

Sanger Mouse Genetics Project participants

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SI Table 1 | Results of the experimental metastasis assay from stage 1 of the screen. A mutant (Mut) mouse line progressed to stage 2 if the metastatic ratio was ≤ 0.6 or ≥ 1.6 and $P \leq 0.0175$ (Mann-Whitney test), and additional cohorts were tested. Where multiple cohorts were tested: (i) data is shown for the results from the first cohort, (ii) those with a significant results by Integrative Data Analysis ($P < 0.01$) are in red/green font (depending if decreased/increased metastasis), and (iii) those without significant results by Integrative Data Analysis ($P > 0.01$) are in blue font. P - and U -value listed in the table is from a Mann-Whitney test. F, female; M, male; Mut, mutant; WT, wildtype.

Mutated Gene	<Allele>	Background	Genotype	Sex	(mean)	(SD)	(n)	(mean)	(SD)	(n)	Mut/WT	P-value	U-value
1110037F02Rik	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	218	37	9	233	126	5	1.069	0.7972	20
1110059G10Rik	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	209	53	16	127	52	4	0.608	0.0261	8
1700001C02Rik	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	245	67	21	202	96	4	0.824	0.335	28.5
1700007K13Rik	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	112	34	10	113	11	4	1.009	0.8392	18
1700008O03Rik	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	260	52	18	265	96	4	1.019	0.6391	30
1700011A15Rik	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	147	36	17	130	39	5	0.884	0.3881	31
1700024P04Rik	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	138	29	20	126	17	5	0.913	0.3079	34.5
1700029H14Rik	<tm2b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	138	47	34	150	21	5	1.087	0.3662	63
1700034J05Rik	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	95	36	8	117	22	4	1.232	0.2337	8.5
1700042B14Rik	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	200	47	16	206	46	7	1.030	0.8128	48
1700067K01Rik	<tm2a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	249	53	18	278	27	3	1.116	0.4212	18.5
1700112E06Rik	<tm1e(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	191	36	17	168	46	4	0.880	0.3244	22.5
1700123O20Rik	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	104	31	13	134	21	5	1.288	0.0607	13
2010300C02Rik	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	203	42	16	212	37	5	1.044	0.5629	32.5
2510003E04Rik	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	275	53	21	221	39	4	0.804	0.0879	18.5
2610029G23Rik	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	281	51	12	264	87	6	0.940	0.9253	34.5
2610034B18Rik	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	125	41	24	136	22	4	1.088	0.6223	40
2610318N02Rik	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	147	36	17	102	4	5	0.694	0.0148	11
2700029M09Rik	<em1Wtsi>	C57BL/6NTac	Homozygote	M	170	29	23	106	76	4	0.624	0.1806	22
2810417H13Rik	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	104	45	19	95	14	3	0.913	0.8107	25
3110035E14Rik	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	220	40	13	239	54	6	1.086	0.3125	27
3300002A11Rik	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	156	46	18	165	45	4	1.058	0.8646	33
3830406C13Rik	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	155	40	21	124	31	6	0.800	0.1082	35
3830417A13Rik	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	222	65	11	190	61	6	0.856	0.3146	22.5
4921536K21Rik	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	173	41	16	188	29	7	1.087	0.2554	38.5
4930404H24Rik	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	88	21	21	93	34	5	1.057	1	52
4930449E01Rik	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	137	32	19	129	19	5	0.942	0.7759	43
4930590J08Rik	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	136	44	21	142	55	3	1.044	0.7269	27
4931429L15Rik	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	97	39	22	50	23	6	0.515	0.0148	22
4932431P20Rik	<em1Wtsi>	C57BL/6NTac	Homozygote	M	88	21	21	84	29	5	0.955	0.6022	44
4933402N03Rik	<tm2a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	196	57	15	158	63	3	0.806	0.4328	14
4933434E20Rik	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	116	26	21	101	27	9	0.871	0.2131	66.5
5330434G04Rik	<em1Wtsi>	C57BL/6NTac	Homozygote	M	132	30	26	117	16	4	0.886	0.3928	37.5
5430421N21Rik	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	111	30	24	130	30	5	1.171	0.1839	36.5
5730559C18Rik	<tm2a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	137	44	18	145	53	8	1.058	0.8458	68
9130011E15Rik	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	175	42	18	154	54	4	0.880	0.6702	30.5
9330182L06Rik	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	136	44	21	136	65	5	1.000	0.7946	48
A430005L14Rik	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	270	52	19	302	38	4	1.119	0.3689	26.5
A430078G23Rik	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	154	49	21	158	81	5	1.026	0.8452	49
A730017C20Rik	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	72	29	23	79	10	4	1.097	0.5167	36
A830019P07Rik	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	281	51	12	276	76	5	0.982	0.8741	28
Abcb6	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	190	56	12	184	55	4	0.968	0.7158	20.5
Abhd14a	<tm2a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	119	43	26	128	42	5	1.076	0.6288	55.5
Abhd16a	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	153	40	21	147	46	5	0.961	0.974	51.5
Abhd17a	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	162	49	20	286	40	4	1.765	0.0022	0
Abtb2	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	210	48	10	187	72	4	0.890	0.7222	17
Acaa1a	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	277	62	11	239	107	4	0.863	1	21.5
Acbd5	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	170	54	22	142	29	5	0.835	0.435	42
Acer1	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	294	51	10	133	26	5	0.452	0.0007	0
Acot5	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	213	54	14	134	28	4	0.629	0.0223	6

Actl10	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	133	40	32	102	9	3	0.767	0.0928	19
Actn4	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	147	38	23	139	27	3	0.946	0.5464	26.5
Actr6	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	245	65	3	321	52	3	1.310	0.4	2
Adal	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	100	25	17	56	26	4	0.560	0.0137	6
Adamts19	<tm4a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	127	45	17	134	62	5	1.055	1	42
Adamts3	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	170	50	28	163	28	5	0.959	0.6878	61.5
Adap1	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	249	43	23	233	49	9	0.936	0.3773	82
Adcy2	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	197	50	13	226	32	3	1.147	0.4178	13
Adcy9	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	104	45	19	79	25	5	0.760	0.2129	29.5
Adpgk	<tm2a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	228	79	15	198	51	4	0.868	0.4525	22
Aff3	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	260	52	18	207	95	4	0.796	0.3937	25.5
Agap1	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	174	57	22	220	80	3	1.264	0.2574	19
Ago3	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	233	58	17	212	66	5	0.910	0.5551	34.5
Ahcy1	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	247	54	18	231	62	4	0.935	0.7013	31
Aicda	<tm1b(EUCOMM)Hgmua>	C57BL/6NTac	Homozygote	M	111	34	19	106	30	6	0.955	0.6791	50
Akap9	<tm1a(KOMP)Wtsi>	C57BL/6Brd-Tyr, C57BL/6Dnk, C57BL/6NTac	Heterozygote	F	216	80	12	233	33	6	1.079	0.3731	21
Akr1c20	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	143	49	28	131	11	5	0.916	0.6333	60
Akt2	<tm1e(KOMP)Wtsi>	129S5	Homozygote	F	223	54	5	214	85	4	0.960	0.9048	9
Aldh1b1	<tm2a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	114	24	9	109	29	4	0.956	0.6993	15
Aldh3b1	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	216	60	15	203	42	10	0.940	0.3045	56
Alox12e	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	219	49	19	170	41	6	0.776	0.0258	21.5
Alpk1	<em2Wtsi>	C57BL/6NTac	Homozygote	M	152	57	24	180	30	5	1.184	0.3372	53
Amz2	<tm1e(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	112	34	10	106	21	6	0.946	0.9567	29
Anapc4	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	165	55	7	130	37	4	0.788	0.3152	8
Ankrd13d	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	116	26	21	113	49	4	0.974	0.824	38.5
Ankrd6	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	166	45	16	222	24	4	1.337	0.0261	8
Ankrd9	<tm1(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	299	67	13	288	81	5	0.963	0.8428	30
Anks1b	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	113	42	17	155	25	3	1.372	0.1117	10
Anks6	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	147	54	18	152	39	6	1.034	0.9734	53
Ano10	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	185	48	16	192	26	7	1.038	0.8935	53.5
Anxa6	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	170	34	19	145	34	6	0.853	0.1521	34
Anxa9	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	270	52	19	278	31	5	1.030	0.8865	45
Ap2a2	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	113	42	17	95	21	5	0.841	0.4558	32.5
Ap4e1	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	153	51	19	112	23	4	0.732	0.1801	21
Ap4m1	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	141	37	18	137	29	7	0.972	0.739	57
Apip	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	228	79	15	224	46	6	0.982	0.7553	40.5
Apol7a	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	133	37	10	158	24	3	1.188	0.4431	10
Apol9b	<tm2a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	149	46	20	122	26	8	0.819	0.1269	49.5
Apoa	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	110	31	18	99	24	6	0.900	0.3332	39
Apool	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	221	56	6	91	41	4	0.412	0.0095	0
Arap2	<tm2b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	120	48	15	102	22	6	0.850	0.6679	39
Arhgap17	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	87	40	24	86	25	7	0.989	0.8686	80
Arhgap22	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	196	56	20	197	41	4	1.005	0.8767	37.5
Arhgef1	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	104	39	21	17	11	5	0.163	0.0007	0
Arhgef38	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	266	53	13	254	73	4	0.955	1	25.5
Arhgef7	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	144	46	18	130	14	4	0.903	0.7982	32.5
Arid1b	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	83	29	26	37	16	5	0.446	0.0043	10
Armc7	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	219	49	19	205	48	4	0.936	0.7147	33
Arpc1b	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	185	73	17	237	102	6	1.281	0.1945	32
Arpc3	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	197	55	9	144	49	3	0.731	0.1455	5
Arrdc5	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	159	55	28	160	45	6	1.006	0.8036	78
Arsg	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	238	86	6	218	34	6	0.916	0.3939	12
Art4	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	277	62	11	266	40	6	0.960	0.311	22.5
Asb6	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	138	37	12	164	7	3	1.188	0.2195	9
Aspm	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	227	36	13	237	60	3	1.044	0.893	18
Atad2	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	270	86	14	233	64	5	0.863	0.1756	20
Atad3a	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	193	38	13	48	55	5	0.249	0.0022	1

Atg16l1	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	127	47	20	146	18	5	1.150	0.3946	37
Atg16l2	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	162	49	20	121	25	6	0.747	0.0479	27
Atp11a	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	228	79	15	201	99	4	0.882	0.5822	24
Atp5e	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	110	45	20	119	47	5	1.082	0.9727	49
Atp5f1	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	133	49	16	147	28	5	1.105	0.4826	31
Atp8b2	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	233	58	17	227	49	4	0.974	0.9641	33
Atxn10	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	121	33	25	96	24	5	0.793	0.0662	29
Atxn3	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	206	55	17	231	51	5	1.121	0.4328	32
B9d2	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	139	41	18	168	78	6	1.209	0.3859	40.5
Bach2	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	129	51	27	40	5	4	0.310	0.0122	11
Bai1	<tm2a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	155	48	20	130	49	5	0.839	0.3074	34.5
Bap1	<tm1a(EUCOMM)HgmU>	C57BL/6NTac	Heterozygote	M	108	39	12	125	46	5	1.157	0.3425	30.5
BC017643	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	240	49	6	121	51	4	0.504	0.0247	1
BC023829	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	270	52	19	222	67	5	0.822	0.0744	22
BC089597	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	218	37	9	218	49	5	1.000	0.8937	21
Bhlhe40	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	100	26	12	112	10	7	1.120	0.1171	23
Bivm	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	142	69	17	164	36	5	1.155	0.4334	32
Bnip2	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	133	40	32	140	15	3	1.053	0.8828	45
Bpgm	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	119	29	17	121	35	5	1.017	0.9375	41
Bpifb1	<tm1e(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	240	51	15	227	55	3	0.946	0.6354	18
Bpifb5	<tm2a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	299	67	13	270	39	5	0.903	0.2543	20.5
Brcc3	<em1Wtsi>	C57BL/6NTac	Homozygote	M	88	21	21	128	28	4	1.455	0.0412	14
Brd2	<em1Wtsi>	C57BL/6NTac	Heterozygote	M	121	38	16	127	56	5	1.050	0.9341	38.5
Brd8	<tm1a(EUCOMM)Wtsi>	C57BL/6Brd-Tyr, C57BL/6Dnk, C57BL/6NTac	Heterozygote	F	265	51	6	283	73	10	1.068	0.5505	24
Cabp1	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	238	86	6	213	78	5	0.895	0.7144	12.5
Cadm1	<tm1.2Brd>	C57BL/6Brd-Tyr, C57BL/6J, 129S5/SvEvBrd	Homozygote	F	156	48	9	164	50	3	1.051	0.8636	12
Calcoco2	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	247	75	10	258	39	5	1.045	0.902	23.5
Camkmt	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	94	28	24	95	26	5	1.011	0.795	55
Camsap3	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	151	42	17	187	87	3	1.238	0.3969	17
Capn11	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	128	36	20	168	30	3	1.313	0.1205	12.5
Capza2	<tm1(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	187	49	21	134	34	4	0.717	0.0413	14
Card9	<tm1a(EUCOMM)HgmU>	C57BL/6NTac	Homozygote	M	147	67	16	114	23	3	0.776	0.6953	20
Casc4	<tm2b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	170	54	22	166	44	6	0.976	0.9108	63.5
Casp12	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	280	56	6	272	61	6	0.971	0.6991	15
Catip	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	119	29	17	79	42	5	0.664	0.0599	18
Cbr2	<tm1a(EUCOMM)HgmU>	C57BL/6NTac	Homozygote	F	352	93	20	395	58	7	1.122	0.2806	50
Cbx6	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	220	40	13	231	39	4	1.050	0.6502	21.5
Ccdc122	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	201	52	14	165	24	4	0.821	0.31	18
Ccdc127	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	171	50	23	158	45	3	0.924	0.5741	27
Ccdc134	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	172	59	10	147	50	8	0.855	0.2294	26
Ccdc159	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	147	36	17	160	49	4	1.088	0.4447	25
Ccdc160	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	186	45	10	220	125	3	1.183	0.5536	11
Ccdc18	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	153	48	16	164	67	8	1.072	0.2972	46.5
Ccdc24	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	220	40	13	218	19	6	0.991	0.7919	35.5
Ccdc6	<em1Wtsi>	C57BL/6NTac	Heterozygote	M	170	29	23	175	22	5	1.029	0.8807	54.5
Ccdc69	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	123	35	20	93	36	5	0.756	0.1534	28.5
Ccl22	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	222	55	13	211	50	7	0.950	0.8417	42.5
Cd300lg	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	147	35	6	125	23	3	0.850	0.5476	6
Cdca8	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	281	51	12	271	64	8	0.964	0.9691	47
Cdh19	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	222	65	11	222	62	6	1.000	0.9199	31.5
Cdh23	<v>	Mixed	Homozygote	M	219	57	3	253	61	4	1.155	0.7213	4.5
Cdk4	<R24C/R24/C>	C57BL/6	Homozygote	M	120	44	15	157	48	9	1.308	0.0836	38
Cdk5rap2	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	113	42	17	116	27	4	1.027	1	29.5
Cdkal1	<tm2a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	205	57	8	269	99	8	1.312	0.1883	19
Cdkn2aipnl	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	201	52	24	181	82	5	0.900	0.4876	47.5
Cdyl	<em1Wtsi>	C57BL/6NTac	Heterozygote	M	79	29	21	71	38	6	0.893	0.5022	51

<i>Celf4</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	204	53	14	213	44	3	1.044	0.9498	21
<i>Cenpl</i>	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	120	56	22	136	32	5	1.133	0.2354	35.5
<i>Cep250</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	166	43	22	166	26	6	1.000	0.8164	61.5
<i>Cfap61</i>	<tm2a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	234	106	17	305	78	4	1.303	0.2626	21
<i>Cgrrf1</i>	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	185	35	25	212	20	4	1.146	0.1456	26.5
<i>Chd9</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	162	35	13	162	23	4	1.000	0.8651	24
<i>Chil4</i>	<tm1b(EUCOMM)Hmgu>	C57BL/6NTac	Homozygote	M	147	38	23	147	33	5	1.000	0.9761	56.5
<i>Chka</i>	<tm2a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	70	23	22	69	17	5	0.986	0.9502	53.5
<i>Chmp6</i>	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	121	34	15	122	15	3	1.008	0.7667	19.5
<i>Chst11</i>	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	104	31	13	109	12	5	1.048	0.3748	23
<i>Chtop</i>	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	108	39	12	118	37	5	1.093	0.5621	24
<i>Cir1</i>	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	127	45	17	138	50	6	1.087	0.7253	45.5
<i>Clk1</i>	<tm1a(EUCOMM)Wtsi/lcs>	C57BL/6NTac	Homozygote	F	240	49	6	183	61	6	0.763	0.1481	8.5
<i>Clpp</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	146	26	13	170	31	4	1.164	0.157	13
<i>Cmb1</i>	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	150	39	18	152	33	7	1.013	0.8797	60
<i>Cmip</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	234	64	14	254	109	5	1.085	0.5473	28
<i>Cmtm4</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	193	47	18	236	33	4	1.223	0.0805	15
<i>Cmtm5</i>	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	164	47	18	208	37	5	1.268	0.0572	19
<i>Cmtm6</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	298	78	12	275	46	6	0.923	0.2232	22.5
<i>Cnbd1</i>	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	247	47	15	272	27	3	1.101	0.2352	12
<i>Cnih3</i>	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	203	60	20	194	40	6	0.956	0.4651	47.5
<i>Cnot4</i>	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	170	50	28	153	50	5	0.900	0.4362	54
<i>Cnot6</i>	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	270	86	14	266	74	5	0.985	1	34.5
<i>Cog6</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	144	46	18	102	14	4	0.708	0.0805	15
<i>Col24a1</i>	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	138	37	12	138	13	5	1.000	0.3163	20
<i>Col4a3bp</i>	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	104	31	13	116	40	5	1.115	0.5873	26.5
<i>Commd10</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	200	47	16	209	24	4	1.045	0.6699	27
<i>Copg</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	222	55	13	216	84	7	0.973	0.5517	37.5
<i>Coq4</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	319	77	18	282	81	10	0.884	0.1951	62.5
<i>Coro1c</i>	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	209	53	16	214	67	6	1.024	0.8536	45
<i>Coro6</i>	<tm1e(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	144	40	20	129	31	8	0.896	0.4012	63
<i>Cpsf3</i>	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	234	64	14	243	43	7	1.038	0.6014	41.5
<i>Cpsf3l</i>	<tm2b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	132	38	32	147	17	7	1.114	0.456	91
<i>Cpt2</i>	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	181	35	15	176	31	5	0.972	0.693	32.5
<i>Crb2</i>	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	133	37	10	120	47	6	0.902	0.7858	27
<i>Creb3l1</i>	<tm1e(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	291	60	10	239	53	6	0.821	0.115	11
<i>Crim1</i>	<em1Wtsi>	C57BL/6NTac	Heterozygote	M	70	23	22	96	22	6	1.371	0.0333	27.5
<i>Crip2</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	170	29	23	125	36	4	0.735	0.0315	14
<i>Crif3</i>	<tm1a(KOMP)Wtsi>	C57BL/6Brd-Tyr, C57BL/6Dnk, C57BL/6NTac	Homozygote	F	204	47	7	197	15	3	0.966	0.6667	8
<i>Cris1</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	88	19	23	87	34	6	0.989	0.9141	66.5
<i>Csmd1</i>	<em2Wtsi>	C57BL/6NTac	Homozygote	M	111	33	19	111	16	6	1.000	0.9239	55
<i>Csnk1g3</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	76	28	21	132	37	5	1.737	0.0076	11
<i>Ctr9</i>	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	144	37	11	161	41	6	1.118	0.2889	22
<i>Cttnbp2</i>	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	133	47	20	165	77	6	1.241	0.4467	47
<i>Cutal</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	180	62	26	169	40	7	0.939	0.708	82
<i>Cxcr1</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	143	43	21	158	58	4	1.105	0.6037	34.5
<i>Cxcr2</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	247	47	15	238	12	3	0.964	0.9055	21
Cyba	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	118	38	18	32	13	5	0.271	0.0009	0
Cybb	<tm1Din>	C57BL/6J	Homozygote	F	162	65	12	76	42	7	0.469	0.0077	10
<i>Cyfp1</i>	<tm2a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	249	82	10	261	38	7	1.048	0.6959	30.5
<i>Cyfp2</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	113	42	17	115	20	4	1.018	1	33.5
<i>Cyp11a1</i>	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	109	24	20	85	15	6	0.780	0.0357	25
<i>Cyp20a1</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	298	78	12	308	52	6	1.034	0.8513	33.5
<i>Cyp2b13</i>	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	179	50	23	214	80	6	1.196	0.4672	55
<i>Cyp2r1</i>	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	205	29	12	202	41	7	0.985	0.6398	36
<i>Cyp3a11</i>	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	191	50	18	203	32	3	1.063	0.0814	24
<i>D630023F18Rik</i>	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	159	46	17	200	41	6	1.258	0.0498	22.5

D7Erd443e	<tm2a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	155	47	22	160	44	4	1.032	0.9716	44
D930028M14Rik	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	97	34	24	76	24	5	0.784	0.1408	34
Daam2	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	229	57	16	223	79	5	0.974	0.5904	33
Dact3	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	141	45	23	167	25	5	1.184	0.2668	38.5
Daf2	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	270	52	19	286	43	5	1.059	0.668	41
Dap	<tm1a(KOMP)Mbp>	C57BL/6NTac	Homozygote	M	239	57	13	234	26	4	0.979	0.8207	23.5
Dapk2	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	130	37	25	128	42	6	0.985	0.98	74
Dbn1	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	186	37	13	194	43	5	1.043	0.9214	31
Dcaf11	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	168	45	18	208	68	8	1.238	0.1133	43
Dcbl2	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	178	54	12	229	86	4	1.287	0.2022	13
Dcdc2b	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	225	72	20	220	61	4	0.978	0.6701	34
Dcdc2c	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	198	41	12	239	29	4	1.207	0.078	9
Dclk1	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	206	55	17	234	32	6	1.136	0.2337	33.5
Dcn	<em2Wtsi>	C57BL/6NTac	Homozygote	M	111	33	19	142	51	5	1.279	0.2406	30.5
Dctn1	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	229	57	16	206	40	7	0.900	0.4618	44.5
Dcun1d3	<em2Wtsi>	C57BL/6NTac	Heterozygote	M	132	38	32	136	26	6	1.030	0.9922	95.5
Dcx	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	111	35	25	108	63	4	0.973	0.9748	50
Ddah1	<tm2a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	143	43	21	152	35	5	1.063	0.6962	46
Ddhd1	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	133	37	10	131	41	5	0.985	0.9507	25
Ddx42	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	225	37	19	174	50	5	0.773	0.0463	19
Ddx51	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	118	38	18	119	31	5	1.008	0.9702	44
Ddx55	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	142	39	13	120	42	5	0.845	0.2777	21
Def6	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	210	55	11	202	55	4	0.962	0.8447	20
Defb14	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	321	37	12	349	80	4	1.087	0.8075	21.5
Defb22	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	219	49	19	171	33	4	0.781	0.0739	15.5
Dennd1b	<tm1a(EUCOMM)Hmgu>	C57BL/6NTac	Homozygote	F	155	48	20	187	57	4	1.206	0.2611	25
Dennd1c	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	144	46	12	147	45	6	1.021	0.9252	34.5
Dennd4c	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	103	37	20	92	19	5	0.893	0.7858	45.5
Denr	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	105	27	23	120	21	4	1.143	0.1245	23
Dffb	<em1Wtsi>	C57BL/6NTac	Homozygote	M	88	21	21	90	19	4	1.023	0.6566	35.5
Dhodh	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	150	41	12	135	22	5	0.900	0.7122	26
Dhps	<tm2a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	149	46	20	148	30	5	0.993	0.9458	48.5
Dhrs2	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	231	63	9	309	12	4	1.338	0.0205	2.5
Dhx33	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	188	49	23	183	40	6	0.973	0.8505	65
Dhx35	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	104	39	21	125	20	3	1.202	0.2216	17
Dip2a	<tm2b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	278	77	17	331	36	4	1.191	0.1784	18.5
Dlg2	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	186	69	15	249	45	3	1.339	0.1384	9.5
Dlg3	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	141	36	23	173	40	4	1.227	0.1714	25.5
Dlg4	<tm1e(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	113	42	17	128	52	4	1.133	0.5015	26
Dmgdh	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	133	49	16	146	45	5	1.098	0.5356	32
Dmxl2	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	190	56	12	150	30	6	0.789	0.0832	17
Dnah17	<tm1e(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	109	24	20	96	23	5	0.881	0.5184	40
Dnajc8	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	121	34	15	98	19	5	0.810	0.1376	20
Dnase112	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	278	77	17	268	55	6	0.964	0.806	47
Dnmt3a	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	213	54	14	282	37	7	1.324	0.0111	14.5
Dnpep	<tm1e(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	260	80	17	326	41	4	1.254	0.0664	13
Donson	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	165	55	7	135	23	5	0.818	0.4641	12.5
Dopey2	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	113	53	4	110	23	4	0.973	1	8
Dph2	<tm2(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	175	76	15	237	40	3	1.354	0.1543	10
Dph6	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	185	48	16	390	22	5	2.108	0.001	0
Dpm1	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	164	36	13	167	26	5	1.018	0.8053	29.5
Dppa1	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	203	30	15	248	60	8	1.222	0.0865	33
Dpy30	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	120	21	15	162	24	4	1.350	0.0142	5
Dsc2	<tm1e(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	153	48	16	134	30	5	0.876	0.4565	30.5
Dscc1	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	169	55	17	129	24	4	0.763	0.0807	14
Dsg1b	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	142	39	11	119	30	8	0.838	0.3215	31.5
Dusp5	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	201	52	24	242	26	5	1.204	0.1185	32.5

Dynlrb1	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	205	57	8	152	45	5	0.741	0.1604	8.5
Dynlrb2	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	245	67	21	279	69	8	1.139	0.2513	60
Eci3	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	259	46	13	264	14	4	1.019	0.9545	26
Edc4	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	200	47	16	198	50	4	0.990	0.9245	30.5
Efna1	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	178	54	12	191	39	7	1.073	0.6418	36
Ehbp11	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	210	48	10	176	53	4	0.838	0.251	11.5
Eif2b2	<tm2a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	135	37	28	135	15	4	1.000	0.7967	51
Eif3h	<tm1a(EUCOMM)Hmgu>	C57BL/6NTac	Heterozygote	M	162	32	20	143	29	5	0.883	0.2086	31
Elac2	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	162	49	20	133	40	4	0.821	0.2452	24.5
Ell2	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	175	76	15	211	55	8	1.206	0.1966	39.5
Elmo1	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	141	36	23	137	13	3	0.972	0.9359	33
Enc1	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	144	40	20	133	48	7	0.924	0.3466	52.5
Endou	<tm1>	C57BL/6NTac	Homozygote	F	147	30	12	149	52	8	1.014	0.787	44
Enthd2	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	85	36	14	93	16	5	1.094	0.7457	31
Entpd1	<tm1a(EUCOMM)Wtsi/Hmgu>	C57BL/6Dnk	Homozygote	F	215	51	17	78	46	6	0.363	0.0004	0
Entpd6	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	210	48	10	194	53	8	0.924	0.4758	31.5
Erlin2	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	181	35	15	187	24	4	1.033	0.9201	28.5
Erp44	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	117	31	11	112	32	5	0.957	0.734	24
Esco1	<tm1(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	136	44	21	177	45	3	1.301	0.1625	15
Espn	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	214	59	12	198	40	8	0.925	0.9382	46.5
Evi5	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	216	60	15	182	95	3	0.843	0.4765	16
Exoc3l2	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	271	84	8	228	45	5	0.841	0.1709	10
Exosc9	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	97	34	24	81	35	5	0.835	0.4883	47.5
Expi	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	164	47	18	164	22	6	1.000	0.6405	46.5
Fads3	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	152	57	24	163	41	7	1.072	0.9811	83
Fam122c	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	180	62	26	149	33	9	0.828	0.1086	74
Fam160a1	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	70	23	22	92	18	5	1.314	0.086	27
Fam163a	<tm2b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	186	56	32	192	51	4	1.032	1	63.5
Fam175b	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	209	53	16	127	38	6	0.608	0.005	9.5
Fam21	<tm2b(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	69	17	10	86	18	7	1.246	0.1285	19
Fam212b	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	141	45	23	146	31	5	1.035	0.8808	54.5
Fam46c	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	134	39	20	137	36	8	1.022	0.7218	72.5
Fam47e	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	93	40	17	138	22	4	1.484	0.0315	9.5
Fam69a	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	170	54	22	161	59	5	0.947	0.8514	51.5
Fam92a	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	127	47	20	138	55	5	1.087	0.153	28.5
Fanci	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	203	38	16	191	63	4	0.941	0.8129	29
Fbf1	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	138	37	12	118	13	4	0.855	0.4662	17.5
Fbxo33	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	175	42	18	308	48	5	1.760	0.0009	0
Fbxo7	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	216	51	24	98	50	3	0.388	0.0038	3.5
Fbxw26	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	204	43	11	156	56	5	0.765	0.1399	14
Fdft1	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	156	46	18	166	45	6	1.064	0.4834	43
Fggy	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	247	98	12	192	43	12	0.777	0.2143	50
Fkbp3	<tm2a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	187	49	21	197	21	3	1.053	0.9652	30.5
Fnip2	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	170	54	22	176	76	9	1.035	0.6166	87
Frmf7	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	218	37	9	205	77	5	0.940	0.7386	19.5
Frrs1	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	193	45	8	267	42	5	1.383	0.019	3.5
Fryl	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	100	29	22	113	20	5	1.130	0.4169	41.5
Fut2	<em1Wtsi>	C57BL/6NTac	Homozygote	M	138	29	20	106	51	6	0.768	0.128	34.5
Fut8	<em1Wtsi>	C57BL/6NTac	Heterozygote	F	176	37	21	149	35	3	0.847	0.2214	17
Fxyd3	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	143	43	21	144	43	6	1.007	0.9767	62
Fzd6	<tm2a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	141	36	23	220	59	5	1.560	0.0082	13
G3bp2	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	201	52	24	235	69	5	1.169	0.2846	41
Galnt18	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	136	43	24	140	57	4	1.029	0.5992	39.5
Galntl5	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	179	50	23	182	61	5	1.017	0.6313	49

Gas2/2	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	79	29	21	102	21	5	1.292	0.2406	34
Gbf1	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	210	55	11	205	82	4	0.976	0.896	20.5
Gbp5	<em1Wtsi>	C57BL/6NTac	Homozygote	M	88	19	23	118	33	7	1.341	0.0131	29.5
Gda	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	83	29	26	104	42	5	1.253	0.1409	34
Gdpc2	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	133	43	25	125	36	5	0.940	0.5043	50
Gimap6	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	213	55	20	152	43	6	0.714	0.0224	22
Glcc	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	201	52	24	223	51	3	1.109	0.4864	26.5
Glg1	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	219	59	10	242	57	5	1.105	0.6676	21
Glo1	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	186	56	32	203	26	4	1.091	0.3647	45.5
Gltd2	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	166	45	16	202	50	4	1.217	0.2019	18
Glyatl3	<em1Wtsi>	C57BL/6NTac	Homozygote	M	100	26	12	121	24	5	1.210	0.1132	14.5
Gm12253	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	187	49	21	208	36	7	1.112	0.4901	60
Gm13119	<tm2b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	120	56	22	125	17	4	1.042	0.3934	31.5
Gm13125	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	213	58	22	194	27	6	0.911	0.654	57.5
Gm16379	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	273	60	19	284	49	6	1.040	0.75	51.5
Gm16432	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	115	34	19	155	36	4	1.348	0.0884	16.5
Gm5544	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	147	67	16	107	10	5	0.728	0.5355	32
Gm648	<tm1e(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	139	41	18	103	39	9	0.741	0.0448	41.5
Gm6578	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	107	36	20	116	27	9	1.084	0.3454	69.5
Gmds	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	234	106	17	232	106	7	0.991	0.9747	59.5
Gmnc	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	144	28	13	145	33	4	1.007	0.8651	24
Gnb3	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	119	29	17	215	17	3	1.807	0.0081	0
Gpatch1	<em2Wtsi>	C57BL/6NTac	Heterozygote	M	147	38	23	116	36	5	0.789	0.1495	33
Gpbp1/1	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	150	43	21	154	19	3	1.027	0.8272	28.5
Gpc5	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	270	86	14	250	52	8	0.926	0.4522	44.5
Gpr107	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	205	29	12	194	56	5	0.946	0.8324	27.5
Gpr133	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	236	60	10	226	46	5	0.958	0.8063	22.5
Gpr152	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	124	28	10	151	73	5	1.218	1	25
Gpr35	<tm1b(EUCOMM)Hmgu>	C57BL/6NTac	Homozygote	M	170	50	28	165	20	6	0.971	0.6513	73.5
Grb7	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	200	53	13	190	46	7	0.950	0.7213	40.5
Grm8	<tm2a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	186	45	10	245	13	3	1.317	0.0516	3
Grsf1	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	111	35	25	69	20	5	0.622	0.0154	18.5
Gsto2	<tm2a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	245	67	21	243	68	3	0.992	0.8614	29
Gtf2a1	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	142	39	13	103	25	3	0.725	0.1059	7
Gtf2h2	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	87	40	24	81	20	3	0.931	0.8772	33.5
Gtpbp3	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	90	21	19	127	40	7	1.411	0.0129	23
H2-Eb1	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	142	39	11	142	19	6	1.000	0.9599	33
Hacl1	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	210	55	11	148	58	4	0.705	0.1333	10
Hao2	<em1Wtsi>	C57BL/6NTac	Homozygote	M	70	23	22	80	25	4	1.143	0.6958	38
Hbs1/1	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	97	34	24	99	7	7	1.021	0.5704	71.5
Hdac8	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	227	36	13	222	21	5	0.978	0.6928	28
Hecw2	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	113	42	17	121	71	3	1.071	0.9577	25.5
Herc1	<em4Wtsi> (T1696G point mutation)	C57BL/6NTac	Homozygote	F	114	23	18	108	20	5	0.947	0.5507	36.5
Hibadh	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	137	44	18	123	40	5	0.898	0.5019	35.5
Hmgxb3	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	182	55	24	213	30	5	1.170	0.2365	39
Homez	<tm1e(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	119	29	17	108	30	4	0.908	0.5602	27
Hrsp12	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	152	57	24	143	51	5	0.941	0.7949	55
Hsp90aa1	<tm1(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	247	47	15	135	23	4	0.547	0.0031	0
Ido1	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	213	58	12	284	100	4	1.333	0.1296	11
Ifi27	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	127	25	30	127	42	7	1.000	0.9381	102.5
Ifitm3	<tm1Masu>	C57/129 mixed	Homozygote	F	177	58	12	207	28	15	1.169	0.1718	61.5
Ifitm6	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	150	39	18	194	63	5	1.293	0.0799	21
Ifnar1	<tm2a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	352	93	20	438	94	5	1.244	0.0832	24
Ifnlr1	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	149	46	20	145	52	4	0.973	0.8161	36.5
Ifi140	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	219	49	19	187	49	4	0.854	0.2911	24.5

<i>Ift80</i>	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	222	55	13	199	62	5	0.896	0.621	27
Ighm	<tm1(Cgn)>	C57BL/6J	Homozygote	F	205	94	9	339	34	5	1.654	0.0092	2.5
<i>Ii10rb</i>	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	192	45	19	171	97	4	0.891	0.3503	26
<i>Ii17re</i>	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	128	36	20	125	27	4	0.977	0.8768	37.5
<i>Ii18rap</i>	<em1Wtsi>	C57BL/6NTac	Homozygote	M	205	45	23	224	45	6	1.093	0.37670	52.0
<i>Ii1r2</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	206	55	17	233	33	5	1.131	0.3673	30.5
<i>Ii22ra1</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	200	47	16	211	19	4	1.055	0.4475	23.5
<i>Ii23r</i>	<tm2a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	168	54	13	213	23	4	1.268	0.1567	13
<i>Iidr1</i>	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	179	50	23	135	57	5	0.754	0.0818	28
<i>Ints2</i>	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	206	43	21	228	57	6	1.107	0.2082	44
<i>Irak1</i>	<tm1a(EUCOMM)HgmU>	C57BL/6NTac	Homozygote	M	118	38	18	113	32	4	0.958	1	35.5
Irf1	<tm1a(EUCOMM)Wtsi>	C57BL/6Brd-Tyr, C57BL/6Dnk, C57BL/6NTac	Homozygote	F	160	41	6	383	32	3	2.394	0.0238	0
<i>Irf5</i>	<tm1e(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	150	41	12	174	47	4	1.160	0.3316	15.5
Irf7	<tm1(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	156	12	57	288	97	9	1.846	0.0031	12
<i>Isg20</i>	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	151	58	12	161	34	7	1.066	0.6391	36
<i>Itn1</i>	<em1Wtsi>	C57BL/6NTac	Homozygote	M	203	60	20	159	45	6	0.783	0.128	34.5
<i>Izumo1r</i>	<tm2a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	124	21	11	120	7	5	0.968	0.6099	22.5
<i>Jhdm1d</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	156	46	18	166	25	5	1.064	0.7089	39.5
<i>Jmjd1c</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	206	43	21	171	42	8	0.830	0.0573	47
<i>Josd1</i>	<em2Wtsi>	C57BL/6NTac	Homozygote	F	114	23	18	124	31	5	1.088	0.4787	35
<i>Kcqh4</i>	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	127	25	30	144	55	3	1.134	0.3975	31
<i>Kcnp4</i>	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	291	60	10	322	73	5	1.107	0.623	20.5
<i>Kdm4d</i>	<tm2a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	144	63	5	106	66	5	0.736	0.4206	8
<i>Kera</i>	<em1Wtsi>	C57BL/6NTac	Homozygote	M	132	38	32	157	40	5	1.189	0.4551	62.5
<i>Kif13b</i>	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	170	50	22	182	4	5	1.071	0.7787	50
<i>Kif18b</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	109	42	18	92	57	4	0.844	0.443	26.5
<i>Kif24</i>	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	83	29	26	90	2	4	1.084	0.6694	41
<i>Kif3b</i>	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	164	36	13	138	30	7	0.841	0.1319	26
<i>Kifap3</i>	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	166	45	16	146	32	4	0.880	0.5075	24.5
<i>Klc2</i>	<tm1e(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	123	65	9	108	52	5	0.878	0.7386	15
<i>Klf17</i>	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	294	51	10	261	85	5	0.888	0.5941	20
<i>Klh18</i>	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	259	46	13	215	80	4	0.830	0.2113	14.5
<i>Klh21</i>	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	165	46	11	163	46	9	0.988	1	49
<i>Klh30</i>	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	72	29	23	47	16	4	0.653	0.0877	20.5
<i>Klk5</i>	<tm2a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	159	55	28	136	18	3	0.855	0.3323	27
<i>Klk9</i>	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	205	29	12	222	52	5	1.083	0.711	26
<i>Klrb1a</i>	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	158	49	18	165	53	4	1.044	0.8647	33.5
<i>Kptn</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	249	53	18	202	48	9	0.811	0.0604	44
<i>Krt31</i>	<tm1e(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	124	21	11	121	37	5	0.976	1	27
<i>Krt7</i>	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	156	46	18	165	65	8	1.058	0.6564	63.5
<i>L3mbt2</i>	<tm1e(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	218	45	18	158	48	5	0.725	0.0253	14.5
<i>Lacc1</i>	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	231	63	9	176	61	7	0.762	0.0712	14
<i>Lars</i>	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	185	35	25	206	56	4	1.114	0.2683	32
<i>Lce1m</i>	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	151	64	20	164	25	4	1.086	0.7565	35.5
<i>Lce3c</i>	<tm2a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	275	53	21	278	16	3	1.011	0.8621	29
<i>Ldhb</i>	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	83	29	26	106	22	6	1.277	0.0619	35.5
Ldlrad4	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	105	27	23	42	12	3	0.400	0.0063	0
<i>Leo1</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	170	50	22	157	44	5	0.924	0.7549	49.5
<i>Leprot</i>	<tm2a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	277	60	6	324	44	5	1.170	0.1255	6
<i>Lgals7</i>	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	277	62	11	271	41	7	0.978	0.4945	30.5
<i>Lix1l</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	193	47	18	172	36	7	0.891	0.3319	46.5
<i>Lmna</i>	<G609G>	C57BL/6NTac	Homozygote	F	152	51	19	158	11	6	1.039	0.8236	53
<i>Lonrf3</i>	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	113	42	17	142	73	3	1.257	0.6352	18
<i>Lpxn</i>	<tm1b(EUCOMM)HgmU>	C57BL/6NTac	Homozygote	M	109	24	20	80	40	6	0.734	0.0479	27
Lrig1	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	182	53	14	24	8	3	0.132	0.0098	0
<i>Lrrc23</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	188	49	23	207	27	3	1.101	0.47	0.25
<i>Lrrc71</i>	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	134	39	20	126	23	3	0.940	0.7492	26

Lrrc8d	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	159	55	28	151	52	3	0.950	0.9467	40.5
Lyplal1	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	137	32	19	121	5	4	0.883	0.3302	25.5
Lymr9	<tm1a(KOMP)Mbp>	C57BL/6NTac	Homozygote	M	159	46	17	183	66	3	1.151	0.5252	19
Macrocl1	<em1Wtsi>	C57BL/6NTac	Homozygote	M	132	30	26	109	13	6	0.826	0.0627	39
Mamstr	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	185	48	16	186	43	6	1.005	0.8247	44.5
Man2b2	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	273	60	19	241	38	4	0.883	0.2912	24.5
Map2k7	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	229	57	16	232	57	8	1.013	0.8301	60
Map3k1	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	117	31	11	122	32	4	1.043	0.7441	19
Mast2	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	196	56	20	153	37	4	0.781	0.2141	23.5
Mau2	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	169	55	17	128	19	3	0.757	0.1121	10
Mbl2	<em1Wtsi>	C57BL/6NTac	Homozygote	M	155	43	27	174	53	4	1.123	0.498	42
Mcf2l	<tm1a(EUCOMM)Hmgu>	C57BL/6NTac	Homozygote	F	200	47	16	187	69	7	0.935	0.6631	49
Med22	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	174	50	24	176	46	4	1.011	0.7175	42
Med23	<em1Wtsi>	C57BL/6NTac	Heterozygote	M	155	43	27	127	27	5	0.819	0.161	40
Medag	<tm2b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	236	60	10	267	45	3	1.131	0.4984	10.5
Mep1a	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	132	30	26	105	24	5	0.795	0.0718	31
Metrl	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	203	42	16	211	45	5	1.039	0.62	33.5
Mettl24	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	185	73	17	167	51	5	0.903	0.5829	35
Mgat4c	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	109	42	18	82	14	4	0.752	0.2671	22.5
Micu2	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	141	25	22	131	37	5	0.929	0.5733	45.5
Mier1	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	274	96	20	214	63	4	0.781	0.0956	18
mir122	<tm1Brd>	C57BL/6NTac	Homozygote	M	143	49	28	101	34	4	0.706	0.1462	30
mir145	<tm1Brd>	C57BL/6NTac	Heterozygote	F	160	44	19	146	62	4	0.913	0.5159	29.5
mir210	<tm1Brd>	C57BL/6NTac	Homozygote	F	179	50	23	186	40	5	1.039	0.7642	52
mir211	<tm1Brd>	C57BL/6NTac	Homozygote	M	155	40	21	134	14	5	0.865	0.2821	35.5
mir32	<tm1Brd>	C57BL/6NTac	Homozygote	M	104	39	21	101	16	6	0.971	0.9767	62
mir342	<tm1Brd>	C57BL/6NTac	Homozygote	M	111	33	19	123	30	6	1.108	0.4079	43.5
mir34a	<tm1Brd>	C57BL/6NTac	Homozygote	F	150	43	21	122	51	4	0.813	0.3939	30
mir96	<tm2.1Wtsi>	C57BL/6NTac	Heterozygote	M	136	44	21	125	21	5	0.919	0.5364	42.5
mir-96, mir-183 ('cluster6N1')	<tm1Brd>	C57BL/6NTac	Homozygote	M	170	50	22	223	27	3	1.312	0.1028	13
mir-25, mir-93, mir-106b ('cluster5N1')	<tm1Brd>	C57BL/6NTac	Homozygote	M	111	35	25	113	20	8	1.018	1	99.5
mir-18b, mir-106a ('clusterXN1')	<tm1Brd>	C57BL/6NTac	Homozygote	M	95	30	18	87	23	4	0.916	0.6093	29.5
Mkrm2	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	122	36	13	149	33	4	1.221	0.1918	14
Mospd1	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	218	45	18	198	55	5	0.908	0.4788	35
Mpg	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	209	49	14	195	48	3	0.933	0.8008	18.5
Mrm1	<tm2a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	203	42	16	178	41	6	0.877	0.1842	29.5
Mroh4	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	174	42	19	209	59	4	1.201	0.3506	26
Mroh9	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	133	43	25	164	26	6	1.233	0.1273	44
Mrps21	<tm1e(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	94	28	24	95	42	3	1.011	1	35.5
Mrps5	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	215	48	17	262	71	4	1.219	0.3022	22
Mtmt1	<tm2a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	170	50	28	156	34	6	0.918	0.366	63.5
Mtss1l	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	193	45	8	257	47	3	1.332	0.1521	4.5
Mybphl	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	193	45	8	173	41	5	0.896	0.5576	15.5
Myd88	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	274	96	20	317	34	3	1.157	0.2937	18
Myh14	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	193	47	18	200	47	6	1.036	0.9467	52.5
Myh7b	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	141	25	22	135	19	7	0.957	0.4907	63
Myo10	<tm2(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	197	50	13	178	22	5	0.904	0.5211	25.5
Myo7a	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	220	54	5	127	35	4	0.577	0.0491	1.5
Myo9a	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	200	53	13	200	50	8	1.000	0.9422	50.5
Mysm1	<tm1a(KOMP)Wtsi>	C57BL/6Dnk, C57BL/6NTac	Heterozygote	F	224	51	4	207	58	6	0.924	0.8307	10.5
Myt1l	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	181	59	16	159	67	5	0.878	0.4285	31
N6amt2	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	160	44	19	200	40	4	1.250	0.1554	20
Naaa	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	139	41	18	137	30	8	0.986	0.9336	70
Nacad	<tm1(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	200	47	16	237	29	5	1.185	0.0895	19
Nacc2	<tm2b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	134	39	20	151	44	6	1.127	0.4651	47.5
Nadk2	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	138	47	34	137	22	5	0.993	1	84.5
Nat10	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	173	49	13	200	84	4	1.156	0.4615	19

Natd1	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	168	45	18	193	36	5	1.149	0.2794	30
Nbeal2	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	197	54	10	44	15	5	0.223	0.0007	0
Ncf2	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	138	47	34	69	16	4	0.500	0.0062	10
Ndufb8	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	203	42	16	219	37	4	1.079	0.5385	25
Nebi	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	128	36	20	133	31	7	1.039	0.6575	61.5
Nek3	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	125	41	24	135	37	7	1.080	0.3949	65.5
Nek9	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	150	41	12	128	37	5	0.853	0.4932	23
Nelfe	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	88	19	23	88	34	6	1.000	0.4666	55
Nfkb1	<tm1a(KOMP)Wtsi>	C57BL/6Brd-Tyr, C57BL/6Dnk, C57BL/6NTac	Homozygote	F	174	55	12	150	60	4	0.862	0.9031	22.5
Nfkbil1	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	143	43	21	137	28	6	0.958	0.7928	58
Nfu1	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	115	34	19	119	18	4	1.035	0.5162	29.5
Ngrn	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	203	30	15	246	73	6	1.212	0.0671	21
Nhlrc2	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	76	28	21	86	11	7	1.132	0.5241	61
Nhp2	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	120	21	15	134	25	5	1.117	0.3364	26
Ninj2	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	176	39	7	193	32	3	1.097	0.7309	8.5
Nipsnap3a	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	155	40	21	158	72	4	1.019	0.9704	41
Nme4	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	213	54	14	187	81	6	0.878	0.5636	34.5
Nmrk1	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	147	54	18	102	43	7	0.694	0.0606	31.5
Npat	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	156	37	24	165	48	4	1.058	0.5767	39
Nrbp1	<tm3a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	206	77	19	208	78	6	1.010	0.9746	57
Nrde2	<tm2a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	237	58	14	176	41	4	0.743	0.063	10
Nubpl	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	213	58	22	207	48	5	0.972	0.8759	cc18
Nudt12	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	182	53	14	210	28	6	1.154	0.248	27.5
Nup85	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	294	51	10	282	46	5	0.959	0.5392	19.5
Nutm2	<tm2b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	158	49	18	133	37	5	0.842	0.2049	27.5
Nxn	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	218	45	18	153	36	4	0.702	0.0239	9
Oaf	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	206	77	19	178	67	5	0.864	0.5223	38
Oas1g	<tm3e(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	133	37	10	156	19	3	1.173	0.3506	9
Ocm	<tm1e(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	206	43	21	269	13	4	1.306	0.1044	8.5
Ogdh	<tm1e(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	218	60	15	210	56	8	0.963	0.9228	58
Olfir168	<KO>	C57BL/6NTac	Heterozygote	M	132	30	26	126	25	4	0.955	0.6915	45
Oog2	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	284	73	22	259	44	4	0.912	0.3189	29.5
Orc1	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	206	55	17	178	34	4	0.864	0.3029	22
Os9	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	213	54	14	208	79	4	0.977	1	27.5
Osbpl3	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	112	34	10	107	38	4	0.955	1	19.5
Otub2	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	172	32	12	197	32	5	1.145	0.2042	17.5
Otud7b	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	121	33	25	105	40	8	0.868	0.4239	80.5
Oxr1	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	166	50	6	184	48	5	1.108	0.6623	12
Pabpc4	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	206	77	19	187	19	6	0.908	0.7264	51
Pabpn1l	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	247	54	18	233	38	8	0.943	0.2658	51.5
Pam16	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	161	41	20	141	17	5	0.876	0.2088	31
BC029214	<em1(GB)Paxx>	C57BL/6NTac	Homozygote	M	170	50	22	197	23	6	1.159	0.3002	47
Pced1a	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	236	60	10	252	66	3	1.068	0.6923	12
Pdcd2	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	213	58	22	236	71	5	1.108	0.4727	43
Pdia4	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	240	51	15	230	32	5	0.958	0.5403	30
Pdk3	<tm2a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	191	50	18	194	74	5	1.016	0.8814	42.5
Pds5b	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	138	47	34	147	19	9	1.065	0.3244	119.5
Pdxk	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	144	40	20	177	57	4	1.229	0.2778	25.5
Pdzd3	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	260	52	18	292	68	8	1.123	0.2315	50
Pdzk1	<tm2b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	100	25	17	104	12	3	1.040	0.7505	22
Pear1	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	185	73	17	174	56	4	0.941	0.7535	30
Pepd	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	201	52	24	202	54	4	1.005	0.8954	45.5
Pfkb4	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	247	54	18	249	65	7	1.008	0.6067	54
Pgap2	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	125	41	24	126	39	5	1.008	0.8624	56.5
Pigf	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	110	31	18	102	34	5	0.927	0.7941	41
Pigl	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	173	49	13	185	65	8	1.069	0.7719	47.5
Pik3cg	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	162	45	25	447	53	4	2.759	0.0017	0

Pitrm1	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	147	67	16	114	55	7	0.776	0.3844	42.5
Pkhd1	<del2>	C57BL/6, 129S6/SvEvTac	Homozygote	F	101	31	10	96	41	4	0.950	0.8316	18
Pla2g6	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	234	106	17	209	110	5	0.893	0.7539	38
Pld3	<tm1e(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	116	26	21	107	22	10	0.922	0.3977	84.5
Plekhhg1	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	128	28	14	117	31	3	0.914	0.7053	17.5
Plet1	<tm2b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	209	34	21	218	25	4	1.043	0.7383	37
Pls3	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	185	73	17	125	22	3	0.676	0.168	12
Plscr2	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	133	47	20	113	32	5	0.850	0.2622	33
Plxna2	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	220	40	13	259	33	6	1.177	0.0789	18.5
Plxnb3	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	127	45	17	110	20	5	0.866	0.7539	38
Polb	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	147	54	18	153	25	5	1.041	0.7941	41
Pold3	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	121	33	25	101	28	4	0.835	0.2964	33
Polr3f	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	277	62	11	243	41	6	0.877	0.0559	13.5
Polr3g	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	162	35	13	127	43	6	0.784	0.0591	17
Pop4	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	191	66	26	168	70	6	0.880	0.7172	70
Ppil3	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	112	34	10	107	23	4	0.955	0.9451	19
Ppp6c	<tm1a(EUCOMM)Hgmu>	C57BL/6NTac	Heterozygote	F	149	26	7	148	23	3	0.993	1	10
Praf2	<tm1e(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	237	66	11	216	52	5	0.911	0.3072	18
Prame	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	167	45	17	149	47	5	0.892	0.4558	32.5
Prkab1	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	247	47	15	230	64	5	0.931	0.5395	30
Prrc2b	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	161	76	20	184	58	4	1.143	0.4617	30
Prrg2	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	168	54	13	128	27	4	0.762	0.1567	13
Prrt2	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	157	69	27	181	36	5	1.153	0.6591	58.5
Prss52	<tm2a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	170	50	28	197	59	6	1.159	0.231	57
Prss53	<em2Wtsi>	C57BL/6NTac	Homozygote	M	205	45	23	187	46	5	0.912	0.6518	49.5
Psat1	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	141	36	23	114	30	5	0.809	0.1579	33.5
Dlg4	<tm1Grnt>	C57BL/6;129	Homozygote	M	108	32	9	112	50	3	1.037	0.9262	12.5
Psph	<tm1a(EUCOMM)Hmgmu>	C57BL/6NTac	Heterozygote	M	249	35	14	287	57	4	1.153	0.1844	15
Pth	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	299	67	13	291	81	8	0.973	0.9422	50.5
Pth1r	<tm1a(EUCOMM)Hmgmu>	C57BL/6NTac	Heterozygote	M	168	54	13	145	57	3	0.863	0.4192	13
Pth2r	<tm2a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	193	45	8	183	66	4	0.948	1	16
Pthlh	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	201	52	14	177	38	7	0.881	0.4996	39.5
Ptprd	<tm2a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	124	28	10	141	59	4	1.137	0.9451	19
Pus10	<tm1a(EUCOMM)Hgmu>	C57BL/6NTac	Homozygote	M	119	29	17	119	27	3	1.000	0.9577	24.5
Pwp1	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	155	47	22	185	36	5	1.194	0.2355	35.5
Pycr2	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	133	40	32	154	38	5	1.158	0.2664	54.5
Rab15	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	203	30	15	183	22	3	0.901	0.342	14
Rab17	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	109	42	18	107	34	4	0.982	0.8312	33
Rab21	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	120	56	22	143	53	6	1.192	0.3409	48.5
Rab5c	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	239	57	13	239	63	4	1.000	0.9545	25
Rala	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	205	57	8	170	65	6	0.829	0.3006	15.5
Ralgapb	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	153	38	7	190	70	4	1.242	0.5074	10
Ralgs2	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	203	30	15	194	24	4	0.956	0.6146	24.5
Raph1	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	144	46	18	121	32	5	0.840	0.4335	34
Rasal2	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	260	52	18	52	33	3	0.200	0.0077	0
Rasgrp4	<tm2a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	204	43	11	233	32	3	1.142	0.3908	10.5
Rassf1a	<tm1.2Brd>	C57BL/6Brd-Tyr, C57BL/6J, 129S5/SvEvBrd	Homozygote	F	233	54	5	251	48	4	1.077	0.5556	7
Rbak	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	175	14	18	185	30	3	1.057	0.8404	24.5
Rbm14	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	159	46	17	147	50	4	0.925	0.72	29.5
Rbm33	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	121	38	16	143	53	6	1.182	0.3964	36
Rbm47	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	218	60	15	144	51	5	0.661	0.0232	11
Rbmx	<tm2a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	218	37	9	179	22	4	0.821	0.0755	6
Rcor2	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	220	96	12	226	63	6	1.027	1	35.5
Reg3d	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	174	42	19	195	71	4	1.121	0.598	31
Reg3g	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	190	56	12	189	31	9	0.995	1	53.5
Repin1	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	206	55	17	156	17	4	0.757	0.0438	11
Rftn2	<tm1e(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	281	51	12	347	49	5	1.235	0.0814	13

<i>Rhox13</i>	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	213	58	12	272	87	5	1.277	0.1398	15.5
<i>Rimbp2</i>	<em1Wtsi>	C57BL/6NTac	Homozygote	M	88	21	21	99	20	5	1.125	0.2545	34.5
<i>Rnaseh2c</i>	<tm1(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	142	39	11	148	48	5	1.042	0.734	24
<i>Rnasek</i>	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	162	45	25	141	43	6	0.870	0.4531	59.5
<i>Rnf10</i>	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	141	36	23	497	94	5	3.525	0.0006	0
<i>Rnf125</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	187	49	21	202	35	6	1.080	0.7045	56
<i>Rnf138</i>	<tm1b(EUCOMM)Hmgmu>	C57BL/6NTac	Homozygote	M	154	49	21	163	19	5	1.058	0.5152	42
<i>Rnf157</i>	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	114	24	9	107	30	4	0.939	0.6425	13.5
<i>Ropn1l</i>	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	151	58	12	190	94	4	1.258	0.3617	16
<i>Rpgrip1l</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	88	19	23	86	34	5	0.977	0.4895	45.5
<i>Rpia</i>	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	114	24	9	131	36	5	1.149	0.4232	16
<i>Rsad1</i>	<tm1(KOMP)Vlcb>	C57BL/6NTac	Homozygote	F	193	47	18	236	57	5	1.223	0.2315	28.5
<i>Rspo4</i>	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	85	36	14	94	51	4	1.106	0.7497	24.5
<i>Rufy2</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	266	53	13	293	11	3	1.102	0.2712	8
<i>Rundc1</i>	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	196	57	15	138	41	6	0.704	0.0321	17
<i>Sap130</i>	<tm1a(KOMP)Mbp>	C57BL/6NTac	Heterozygote	F	155	48	20	176	43	4	1.135	0.4615	30
<i>Sc4mol</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	174	50	24	106	29	3	0.609	0.0405	9
<i>Scn3b</i>	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	183	51	15	271	111	5	1.481	0.0733	16.5
<i>Sec1</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	174	57	22	210	46	3	1.207	0.2403	18.5
<i>Sec22b</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	172	59	10	150	40	7	0.872	0.4057	26
<i>Sel1l</i>	<tm1e(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	186	45	10	204	32	5	1.097	0.2695	15.5
<i>Selk</i>	<tm1b(EUCOMM)wtsi>	C57BL/6NTac	Homozygote	M	165	46	11	186	29	4	1.127	0.2387	12.5
<i>Sema7a</i>	<tm1Alk>	C57BL/6, 129S6/SvEvTac	Homozygote	M	123	34	11	129	65	12	1.049	0.7817	61
<i>Sept10</i>	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	260	80	17	266	122	4	1.023	0.9643	34
<i>Sepw1</i>	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	175	37	14	176	24	5	1.006	0.781	31.5
<i>Serinc3</i>	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	167	45	17	217	69	6	1.299	0.0858	26
<i>Serpina3c</i>	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	120	21	15	161	35	4	1.342	0.0186	6
<i>Setd1a</i>	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	151	42	17	158	20	6	1.046	0.8335	47.5
<i>Setd4</i>	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	218	37	9	200	27	5	0.917	0.4629	16.5
<i>Setd5</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	128	58	14	108	23	5	0.844	0.7456	31
<i>Sfxn3</i>	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	113	42	17	118	66	4	1.044	0.9643	34
<i>Sgms1</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	160	44	19	158	33	3	0.988	1	28
<i>Sgol1</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	178	66	16	164	19	5	0.921	0.3423	28
<i>Sgsm1</i>	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	175	42	18	186	56	5	1.063	0.6017	37.5
<i>Sh2d5</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	227	63	25	243	67	3	1.070	0.7659	33
<i>Sh3bgrl3</i>	<tm2b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	186	56	32	149	22	6	0.801	0.0655	49.5
<i>Sh3bp4</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	152	49	19	128	20	4	0.842	0.1442	19.5
<i>Sh3pxd2a</i>	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	155	40	21	110	44	4	0.710	0.1278	21
<i>Sirt3</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	148	38	9	140	27	8	0.946	0.4114	27
<i>Skida1</i>	<tm1(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	191	66	26	168	91	6	0.880	0.2665	54.5
<i>Slamf9</i>	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	111	33	19	114	40	5	1.027	0.4552	36.5
<i>Slc16a4</i>	<tm2e(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	147	54	18	165	54	5	1.122	0.5762	37
<i>Slc16a6</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	229	57	16	225	77	6	0.983	0.6312	41
<i>Slc1a4</i>	<tm1e(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	222	55	13	220	22	6	0.991	0.8603	36.5
<i>Slc20a2</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	142	39	13	142	59	4	1.000	0.865	24
<i>Slc25a20</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	144	40	20	131	29	7	0.910	0.5063	57.5
<i>Slc25a28</i>	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	237	58	14	265	24	4	1.118	0.428	20
<i>Slc25a30</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	192	45	19	134	52	3	0.698	0.0618	8.5
<i>Slc38a2</i>	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	138	37	12	141	49	4	1.022	1	23.5
<i>Slc5a7</i>	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	178	66	16	144	48	8	0.809	0.1252	38.5
<i>Slc9a3r2</i>	<tm2a(EUCOMM)Hmgmu>	C57BL/6NTac	Homozygote	M	97	34	24	291	107	5	3.000	0.0035	9
<i>Sliitrk4</i>	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	156	46	18	155	58	7	0.994	0.9758	62
<i>Slu7</i>	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	85	36	14	66	24	7	0.776	0.2472	33
<i>Slx4ip</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	239	57	16	230	28	7	0.962	0.5929	47.5
<i>Smg1</i>	<tm1b(EUCOMM)Hgmua>	C57BL/6NTac	Heterozygote	M	111	30	24	92	37	5	0.829	0.248	39.5
<i>Smpd4</i>	<tm2b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	52	36	3	47	14	3	0.904	1	4
<i>Sms</i>	<tm1a(EUCOMM)Wtsi>	C57BL/6Brd-Tyr, C57BL/6Dnk, C57BL/6NTac	Heterozygote	F	216	80	12	264	80	8	1.222	0.2799	33.5

Smyd5	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	174	50	24	86	49	5	0.494	0.0094	8
Snx31	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	240	51	15	218	64	5	0.908	0.2947	25
Snx8	<tm2a(EUCOMM)Hmgu>	C57BL/6NTac	Homozygote	F	209	34	21	255	26	5	1.220	0.019	16
Spata25	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	142	48	16	163	36	5	1.148	0.4328	30
Spink10	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	197	67	12	137	32	5	0.695	0.0651	12
Spink14	<tm1e(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	352	93	20	350	41	4	0.994	0.9382	38.5
Spnb2	<tm1a(EUCOMM)Wtsi>	C57BL/6Brd-Tyr, C57BL/6NTac	Heterozygote	F	137	46	8	146	41	7	1.066	0.7719	25
Spns2	<tm1a(KOMP)Wtsi>	C57BL/6Brd-Tyr, C57BL/6Dnk, C57BL/6NTac	Homozygote	M	231	76	8	29	20	5	0.126	0.0016	0
Spopl	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	181	35	15	183	21	3	1.011	0.812	20
Sqle	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	249	35	14	208	47	4	0.835	0.111	12.5
Srrm4	<tm1e(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	165	46	11	163	48	9	0.988	0.7609	45
Srsf7	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	213	54	14	236	8	4	1.108	0.1517	14
Ssbp1	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	319	77	18	292	52	6	0.915	0.3678	40
Ssr2	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	127	25	30	131	25	7	1.031	0.461	85.5
Stard8	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	196	56	20	209	29	7	1.066	0.524	58
Stau2	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	80	21	21	101	23	5	1.263	0.1032	27
Stxbp4	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	167	36	15	123	50	4	0.737	0.1766	16
Sult1c1	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	123	35	20	136	19	4	1.106	0.642	33.5
Supt3	<tm1a(EUCOMM)HgmU>	C57BL/6NTac	Heterozygote	M	141	36	23	127	25	5	0.901	0.548	47
Supt5	<tm2a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	128	28	14	135	47	5	1.055	0.817	32
Syt1	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	229	57	16	202	66	5	0.882	0.2634	26
Taf11	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	69	17	10	75	33	5	1.087	0.7131	21.5
Tatdn3	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	198	41	12	212	41	5	1.071	0.5599	24
Tbcd122a	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	83	29	26	42	25	7	0.506	0.0051	27
Tceal5	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	171	45	12	190	40	6	1.111	0.3726	26
Tcf4	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	203	38	16	176	42	5	0.867	0.1999	24
Tcf7l2	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	203	30	15	202	55	4	0.995	0.6165	24.5
Tchp	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	240	51	15	250	28	3	1.042	0.7669	19.5
Tcp11	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	155	48	20	150	50	4	0.968	0.8768	37.5
Tcte1	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	165	46	11	145	17	6	0.879	0.5131	26
Tctex1d2	<tm1e(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	249	35	14	241	33	6	0.968	0.8689	39.5
Tead3	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	274	96	20	263	50	6	0.960	0.345	44
Tet1	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	170	34	19	160	33	6	0.941	0.5452	47
Tex38	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	138	38	24	154	19	5	1.116	0.5444	49
Tff1	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	159	55	28	150	21	3	0.943	0.6639	35
Tgfb1i1	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	191	67	20	180	62	5	0.942	0.6101	42
Tgm6	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	128	28	14	55	41	4	0.430	0.0126	4
Tigar	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	155	43	27	136	31	7	0.877	0.2329	66
Timeless	<tm1b(EUCOMM)Hmgu>	C57BL/6NTac	Heterozygote	M	121	38	16	152	11	4	1.256	0.0375	9.5
Timmdc1	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	109	42	18	129	29	6	1.183	0.182	33.5
Tmc3	<tm2b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	160	44	19	130	40	3	0.813	0.2921	17
Tmem110	<tm2b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	155	38	13	154	36	4	0.994	0.8437	30
Tmem126a	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	164	47	18	149	57	3	0.909	0.8061	24
Tmem127	<tm1(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	201	52	24	206	29	5	1.025	0.6025	50.5
Tmem178b	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	143	49	28	127	28	4	0.888	0.6484	47.5
Tmem18	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	104	39	21	93	68	3	0.894	0.5411	24
Tmem241	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	111	34	19	101	20	6	0.910	0.4642	45
Tmem254b	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	200	47	16	240	26	3	1.200	0.1288	10
Tmem30a	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	151	64	20	204	44	5	1.351	0.0829	24
Tmem37	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	159	55	28	130	22	4	0.818	0.1996	33
Tmem42	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	138	45	19	152	22	3	1.101	0.9238	27
Tnik	<tm3a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	230	29	10	213	91	3	0.926	0.5536	11
Tomm20l	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	147	30	12	183	44	9	1.245	0.0949	30
Traf2	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	249	43	23	267	27	5	1.072	0.5077	46
Traf6	<tm2a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	115	31	12	143	42	4	1.243	0.3316	15.5
Tram2	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	178	66	16	158	62	5	0.888	0.4082	29.5
Trappc10	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	185	35	25	191	35	4	1.032	0.8743	47

Trappc9	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	152	57	24	163	40	5	1.072	0.931058	83
Trem1	<tm1(KOMP)Vlcg>	C57BL/6NTac	Homozygote	F	300	83	17	211	52	7	0.703	0.0172	21.5
Trex1	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	234	106	17	210	52	3	0.897	0.6714	21
Trim17	<tm1e(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	148	38	9	146	38	5	0.986	1	22
Trim21	<em1Wtsi>	C57BL/6NTac	Homozygote	M	154	49	21	181	10	4	1.175	0.0494	15
Trim25	<tm2a(EUCOMM)Hmgu>	C57BL/6NTac	Homozygote	M	159	55	28	133	27	5	0.836	0.2581	47
Trim29	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	193	47	18	200	46	3	1.036	1	26.5
Trim38	<tm1a(EUCOMM)Hmgu>	C57BL/6NTac	Homozygote	M	119	43	26	109	60	5	0.916	0.6479	56
Trim45	<tm1a(KOMP)Wtsi>	C57BL/6Brd-Tyr, C57BL/6Dnk, C57BL/6NTac	Heterozygote	M	121	38	16	120	46	8	0.992	0.8302	60
Trim56	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	137	44	18	182	43	4	1.328	0.0807	15
Trim65	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	155	40	21	160	60	7	1.032	0.9576	72
Trmt2a	<tm2b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	174	42	19	212	44	5	1.218	0.088	23
Trp53rk	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	294	51	10	259	30	5	0.881	0.2186	14.5
Trub2	<tm2a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	112	34	10	114	25	4	1.018	0.9451	19
Tsfm	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	120	21	15	145	40	3	1.208	0.3425	14
Ttll11	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	298	78	12	274	70	10	0.919	0.3219	44.5
Tuba3a	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	151	64	20	165	30	6	1.093	0.7378	54
Tuft1	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	239	57	16	134	31	5	0.561	0.0026	3
Ubash3a	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	128	58	14	136	67	4	1.063	0.71	24
Ube2d1	<tm3e(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	95	30	18	80	27	5	0.842	0.3142	31
Ubxn10	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	116	26	21	113	28	7	0.974	0.7704	67.5
Uevld	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	123	65	9	130	50	4	1.057	0.8252	16
Umodl1	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	171	33	7	149	24	5	0.871	0.1021	24
Unk	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	88	19	23	92	8	7	1.045	0.2691	57.5
Upb1	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	185	35	25	192	63	4	1.038	0.5066	39
Uri1	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	196	57	15	112	3	3	0.571	0.0091	0
Ush1c	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	139	41	18	191	99	5	1.374	0.232	28.5
Ushbp1	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	151	58	12	129	37	4	0.854	0.6687	20
Usp11	<tm1(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	120	21	15	135	24	5	1.125	0.4063	27.5
Usp20	<tm1a(EUCOMM)Hmgu>	C57BL/6NTac	Homozygote	F	249	53	18	267	61	5	1.072	0.6279	38
Usp21	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	172	32	12	143	24	5	0.831	0.0716	12.5
Usp22	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	201	52	24	233	8	6	1.159	0.091	39
Usp24	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	211	63	12	272	15	6	1.289	0.0192	10.5
Usp3	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	233	58	17	261	42	6	1.120	0.02918	35.5
Usp30	<tm2a(EUCOMM)Hmgu>	C57BL/6NTac	Homozygote	M	105	30	15	93	30	7	0.886	0.6204	45
Usp37	<em1Wtsi>	C57BL/6NTac	Heterozygote	F	150	43	21	181	46	5	1.207	0.1718	31
Usp4	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	105	30	15	104	18	3	0.990	1	22
Usp44	<tm1b(EUCOMM)Hmgu>	C57BL/6NTac	Homozygote	M	138	29	20	136	36	5	0.986	0.7597	45
Usp5	<tm1a(EUCOMM)Hmgu>	C57BL/6NTac	Heterozygote	M	162	49	20	118	41	6	0.728	0.0634	29
Vamp3	<tm2a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	170	50	22	240	90	4	1.412	0.1767	24.5
Vps13a	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	133	40	32	128	25	4	0.962	0.6869	55.5
Vps33b	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	294	51	10	315	49	6	1.071	0.5502	24
Vps51	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	218	37	9	215	43	5	0.986	0.7893	20
Vps53	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	220	96	12	246	54	7	1.118	0.6724	36.5
Vps72	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	173	49	13	223	73	4	1.289	0.3355	17
Vwa3a	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	155	40	21	131	54	6	0.845	0.3491	46.5
Wac	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	79	29	21	75	16	7	0.950	0.5241	61
Wbp5	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	181	35	15	183	26	5	1.011	0.9303	36
Wdr89	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	130	37	25	179	32	4	1.377	0.0209	13
Wdtdc1	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	153	51	19	180	47	4	1.176	0.2553	23.5
Wfikkn2	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	242	60	19	273	45	5	1.128	0.2705	31.5
Wnt16	<tm2b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	242	60	19	202	58	4	0.835	0.256	23.5
Wnt3	<tm2a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	227	63	25	211	60	8	0.930	0.5411	85
Wrap53	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	175	14	18	143	33	5	0.817	0.1455	25
Xkrx	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	121	34	15	118	31	5	0.975	0.7933	34
Xpnpep1	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	M	183	51	15	201	63	9	1.098	0.6328	59
Xxylt1	<tm1a(EUCOMM)Hmgu>	C57BL/6NTac	Homozygote	F	261	47	21	262	87	5	1.004	0.8191	48.5

Ydjc	<tm1(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	185	73	17	133	66	4	0.719	0.1379	17
Yipf7	<tm1e(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	118	38	18	144	38	5	1.220	0.1919	27
Ypel4	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	242	60	19	255	93	6	1.054	0.2793	39.5
Zbed5	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	127	25	30	111	32	3	0.874	0.5105	34
Zc3h14	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	93	40	17	112	7	5	1.204	0.1827	25
Zcchc14	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Heterozygote	F	200	54	13	204	109	6	1.020	0.5003	36.5
Zfp182	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	191	67	20	193	40	5	1.010	0.8116	46
Zfp239	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	110	45	20	135	37	5	1.227	0.2344	32
Zfp266	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	103	37	20	100	26	9	0.971	0.9062	87
Zfp287	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	138	37	12	164	19	4	1.188	0.145	11.5
Zfp341	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	109	24	20	107	32	5	0.982	0.7857	45.4
Zfp365	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	174	42	19	141	43	4	0.810	0.2235	22.5
Zfp408	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	M	104	39	21	99	9	3	0.952	0.9304	30
Zfp616	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	122	36	13	159	17	4	1.303	0.1125	11.5
Zfp658	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	158	49	18	170	51	6	1.076	0.5709	45
Zfp719	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	220	96	12	230	79	7	1.045	0.8657	39.5
Zfp763	<em1Wtsi>	C57BL/6NTac	Homozygote	M	203	60	20	225	7	4	1.108	0.4384	29.5
Zfp791	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	196	57	15	184	99	4	0.939	0.7258	26
Zfp84	<tm1b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	119	43	26	141	46	4	1.185	0.3601	36.5
Zfp879	<tm2b(KOMP)Wtsi>	C57BL/6NTac	Homozygote	M	87	40	24	42	30	5	0.483	0.0225	20
Zfyve20	<tm1a(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	F	133	37	10	136	26	5	1.023	0.7588	22
Zfyve28	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Homozygote	F	175	42	18	102	6	4	0.583	0.0038	1.5
Zkscan1	<tm1b(EUCOMM)Wtsi>	C57BL/6NTac	Heterozygote	M	227	36	13	222	61	8	0.978	0.772	47.5
Zranb1	<tm1a(EUCOMM)Hmgu>	C57BL/6NTac	Homozygote	F	259	46	13	203	71	8	0.784	0.0581	25.5
Zscan2	<tm1a(KOMP)Wtsi>	C57BL/6NTac	Homozygote	F	142	39	11	195	49	8	1.373	0.0474	19.5

SI Table 2. Results of the Integrative Data Analysis (IDA). IDA was performed on experimental metastasis assay data from mutant mouse lines tested in ≥ 2 independent cohorts. Shown in the top box are mutant lines that were significant from stage 1 of the screen (39/810, 5%), and were found to be significant by IDA ($P < 0.01$; 23/39, 59%); termed "hit". Green indicates mice with an increased metastatic burden and red indicates mice with a decreased metastatic burden (the magnitude of the burden is indicated by the "genotype effect"). The genes are listed in order of "genotype effect". Shown in the middle box (in blue) are mutant lines that were significant from stage 1 of the screen, and were not found to be significant by IDA ($P > 0.01$; 16/39, 41%); termed "false positive". Shown in the bottom box (in black) are mutant lines which were not significant from stage 1 of the screen (102/810, 12%) for which additional cohorts were tested to ensure the selection criteria from stage 1 was not too stringent; termed "repeated negative". F, female; M, male; SE, standard error.

Gene	No. cohorts	Genders	Genotype estimate	SE	Adjusted P value	Classification
<i>Irf1</i>	4	1M, 3F	236	27	1.170E-06	"hit"
<i>Rnf10</i>	5	2M, 3F	217	16	0.000E+00	"hit"
<i>Pik3cg</i>	6	4M, 2F	196	14	1.284E-12	"hit"
<i>Dph6</i>	4	2M, 2F	194	23	4.677E-05	"hit"
<i>Slc9a3r2</i>	6	5M, 1F	137	21	3.026E-05	"hit"
<i>Ighm</i>	6	4M, 2F	101	13	3.741E-08	"hit"
<i>Irf7</i>	6	3M, 3F	97	15	7.896E-06	"hit"
<i>Abhd17a</i>	5	3M, 2F	70	15	7.520E-03	"hit"
<i>Grsf1</i>	6	4M, 2F	-54	5	6.105E-11	"hit"
<i>BC017643</i>	9	4M, 5F	-57	12	2.712E-04	"hit"
<i>Cybb</i>	5	2M, 3F	-66	7	6.464E-12	"hit"
<i>Fam175b</i>	4	2F, 2M	-69	11	1.682E-04	"hit"
<i>Bach2</i>	6	3M, 3F	-72	9	5.092E-12	"hit"
<i>Ncf2</i>	5	3M, 2F	-75	6	3.247E-11	"hit"
<i>Arhgef1</i>	4	2M, 2F	-87	7	6.617E-09	"hit"
<i>Fbxo7</i>	4	1M, 3F	-93	17	2.141E-05	"hit"
<i>Tbcl22a</i>	5	3M, 2F	-94	10	0.000E+00	"hit"
<i>Entpd1</i>	4	1M, 3F	-96	16	1.266E-06	"hit"
<i>Lrig1</i>	5	2M, 3F	-97	11	1.904E-12	"hit"
<i>Hsp90aa1</i>	4	1M, 3F	-102	13	3.616E-06	"hit"
<i>Cyba</i>	4	2M, 2F	-106	8	0.000E+00	"hit"
<i>Nbeal2</i>	4	1M, 3F	-125	13	0.000E+00	"hit"
<i>Spns2</i>	9	6M, 3F	-155	7	0.000E+00	"hit"
<i>Apool</i>	2	1M, 1F	-70	20	0.116	"false positive"
<i>Arid1b</i>	4	2M, 2F	-38	13	0.442	"false positive"
<i>4931429L15Rik</i>	3	3M	-35	12	0.461	"false positive"
<i>Uri1</i>	2	2M	-72	27	0.768	"false positive"
<i>Acer1</i>	5	3M, 2F	-33	13	0.998	"false positive"
<i>Adal</i>	5	5M	-3	7	0.998	"false positive"
<i>Atad3a</i>	3	2M, 1F	-41	18	0.998	"false positive"
<i>Csnklg3</i>	3	3M	25	12	0.998	"false positive"
<i>Fbxo33</i>	3	3M	42	25	0.998	"false positive"
<i>Gnb3</i>	5	4M, 1F	13	9	0.998	"false positive"
<i>Ldlrad4</i>	8	4M, 4F	35	24	0.998	"false positive"
<i>Rasa12</i>	3	3F	-26	24	0.998	"false positive"
<i>Smyd5</i>	4	2M, 2F	-14	29	0.998	"false positive"
<i>Tgm6</i>	2	1M, 1F	-16	17	0.998	"false positive"
<i>Tuft1</i>	2	2F	-48	19	0.998	"false positive"
<i>Zfyve28</i>	2	1M, 1F	-16	29	0.998	"false positive"

<i>Lacc1</i>	5	3M, 2F	-57	15	0.016	"repeated negative"
<i>Rbmx</i>	2	2F	-49	14	0.113	"repeated negative"
<i>Exoc3l2</i>	3	1M, 2F	-68	20	0.164	"repeated negative"
<i>Mier1</i>	3	1M, 2F	-56	18	0.218	"repeated negative"
<i>Zfp182</i>	3	2M, 1F	37	13	0.363	"repeated negative"
<i>Psat1</i>	2	2M	-47	17	0.572	"repeated negative"
<i>Psd95</i>	3	1M, 2F	64	23	0.611	"repeated negative"
<i>Natd1</i>	2	2F	79	29	0.7	"repeated negative"
<i>Klh18</i>	3	1M, 2F	-68	28	0.743	"repeated negative"
<i>Cd300lg</i>	2	1M, 1F	-68	26	0.958	"repeated negative"
<i>Map3k1</i>	3	2M, 1F	-52	20	0.958	"repeated negative"
<i>1110037F02Rik</i>	2	1M, 1F	28	26	0.998	"repeated negative"
<i>2810417H13Rik</i>	3	1M, 2F	-19	13	0.998	"repeated negative"
<i>3110035E14Rik</i>	2	2F	22	20	0.998	"repeated negative"
<i>Abhd14a</i>	2	2M	44	20	0.998	"repeated negative"
<i>Acaa1a</i>	2	1M, 1F	10	31	0.998	"repeated negative"
<i>Actl10</i>	3	2M, 1F	-9	13	0.998	"repeated negative"
<i>Actr6</i>	2	2M	40	38	0.998	"repeated negative"
<i>Akt2</i>	3	2M, 1F	21	23	0.998	"repeated negative"
<i>Ano10</i>	2	2F	21	16	0.998	"repeated negative"
<i>Arsg</i>	3	1M, 2F	-13	25	0.998	"repeated negative"
<i>Brd8</i>	3	2M, 1F	3	24	0.998	"repeated negative"
<i>Ccdc160</i>	2	1M, 1F	-37	37	0.998	"repeated negative"
<i>Ccl22</i>	3	1M, 2F	37	17	0.998	"repeated negative"
<i>Cnot6</i>	2	1M, 1F	21	26	0.998	"repeated negative"
<i>Col4a3bp</i>	4	2M, 2F	23	20	0.998	"repeated negative"
<i>Copg</i>	5	3M, 2F	-2	14	0.998	"repeated negative"
<i>Cpsf3</i>	3	2M, 1F	-19	17	0.998	"repeated negative"
<i>Crip2</i>	2	1M, 1F	-5	8	0.998	"repeated negative"
<i>Cyfp1</i>	3	1M, 2F	17	20	0.998	"repeated negative"
<i>Cyp3a11</i>	2	2F	30	15	0.998	"repeated negative"
<i>D7Ert443e</i>	3	3M	-4	15	0.998	"repeated negative"
<i>Defb14</i>	2	2F	10	35	0.998	"repeated negative"
<i>Dennd1c</i>	2	1M, 1F	-20	19	0.998	"repeated negative"
<i>Dlg2</i>	4	2M, 2F	6	17	0.998	"repeated negative"
<i>Dlg3</i>	2	1M, 1F	43	27	0.998	"repeated negative"
<i>Ell2</i>	2	2M	31	21	0.998	"repeated negative"
<i>Elmo1</i>	3	1M, 2F	0	18	0.998	"repeated negative"
<i>Enthd2</i>	2	1M, 1F	-7	12	0.998	"repeated negative"
<i>Erp44</i>	2	1M, 1F	7	19	0.998	"repeated negative"
<i>Espn</i>	3	2M, 1F	-37	17	0.998	"repeated negative"
<i>Fbxw26</i>	2	2M	37	24	0.998	"repeated negative"
<i>Fnip2</i>	2	2M	10	16	0.998	"repeated negative"
<i>Folr4</i>	2	2M	-38	16	0.998	"repeated negative"
<i>Gbf1</i>	2	1M, 1F	33	25	0.998	"repeated negative"
<i>Gdpd2</i>	2	2M	-14	14	0.998	"repeated negative"
<i>Glg1</i>	2	2F	15	22	0.998	"repeated negative"
<i>Gm16432</i>	3	3M	17	14	0.998	"repeated negative"
<i>Gpc5</i>	3	1M, 2F	-8	18	0.998	"repeated negative"
<i>Gpr152</i>	2	1M, 1F	18	18	0.998	"repeated negative"
<i>Gtf2a1</i>	3	3M	-26	19	0.998	"repeated negative"
<i>Hacl1</i>	2	2F	-35	28	0.998	"repeated negative"
<i>Homez</i>	2	2M	-26	15	0.998	"repeated negative"
<i>Ido1</i>	5	2M, 3F	22	16	0.998	"repeated negative"
<i>Il10rb</i>	3	2M, 1F	-18	19	0.998	"repeated negative"

<i>Ii22ra1</i>	3	1M, 2F	10	23	0.998	"repeated negative"
<i>Irf5</i>	2	2F	13	15	0.998	"repeated negative"
<i>Jhdm1d</i>	2	1M, 1F	13	27	0.998	"repeated negative"
<i>L3mbtl2</i>	2	2M, 4F	-14	7	0.998	"repeated negative"
<i>Leprot</i>	3	2M, 1F	18	19	0.998	"repeated negative"
<i>Lgals7</i>	2	1M, 1F	-19	27	0.998	"repeated negative"
<i>Lonrf3</i>	2	2M	25	21	0.998	"repeated negative"
<i>Metrn1</i>	3	1M, 2F	13	18	0.998	"repeated negative"
<i>Mroh4</i>	2	2F	0	23	0.998	"repeated negative"
<i>Myh14</i>	5	2M, 3F	26	15	0.998	"repeated negative"
<i>Myt1l</i>	2	1M, 1F	-38	25	0.998	"repeated negative"
<i>Nfkb1</i>	2	1M, 1F	-7	22	0.998	"repeated negative"
<i>Pabpc4</i>	2	2F	13	22	0.998	"repeated negative"
<i>Pld3</i>	3	2M, 1F	-6	9	0.998	"repeated negative"
<i>Plet1</i>	2	1M, 1F	10	12	0.998	"repeated negative"
<i>Pls3</i>	2	1M, 1F	-29	23	0.998	"repeated negative"
<i>Ppp6c</i>	2	2F	36	24	0.998	"repeated negative"
<i>Prrc2b</i>	2	2M	36	24	0.998	"repeated negative"
<i>Prrt2</i>	2	2F	8	21	0.998	"repeated negative"
<i>Pus10</i>	3	3M	-5	8	0.998	"repeated negative"
<i>Pwp1</i>	2	2M	23	15	0.998	"repeated negative"
<i>Ralgapb</i>	3	2M, 1F	15	20	0.998	"repeated negative"
<i>Rassf1a</i>	3	1M, 2F	24	20	0.998	"repeated negative"
<i>Rhox13</i>	3	1M, 2F	45	30	0.998	"repeated negative"
<i>Rsad1</i>	2	1M, 1F	48	23	0.998	"repeated negative"
<i>Rspo4</i>	4	2M, 2F	14	17	0.998	"repeated negative"
<i>Sec1</i>	3	2M, 1F	-1	21	0.998	"repeated negative"
<i>Sel1l</i>	2	1M, 1F	23	25	0.998	"repeated negative"
<i>Selk</i>	2	1M, 1F	-5	24	0.998	"repeated negative"
<i>Sema7a</i>	3	1M, 2F	6	20	0.998	"repeated negative"
<i>Slc38a2</i>	2	1M, 1F	2	24	0.998	"repeated negative"
<i>Smpd4</i>	2	2F	-3	14	0.998	"repeated negative"
<i>Spink14</i>	2	2F	-6	20	0.998	"repeated negative"
<i>Stard8</i>	2	2F	11	23	0.998	"repeated negative"
<i>Tatdn3</i>	2	2F	13	17	0.998	"repeated negative"
<i>Tceal5</i>	6	3M, 3F	15	13	0.998	"repeated negative"
<i>Tgfb1i1</i>	2	1M, 1F	-31	24	0.998	"repeated negative"
<i>Tmem126a</i>	2	1M, 1F	31	20	0.998	"repeated negative"
<i>Tmem241</i>	4	3M, 1F	-3	10	0.998	"repeated negative"
<i>Tmem241</i>	4	3M, 1F	-3	10	0.998	"repeated negative"
<i>Tomm20l</i>	2	1M, 1F	6	14	0.998	"repeated negative"
<i>Trex1</i>	3	1M, 2F	-51	25	0.998	"repeated negative"
<i>Trim29</i>	2	2F	7	27	0.998	"repeated negative"
<i>Trim38</i>	2	1M, 1F	8	19	0.998	"repeated negative"
<i>Vps51</i>	2	1M, 1F	-22	18	0.998	"repeated negative"
<i>Zbed5</i>	3	2M, 1F	-8	14	0.998	"repeated negative"
<i>Zfp719</i>	3	1M, 2F	49	21	0.998	"repeated negative"

SI Table 3. Results of analysis of RNAseq data. Differentially expressed genes in B16-F10-mCherry cells isolated from the lungs of *tm1a/tm1a* mice relative to those from +/+ mice 24 hours after administration (n=5 per genotype).

Gene_name	Alternative gene names	Gene ID	Log2 Fold Change	Adjusted P value	Comments
H2-Q7	Q9; Ped; Qa7; Qa-2; Qa-7; H-2Q7	ENSMUSG00000060550	0.913229743	4.049E-03	* Correction of defects responsible for impaired Qa-2 class Ib MHC expression on melanoma cells protects mice from tumor growth; B78H1 cells (a B16 mouse melanoma variant; all B16 cell lines show down-regulation of class I MHC expression) genetically manipulated to re-express Q9 Ag have reduced tumor potential in syngeneic B6 mice compared with TAP2-transfected parental melanoma. Both NK cells and CTLs appear to collaborate in restraining growth of Q9-positive tumors [PMID: 12707328].
Glipr2	GAPR1; GAPR-1; C9orf19	ENSMUSG00000028480	0.95642786	3.656E-02	* GLIPR-2 overexpression in HK-2 cells can potentiate EMT-like processes in this cell type through the ERK1/2 signaling pathway [PMID: 23516513]. * The plant pathogenesis related protein GLIPR-2 is highly expressed in fibrotic kidney and promotes epithelial to mesenchymal transition in vitro [PMID: 17055234].
Traf1	EBI6; MGC:10353	ENSMUSG00000026875	0.96642868	3.049E-02	* ATPase inhibitory factor 1 (IF1) promoted Snai1 and VEGF expression by way of activating NF-κB signaling, which depended on the binding of TRAF1 to NF-κB-inducing kinase (NIK) and the disruption of NIK association with the TRAF2-cIAP2 complex. Suppression of the NF-κB pathway interfered with IF1-mediated EMT and invasion [PMID: 25042864].
Marcks1	F52; MLP; MRP; MLP1; MACMARCKS	ENSMUSG00000047945	1.00910128	3.656E-02	* MARCKSL1 expression is deregulated in a wider range of cancers than previously appreciated (upregulated) & increased MARCKSL1 expression in breast cancer is correlated with an increased risk for distant metastasis [PMID: 22751924].
Ccl5	SISd; eoCP; SCYA5; RANTES; TCP228; D17S136E; SIS-delta	ENSMUSG00000035042	1.010245092	3.630E-02	* CCL5 promotes VEGF-dependent angiogenesis in human chondrosarcoma cells [PMID: 25301739]. * Patients with gastric adenocarcinoma had significantly higher serum CCL5 level compared with control group (P < .001); higher CCL5 levels were associated with lower histological differentiation (P < .001), higher depth of tumor invasion (P = .022), more frequent lymph nodes involvement (P = .028), advanced tumor stage (P = .002) and worse overall survival (P = .043) [PMID: 25301002].
AW112010	-	ENSMUSG00000075010	1.133723388	9.521E-04	-
Serpinb6b	NK13; Spi12; ovalbumin	ENSMUSG00000042842	1.301065706	3.656E-02	-
Epsti1	BRES1	ENSMUSG00000022014	1.331280959	1.320E-08	* Experiments using nude mice demonstrated that the ectopic EPST11 granted the MCF-7 cells capability of both invasive growth in the breasts and metastasis to the lungs [PMID: 24096480]. * Evidence for a role of this molecule in the regulation of tumor cell properties and epithelial-mesenchymal transition (breast cancer) [PMID: 20133812].
Pla2g16	AdPLA; HRSL3; HRASLS3; HREV107	ENSMUSG00000060675	1.523604066	3.656E-02	* Overexpression of Pla2g16 increased the invasion of p53-null cells; Pla2g16 is a transcriptional target of mutant p53 that is required for metastasis [PMID: 25024203].

SI Table 4. Details of antibodies used in this study.

Fluorochrome	Antigen	Clone	Supplier	Concentration (ug/ml)
PE	CD107a	1D4B	BD Biosciences	0.4 ug/well
Pacific Blue	CD11b	M1/70.15	Thermo Fisher Scientific	0.200
PE-CF594	CD19	1D3	BD Biosciences	0.133
BV510	CD19	6D5	Biolegend	0.070
BV786	CD19	1D3	BD Biosciences	0.333
PE	CD25	PC61	Biolegend	0.400
PE	CD25	7D4	Miltenyi Biotec	0.300
PE	CD27	LG.3A10	Biolegend	0.500
Pacific Blue	CD3	17A2	Biolegend	1.250
BV510	CD4	RM4-5	Biolegend	0.100
VioGreen	CD4	GK1.5	Miltenyi Biotec	0.375
FITC	CD44	IM7	BD Biosciences	0.250
FITC	CD44	IM7.8.1	Miltenyi Biotec	0.375
PerCP-Cy5.5	CD45.1	A20	Biolegend	0.400
BUV737	CD45.1	A20	BD Biosciences	0.500
Alexa Fluor 700	CD45.2	104	Biolegend	1.000
FITC	CD49b	DX5	Biolegend	0.830
PE-Cy7	CD62L	MEL-14	Biolegend	0.100
PE-CF594	CD69	H1.2F3	BD Biosciences	0.400
VioBlue	CD69	H1-2F3	Miltenyi Biotec	3.000
APC-H7	CD8a	53-6.7	BD Biosciences	1.000
PE-Cy7	CD8a	53-6.7	Biolegend	0.500
PerCP-Cy5.5	CXCR3	CXCR3-173	Biolegend	0.500
BV650	CXCR3	CXCR3-173	Biolegend	1.000
BV421	IFN-g	XMG1.2	BD Biosciences	0.500
PE-Cy7	KLRG1	2F1/KLRG1	Biolegend	0.100
PE-Vio770	KLRG1	2F1/KLRG1	Miltenyi Biotec	0.375
Alexa Fluor 647	NK1.1	PK136	Biolegend	1.000
APC	NK1.1	PK136	Miltenyi Biotec	0.500
PerCP-Cy5.5	TCRb	H57-597	Biolegend	0.500
BV711	TCRb	H57-597	BD Biosciences	0.400
APC	TCRgd	GL3	Biolegend	0.333
PerCP-Vio700	TCRgd	GL3	Miltenyi Biotec	1.500
BV421	TCRgd	GL3	Biolegend	0.400