chr17	34168213	34168422	-	Slc39a7	117.165	180.645	149.867	115.248	205.124	223.904	138.495	168.74	151.433	132.165	328.351	270.378	302.054	140.73125	214.514	147.70825	300.261	1.56914
5433570	chr15	100646067	100646247	+	Slc4a8	216.101	275.675	346.804	261.647	1405.65	915.091	215.841	233.36	289.934	325.61	155.258	141.971	225.601	275.05675	1160.3705	266.18625	174.2766667	1.94
5371647	chr14	55354562	55354669	-	Slc7a8	37.9988	42.1281	55.9639	56.016	250.245	167.721	208.924	224.449	190.986	207.535	39.8156	65.7349	57.9208	48.0267	208.983	207.9735	54.49043333	3.27211
5023459	chr14	55356393	55356502	-	Slc7a8	57.7037	99.0914	60.2049	52.6853	369.128	225.814	286.236	442.073	298.591	410.462	56.407	87.7883	34.9241	67.421325	297.471	359.3405	59.70646667	3.54249
4406474	chr14	55345592	55345656	-	Slc7a8	16.7913	90.5218	30.7971	21.9336	256.128	259.684	284.249	284.258	181.249	223.915	152.508	137.008	112.32	40.01095	257.906	243.41775	133.9453333	5.29245
5049159	chr14	55353926	55353983	-	Slc7a8	11.0486	52.4432	64.721	7.45258	274.066	188.77	398.61	397.11	222.202	331.258	79.1654	98.7476	68.0916	33.916345	231.418	337.295	82.00153333	6.39528
5551998	chr14	55342948	55343024	-	Slc7a8	110.74	47.74	11.2841	33.7488	386.313	403.17	759.906	697.61	396.98	571.04	202.74	161.591	123.577	50.878225	394.7415	606.384	162.636	7.62448
4825831	chr7	81429354	81429500	-	Slco3a1	622.689	552.753	596.151	517.948	614.837	646.04	941.11	1037.52	1065.94	832.503	786.124	941.202	856.401	572.38525	630.4385	969.26825	861.2423333	1.43315
5260356	chr6	28834201	28834257	+	Snd1	498.49	467.286	426.721	426.638	498.11	481.314	547.24	534.193	539.675	567.388	370.527	421.702	386.138	454.78375	489.712	547.124	392.789	1.04784
4441857	chr2	142891012	142891047	+	Snrpb2	816.054	682.869	847.226	747.221	791.443	761.758	702.24	688.355	731.827	722.096	1056.55	1001.85	942.925	773.3425	776.6005	711.1295	1000.441667	1.07247
5531106	chr11	72312922	72313001	-	Spns3	542.258	850.462	944.494	922.54	1766.15	1520.94	1603.21	1378.85	1366.97	1622.37	878.924	1029.78	1010.57	814.9385	1643.545	1492.85	973.0913333	1.6809
5031914	chr11	72352575	72352653	-	Spns3	72.9834	110.54	169.013	226.351	460.846	471.42	262.258	380.661	339.901	406.577	211.054	198.892	249.277	144.72185	466.133	347.34925	219.741	2.37979
5445301	chr19	8816925	8816979	+	Stx5a	620.119	560.73	524.888	566.314	848.277	732.369	619.202	574.249	609.091	605.573	493.554	467.869	513.128	568.01275	790.323	602.02875	491.517	1.10553
4968499	chr15	11913988	11914013	-	Sub1	337.832	246.147	326.628	392.091	260.388	172.61	122.073	255.128	117.314	246.814	743.351	605.684	628.017	325.6745	216.499	185.33225	659.0173333	1.0858
4707606	chr6	67484067	67484334	-	Tacstd2	72.8064	312.851	226.48	95.3691	723.388	687.147	634.128	472.202	579.147	703.017	542.536	466.258	465.295	176.876625	705.2675	597.1235	491.363	3.38042
5519022	chr6	67484391	67484533	-	Tacstd2	109.665	226.258	308.61	207.758	1202.2	793.59	945.516	717.146	887.349	1122.17	653.341	625.96	558.972	213.07275	997.895	918.04525	612.7576667	3.95592
5048301	chr1	174435909	174436061	+	Tagln2	4106.05	3871.8	3302.48	3774.28	2388.91	2747.39	2824.87	2497.96	2501.92	2577.04	3334.67	3475.91	3497.66	3763.6525	2568.15	2600.4475	3436.08	-1.31219
5057639	chr9	90165338	90165405	-	Tbc1d2b	92.3506	107.628	135.628	139.336	265.962	251.702	251.702	197.276	246.851	243.036	235.462	198.907	261.851	118.73565	258.832	234.71625	232.0733333	2.03708
4804419	chr11	49985116	49985401	+	Tbc1d9b	1268.98	1481.77	1290.05	1247.31	2089.42	2087.88	2276.26	1965.72	2480.71	2072.14	1563.49	1489.26	1501.1	1322.0275	2088.65	2198.7075	1517.95	1.46374
5176110	chr6	39034295	39034369	+	Tbxas1	89.2868	116.667	181.554	122.132	56.7395	87.6284	2.77141	66.1469	52.9749	78.111	221.277	236.083	245.073	127.40995	72.18395	50.0010525	234.1443333	-1.07269
5301022	chr6	39034405	39034537	+	Tbxas1	83.5671	183.991	221.48	136.032	43.7643	155.459	6.48889	51.1004	59.758	61.258	350.351	337.758	455.1	156.267525	99.61165	44.6513225	381.0696667	1.12058
4844861	chr19	3898548	3898605	-	Tcirg1	1420.37	1222.42	1145.92	1205.26	416.795	527.314	333.517	494.814	528.962	435.573	1079.72	963.591	784.795	1248.4925	472.0545	448.2165	942.702	-2.01049
5295574	chr19	3897768	3897873	-	Tcirg1	3476.01	2873.12	2774.17	2787.94	1160.24	1603.67	994.628	1596.33	1763.44	1301.39	1966.6	2177.21	1729.9	2977.81	1381.955	1413.947	1957.903333	-1.87922
5598001	chr19	3897469	3897612	-	Tcirg1	748.536	712.388	665.851	558.535	313.666	309.193	232.425	347.739	316.72	257.307	744.24	648.073	721.138	671.3275	311.4295	288.54775	704.4836667	-1.54392
5032215	chr13	56727415	56727530	+	Tgfbi	158.949	177.918	195.221	156.597	183.48	123.331	39.2472	63.16	51.4349	39.7575	163.733	193.202	240.675	172.17125	153.4055	48.3999	199.2033333	-1.28804
5201194	chr13	93522369	93522446	-	Thbs4	71.4447	73.8604	86.5933	86.2889	313.633	195.894	78.3876	79.8538	93.5177	107.358	107.22	91.3513	89.152	79.546825	254.7635	89.779275	95.90776667	1.84566
4337871	chr13	93521588	93521702	-	Thbs4	43.2596	35.3824	43.3633	32.4999	369.467	210.559	70.5207	54.9626	52.8638	64.5095	64.6816	59.1698	64.4296	38.6263	290.013	60.71415	62.76033333	3.56827
5127490	chr13	56275981	56276575	-	Tifab	1328.8	1509.96	1630.76	1279.11	753.286	710.554	454.8	822.323	667.814	737.277	1030.79	1305.61	1167.65	1437.1575	731.92	670.5535	1168.016667	-1.6773
5055320	chr13	56278266	56278421	-	Tifab	437.795	354.073	517.943	403.851	218.406	224.943	154.925	204.165	258.665	215.027	376.036	401.777	407.795	428.4155	221.6745	208.1955	395.2026667	-1.55774
4499304	chr12	72224190	72224229	-	Timm9	261.685	348.895	223.1	234.517	141.684	221.166	174.814	209.676	244.686	231.869	505.313	477.314	422.702	267.04925	181.425	215.26125	468.443	1.07986
4794636	chr11	117677349	117677380	-	Tk1	699.073	802.776	664.906	670.74	495.851	454.397	476.17	410.999	429.101	510.013	563.642	545.851	626.415	709.37375	475.124	456.57075	578.636	-1.40904
5061393	chr2	127074348	127074539	+	Tmem127	178.001	176.658	186.774	167.609	287.702	263.252	179.777	181.163	212.684	196.719	198.464	186.25	199.33	177.2605	275.477	192.58575	194.6813333	1.24627
5175371	chr6	91436975	91437738	+	Tmem43	257.733	354.98	301.989	288.934	498.517	494.199	335.68	385.967	316.323	358.823	253.101	214.782	289.773	300.909	496.358	349.19825	252.552	1.21643
4456194	chr4	155402609	155402638	+	Tnfrsf18	59.7395	84.4988	101.406	74.4803	266.814	200.943	136.054	172.98	177.61	180.388	126.406	141.295	104.388	80.03115	233.8785	166.758	124.0296667	2.18526
4315898	chr11	69497359	69497475	-	Tnfsf13	688.851	534.378	541.277	715.036	423.397	541.304	155.767	216.397	344.767	272.027	618.415	827.267	744.934	619.8855	482.3505	247.2395	730.2053333	-1.27392
4863211	chr11	69496757	69496839	-	Tnfsf13	346.11	221.219	252.369	290.258	233.406	243.739	42.5914	9.99893	202.832	127.899	503.61	470.536	475.388	277.489	238.5725	95.8303325	483.178	-1.01821
5493699	chr11	98867325	98867438	-	Top2a	1203.71	1091.51	1291.29	1283.46	1150.21	1146.82	1228.91	1023.65	1091.09	1036.82	706.221	729.517	607.962	1217.4925	1148.515	1095.1175	681.2333333	-1.24877
5127929	chr14	62223386	62224244	+	Trim13	68.4432	111.823	77.7951	82.7016	239.934	199.943	273.462	212.406	241.156	303.471	168.702	181.869	170.425	85.190725	219.9385	257.62375	173.6653333	2.54811
5031042	chr14	62218701	62218726	+	Trim13	80.758	76.5913	46.9432	6.80292	169.277	89.7582	293.314	417.443	279.702	283.314	65.6654	84.282	49.2766	52.773855	129.5176	318.44325	66.408	3.24888
4806047	chr12	36768840	36768890	-	Tspan13	89.5914	62.2951	96.4247	160.74	96.7395	136.999	170.24	208.726	204.647	209.369	251.406	235.406	253.226	102.2628	116.86925	198.2455	246.6793333	1.83121
4883870	chr13	38596593	38596668	-	Txndc5	589.684	608.684	646.24	667.314	411.462	476.517	351.665	454.11	386.74	351.943	222.628	271.906	258.832	627.9805	443.9895	386.1145	251.122	-1.74241
4969736	chr7	34950450	34950498	-	Uba2	402.647	327.554	429.665	457.24	748.943	769.165	651.61	676.878	715.397	711.369	615.888	644.795	802.341	404.2765	759.054	688.8135	687.6746667	1.76079
4847588	chr5	111224772	111224846	-	Ulk1	202.29	211.684	214.272	235.814	280.091	265.142	331.832	331.587	292.962	297.92	214.462	205.364	224.221	216.015	272.6165	313.57525	214.6823333	1.23583
4682088	chr19	3948962	3949194	+	Unc93b1	1127.19	1289.32	1473.42	1378.98	425.98	687.619	171.702	444.851	682.304	402.776	1271.02	1268.96	1345	1317.2275	556.7995	425.40825	1294.993333	-1.73533
4323546	chr19	3941897	3941981	+	Unc93b1	798.647	814.091	863.184	723.296	399.721	465.665	373.351	394.499	546.184	256.165	810.148	760.48	968.573	799.8045	432.693	392.54975	846.4003333	-1.43536
4986051	chr6	72319202	72319275	-	Vamp5	249.054	354.915	282.786	147.462	629.406	745.017	637.36	794.351	763.202	907.712	578.897	554.443	452.091	258.55425	687.2115	775.65625	528.477	2.56728
4964633	chr6	72335525	72335634	-	Vamp8	2135.75	1743.4	2027.96	1817.25	2424.44	2236.43	2182.87	2150.07	2209.83	2259.62	2829.11	2732.07	2611.57	1931.09	2330.435	2200.5975	2724.25	1.25236
4687819	chr3	109309326	109309371	+	Vav3	953.332	1093.04	1207.24	1238.42	793.777	793.499	745.61	738.628	756.647	678.776	834.462	869.332	794.517	1123.008	793.638	729.91525	832.7703333	-1.42978
5481073	chr1	9738248	9738290	-	Vcpip1	98.2766	93.3043	140.452	130.101	307.082	271.064	137.897	142.193	154.841	180.323	122.165	150.471	118.591	115.533475	289.073	153.8135	130.409	1.65405
5062741	chr12	107296059	107296180	+	Vrk1	1213.04	1287.13	1104.88	1208.19	817.763	828.156	950.878	777.304	902.189	825.744	931.124	984.216	912.73	1203.31	822.9595	864.02875	942.69	-1.37277

5058098	chr11	109441031	109441073	-	Wipi1	14.7294	59.3448	57.286	70.4299	278.027	236.184	291.647	223.36	272.795	333.332	130.443	181.101	176.415	50.447525	257.1055	280.2835	162.653	4.62554
4347714	chr6	91442851	91442994	-	Xpc	235.165	230.212	230.23	236.517	636.369	567.573	434.582	417.332	490.147	478.99	305.823	338.952	523.054	233.031	601.971	455.26275	389.2763333	2.06912
5101774	chr18	5766866	5767931	+	Zeb1	166.378	231.73	188.406	217.628	210.499	271.397	353.823	397.434	353.915	426.471	376.99	390.462	335.527	201.0355	240.948	382.91075	367.6596667	1.64402
4810972	chr13	64243530	64243642	-	Zfp367	458.457	497.628	432.61	421.846	243.402	264.846	279.036	256.758	295.628	269.628	355.457	326.462	261.24	452.63525	254.124	275.2625	314.3863333	-1.60933
4477660	chr6	42300373	42300465	+	Zyx	235.833	207.888	212.051	125.202	567.675	457.203	394.452	353.999	407.471	369.573	291.499	281.304	378.517	195.2435	512.439	381.37375	317.1066667	2.06736
4777904	chr3	152109803	152109830	+	Zzz3	520.277	461.702	413.161	448.962	289.795	264.3	253.633	296.499	251.476	291.74	374.628	328.499	324.832	461.0255	277.0475	273.337	342.653	-1.54873

Supplemental Table S5: Amplicons for HpaII Methylation Assay

Amplicon Number	Amplicon Name	Chromosome	Start (mm9)	End (mm9)	Primer F	Primer R
1	RB2A1	16	92699722	92699919	AGCTAGACTCCCCTCAAATGC	CCAACGCGATTCCTTTAATC
2	RB2A2	16	92700069	92700262	AGT TCG AAG CTC GAT CAG GAT	GGTGCCCCTCGGTAGAGT
3	Canyon F5R5	16	92698431	92698688	AGCGGCTGGAGAGGAGATAG	AGGAAGGAGACCCTTAAAGC
4	Canyon F2R2	16	92697248	92697448	GGAACACTTTCTCCCGCAGTTG	CACCCTTTGCGGCTCTTTCTAG

Supplemental Table S6: Flow Markers for Stem Cell and Progenitor Stains

Population	Cell Phenotype
Lin-neg	B220- CD3e- Gr-1- Ter-119-
HSC	Lin- Sca-1+ c-Kit+ CD34- Flk2-
MPP	Lin- Sca-1+ c-Kit+ CD34+ Flk2+
GMP	Sca-1- c-Kit+ CD34+ CD16/32-
CMP	Sca-1- c-Kit+ CD34+ CD16/32+
MEP	Sca-1- c-Kit+ CD34- CD16/32-