

Table S1. List of DNA samples used in this study.

Strain		Geographic origin	Original holder	Provider
MSM/Ms	<i>M. m. molossinus</i>	Mishima, Japan	NIG	NIG
JF1/Ms	<i>M. m. molossinus</i>	Pet shop in Denmark	NIG	NIG
PGN2/Ms	<i>M. m. domesticus</i>	Pegion, Canada	NIG	NIG
HMI/Ms	<i>M. m. castaneus</i>	Hemei, Taiwan	NIG	NIG
CHD/Ms	<i>M. m. musculus</i>	Chengdo, China	NIG	NIG
BLG2/Ms	<i>M. m. musculus</i>	Toshevo, Bulgaria	NIG	NIG
KJR/Ms	<i>M. m. musculus</i>	Kojuri, South Korea	NIG	NIG
PWK/Ph	<i>M. m. musculus</i>	Lhotka, Czech Republic	IMG	Prf. Forejt
PWD/Ph	<i>M. m. musculus</i>	Kunratice, Czech Republic	IMG	Prf. Forejt
Aiz/Stm	<i>M. m. molossinus</i>	Aizuwakamatsu, Japan	SCC	Dr. Matsushima
KOR1/Stm	<i>M. m. molossinus</i>	Koriyama, Japan	SCC	Dr. Matsushima
KOR5/Stm	<i>M. m. molossinus</i>	Koriyama, Japan	SCC	Dr. Matsushima
KOR7/Stm	<i>M. m. molossinus</i>	Koriyama, Japan	SCC	Dr. Matsushima
STM1/Stm	<i>M. m. molossinus</i>	Saitama, Japan	SCC	RIKEN BRC
STM2/Stm	<i>M. m. molossinus</i>	Saitama, Japan	SCC	RIKEN BRC
Mae/Stm	<i>M. m. molossinus</i>	Maesawa, Japan	SCC	RIKEN BRC
MOM/Nga	<i>M. m. molossinus</i>	Mizuho, Japan	SCC	RIKEN BRC
C57BL/6J	Laboratory strain	JAX, USA	JAX	Jackson Lab.
C57BL/10J	Laboratory strain	JAX, USA	JAX	Jackson Lab.
NIG	National Institute of Genetics, Japan			
IMG	Institute of Molecular Genetics of the ASCR, Czech Republic			
SCC	Saitama Cancer Center, Saitama, Japan			
RIKEN BRC	RIKEN BioResource Center, Japan			
JAX	The Jackson Laboratory, USA			

Table S2. MSM and JF1 resequencing statistics.

		Capillary	Illumina Sequencing
Number of sequence reads	MSM/Ms	9,881,203	625,032,101
	JF1/Ms	-	1,224,755,124
Length of read coverage	MSM/Ms	9,485,900,366	42,325,589,100
	JF1/Ms	-	134,723,063,640
High quality read coverage ^a	MSM/Ms	6,324,891,986	32,113,711,950 (unique)
	JF1/Ms	-	85,535,887,800 (unique)
Total coverage of the C57BL/6J genome ^b	MSM/Ms	2.4x	16.5x / 12.6x (entire / unique)
	JF1/Ms	-	52.7x / 33.5x (entire / unique)
Unique map	MSM/Ms	1,147,480,303	2,457,765,264 / 2,240,319,597 (entire / unique)
	JF1/Ms	-	2,491,763,405 / 2,342,267,030 (entire / unique)
Coverage of non-repetitive C57BL/6J sequence [#]			(entire/ unique)
	MSM/Ms	76.7%	98.2% / 94.5%
	JF1/Ms	-	98.8% / 96.4%

^a QV>30
^b NCBI m37.1

Table S3. Validation of SNP and indel calls.

MSM_BAC	Total nucleotide (bp)	Non-Repeat nucleotide (bp)	SNPs			Indels		
			Identical	False positive	False negative	Identical	False positive	False negative
MSMg01-122K03	173,324	125,667	789	2	4	68	4	10
MSMg01-275M02	165,943	101,171	533	2	6	61	9	11
Total	339,267	226,838	1,322	4	10	129	13	21
(%)		99.97 (99.75)*		0.30	0.76		10.08	16.28

To estimate false-positive and false-negative rates in SNP and indel detection, SNPs and indels relative to the reference B6 genome (MGSCv37) were compared between the non-repeat-containing sequences (total 226,838 bp) of 2 MSM BACs and the present MSM sequence.

* 16.5× Illumina read only

Table S4. Summary of ANNOVAR annotations for the MSM and JF1 genomes.

	UTR3	UTR5	UTR5;UTR3	downstream	exonic	exonic;splicing	intergenic	intronic
MSM	136,754	20,532	29	117,339	121,309	1,441	7,620,332	5,420,116
JF1	140,860	20,556	32	121,661	122,076	1,511	7,810,135	5,566,388
Common	118,134	17,639	25	99,223	106,841	1,283	6,541,313	4,727,720

	ncRNA_UTR3	ncRNA_UTR5	ncRNA_exonic	ncRNA_intronic	ncRNA_splicing	splicing	upstream	upstream;downstream
MSM	1,374	173	23,396	224,575	128	523	113,737	3,198
JF1	1,354	177	24,024	230,215	135	573	117,068	3,195
Common	1124	147	20,227	193,833	115	390	95,294	2,665

	frameshift deletion	frameshift insertion	nonframeshift deletion	nonframeshift insertion	nonsynonymous SNV	stopgain SNV	stoploss SNV	synonymous SNV	unknown
MSM	183	800	159	193	38,182	205	39	82,240	749
JF1	203	2228	201	261	38,124	217	43	81,559	751
Common	87	137	115	151	32,573	112	32	74,282	635

Value Explanation

exonic variant overlaps a coding exon

splicing variant is within 2-bp of a splicing junction (use -splicing_threshold to change this)

ncRNA variant overlaps a transcript without coding annotation in the gene definition (see Notes below for more explanation)

UTR5 variant overlaps a 5' untranslated region

UTR3 variant overlaps a 3' untranslated region

intronic variant overlaps an intron

upstream variant overlaps 1-kb region upstream of transcription start site

downstream variant overlaps 1-kb region downstream of transcription end site (use -neargene to change this)

intergenic variant is in intergenic region

Table S5. Coding SNPs predicted to cause premature termination of translation in MSM and/or JF1 relative to B6.

Chr	the gene start	Ref	Sub	State	GENE SYMBOL	Acc_#	Strains	Chr	the gene start	Ref	Sub	State	GENE SYMBOL	Acc_#	Strains
1	21,003,493	-	C	stopgain SNV	Tram2	NM_177409	J	8	3,849,087	C	T	stopgain SNV	Cd209e	NM_130905	M/J
1	53,560,737	-	A	stopgain SNV	Dnahc7a	NM_001252070	J	8	18,986,314	T	A	stoploss SNV	Defb37	NM_181683	M/J
1	58,903,598	A	C	stoploss SNV	Casp8	NM_009812	M/J	8	19,250,762	C	A	stopgain SNV	Defb5	NM_030734	J
1	60,803,358	-	CTA	stopgain SNV	Cd28	NM_007642	M	8	22,767,033	A	T	stopgain SNV	Defa17	NM_001167790	J
1	63,815,114	G	A	stopgain SNV	4933402D24Rik	NM_001256158	M	8	23,771,862	T	G	stoploss SNV	Ikbbk	NM_010546	M/J
1	74,179,741	-	AAT	stopgain SNV	Rufy4	NM_001170641	J	8	27,268,946	C	A	stopgain SNV	Thap1	NM_199042	M
1	90,397,709	C	A	stopgain SNV	Glrp1	NM_008132	M/J	8	44,655,124	C	A	stopgain SNV	Adam26a	NM_010085	J
1	95,198,102	C	A	stopgain SNV	Mterfd2	NM_178051	J	8	67,492,732	G	T	stoploss SNV	Tmem192	NM_028427	M/J
1	108,069,292	C	T	stopgain SNV	Phlpp1	NM_133821	M/J	8	74,240,476	-	A	stopgain SNV	Fcho1	NM_028715	J
1	132,699,751	C	T	stopgain SNV	Fcamr	NM_001170632	M/J	8	86,656,124	T	C	stoploss SNV	Podn1	NM_001013384	M/J
1	134,987,307	-	A	stopgain SNV	Pik3c2b	NM_001099276	J	8	89,249,157	-	TAT	stopgain SNV	Siah1a	NM_009172	J
1	135,033,372	-	A	stopgain SNV	Ppp1r15b	NM_133819	J	8	109,402,051	-	A	stopgain SNV	Has3	NM_008217	J
1	137,894,354	C	A	stopgain SNV	Igfn1	NM_177642	M/J	8	109,572,716	G	A	stopgain SNV	Cog8	NM_139229	M
1	141,718,286	G	T	stopgain SNV	Cfhr2	NM_001025575	J	8	113,593,792	A	G	stoploss SNV	Clec18a	NM_181549	M
1	142,032,809	G	T	stopgain SNV	Cfh	NM_009888	J	8	126,033,799	-	CTA	stopgain SNV	Dsndd1	NM_001170976	M
1	157,695,755	-	A	stopgain SNV	Cep350	NM_001039184	J	9	20,017,158	C	T	stopgain SNV	Olfir871	NM_146903	M
1	157,779,957	-	A	stopgain SNV	Cep350	NM_001039184	M	9	21,932,181	G	A	stopgain SNV	Acp5	NM_00102405	J
1	175,061,167	A	C	stopgain SNV	Olfir1408	NM_146764	M	9	31,123,739	G	A	stopgain SNV	Prdm10	NM_001080817	M/J
1	175,133,759	C	T	stopgain SNV	Olfir218	NM_001001809	J	9	37,800,312	C	A	stopgain SNV	Olfir881	NM_146418	M
1	192,774,064	-	A	stoploss SNV	Vash2	NM_144879	J	9	38,564,065	C	G	stopgain SNV	Olfir920	NM_146787	M
1	196,475,788	-	A	stopgain SNV	Plxna2	NM_008882	J	9	38,826,359	C	A	stopgain SNV	Olfir146	NM_146747	M/J
2	33,496,027	A	T	stopgain SNV	Lmx1b	NM_010725	M	9	39,545,339	A	-	stoploss SNV	Olfir150	NM_146609	M/J
2	36,706,323	T	A	stopgain SNV	Olfir350	NM_146627	M	9	49,373,124	C	A	stopgain SNV	Ncam1	NM_001113204	M/J
2	36,924,775	G	T	stopgain SNV	Olfir360	NM_146622	M	9	50,571,963	A	G	stoploss SNV	1110032A03Rik	NM_023483	M/J
2	38,856,437	-	A	stopgain SNV	Wdr38	NM_029687	M	9	54,883,272	-	C	stopgain SNV	Chrn4	NM_148944	J
2	62,318,613	T	-	stopgain SNV	Gcg	NM_008100	M	9	55,810,681	C	A	stopgain SNV	Rpl3s	NM_183111	M
2	76,738,856	-	A	stopgain SNV	Ttn	NM_011652	J	9	64,083,271	C	T	stopgain SNV	Uchl4	NM_033607	M
2	76,746,068	G	T	stopgain SNV	Ttn	NM_028004	M/J	9	65,261,248	C	T	stopgain SNV	Ras12	NM_001162923	M/J
2	79,510,977	C	T	stopgain SNV	Ssfa2	NM_080558	M	9	66,818,563	-	A	stopgain SNV	Lactb	NM_030717	J
2	86,187,635	C	T	stopgain SNV	Olfir1055	NM_147021	M	9	79,603,359	-	TA	stopgain SNV	Cox7a2	NM_009945	J
2	88,115,011	G	T	stopgain SNV	Olfir1173	NM_207566	J	9	86,935,240	-	GA	stopgain SNV	Cyb5r4	NM_024195	M
2	88,863,946	G	T	stopgain SNV	Olfir1217	NM_146901	J	9	92,166,421	C	T	stopgain SNV	Plscr1	NM_011636	M
2	88,952,381	-	T	stopgain SNV	Olfir1221	NM_146902	J	9	105,598,068	C	A	stopgain SNV	Col6a6	NM_001102607	J
2	104,672,796	-	TT	stopgain SNV	Prrg4	NM_178695	J	9	106,333,616	C	T	stopgain SNV	Rpl29	NM_009082	M
2	113,128,071	C	A	stopgain SNV	Tmco5b	NM_029232	M/J	9	108,307,486	G	A	stopgain SNV	Ccdc36	NM_001135198	M/J
2	132,696,364	C	T	stopgain SNV	Lrrn4	NM_177303	J	9	109,749,951	A	G	stoploss SNV	Camp	NM_009921	M/J
2	149,231,327	C	T	stopgain SNV	Cst10	NM_021405	M	9	112,057,806	A	T	stopgain SNV	Arpp21	NM_001177619	M/J
2	155,459,825	-	G	stoploss SNV	Myh7b	NM_001085378	J	10	4,533,333	T	A	stoploss SNV	Mtrf1l	NM_175374	J
2	180,418,343	-	A	stopgain SNV	Dido1	NM_011805	J	10	7,087,234	A	G	stoploss SNV	H60c	NM_001204916	M/J
3	32,633,069	-	A	stopgain SNV	Mrlp47	NM_029017	M/J	10	39,943,547	-	TC	stoploss SNV	Rpf2	NM_001042556	J
3	81,837,195	A	G	stoploss SNV	Gucy1b3	NM_001161796	M/J	10	40,021,622	C	A	stopgain SNV	Amd2	NM_007444	M
3	88,457,007	C	A	stopgain SNV	Rxfp4	NM_181817	M/J	10	51,211,845	T	A	stopgain SNV	Lilrb4	NM_013532	M
3	92,375,707	G	C	stopgain SNV	Ivl	NM_008412	M	10	77,497,231	G	A	stopgain SNV	Aire	NM_001271558	M/J
3	92,822,005	G	T	stopgain SNV	Lce1m	NM_025420	M/J	10	80,100,870	G	A	stopgain SNV	Csnk1g2	NM_134002	M/J
3	93,019,216	C	G	stopgain SNV	Flg2	NM_001013804	J	10	80,353,140	-	A	stopgain SNV	Tmprss9	NM_001081688	J
3	94,934,117	A	G	stoploss SNV	Scnm1-ps	NM_027013	M/J	10	115,019,050	T	C	stoploss SNV	A930009A15Rik	NM_029982	M/J
3	96,088,207	G	A	stopgain SNV	Fcgr1	NM_010186	M/J	10	119,668,396	A	T	stopgain SNV	Llph	NM_025431	M
3	96,515,907	G	A	stopgain SNV	Polr3c	NM_028925	M/J	10	120,415,324	G	T	stopgain SNV	Lem3d	NM_001081193	M
3	105,534,904	-	A	stoploss SNV	Rap1a	NM_145541	J	10	129,915,511	C	A	stopgain SNV	Vmn2r87	NM_001103366	M/J
3	107,771,093	C	T	stopgain SNV	Gstm3	NM_010359	M/J	11	19,920,809	-	A	stopgain SNV	Spred2	NM_033523	M
3	129,618,062	G	A	stopgain SNV	Ccdc109b	NM_025779	M/J	11	46,629,206	-	A	stopgain SNV	Timd4	NM_178759	M
3	135,214,210	-	A	stopgain SNV	Manba	NM_027288	J	11	49,107,479	C	T	stopgain SNV	Olfir1392	NM_146470	M
3	138,087,210	C	T	stopgain SNV	Adh4	NM_011996	M/J	11	49,283,845	C	A	stopgain SNV	Olfir1386	NM_001011741	M/J
3	140,873,709	-	AAA	stopgain SNV	Pdha2	NM_008811	J	11	53,426,068	A	G	stoploss SNV	Ii4	NM_021283	M/J

Table S5. Coding SNPs predicted to cause premature termination of translation in MSM and/or JF1 relative to B6 (continued).

3	151,412,307	G	A	stopgain SNV	Ifi44	NM_133871	M/J	11	58,303,250	C	A	stopgain SNV	Olfir332	NM_001011770	M
4	12,091,342	G	A	stopgain SNV	Fam92a	NM_026558	M/J	11	58,740,379	G	T	stopgain SNV	Btln10	NM_138678	M
4	32,848,260	-	A	stopgain SNV	Mdn1	NM_001081392	J	11	59,403,187	G	A	stopgain SNV	Olfir223	NM_146429	M/J
4	41,616,840	-	G	stoploss SNV	Cntfr	NM_001146080	M/J	11	59,426,708	C	T	stopgain SNV	Olfir225	NM_001011740	M/J
4	43,440,163	A	T	stopgain SNV	Fam166b	NM_177377	M/J	11	72,311,894	C	A	stoploss SNV	Spns3	NM_029932	M/J
4	53,662,787	C	T	stopgain SNV	Fsd1l	NM_176966	M/J	11	73,600,727	G	T	stopgain SNV	Olfir390	NM_146347	M
4	57,923,222	G	T	stopgain SNV	D630039A03Rik	NM_178727	J	11	83,002,712	G	A	stopgain SNV	Sifn4	NM_011410	M
4	60,018,436	C	T	stopgain SNV	Mup6	NM_001081285	M/J	11	83,028,601	T	C	stoploss SNV	Sifn3	NM_011409	J
4	63,018,919	G	A	stopgain SNV	Orm3	NM_013623	J	11	85,971,125	-	A	stopgain SNV	Brip1	NM_178309	J
4	73,426,239	G	A	stopgain SNV	Rasef	NM_001017427	M/J	11	88,548,862	T	A	stopgain SNV	Msi2	NM_001201341	M/J
4	86,475,620	A	T	stopgain SNV	Dennd4c	NM_001081014	M	11	94,692,985	C	A	stopgain SNV	Tmem92	NM_001163172	M/J
4	88,429,224	A	T	stopgain SNV	Ifnz	NM_197889	M	11	103,221,530	C	A	stopgain SNV	Arhgap27	NM_183288	M/J
4	88,465,989	C	T	stopgain SNV	Ifna11	NM_008333	J	11	110,097,915	C	A	stopgain SNV	Abca6	NM_001166556	M/J
4	104,538,142	G	A	stopgain SNV	C8a	NM_146148	M	11	118,346,225	-	A	stopgain SNV	Engase	NM_172573	J
4	113,610,264	A	T	stopgain SNV	Skint5	NM_001167878	M/J	11	119,934,282	-	TAT	stopgain SNV	Azi1	NM_009734	M
4	114,761,721	-	A	stopgain SNV	Pdzk1ip1	NM_001164557	M	12	36,185,363	A	G	stoploss SNV	Ahr	NM_013464	M
4	114,806,564	C	A	stopgain SNV	Cyp4x1	NM_001003947	M	12	89,197,619	A	T	stopgain SNV	Oog1	NM_178657	J
4	115,282,292	T	-	stopgain SNV	Cyp4a32	NM_001100181	M/J	13	4,271,552	T	A	stopgain SNV	Akr1c12	NM_013777	M/J
4	143,581,401	G	T	stopgain SNV	Pramf17	NM_001085540	J	13	21,629,849	A	C	stopgain SNV	Olfir1366	NM_146283	M/J
4	151,432,583	-	T	stoploss SNV	Nol9	NM_001159599	J	13	22,566,865	C	T	stopgain SNV	Vmn1r201	NM_134221	J
4	155,605,738	-	A	stopgain SNV	Klhl17	NM_198305	J	13	22,567,387	T	A	stoploss SNV	Vmn1r201	NM_134221	J
5	16,986,301	T	G	stoploss SNV	Speer4f	NM_027609	M/J	13	22,897,580	C	A	stopgain SNV	Vmn1r209	NM_001013787	M/J
5	31,611,260	G	A	stopgain SNV	Gckr	NM_144909	M/J	13	33,294,857	T	A	stopgain SNV	Serpnb9d	NM_011460	M/J
5	35,623,801	-	A	stopgain SNV	Adra2c	NM_007418	J	13	61,140,819	C	T	stopgain SNV	Ctsq	NM_029636	M/J
5	37,707,596	G	A	stopgain SNV	Evc	NM_021292	M/J	14	44,396,978	T	A	stopgain SNV	Ear1	NM_007894	J
5	66,050,848	-	A	stopgain SNV	Pds5a	NM_001081321	M	14	44,741,519	T	G	stoploss SNV	4930503E14Rik	NM_029131	M
5	87,335,567	-	A	stopgain SNV	Ugt2b34	NM_153598	M	14	51,330,159	G	A	stopgain SNV	Olfir748	NM_001011837	M/J
5	107,047,296	-	A	stopgain SNV	Zfp644	NM_026856	J	14	54,285,722	C	T	stopgain SNV	A430107P09Rik	NM_001205242	J
5	109,519,414	-	C	stopgain SNV	Vmn2r12	NM_001104623	J	14	55,285,921	-	A	stopgain SNV	Acin1	NM_001085473	J
5	109,519,460	C	A	stopgain SNV	Vmn2r12	NM_001104623	M/J	14	61,930,078	C	T	stopgain SNV	Arl11	NM_177337	M/J
5	121,188,423	C	T	stopgain SNV	Oas2	NM_145227	J	14	64,142,905	A	G	stoploss SNV	Mtmr9	NM_177594	M/J
5	124,990,966	C	A	stopgain SNV	Tmed2	NM_019770	M	14	71,177,875	A	T	stopgain SNV	Dok2	NM_010071	M/J
5	130,112,413	A	G	stoploss SNV	Mmp17	NM_011846	M/J	14	71,378,298	C	T	stopgain SNV	Gfra2	NM_008115	M/J
5	130,322,888	G	A	stopgain SNV	Sumf2	NM_026445	M/J	15	5,049,866	G	A	stopgain SNV	Card6	NM_001163138	M/J
5	138,473,739	C	T	stopgain SNV	Smok3a	NM_001126045	M	15	37,355,392	C	G	stopgain SNV	4930447A16Rik	NM_029113	J
5	139,891,034	G	A	stopgain SNV	C130050O18Rik	NM_177000	M/J	15	58,705,619	G	A	stopgain SNV	Tmt12	NM_026642	M/J
5	148,133,874	C	A	stopgain SNV	Prhoxnb	NM_001039678	M/J	15	66,762,530	-	A	stopgain SNV	Ndrp1	NM_008681	J
5	151,603,804	-	GTAA	stopgain SNV	Pds5b	NM_175310	M/J	15	73,046,383	C	T	stopgain SNV	Ptk2	NM_001130409	M/J
6	24,399,834	-	T	stopgain SNV	Iqub	NM_172535	J	15	75,260,380	C	A	stoploss SNV	9030619P08Rik	NM_001039720	M/J
6	40,715,906	A	T	stopgain SNV	Mgam	NM_001171003	M	15	77,465,990	G	A	stopgain SNV	Apol11b	NM_001143686	M/J
6	41,992,170	G	T	stopgain SNV	Sva	NM_009299	M/J	15	82,622,126	G	A	stopgain SNV	Cyp2d26	NM_029562	M
6	42,712,114	G	A	stopgain SNV	Olfir38	NM_146986	M	15	97,551,491	-	TA	stopgain SNV	Endou	NM_008902	M/J
6	43,167,855	G	A	stopgain SNV	Olfir434	NM_146369	M/J	16	4,711,425	C	G	stoploss SNV	Nmral1	NM_026393	M/J
6	48,628,351	-	AT	stopgain SNV	Gimap9	NM_174960	M/J	16	22,988,202	C	T	stopgain SNV	Kng2	NM_201375	M
6	52,112,885	-	CA	stoploss SNV	Hoxa2	NM_010451	M	16	29,420,852	A	-	stopgain SNV	Atp13a4	NM_001164613	M/J
6	57,612,900	C	T	stopgain SNV	Herc6	NM_025992	M/J	16	33,948,916	T	A	stoploss SNV	Itgb5	NM_010580	M/J
6	57,928,624	-	A	stopgain SNV	Vmn1r25	NM_053238	J	16	37,060,965	C	A	stopgain SNV	Polq	NM_029977	M/J
6	58,258,200	T	A	stoploss SNV	Vmn1r29	NM_053232	M/J	16	38,447,633	A	C	stopgain SNV	Adprh	NM_007414	M/J
6	66,628,886	G	A	stopgain SNV	Vmn1r35	NM_134167	J	16	58,470,762	A	G	stoploss SNV	St3gal6	NM_018784	M/J
6	91,849,411	C	T	stopgain SNV	Ccdc174	NM_172730	M/J	16	59,283,418	T	A	stopgain SNV	Olfir202	NM_146995	M/J
6	92,193,072	C	A	stopgain SNV	Trh	NM_009426	M/J	16	94,347,385	G	T	stopgain SNV	Sim2	NM_011377	M
6	113,483,838	A	T	stopgain SNV	Fancd2	NM_001033244	J	17	19,206,769	C	A	stopgain SNV	Vmn2r98	NM_001104550	J
6	115,536,766	G	A	stopgain SNV	2510049J12Rik	NM_001101431	M	17	19,727,070	C	T	stopgain SNV	Vmn2r101	NM_001104563	M/J
6	122,789,595	C	T	stopgain SNV	Foxj2	NM_021899	M/J	17	19,910,360	C	T	stopgain SNV	Vmn2r103	NM_001104565	M/J
6	129,353,685	-	GTAA	stopgain SNV	Clec1b	NM_019985	M/J	17	19,948,988	A	T	stopgain SNV	Vmn2r103	NM_001104565	M/J
6	130,139,788	G	A	stopgain SNV	Klra9	NM_010651	M	17	23,428,336	A	T	stopgain SNV	Vmn2r114	NM_001102584	J

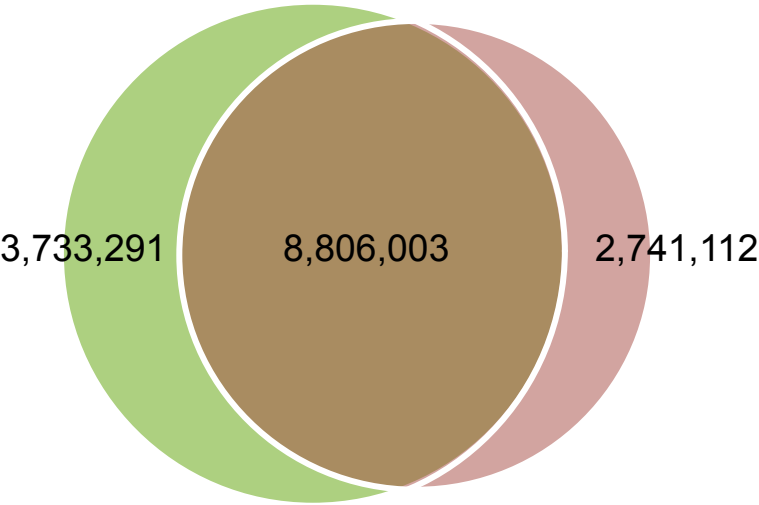
Table S5. Coding SNPs predicted to cause premature termination of translation in MSM and/or JF1 relative to B6 (continued).

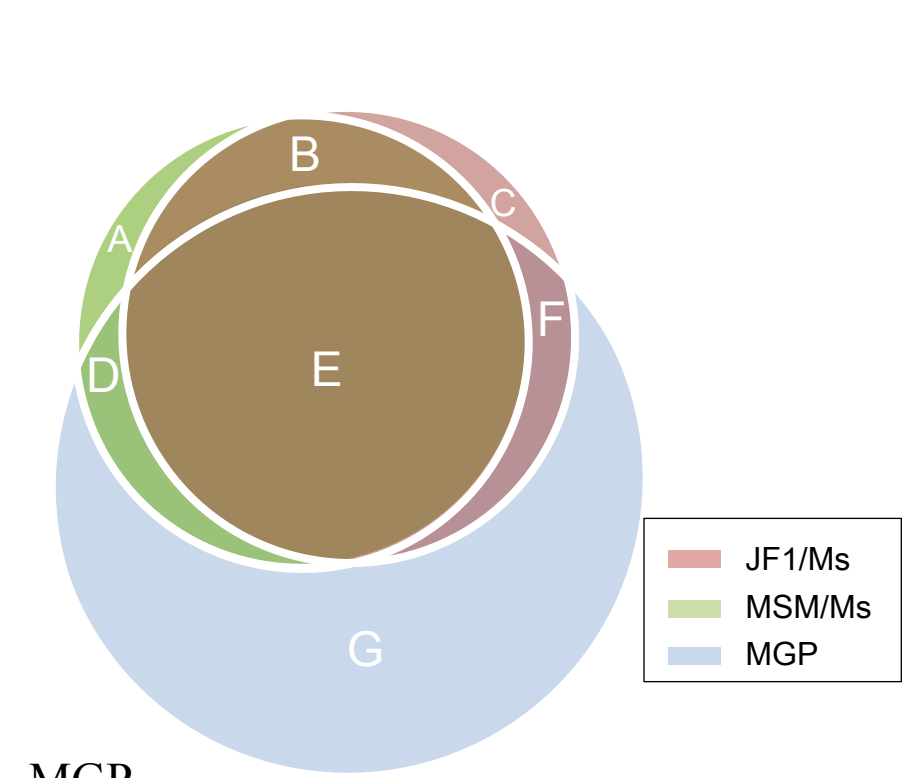
6	132,986,902	G	C	stopgain SNV	Tas2r103	NM_053211	J	17	23,428,391	G	C	stopgain SNV	Vmn2r114	NM_001102584	J
6	133,005,010	-	A	stopgain SNV	Tas2r140	NM_021562	M/J	17	23,428,402	G	T	stopgain SNV	Vmn2r114	NM_001102584	J
6	145,567,333	-	G	stopgain SNV	Tuba3b	NM_009449	J	17	23,484,833	A	T	stopgain SNV	Vmn2r115	NM_001104579	M
7	5,061,921	A	T	stoploss SNV	Rfp14	NM_001145013	M	17	25,629,138	-	A	stopgain SNV	Sstr5	NM_011425	J
7	5,438,057	-	A	stopgain SNV	Vmn2r28	NM_001081405	J	17	31,785,618	-	T	stopgain SNV	U2af1	NM_001163769	M
7	6,454,626	G	A	stopgain SNV	Olf1r1348	NM_146913	M	17	33,777,700	C	T	stopgain SNV	Pram1	NM_001002842	J
7	6,948,175	C	T	stopgain SNV	Aurkc	NM_001080965	J	17	37,332,341	C	T	stopgain SNV	Ubd	NM_023137	M
7	10,633,434	G	C	stopgain SNV	Vmn2r50	NM_001105178	J	17	37,604,095	T	C	stoploss SNV	Olf1r109	NM_146835	M/J
7	11,333,761	A	T	stopgain SNV	Vmn1r71	NM_145848	J	17	37,889,618	T	A	stopgain SNV	Olf1r121	NM_146629	J
7	11,748,447	A	T	stopgain SNV	Zscan4d	NM_001100186	M	17	38,061,437	T	G	stoploss SNV	Olf1r128	NM_206816	J
7	12,762,370	G	T	stopgain SNV	Vmn1r79	NM_001166835	J	17	40,372,865	G	T	stopgain SNV	Crisp3	NM_009639	M
7	12,906,557	C	G	stoploss SNV	Vmn1r83	NM_134209	M/J	17	41,017,323	T	A	stopgain SNV	9130008F23Rik	NM_027834	M
7	13,207,420	G	T	stopgain SNV	Vmn2r54	NM_001081449	M	17	48,490,477	C	A	stopgain SNV	Trem2	NM_031254	M/J
7	19,939,779	C	G	stopgain SNV	Ercc1	NM_001127324	M/J	18	25,179,173	-	AGT	stopgain SNV	Fhod3	NM_175276	J
7	24,910,162	C	T	stopgain SNV	Zfp112	NM_021307	M/J	18	44,435,567	C	T	stopgain SNV	Npy6r	NM_010935	J
7	27,719,256	G	T	stopgain SNV	Cyp2a22	NM_001101467	M	18	62,674,830	-	CTA	stopgain SNV	Fbxo38	NM_134136	M
7	27,940,751	C	T	stopgain SNV	Cyp2t4	NM_001100184	M/J	18	89,183,949	C	T	stopgain SNV	Rttn	NM_175542	M/J
7	28,149,369	A	T	stopgain SNV	Spnb4	NM_001199234	M/J	19	7,069,213	A	T	stopgain SNV	Nudt22	NM_026675	M/J
7	49,301,261	-	A	stopgain SNV	Vmn2r59	NM_001105056	J	19	11,524,494	G	A	stopgain SNV	Ms4a4b	NM_021718	J
7	50,784,264	C	T	stopgain SNV	Cd33	NM_001111058	M/J	19	13,240,433	-	AAT	stopgain SNV	Olf1r1461	NM_146302	J
7	51,209,478	C	A	stopgain SNV	Klk1b8	NM_008457	J	19	13,707,992	C	G	stopgain SNV	Olf1r1489	NM_146635	M
7	51,371,339	T	A	stopgain SNV	Klk1b22	NM_010114	M/J	19	28,605,952	A	T	stopgain SNV	Glis3	NM_175459	J
7	54,441,318	T	C	stoploss SNV	Mrgpra6	NM_205821	M	19	44,081,448	A	T	stoploss SNV	Cyp2c44	NM_001167905	M/J
7	55,737,388	C	A	stopgain SNV	Mrgprx2	NM_001034868	M/J	19	44,290,077	C	A	stopgain SNV	Scd3	NM_024450	M
7	71,064,862	G	T	stopgain SNV	E030018B13Rik	NM_001256311	M/J	X	7,753,020	C	T	stopgain SNV	Tbc1d25	NM_172478	M/J
7	87,233,497	C	A	stopgain SNV	Zfp710	NM_001146000	M/J	X	34,996,350	C	A	stopgain SNV	Rhox3f	NM_001040089	M/J
7	93,100,403	G	A	stopgain SNV	Vmn2r74	NM_001105187	M	X	58,437,182	A	T	stoploss SNV	Cdr1	NM_001166658	M/J
7	93,813,140	G	T	stopgain SNV	Olf1r293	NM_001011752	J	X	80,732,124	C	G	stoploss SNV	Tsga8	NM_021898	M/J
7	94,069,608	C	T	stopgain SNV	Vmn2r78	NM_001105189	M	X	98,643,059	C	T	stopgain SNV	Nono	NM_001252518	M/J
7	99,214,908	G	A	stopgain SNV	Dlg2	NM_001243046	M/J	X	100,826,346	-	AA	stopgain SNV	Zcchc13	NM_029158	J
7	105,414,695	-	A	stopgain SNV	Acer3	NM_025408	J	X	133,068,509	T	G	stopgain SNV	Kir3dl1	NM_177749	M/J
7	109,683,845	C	T	stopgain SNV	Olf1r547	NM_147079	M	X	151,560,349	G	A	stopgain SNV	1700042B14Rik	NM_001081671	M
7	109,901,497	C	-	stoploss SNV	Olf1r560	NM_147113	M	X	156,513,528	-	A	stopgain SNV	Map3k15	NM_001163085	J
7	110,935,829	A	G	stoploss SNV	Olf1r67	NM_013619	M								
7	110,935,829	A	G	stoploss SNV	Olf1r67	NM_013619	J								
7	111,484,760	G	T	stopgain SNV	Trim34b	NM_001243916	M/J								
7	111,852,131	G	T	stopgain SNV	Olf1r663	NM_001011757	M/J								
7	112,073,548	A	T	stopgain SNV	Olf1r668	NM_147059	M								
7	114,959,018	T	A	stoploss SNV	Olf1r467	NM_001005488	M/J								
7	115,098,627	G	A	stopgain SNV	Olf1r474	NM_146495	J								
7	115,303,298	T	A	stopgain SNV	Olf1r485	NM_001011810	M								
7	125,289,590	-	A	stopgain SNV	Smg1	NM_001031814	J								
7	134,517,949	G	A	stopgain SNV	Zfp747	NM_175560	M/J								
7	135,326,940	G	A	stopgain SNV	Itgad	NM_001029872	J								
7	149,053,595	-	A	stopgain SNV	Muc5b	NM_028801	M								

Table S6. Enrichment of PANTHER ontology terms in a list of 1,530 genes from MSM and 1,529 genes from JF1 with radical amino acid substitutions (GMS >150).

Strain	Term	Count	Percentage of total	Fold Enrichment	Enrichment P-Value
MSM/Ms	MF00002:G-protein coupled receptor	147	10.4	2.1	6.03464E-18
	MF00001:Receptor	217	15.4	1.7	3.64461E-17
JF1/Ms	MF00002:G-protein coupled receptor	129	9.2	1.9	4.59048E-12
	MF00001:Receptor	193	13.8	1.6	4.8445E-11
	MF00175:Major histocompatibility complex antigen	15	1.1	4.1	1.24251E-05

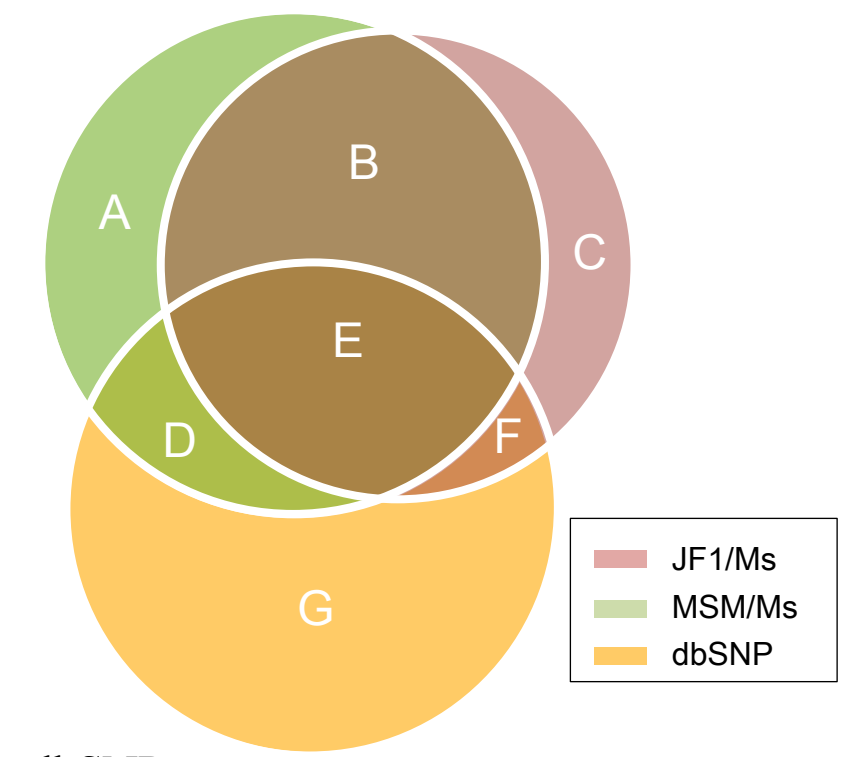
A Bonferroni correction has been applied to the enrichment P-value.





MSM/Ms novel SNPs; 1,574,713
JF1/Ms novel SNPs; 1,854,707

A,	447,938
B,	1,126,775
C,	727,932
D,	635,711
E,	9,337,327
F,	1,146,905
G,	11,523,725

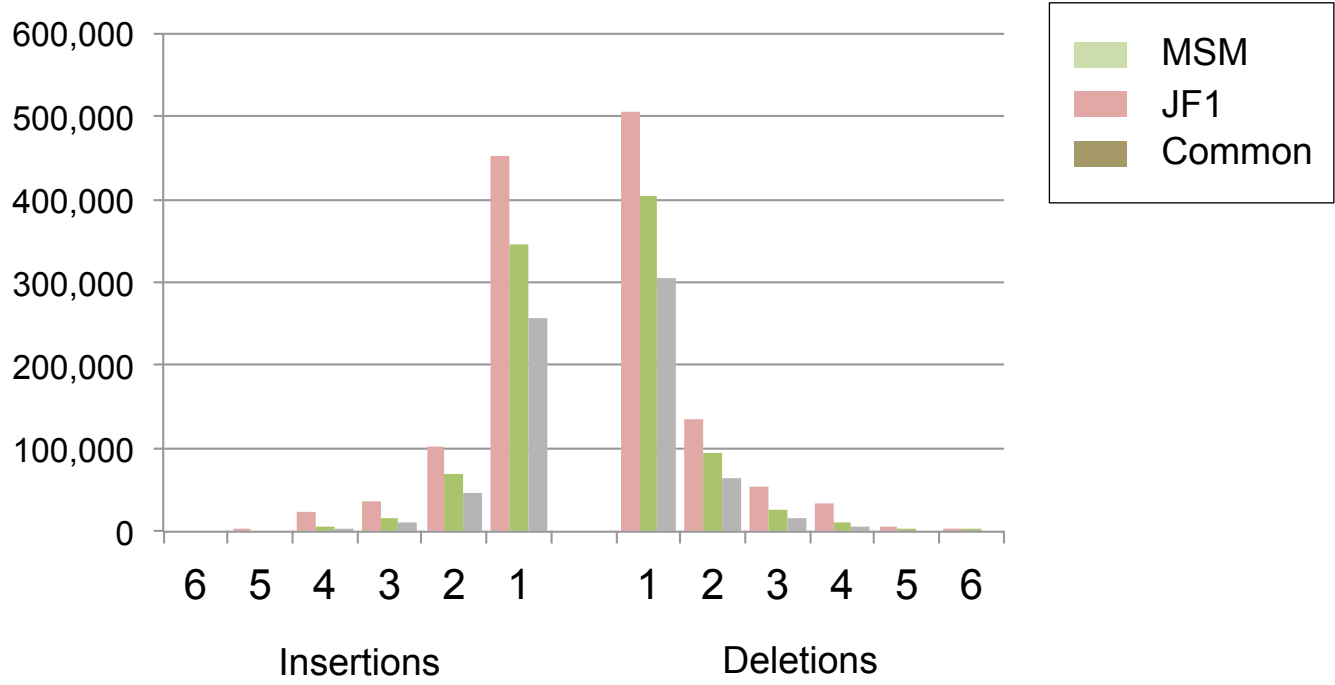
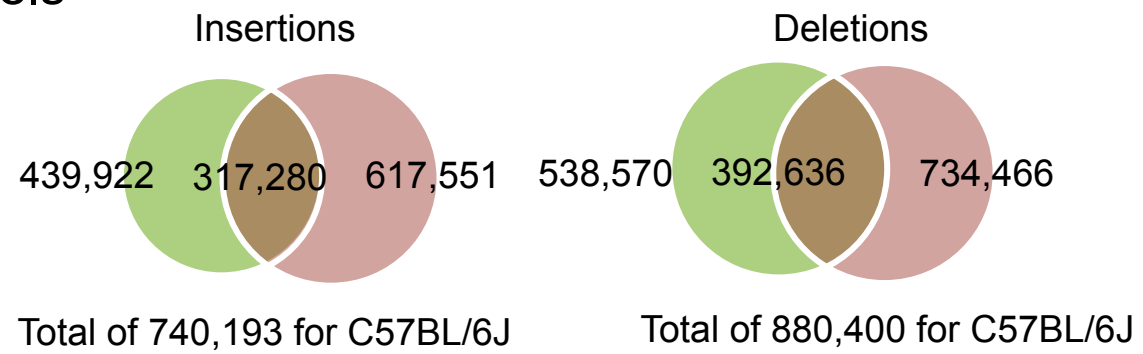


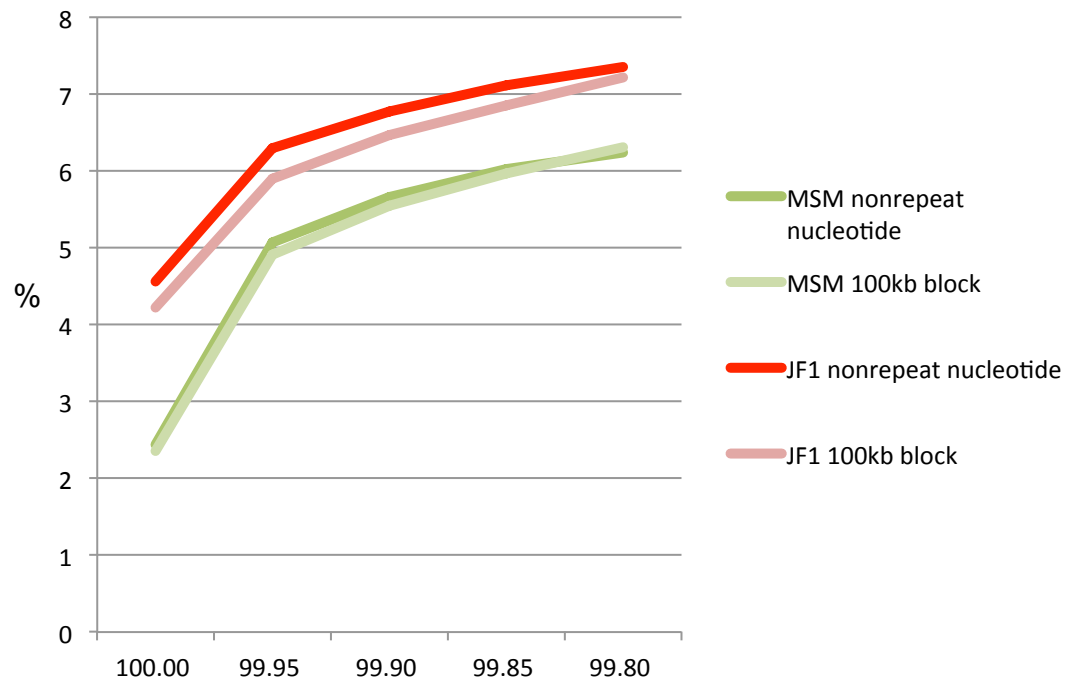
dbSNP

MSM/Ms novel SNPs; 12,430,208
JF1/Ms novel SNPs; 10,865,152

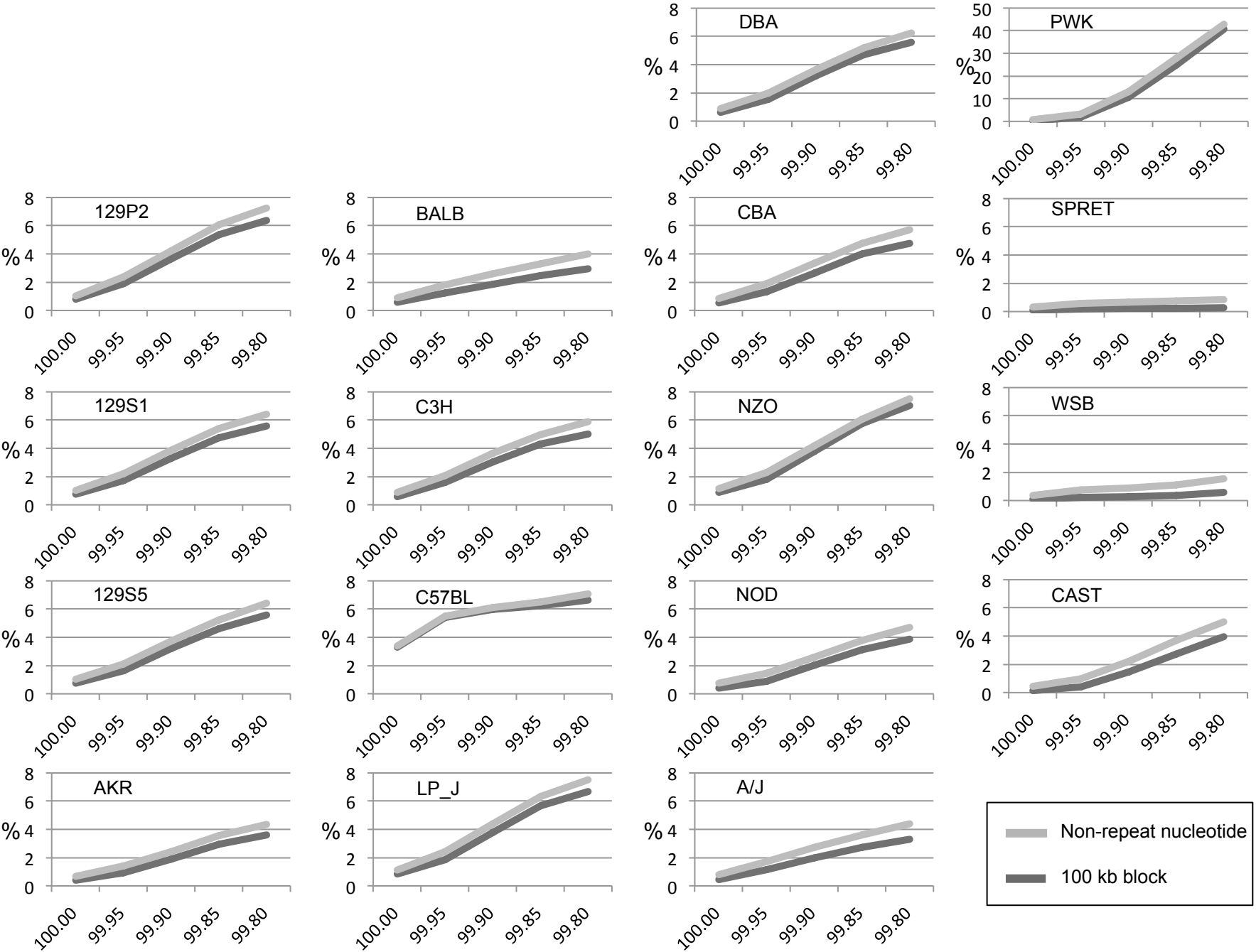
A,	3,076,385
B,	9,353,823
C,	1,511,329
D,	738,182
E,	5,845,481
F,	369,107
G,	7,570,603

Indels

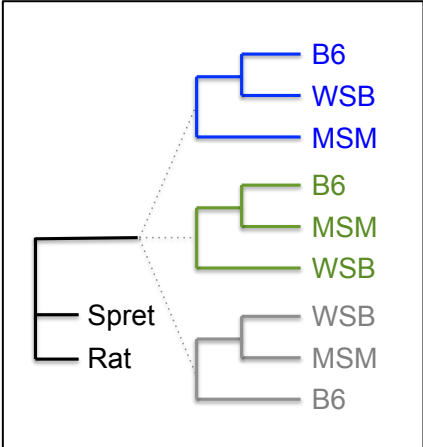
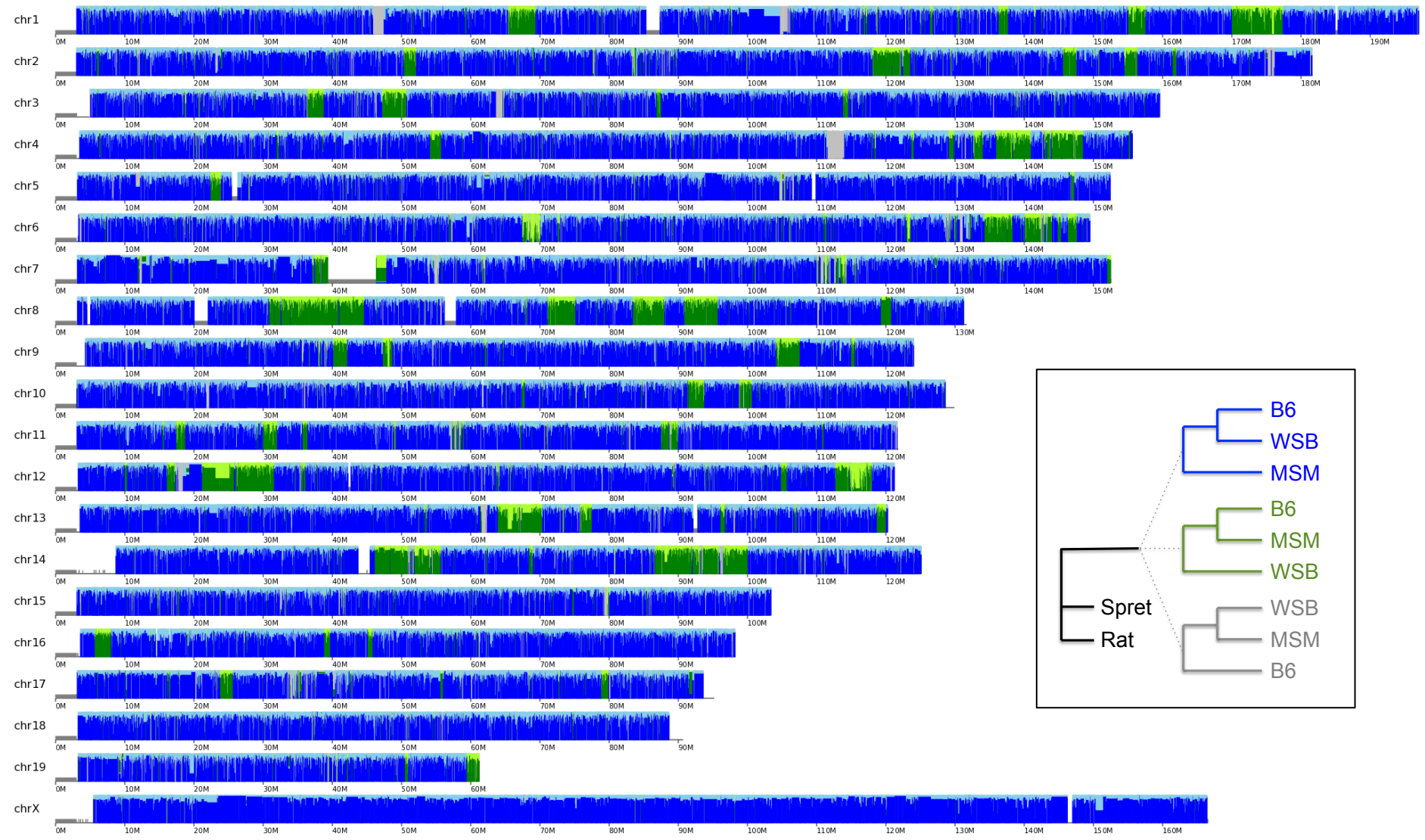


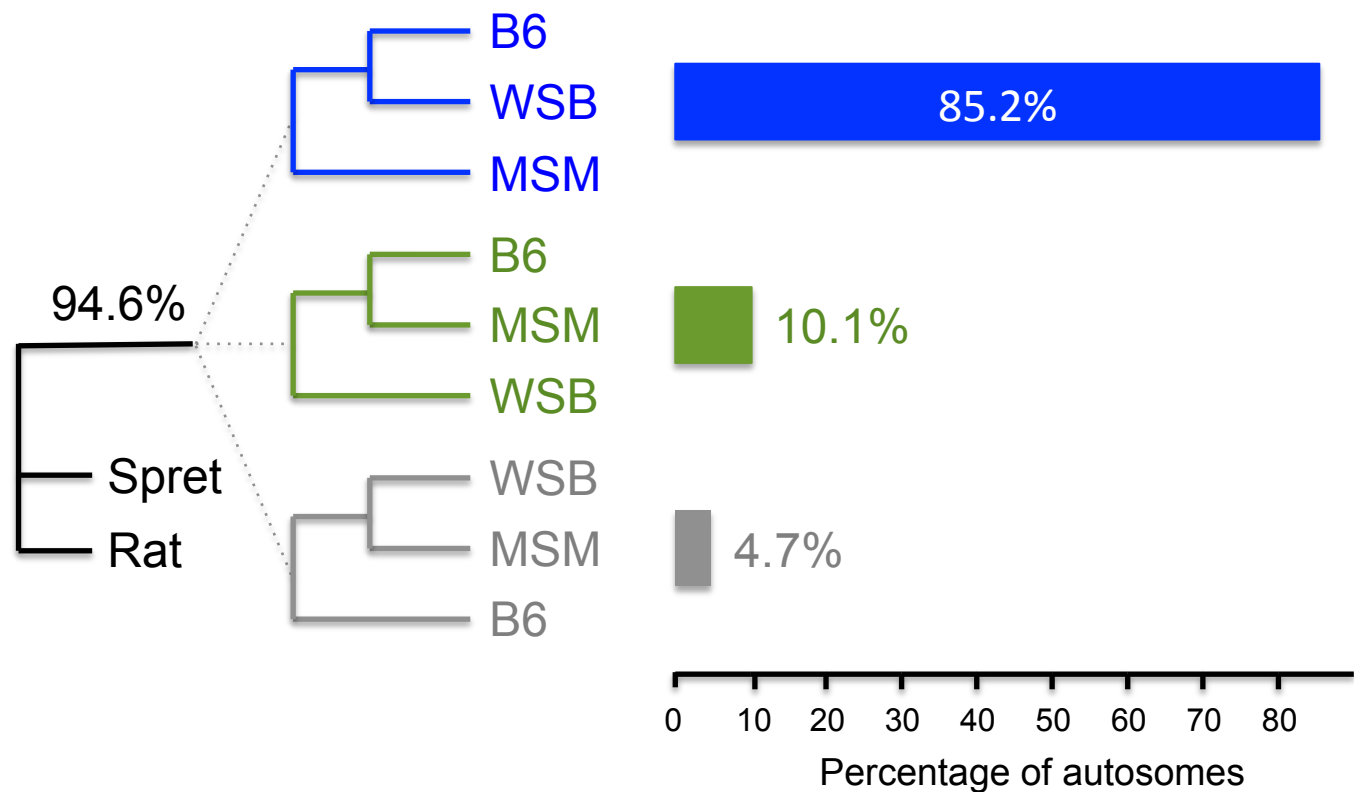


Takada_FigS5

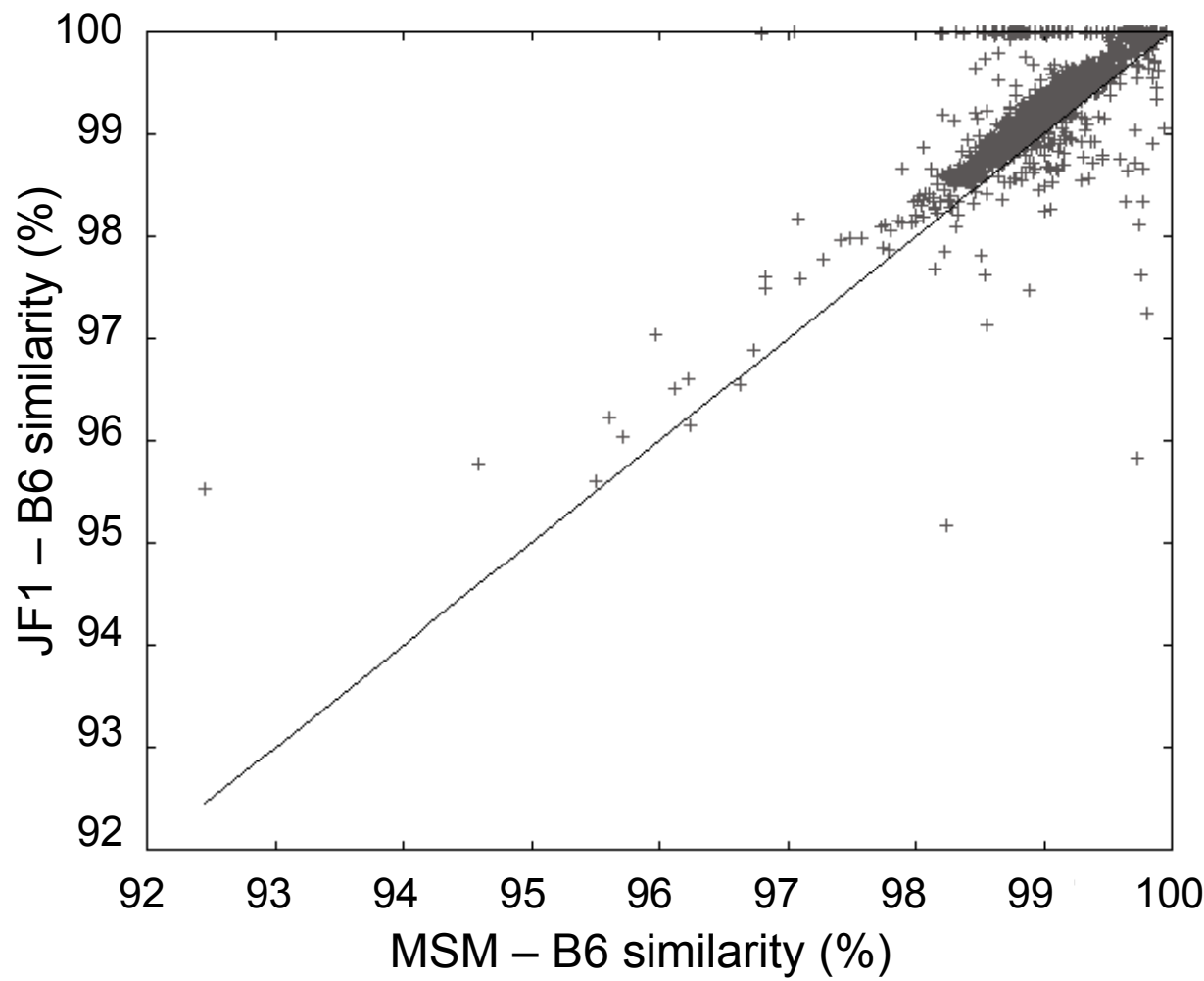


Takada_FigS6

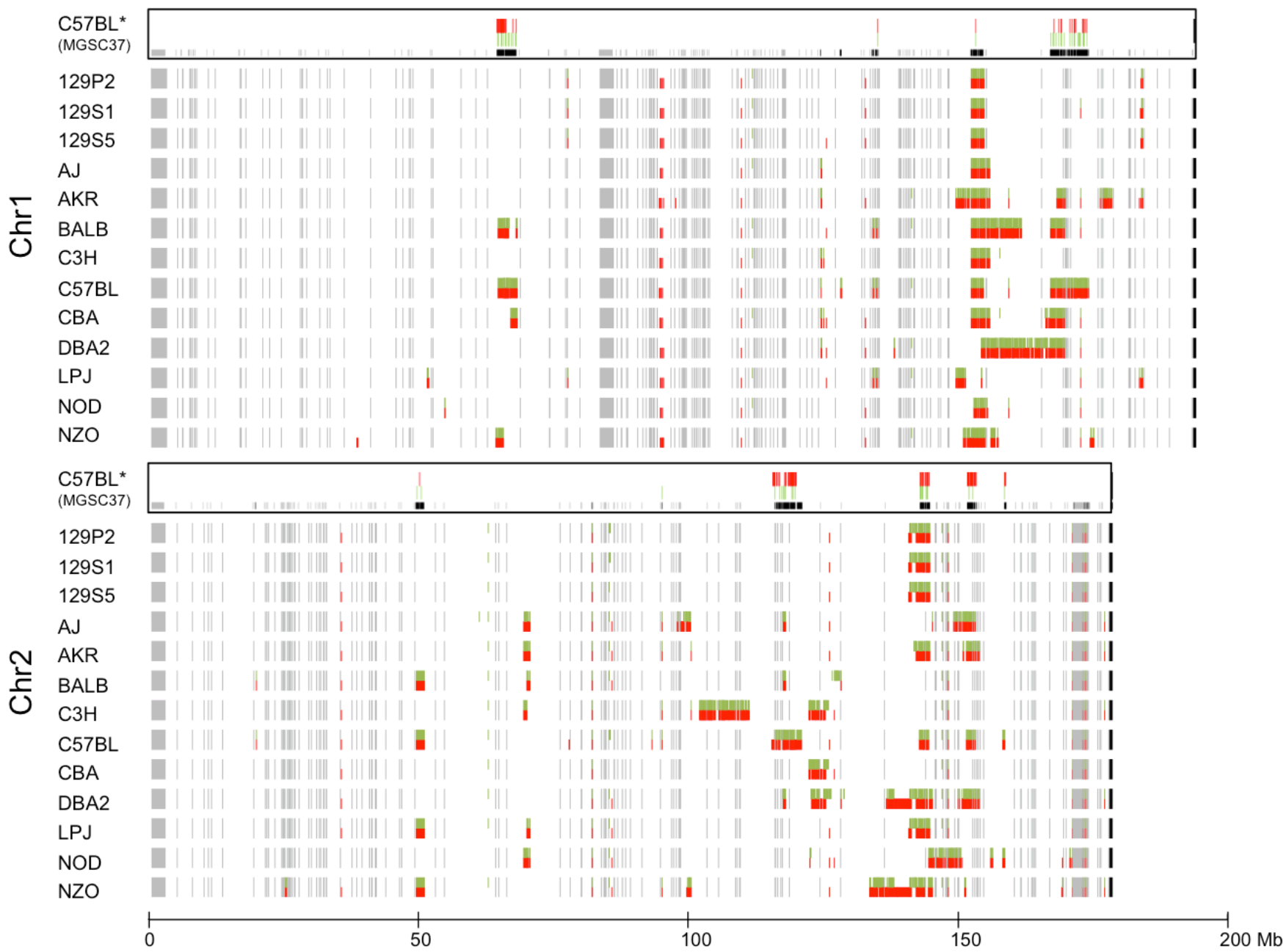




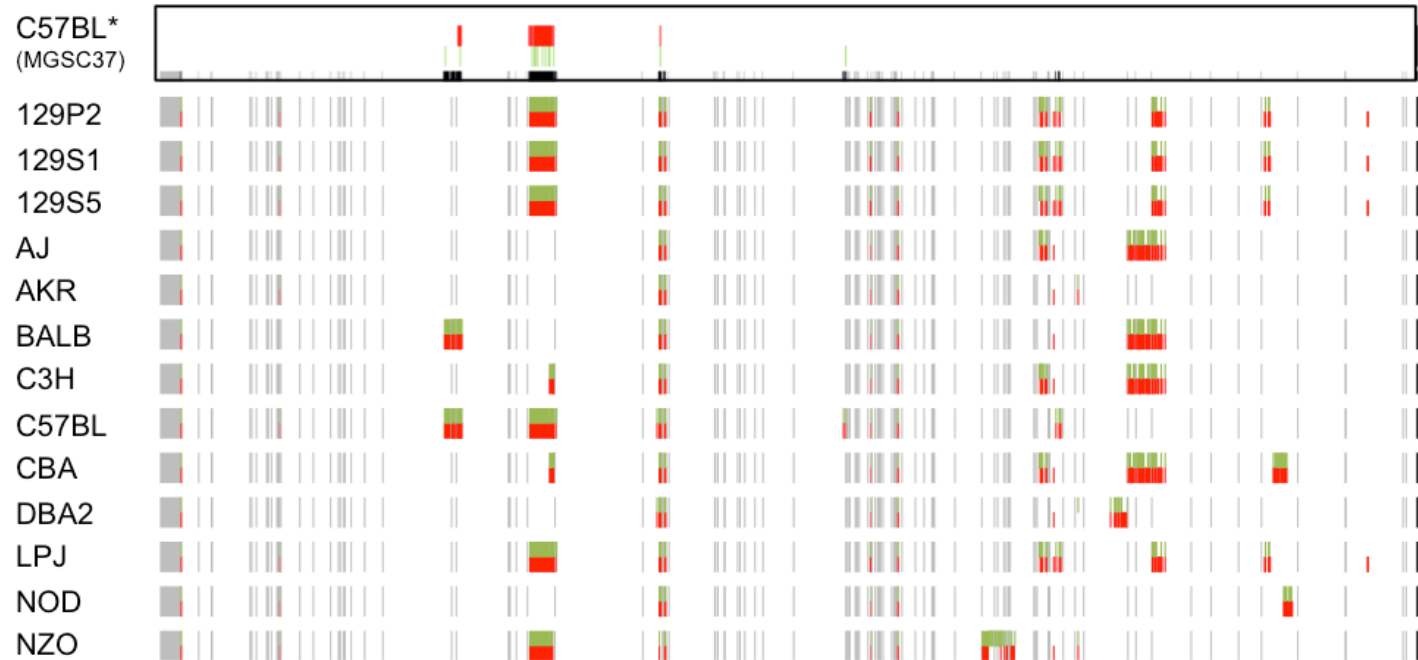
Takada_FigS8



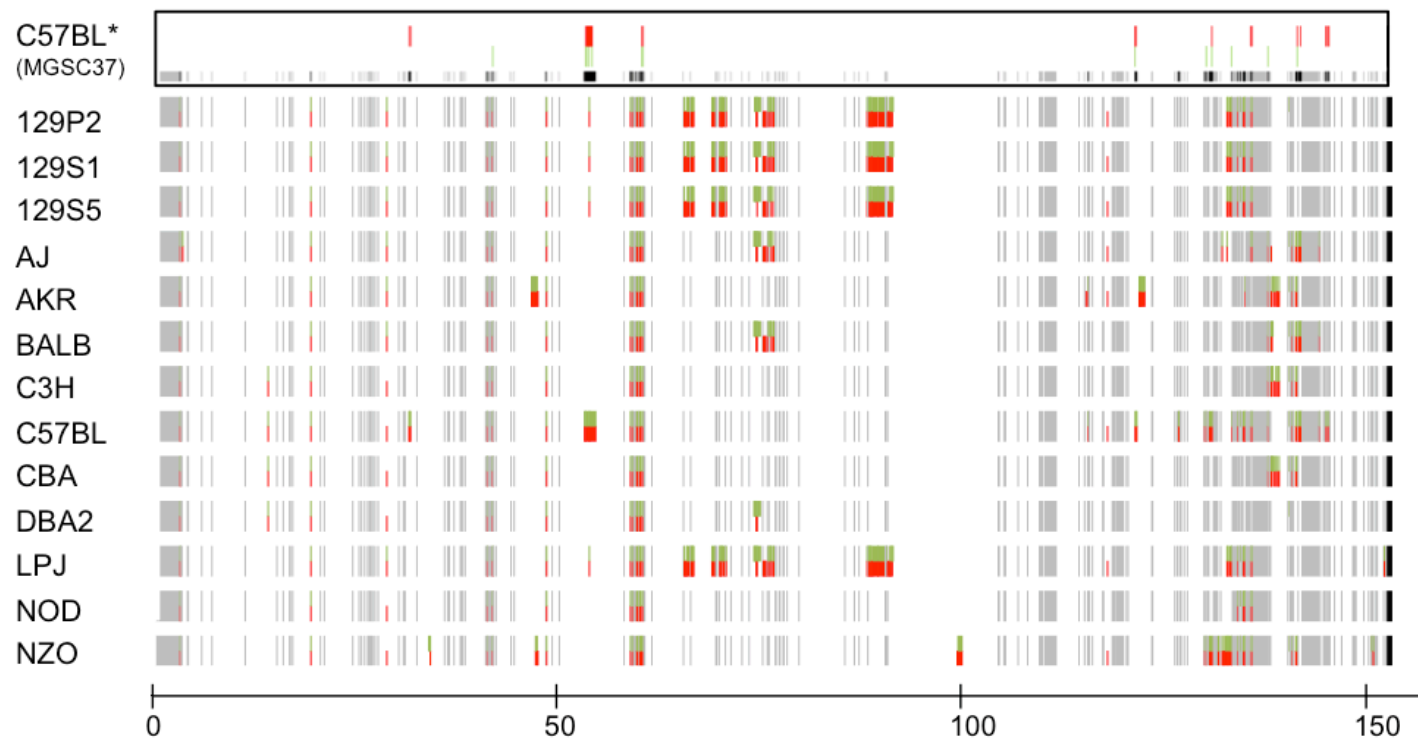
Takada_FigS9



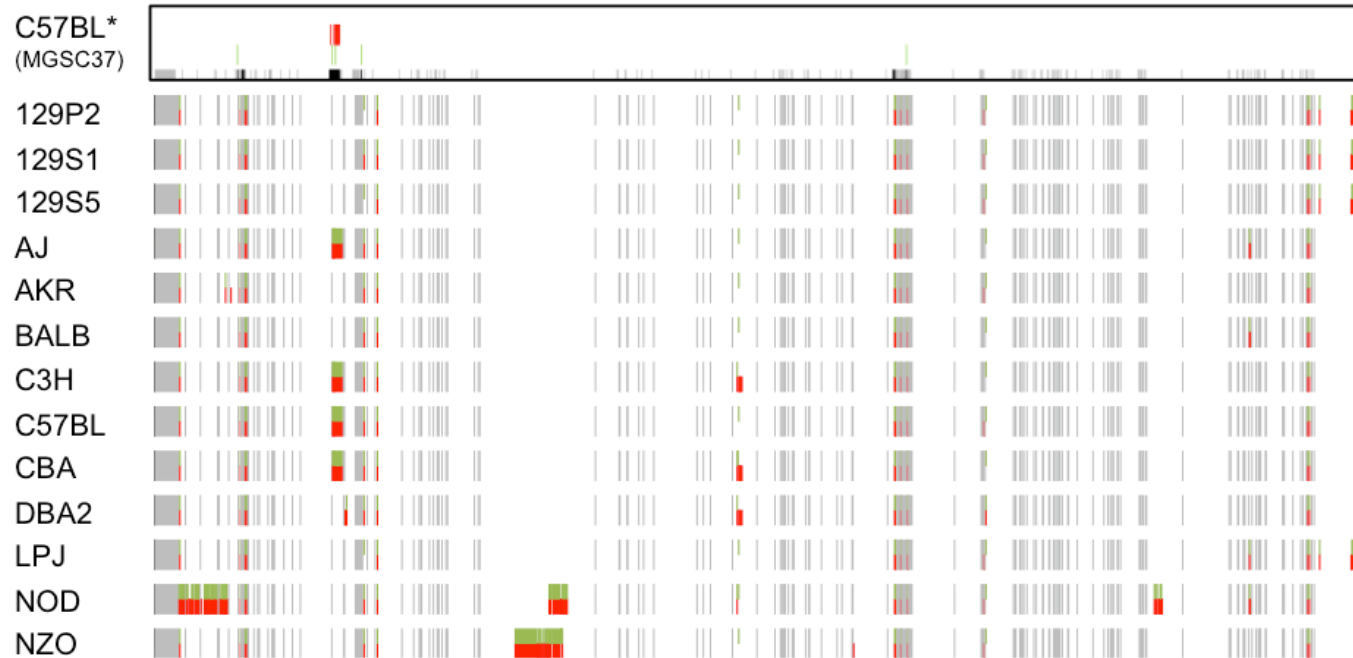
Chr3



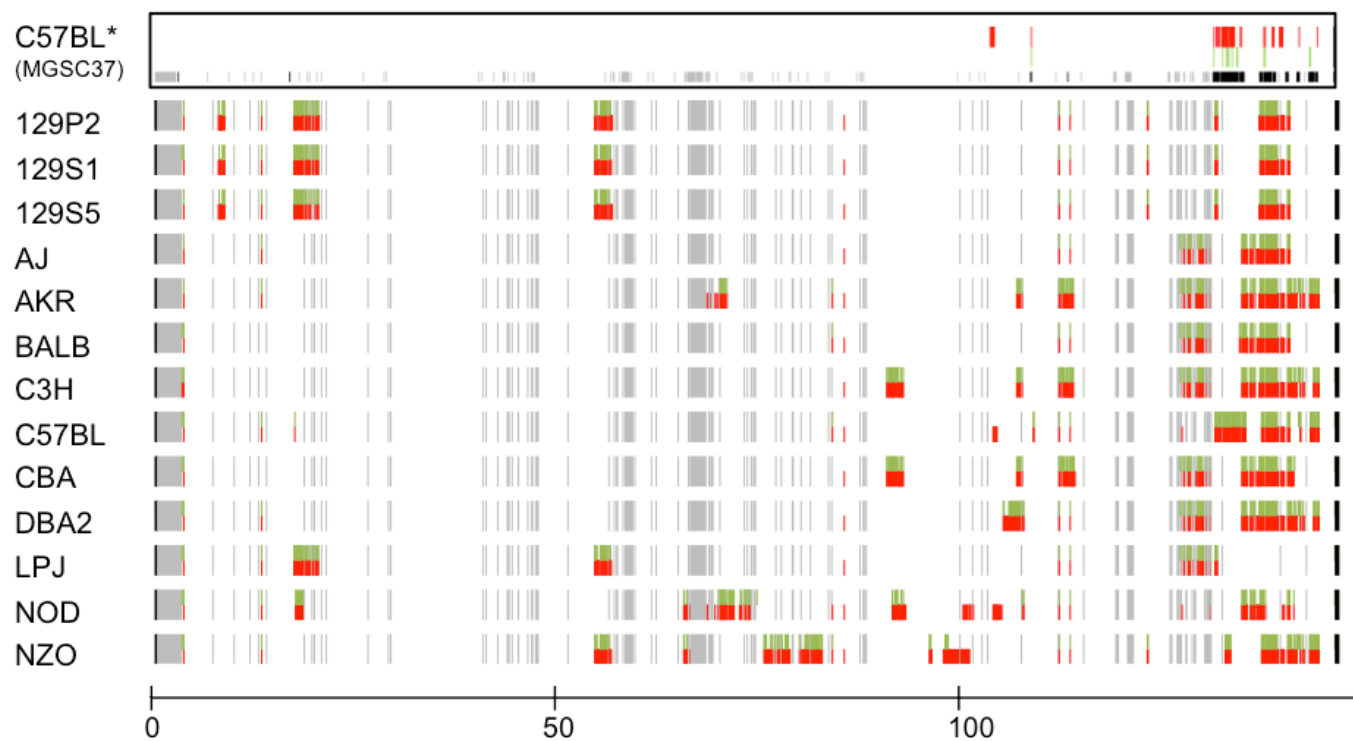
Chr4



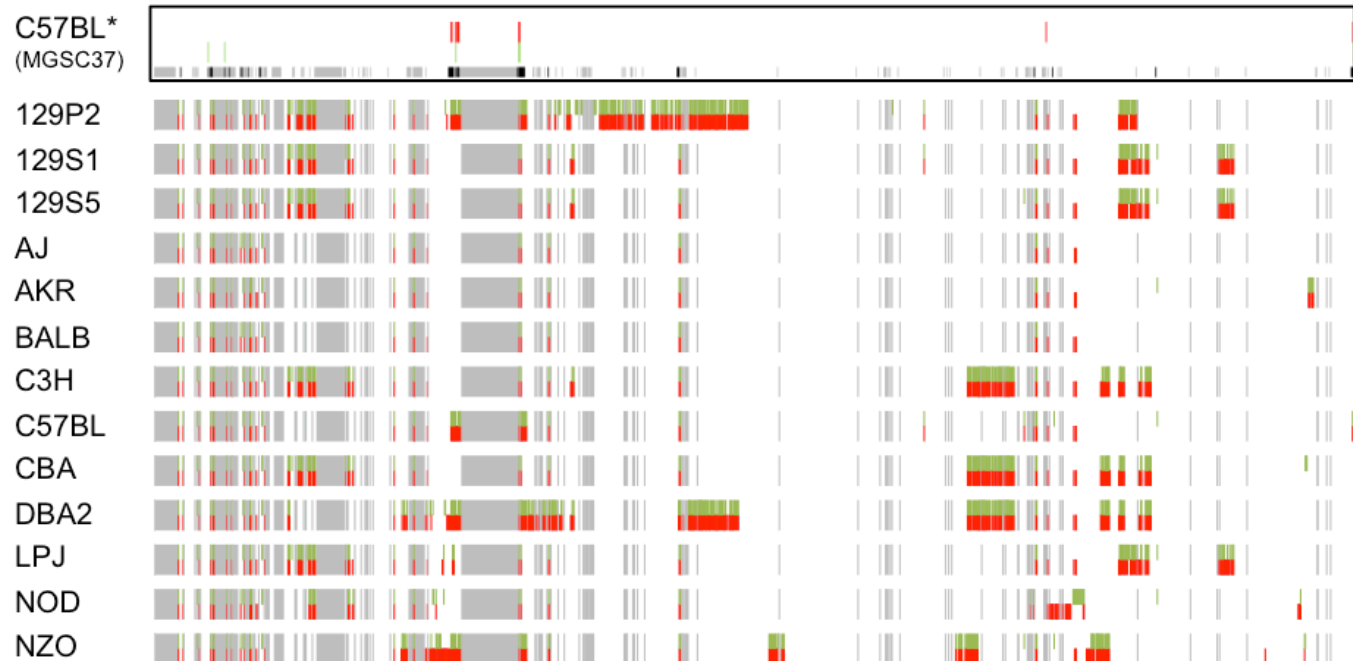
Chr5



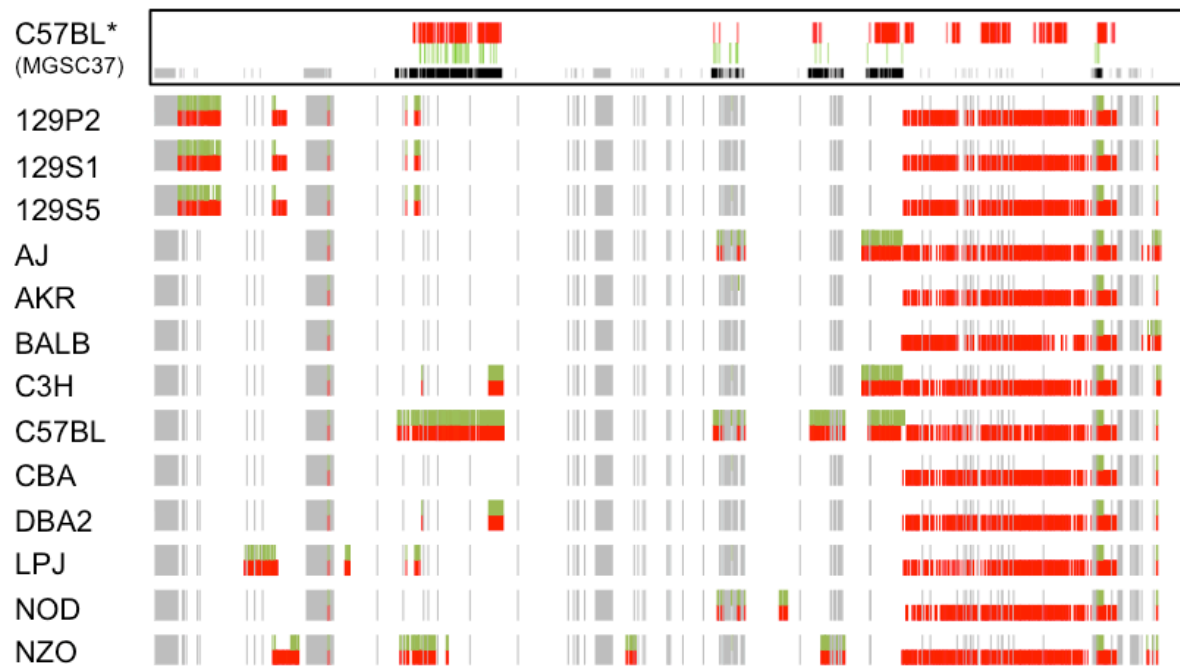
Chr6



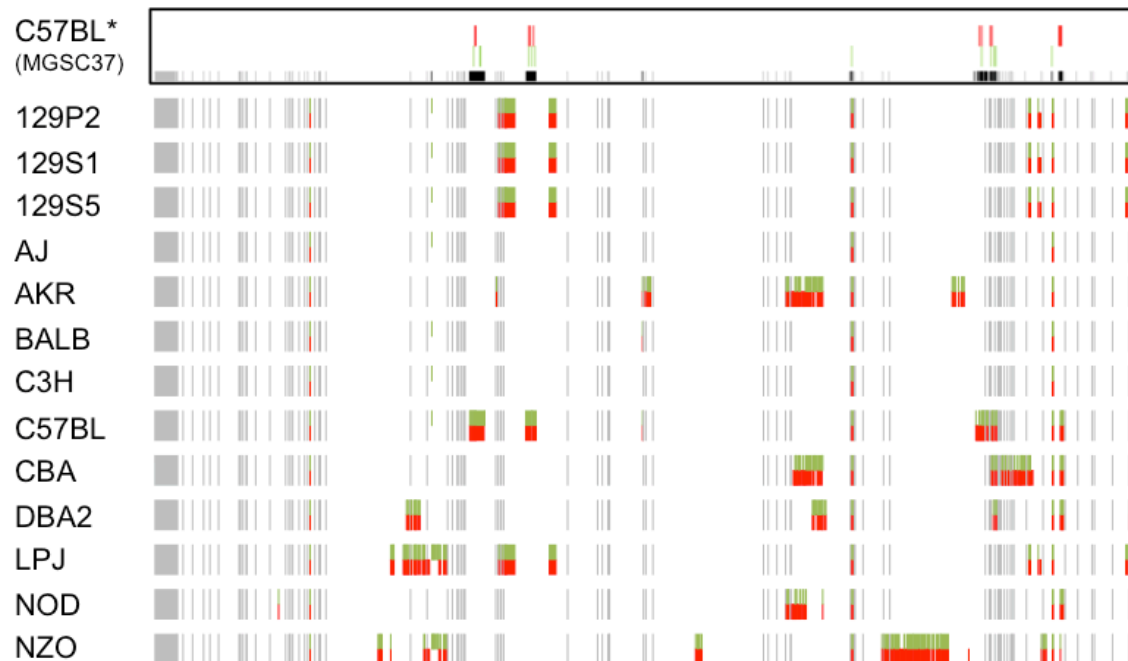
Chr7



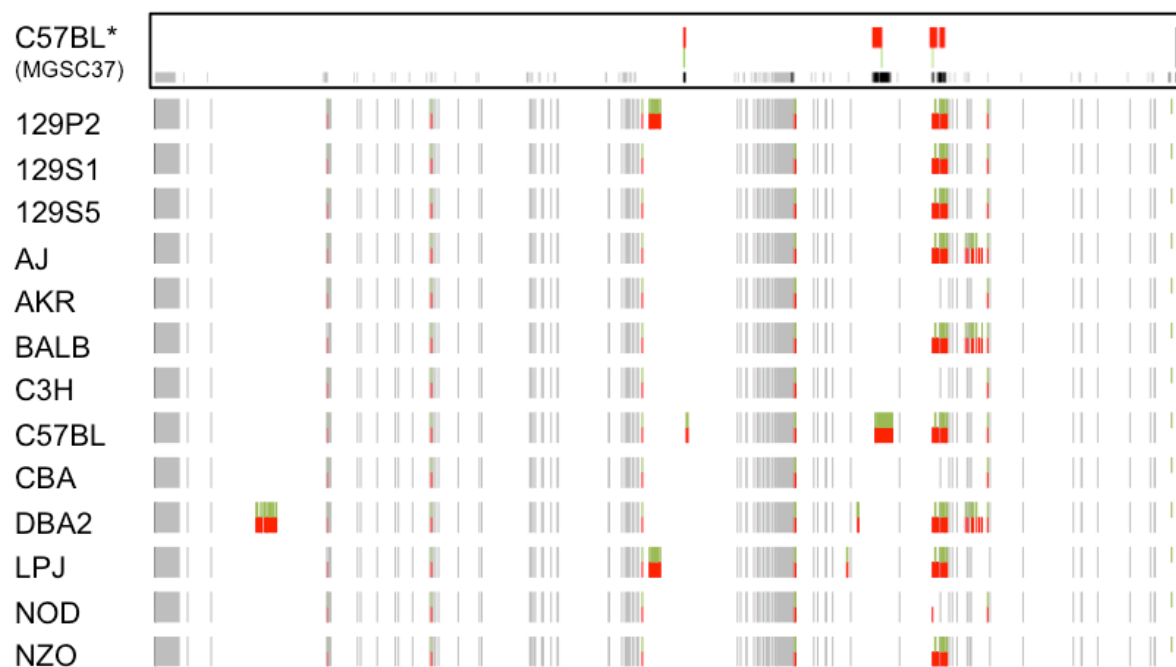
Chr8



Chr9



Chr10



0

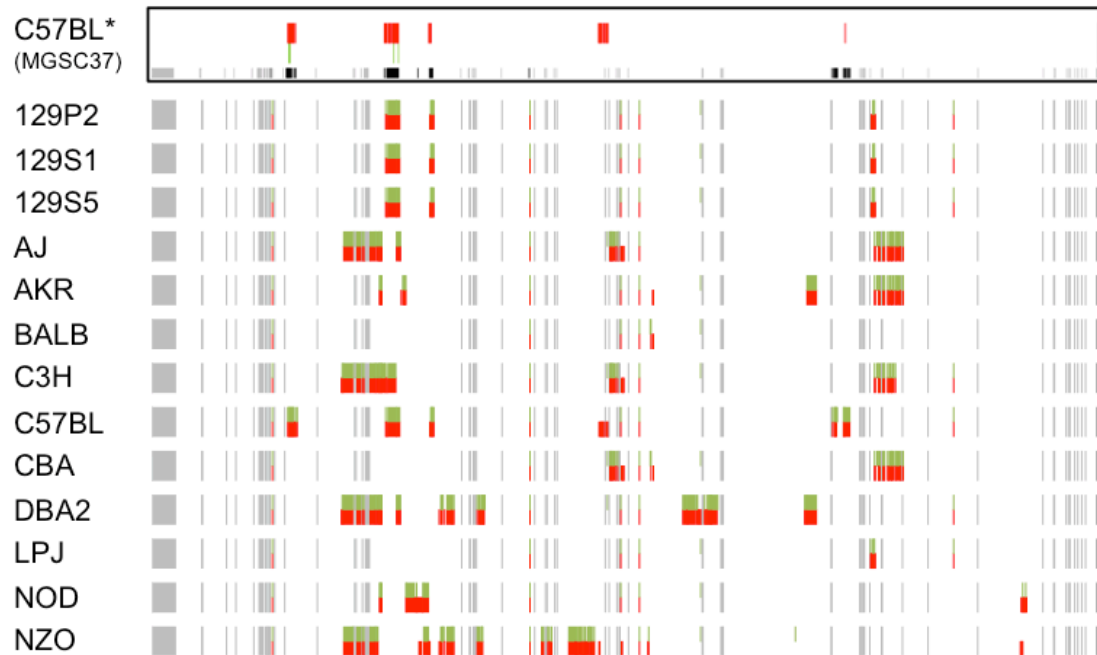
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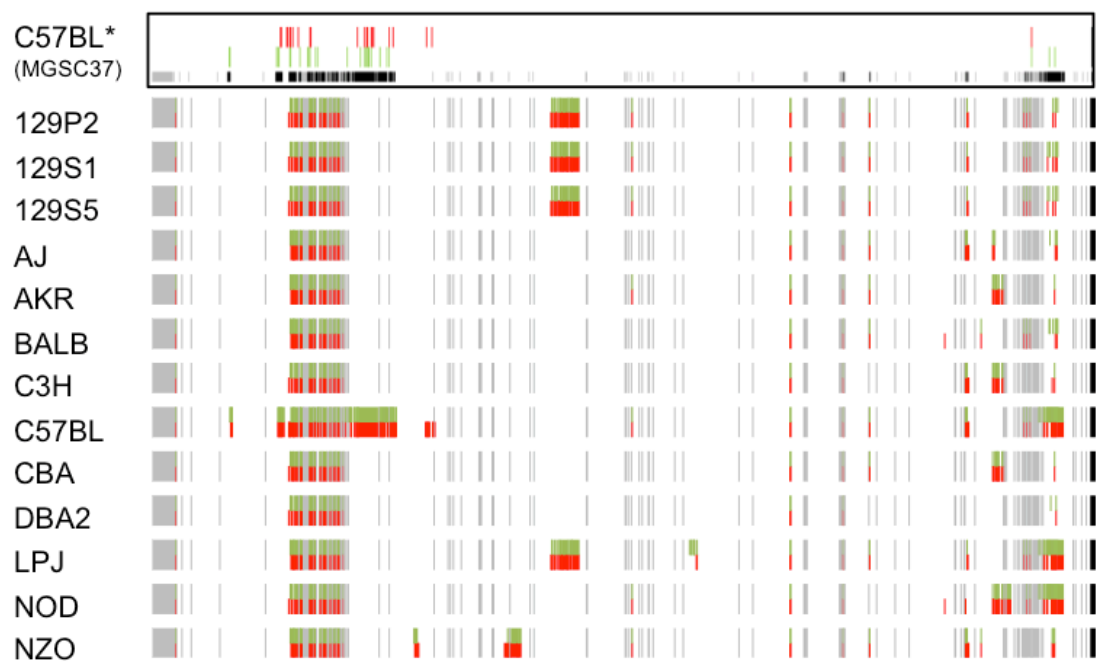
150

200 Mb

Chr11



Chr12



0

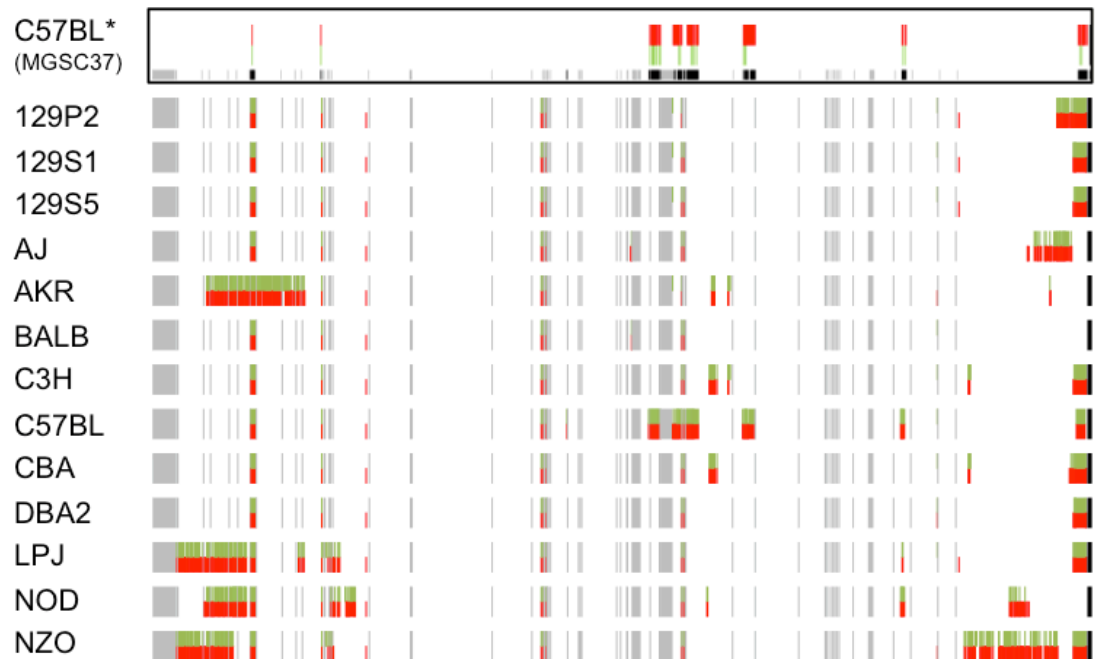
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100

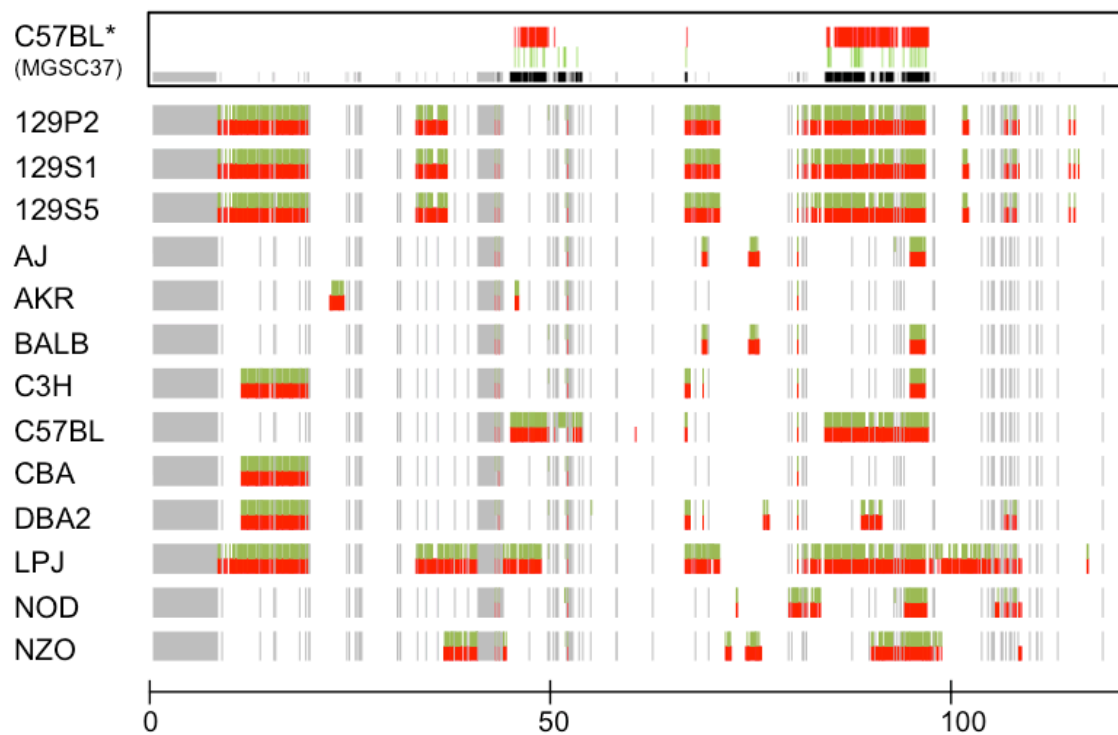
150

200 Mb

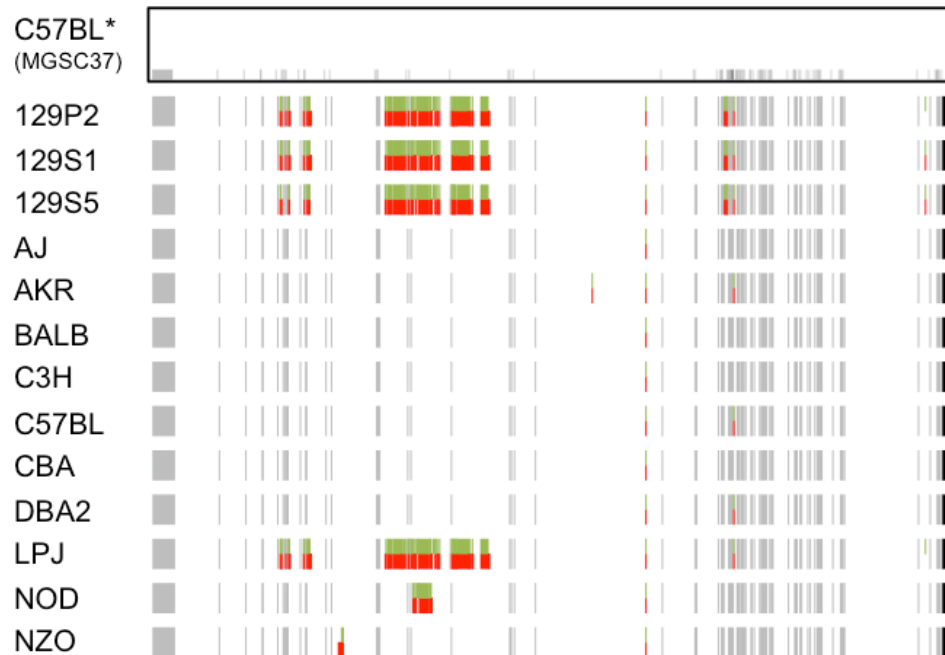
Chr13



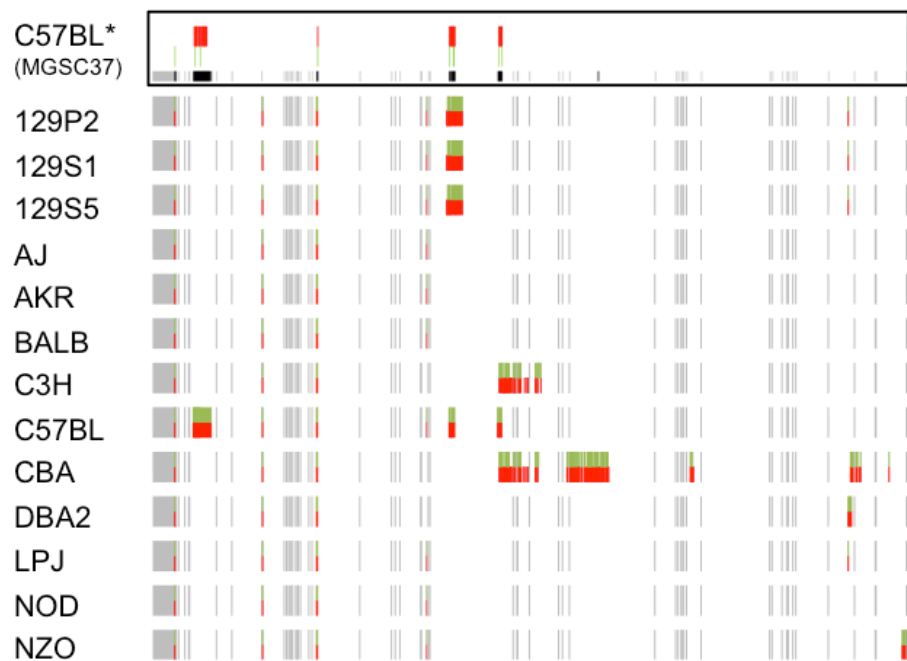
Chr14



Chr15



Chr16



0

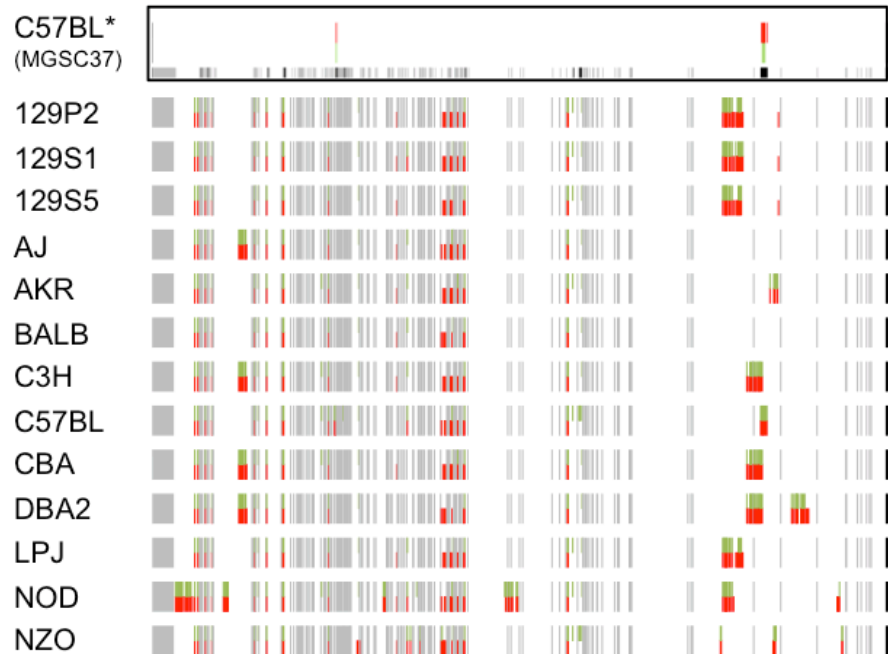
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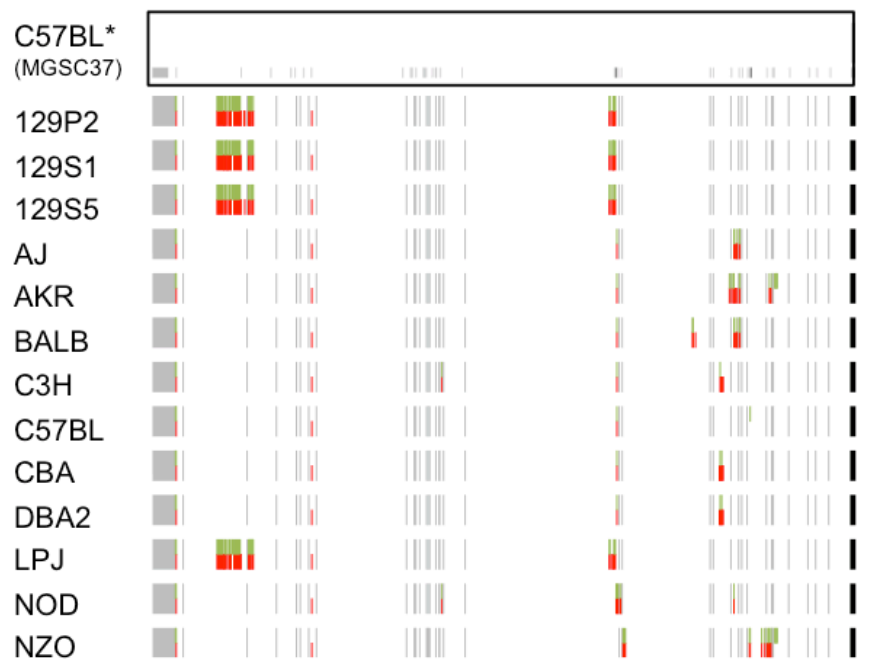
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200 Mb

Chr17



Chr18



0

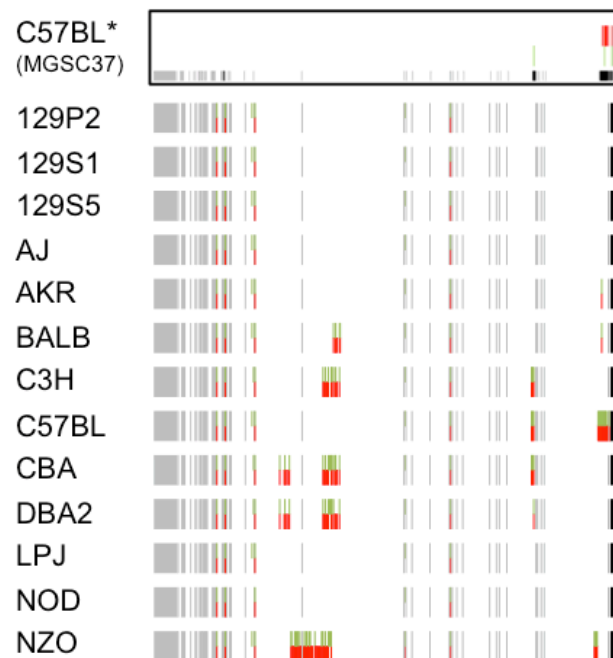
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100

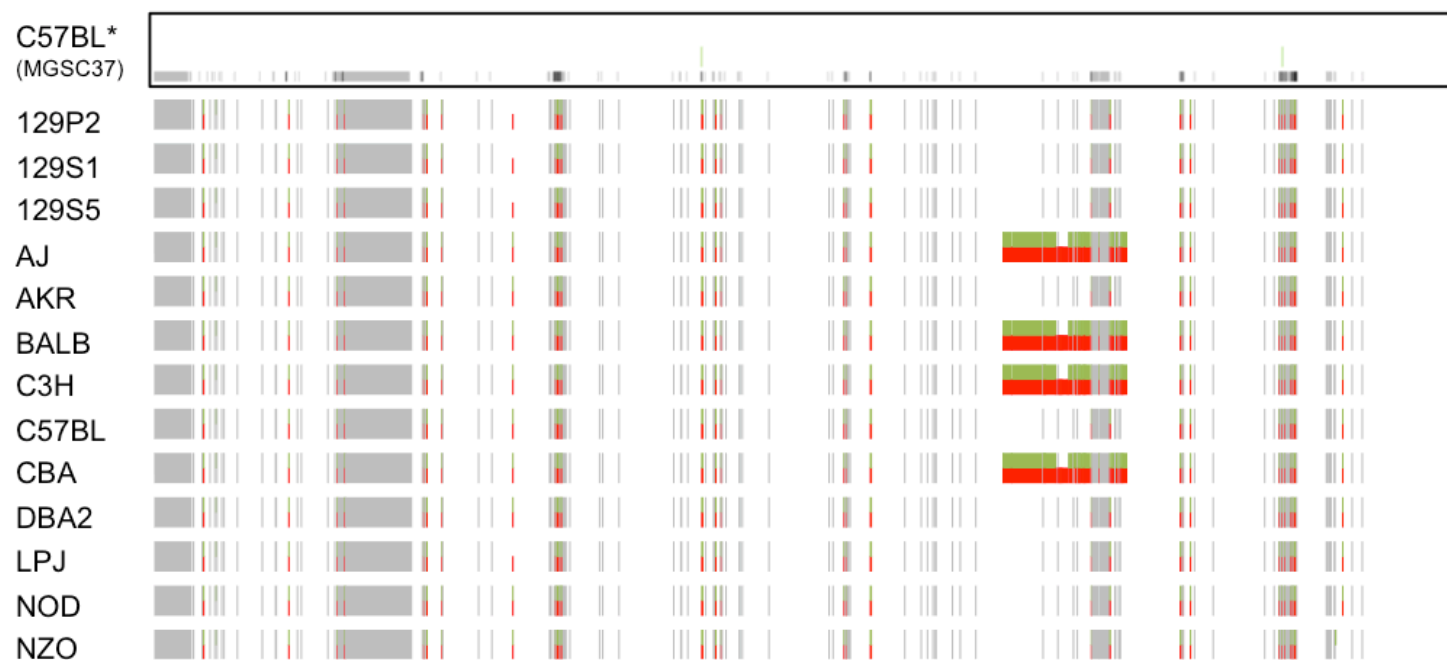
150

200 Mb

Chr19



ChrX



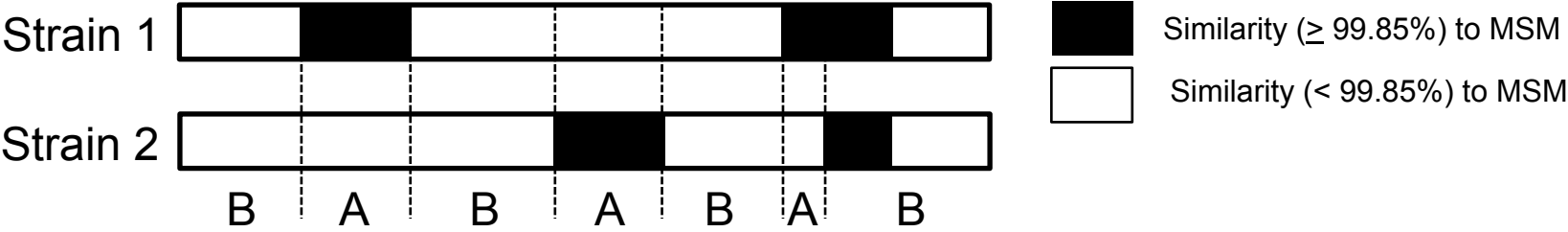
0

50

100

150

200 Mb



	C57BL/6J*	C57BL/6NJ	129P2	129S1/SvImJ	129S5	A/J	AKR/J	BALB/cJ	C3H/HeJ	CBA/J	DBA2/J	LP/J	NZO/HiLtJ	NOD/ShiLtJ
C57BL/6J*	-	10.8	39.2	37.4	37.3	33.4	36.3	33.0	37.5	38.3	40.2	40.5	41.4	37.2
C57BL/6NJ	33	-	39.9	38.1	38.0	34.2	37.2	34.0	38.2	39.1	41.0	41.2	42.0	38.0
129P2	905,728	921,121	-	45.9	41.5	34.0	35.5	34.3	36.5	35.9	36.3	40.9	41.0	34.6
129S1/SvImJ	837,828	852,867	117,073	-	1.8	31.8	33.1	31.4	34.2	33.7	36.0	35.1	39.5	32.2
129S5	825,674	840,691	117,372	2,082	-	31.7	33.0	31.2	34.0	33.5	35.7	33.7	39.4	32.1
A/J	703,063	718,353	745,474	672,966	668,219	-	26.4	23.5	29.3	30.1	32.9	37.1	34.6	27.7
AKR/J	780,133	798,044	833,120	743,883	737,840	428,916	-	26.6	32.3	29.7	32.4	36.4	35.9	27.5
BALB/cJ	639,511	657,965	735,983	647,210	641,945	242,640	425,961	-	33.3	28.9	30.4	36.9	34.7	27.3
C3H/HeJ	818,150	833,102	825,688	724,045	718,348	368,889	559,265	481,792	-	32.2	33.5	39.5	38.2	33.0
CBA/J	860,172	878,819	834,756	740,245	734,744	457,596	511,885	445,131	241,109	-	33.5	38.6	39.3	31.8
DBA2/J	890,782	909,334	830,018	803,737	797,464	622,458	632,925	554,852	529,297	513,273	-	40.5	39.0	36.7
LP/J	953,580	970,331	379,215	285,061	283,245	827,446	817,033	770,618	893,003	894,563	935,388	-	40.3	34.5
NZO/HiLtJ	962,259	975,887	1,033,771	968,285	961,483	797,829	831,911	796,637	942,210	991,425	920,094	996,390	-	36.4
NOD/ShiLtJ	830,238	848,688	825,352	732,954	729,705	509,862	488,831	505,970	660,521	642,945	784,392	799,097	874,445	-

* NCBI m37.1

Percentage of *molossinus*-derived SNPs in total SNPs= $100 * A/(A + B)$: Upper right
Number of potentially *molossinus*-derived SNPs: Lower left