Supplemental Table 1. DNA markers used and their position on the IRGSP1.0 reperence genome

Marker name	Chr.	Position (Mb)		Marker name	Chr.	Position (Mb)		Marker name	Chr.	Position (Mb)		Marker name	Chr.	Position (Mb)	
RM3252	1	0.30	a	RM6783	3	9.32	b,c	RM3805	6	2.85	a	RM23766	9	3.64	a
RM3148-1	1	0.75	b,c	RM1371	3	9.94	a	RM7420	6	3.95	b	RM23823	9	5.13	a
RM6324	1	2.38	a	RM5955-1	3	11.18	c	RM4608	6	4.30	a	RM7481	9	6.59	a
RM5336	1	3.37	b,c	RM5551	3	12.93	a	RM2615	6	5.96	b	RM5515	9	7.15	b,c
RM8105	1	4.05	a	RM3291	3	13.60	b	RM5855	6	7.41	b	RM1328	9	9.21	a
RM5641	1	4.97	b	RM6080	3	13.93	b,c	RM5585-1	6	7.61	b	RM7387	9	10.14	b,c
RM8111	1	6.27	a	RM1164	3	14.86	b,c	Hd1-ID006[d]	6	9.34	b	RM6051	9	12.83	a
RM5800	1	7.40	b,c	GS3_ID001_3[e]	3	16.73	a	RM19830	6	10.57	b	RM3700	9	15.43	a
RM6466	1	9.19	a	RM1334	3	17.42	a	RM3330	6	11.07	b	RM1189	9	16.27	b
RM3627	1	10.31	b,c	RM7431	3	19.52	c	RM19951	6	12.98	a	RM6235	9	16.68	a
RM10787	1	12.49	a	RM7370	3	21.15	b,c	RM20048	6	16.10	b	RM5102	9	18.04	b,c
RM5365	1	14.52	a	RM7134	3	22.01	a	RM6818	6	16.58	a	RM5786-1	9	19.79	a
RM5385	1	17.31	c	RM8208	3	22.40	b,c	RM20158	6	19.70	a	RM3636	9	20.84	b,c
RM11024	1	18.48	a	RM6266	3	23.82	a	RM7193	6	20.26	c	RM6971	9	21.89	a
RM5638	1	20.94	c	RM3513	3	25.11	b,c	RM3827-1	6	22.30	c	RM6816	9	22.21	c
RM1196	1	21.90	a	RM6736	3	27.32	b,c	RM1340-1	6	23.34	a	RM6797	9	22.71	b,c
RM6880	1	22.00	c	RM6358-1	3	28.78	b,c	RM6395	6	26.00	b,c	RM7492	10	0.05	a
RM6716	1	23.12	b,c	RM3525	3	30.39	b,c	RM5509	6	27.83	a	RM7545	10	3.81	b,c
RM7124	1	24.39	c	RM5813	3	30.98	a	RM3138	6	28.47	b	RM25151	10	7.62	a
RM8129	1	25.07	a	RM1238	3	32.08	c	RM3307	6	28.95	a	RM4455	10	11.74	a
RM3440	1	27.19	b,c	RM1352-1	3	32.35	a	RM3343	6	29.62	b,c	RM5689	10	13.55	b
RM3817	1	28.90	a	RM7000	3	33.80	b	RM5463-1	6	30.99	a	RM1859	10	13.56	b,c
RM6702	1	29.77	c	RM3329	3	35.60	a	RM4584	7	0.50	b,c	RM5620	10	17.47	a
RM1183	1	30.98	b,c	RM335	4	0.69	b,c	RM1085	7	1.24	b	RM1937	10	18.00	b
RM6648	1	32.34	a	RM6770	4	2.83	c	RM5752-1	7	2.57	a	RM6737	10	18.78	a
RM1003	1	33.48	b,c	RM7200	4	4.04	a	RM1353-1	7	3.31	b	RM1146	10	19.69	b,c
RM7594	1	35.47	a	RM3658	4	5.61	c	RM7479-1	7	4.14	a	RM1162	10	22.43	b,c
RM6333	1	38.01	b,c	RM6659	4	6.58	a	RM6728	7	5.73	b	RM7093	10	22.83	b,c
RM1387	1	40.21	a	RM7472	4	7.10	c	RM8006	7	7.69	a	RM6673	10	23.08	a
RM5310	1	41.20	b,c	RM16616	4	12.05	a	RM5436	7	9.08	b	RM7203	11	1.08	a
RM8137	1	42.93	a	RM5633	4	13.08	a	RM5499	7	9.99	a	RM3668	11	1.46	b,c
RM6938	2	0.98	a	RM16760	4	17.10	a	RM3635	7	11.09	b	RM1812	11	2.41	a
RM1285	2	3.84	b,c	RM1205	4	19.64	c	RM3832	7	12.71	a	RM6544	11	3.86	c
RM5553	2	4.67	a	RM1359-1	4	20.03	a	RM3670	7	13.44	b	RM5704-1	11	5.48	a
RM4702	2	6.22	c	RM3042	4	23.02	b,c	RM5481-1	7	16.20	a	RM7283	11	9.12	a
RM3828	2	7.65	a	RM17148	4	24.24	a	RM3795	7	17.19	b,c	RM26567	11	13.39	a
RM3390	2	7.66	b,c	RM1388-1	4	25.22	b,c	RM6835	7	17.69	a	RM5824	11	14.53	b,c
RM5699	2	8.98	a	RM1354	4	26.30	a	RM3186	7	18.63	c	RM26616	11	14.68	a
RM1358	2	10.19	b,c	RM3092	4	27.72	c	RM8257	7	18.66	c	RM5312	11	17.63	a
RM5210	2	12.67	a	RM3916	4	28.76	a	RM3404-1	7	20.11	a	RM5349	11	19.65	a
RM3443	2	14.33	b,c	RM7208	4	30.14	c	RM3799	7	21.63	b,c	RM1219	11	21.52	a
RM5812	2	15.90	a	RM3534	4	31.16	a	RM6326	7	24.20	a	RM6105	11	24.11	b,c
RM7426	2	16.68	a	RM3466	4	34.05	a	RM6344	7	24.96	b,c	RM2191-1	11	25.13	a
RM1211-1	2	18.46	c	RM5608	4	35.36	a	RM1330-1	7	25.66	a	RM1233-1	11	27.01	b,c
RM2634	2	20.50	b,c	RM7030	4	35.38	b,c	RM7601	7	29.04	a	RM2064	11	27.49	a
RM3666	2	20.90	c	RM1248	5	0.09	a	RM1381-1	8	0.42	a	BX000503_3[d]	12	0.08	b,c
RM5427	2	21.52	c	RM1024	5	1.23	b	RM6356	8	1.56	b	RM1208	12	1.08	c
RM6379	2	23.57	a	RM6517	5	2.91	a	RM1148	8	3.74	a	RM3747	12	2.31	a
RM1307	2	25.83	b,c	RM3322	5	4.26	b	RM6838	8	5.85	a	RM6998	12	4.75	b,c
RM1367-1	2	27.07	a	RM18107	5	6.83	a	RM3507	8	6.16	b	RM27724	12	5.51	a
RM3685	2	29.29	b,c	RM4691	5	7.03	a	RM22679	8	8.58	a	RM6905	12	6.75	b,c
RM13958	2	31.20	a	RM18194	5	9.35	a	RM3481	8	9.14	b	RM27792	12	7.10	c
RM5404	2	33.68	b,c	RM5140	5	13.54	a	RM3395	8	10.29	a	RM2529	12	7.57	a
RM3789-1	2	34.69	b,c	RM1237	5	18.02	a	RM6032	8	11.90	b,c	RM27900	12	9.57	a
RM1255	2	35.26	b,c	RM6621	5	18.84	b	RM22839	8	12.41	a	RM6973-1	12	10.08	b,c
RM3850	2	35.43	a	RM1386	5	20.06	a	RM22934	8	15.97	a	RM7102-1	12	13.21	a
RM4108	3	0.54	a	RM3351-1	5	20.76	b	RM6382	8	16.92	c	RM28112	12	16.28	a
RM3894	3	1.12	c	RM4501	5	22.11	a	RM5767	8	18.82	a	RM7344	12	17.95	b
RM1332	3	2.45	b,c	RM3476	5	23.91	a	RM7049-1	8	20.82	b,c	RM28305	12	19.96	a
RM6829	3	2.88	c	RM6972	5	25.41	c	RM7556	8	22.21	a	RM5700-1	12	21.98	b,c
RM4352	3	4.32	a	RM3809	5	26.65	a	RM3845	8	24.76	b,c	RM3331	12	23.49	b,c
RM6038	3	4.83	c	RM3170	5	28.02	b,c	RM3155-1	8	27.91	a	RM5479-1	12	24.41	a
RM5442	3	5.53	a	RM3286	5	29.54	a	RM3840	8	27.93	c	RM1159	12	25.94	b,c
RM3766-1	3	6.93	b,c	RM8121	6	0.38	a	RM4997	8	28.24	b,c	RM1300	12	26.00	c
RM1338-1	3	8.39	a	RM7399	6	1.05	b	RM3609	9	1.16	a	RM2197	12	27.38	a

a, 130 markers were used in the F_2 population and in the primary survey of the IRK-BC_4F_2 and KSI-BC_4F_2 populations (see Fig. 1 for details).

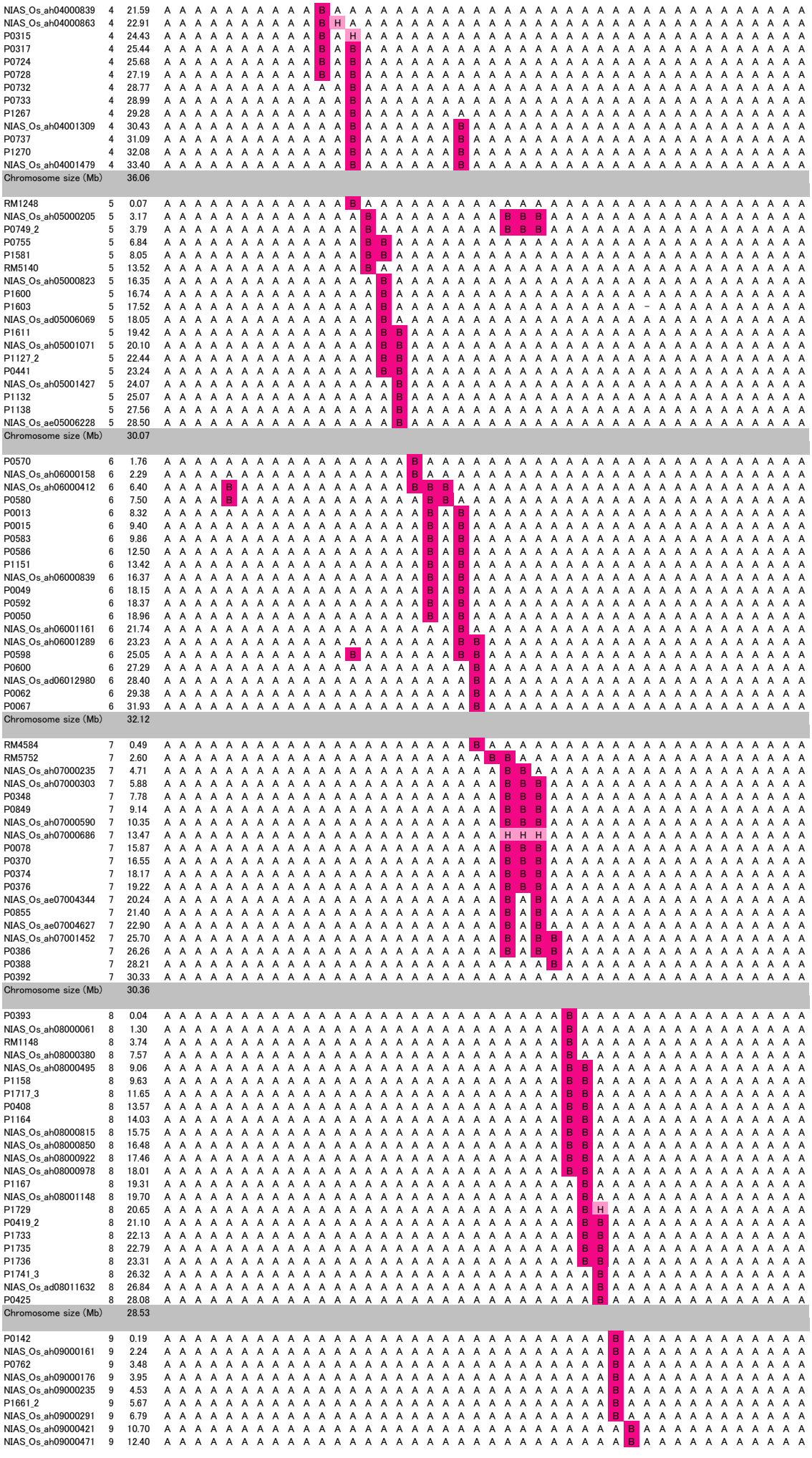
b and c, Additional markers used in the IRK-BC_4F_2 and KSI-BC_4F_2 populations, respectively (see Fig. 1 for details).

d, Primer sequences of insertion/deletion markers: Hd1-ID006, 5′ -GTGCGTGGCGTGCGACGT-3′ (forward), 5′ -CTCAGCGAGGACGGAGGTGGCC-3′ (reverse); BX000503_3, 5′ -GGGGCAAAGAAGAGGAATTT-3′ (forward), 5′ -TTCCTCCTCTCCGATCCTCT-3′ (reverse).

e, Primer sequences of the SNP marker GS3_ID001_3: 5′ -TTTTTTTTTTTTTTTTTTTTTGCAGGCTGGCTTACTCTGTG-3′ (forward, specific to IR64 allele), 5′ -GCAGGCTGGCTTACTCCCTT-3′ (forward, specific to Koshihikari allele), 5′ -ACAACTGTATATATATTTCTTGCAGGGT-3′ (reverse).

Supplemental Table 2. Graphical genotypes of the 42 IRK-CSSLs (IR64 introgression in Koshihikari background)

Marker name	Chr	Mb	Line No.	SL2001	SL2002	SL2003	SL2004	SL2005	SL2006	SL2007	SL2008	SL2009	SL2010	SL2011	SL2012	SL2013	SL2014	SL2015	SL2016	SL2017	SL2018	SL2019	SL2020	SL2021	SL2022	SL2023	SL2024	SL2025	SL2026	SL2027	SL2028	SL2029	SL2030	SL2031	SL2032	SL2033	SL2034	SL2035	SL2036	SL2037	SL2038	SL2039	SL2040	SL2041	SL2042
P0175	1	0.52		B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0176	1	1.02		B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0177	1	1.49		B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ah01000488	1	7.15		B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0187	1	7.57		B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ah01000711	1	9.94		B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ah01000725	1	10.56		B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ad01006120	1	13.69		B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ah01001082	1	14.46		B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0645	1	15.70		B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0646	1	16.01		B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ah01001168	1	16.17		B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ah01001241	1	18.95		B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ah01001446	1	20.41		B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ah01001478	1	22.16		B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ah01001537	1	22.86		A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0207	1	25.16		A	B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P1021	1	25.91		A	B	B	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ah01001843	1	26.84		A	B	B	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P1181	1	29.49		A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ad01013082	1	30.00		A	B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0667	1	32.54		A	B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0669	1	33.03		A	B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0677	1	35.37		A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0681	1	36.56		A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0934	1	37.28		A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ah01002823	1	37.90		A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0684	1	38.04		A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0767	1	41.76		A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P1193	1	42.52		A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ah01003321	1	42.60		A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P1313	1	44.75		A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Chromosome size (Mb)		45.04																																											
P1196	2	0.18		A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A
NIAS_Os_ah02000030	2	1.33		A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A
RM5553	2	4.67		A	A	A	B	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0230	2	7.01		A	A	A	B	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0232	2	8.04		A	A	A	B	B	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0234	2	9.04		A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ah02000670	2	10.37		A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0794	2	11.78		A	A	A	A	H	B	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0796	2	12.79		A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ah02001178	2	16.69		A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0936	2	17.14		A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ah02001272	2	18.20		A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0805	2	20.12		A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0252	2	20.30		A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ah02001405	2	21.00		A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0808	2	22.09		A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0812	2	24.10		A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ah02001841	2	27.22		A	A	A	A	A	B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0818	2	28.10		A	A	A	A	A	B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ah02001950	2	28.50		A	A	A	A	A	B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0261	2	30.37		A	A	A	A	A	H	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0263	2	31.42		A	A	A	A	A	H	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ad02014960	2	31.71		A	A	A	A	A	H	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0267	2	33.36		A	A	A	A	A	H	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0269	2	34.89		A	A	A	A	A	H	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P1299	2	36.08		A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Chromosome size (Mb)		36.79																																											
NIAS_Os_ah03000063	3	0.79		A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0981	3	1.25		A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P1220	3	2.08		A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0982	3	2.83		A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P1223	3	3.34		A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ah03000585	3	6.18		A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P1669_1	3	6.52		A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P1676_3	3	10.61		A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P1231	3	12.73		A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P1006	3	13.30		A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P1012	3	14.98		A	A	A	A	A	A	A	B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0484	3	16.30		A	A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ah03001427	3	18.40		A	A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ah03001586	3	21.20		A	A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ah03001697	3	22.73		A	A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	–	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ah03001762	3	23.65		A	A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0932	3	24.98		A	A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P1699_2	3	27.19		A	A	A	A	A	A	A	A	B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P1700	3	28.06		A	A	A	A	A	A	A	A	B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ah03002119	3	29.31		A	A	A	A	A	A	A	B	B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0131	3	30.99		A	A	A	A	A	A	A	B	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0132_1	3	31.47		A	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P1248	3	32.89		A	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P1709	3	33.82		A	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ah03002560	3	35.30		A	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	B	A	A	A	A	A
P0567	3	37.23		A	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Chromosome size (Mb)		37.31																																											
P0274	4	0.18		A	A	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ad04000319	4	0.60		A	A	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ah04000102	4	1.90		A	A	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM7200	4	4.03		A	A	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ah04000322	4	8.63		A	A	A	A	A	B	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ah04000361	4	8.96		A	A	A	A	A	B	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0696	4	9.32		A	A	A	A	A	B	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ah04000438	4	10.93		A	A	A	A	A	B	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P1255	4	11.85		A	A	A	A	A	B	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0704	4	17.61		A	B	A	A	A	B	A	A	A	A	B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ah04000665	4	18.25		A	B	A	A	A	B	A	A	A	A	B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0706	4	18.77		A	B	A	A	A	B	A	A	A	A	B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0709	4	19.73		A	A	A	A	A	A	A	A	A	A	H	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ad04007542	4	20.27		A	A	A	A	A	A	A	A	A	A	B	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ah04000793	4	20.66		A	A	A	A	A	A	A	A	A	A	B	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A



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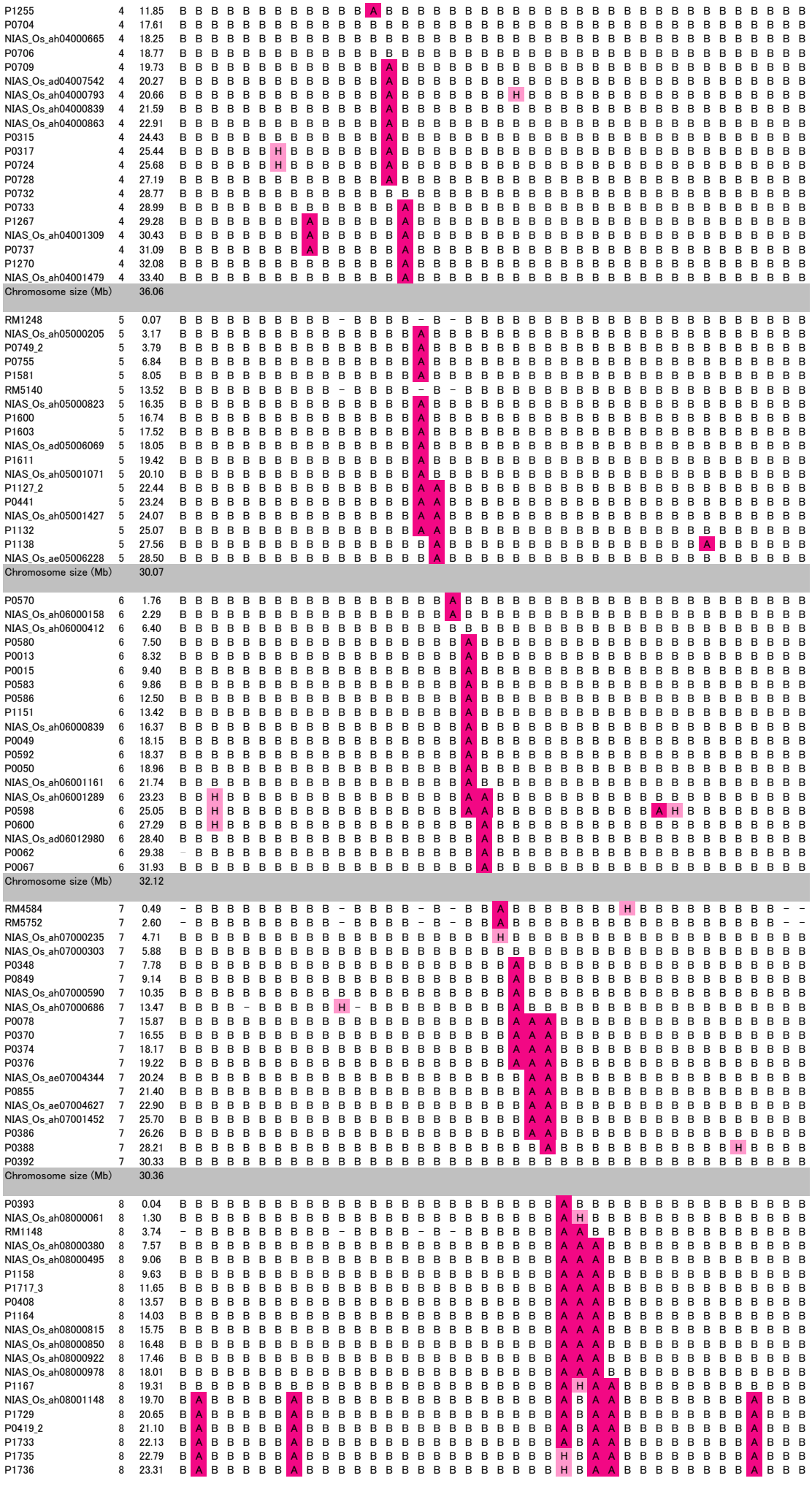
NIAS_Os_ad09005924	9	13.36	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A
P0159	9	16.73	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	A	A	A	A	A	A	A	A	A	A
P0159_2	9	16.73	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	A	A	A	A	A	A	A	A	A	A
P0829	9	16.96	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	A	A	A	A	A	A	A	A	A	A
P0165	9	19.94	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	A	A	A	A	A	A	A	A	A	A
P0833	9	21.38	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	A	A	A	A	A	A	A	A	A	A
P0171	9	22.66	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A
P0837	9	23.76	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A
Chromosome size (Mb)		23.90																																										
P1749_3	10	0.79	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	A	A	A	A	A	A	A	A
NIAS_Os_ah10000191	10	3.00	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	A	A	A	A	A	A	A	A
RM25151	10	7.35	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	A	A	A	A	A	A	A	A
NIAS_Os_ah10000335	10	9.20	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	A	A	A	A	A	A	A	A
P0093	10	10.35	A	A	A	B	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	A	A	A	A	A	A	A	A
NIAS_Os_ah10000426	10	10.59	A	A	A	B	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	A	A	A	A	A	A	A	A
P0096	10	12.33	A	A	A	B	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	A	A	A	A	A	A	A	A
P0464	10	13.45	A	A	A	B	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	A	A	A	A	A	A	A
P1445	10	13.65	A	A	A	B	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	A	A	A	A	A	A	A
P0100	10	15.00	A	A	A	B	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	A	A	A	A	A	A	A
P1448	10	15.19	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	A	A	A	A	A	A	A
P0968	10	16.70	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	A	A	A	A	A	A	A
P0468	10	17.95	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	B	A	A	A	A	A	A
NIAS_Os_ah10001056	10	19.36	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	–	B	B	A	A	A	A	A	A
NIAS_Os_ah10001135	10	20.29	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	B	A	H	A	A	A	A
NIAS_Os_ad10010490	10	21.60	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	A	H	A	A	A	A
NIAS_Os_ah10001235	10	22.15	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	–	A	A	B	B	A	H	A	A	A	A
NIAS_Os_ad10011290	10	23.45	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	A	A	A	A	A	A
Chromosome size (Mb)		23.70																																										
NIAS_Os_ad11000354	11	0.81	A	–	–	A	A	A	A	–	A	A	A	A	A	A	A	–	A	–	–	A	A	A	A	A	–	A	–	A	A	A	–	–	A	–	A	A	B	A	–	–	A	A
NIAS_Os_ah11000149	11	1.55	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A	A
P1068	11	2.50	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A	A
P0487	11	4.06	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ah11000314	11	5.64	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0942	11	7.83	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P0943	11	8.38	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ah11000383	11	10.12	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
NIAS_Os_ah11000443	11	11.10	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A
P0496	11	11.83	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A
RM26567	11	15.18	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A
NIAS_Os_ah11000587	11	17.99	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A
P0504	11	19.50	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A
P1577	11	19.94	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A
NIAS_Os_ah11000705	11	20.29	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A
P0952	11	20.75	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A
NIAS_Os_ah11000714	11	20.87	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A
NIAS_Os_ah11000740	11	21.18	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A
NIAS_Os_ah11000791	11	21.97	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A
P0511	11	24.73	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A
NIAS_Os_ae11004459	11	25.14	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A
RM2191	11	26.97	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A
RM2064	11	29.33	A	A	A	A	A	A		A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A
Chromosome size (Mb)		31.22																																										
NIAS_Os_ah12000026	12	0.74	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	B	B
NIAS_Os_ah12000107	12	1.93	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	B	B
P0523	12	3.02	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	A	A
NIAS_Os_ah12000214	12	3.20	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	A	A
NIAS_Os_ad12001048	12	3.41	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	A	A
NIAS_Os_ah12000261	12	3.74	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	A	A
P0527	12	6.76	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	A	A
NIAS_Os_ah12000440	12	8.85	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	A	A
NIAS_Os_ad12003504	12	9.21	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	A	A
NIAS_Os_ah12000506	12	9.78	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	A	A
NIAS_Os_ah12000717	12	14.63	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	A	A
NIAS_Os_ah12000769	12	16.69	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	A	A
NIAS_Os_ah12000820	12	18.21	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	B
RM28305	12	20.10	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	B
P0550	12	23.75	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A
NIAS_Os_ah12000969	12	24.05	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A
NIAS_Os_ah12001000	12	24.40	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A
NIAS_Os_ah12001060	12	25.16	A	A	A	A	A	A	A	A	A	A	A	A	A	H	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A
NIAS_Os_ah12001184	12	26.85	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
P1089	12	26.93	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	–	A	A	A	A	A	A	A	A	A	A
Chromosome size (Mb)		27.68																																										
Size of target segmente (Mb)			22.3	22.1	19.3	8.4	3.5	18.4	10.8	15.2	16.0	11.2	26.9	4.5	11.4	13.3	14.2	10.5	6.1	11.9	3.6	18.3	10.8	2.1	22.9	13.3	17.6	5.0	18.6	16.5	7.4	8.6	13.3	8.8	12.5	19.4	10.7	6.3	2.9	19.7	17.1	19.4	7.3	4.5
Size of non-target segmente (Mb)			0.0	4.5	0.0	5.3	3.6	14.0	10.9	2.5	2.6	0.0	1.2	0.0	2.0	2.1	3.9	3.1	0.0	0.0	0.0	11.8	0.0	0.0	3.7	3.7	6.6	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	1.7	0.0	0.0	1.7	2.9	0.0	2.1	2.1
Size of heterozygous segment (Mb)			0.0	0.0	0.0	0.0	1.2	6.0	0.0	0.0	0.0	0.0	0.7	3.3	1.3	1.2	1.2	4.4	0.0	0.0	0.0	0.0	0.0	0.0	2.8	2.8	2.8	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	1.2	0.0

Chr., chromosome number; Mb, positions (Mb) of markers on the IRGSP 1.0 rice reference genome (http://rapdb.dna.affrc.go.jp/);

A, Homozygous Koshihikari allele; B, homozygous IR64 allele; H, heterozygous; –, no data.

Supplemental Table 3. Graphical genotypes of the 40 KSI-CSSLs (Koshihikari introgression in IR64 background)

Marker name	Chr	Mb	Line No.	SL2101	SL2102	SL2103	SL2104	SL2105	SL2106	SL2107	SL2108	SL2109	SL2110	SL2111	SL2112	SL2113	SL2114	SL2115	SL2116	SL2117	SL2118	SL2119	SL2120	SL2121	SL2122	SL2123	SL2124	SL2125	SL2126	SL2127	SL2128	SL2129	SL2130	SL2131	SL2132	SL2133	SL2134	SL2135	SL2136	SL2137	SL2138	SL2139	SL2140
P0175	1	0.52		A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P0176	1	1.02		A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P0177	1	1.49		A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
NIAS_Os_ah01000488	1	7.15		B	A	A	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P0187	1	7.57		B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
NIAS_Os_ah01000711	1	9.94		B	B	–	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
NIAS_Os_ah01000725	1	10.56		B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
NIAS_Os_ad01006120	1	13.69		B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
NIAS_Os_ah01001082	1	14.46		B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P0645	1	15.70		B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P0646	1	16.01		B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
NIAS_Os_ah01001168	1	16.17		B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
NIAS_Os_ah01001241	1	18.95		B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
NIAS_Os_ah01001446	1	20.41		B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
NIAS_Os_ah01001478	1	22.16		B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
NIAS_Os_ah01001537	1	22.86		B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P0207	1	25.16		B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P1021	1	25.91		B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
NIAS_Os_ah01001843	1	26.84		B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P1181	1	29.49		B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
NIAS_Os_ad01013082	1	30.00		B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P0667	1	32.54		B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P0669	1	33.03		B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P0677	1	35.37		B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P0681	1	36.56		B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P0934	1	37.28		B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
NIAS_Os_ah01002823	1	37.90		B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P0684	1	38.04		B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P0767	1	41.76		B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P1193	1	42.52		B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
NIAS_Os_ah01003321	1	42.60		B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P1313	1	44.75		B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
Chromosome size (Mb)		45.04																																									
P1196	2	0.18		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
NIAS_Os_ah02000030	2	1.33		B	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM5553	2	4.67		B	B	B	B	B	A	A	B	B	B	–	B	B	B	B	–	B	–	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	–	–
P0230	2	7.01		B	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B
P0232	2	8.04		B	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B
P0234	2	9.04		B	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B
NIAS_Os_ah02000670	2	10.37		B	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B
P0794	2	11.78		B	B	B	B	B	H	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B
P0796	2	12.79		B	B	B	B	B	H	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B
NIAS_Os_ah02001178	2	16.69		B	B	B	B	B	H	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B
P0936	2	17.14		B	B	B	B	B	–	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B
NIAS_Os_ah02001272	2	18.20		B	B	B	B	B	–	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B
P0805	2	20.12		B	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B
P0252	2	20.30		B	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B
NIAS_Os_ah02001405	2	21.00		B	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P0808	2	22.09		B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P0812	2	24.10		B	A	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
NIAS_Os_ah02001841	2	27.22		B	A	B	B	B	B	H	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P0818	2	28.10		B	A	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
NIAS_Os_ah02001950	2	28.50		B	A	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P0261	2	30.37		B	A	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P0263	2	31.42		B	A	B	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B
NIAS_Os_ad02014960	2	31.71		B	A	B	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B
P0267	2	33.36		B	A	B	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B
P0269	2	34.89		H	B	B	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P1299	2	36.08		B	B	B	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
Chromosome size (Mb)		36.79																																									
NIAS_Os_ah03000063	3	0.79		B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P0981	3	1.25		B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B
P1220	3	2.08		B	B	B	B	B	B	B	H	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B
P0982	3	2.83		B	B	B	B	B	B	B	H	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B
P1223	3	3.34		B	B	B	B	B	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	H	B	B
NIAS_Os_ah03000585	3	6.18		B	B	B	B	B	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P1669_1	3	6.52		B	B	B	B	B	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P1676_3	3	10.61		B	B	B	B	B	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P1231	3	12.73		B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P1006	3	13.30		B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P1012	3	14.98		B	B	B	B	A	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P0484	3	16.30		B	B	B	B	A	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
NIAS_Os_ah03001427	3	18.40		B	B	B	B	A	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	H
NIAS_Os_ah03001586	3	21.20		B	B	B	B	A	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	H
NIAS_Os_ah03001697	3	22.73		B	B	B	B	B	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	H
NIAS_Os_ah03001762	3	23.65		B	B	B	B	B	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P0932	3	24.98		B	B	B	B	B	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P1699_2	3	27.19		B	B	B	B	B	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P1700	3	28.06		B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
NIAS_Os_ah03002119	3	29.31		B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P0131	3	30.99		B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P0132_1	3	31.47		B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P1248	3	32.89		B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P1709	3	33.82		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
NIAS_Os_ah03002560	3	35.30		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P0567	3	37.23		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
Chromosome size (Mb)		37.31																																									
P0274	4	0.18		B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
NIAS_Os_ad04000319	4	0.60		B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
NIAS_Os_ah04000102	4	1.90		B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM7200	4	4.03		B	B	B	B	B	B	B	B	B	–	B	A	B	B	–	B	–	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
NIAS_Os_ah04000322	4	8.63		B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
NIAS_Os_ah04000361	4	8.96		B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P0696	4	9.32		B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
NIAS_Os_ah04000438	4	10.93		B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B



P1741_3	8	26.32	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B
NIAS_Os_ad08011632	8	26.84	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B
P0425	8	28.08	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B
Chromosome size (Mb)		28.53																																								
P0142	9	0.19	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B
NIAS_Os_ah09000161	9	2.24	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B
P0762	9	3.48	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B
NIAS_Os_ah09000176	9	3.95	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B
NIAS_Os_ah09000235	9	4.53	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B
P1661_2	9	5.67	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B
NIAS_Os_ah09000291	9	6.79	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B	B
NIAS_Os_ah09000421	9	10.70	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B
NIAS_Os_ah09000471	9	12.40	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B
P0820	9	12.41	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B
NIAS_Os_ad09005924	9	13.36	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B
P0159	9	16.73	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B
P0159_2	9	16.73	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B
P0829	9	16.96	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	B	B	B	B	B	B	B	B	B
P0165	9	19.94	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	A	A	B	B	B	B	B	B	B	B	B
P0833	9	21.38	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	B	A	B	B	B	B	B	B	B	B	B
P0171	9	22.66	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B
P0837	9	23.76	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B
Chromosome size (Mb)		23.90																																								
P1749_3	10	0.79	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	B	B	B	B	B	B	H
NIAS_Os_ah10000191	10	3.00	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	B	B	B	B	B	B	H
RM25151	10	7.35	–	B	B	B	B	B	B	B	B	B	–	B	B	B	B	–	B	–	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	B	B	B	B	B	B	H
NIAS_Os_ah10000335	10	9.20	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	B	B	B	B	B	B	H
P0093	10	10.35	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	B	B	B	B	B	B	H
NIAS_Os_ah10000426	10	10.59	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	B	B	B	B	B	B	H
P0096	10	12.33	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	B	B	B	B	B	B	H
P0464	10	13.45	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	B	B	B	B	B	B	H
P1445	10	13.65	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	B	B	B	B	B	B	B
P0100	10	15.00	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B
P1448	10	15.19	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B
P0968	10	16.70	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B
P0468	10	17.95	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B	B
NIAS_Os_ah10001056	10	19.36	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	B	B	B	B	B	B
NIAS_Os_ah10001135	10	20.29	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	B	B	B	B	B	B
NIAS_Os_ad10010490	10	21.60	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	B	B	B	B	B	B
NIAS_Os_ah10001235	10	22.15	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	B	B	B	B	B	B
NIAS_Os_ad10011290	10	23.45	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B	B
Chromosome size (Mb)		23.70																																								
NIAS_Os_ad11000354	11	0.81	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
NIAS_Os_ah11000149	11	1.55	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P1068	11	2.50	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
P0487	11	4.06	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B
NIAS_Os_ah11000314	11	5.64	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B	B
P0942	11	7.83	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	B	B	B	B
P0943	11	8.38	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	B	B	B	B
NIAS_Os_ah11000383	11	10.12	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	B	B	B	B
NIAS_Os_ah11000443	11	11.10	B	B	B	B	H	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	B	B	B	B
P0496	11	11.83	B	B	B	B	H	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	B	B	B	B
RM26567	11	15.18	–	B	B	B	H	A	B	B	B	B	–	B	B	B	B	–	B	–	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	B	B	–	–
NIAS_Os_ah11000587	11	17.99	B	B	B	B	H	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B
P0504	11	19.50	B	B	B	B	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B
P1577	11	19.94	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B	B
NIAS_Os_ah11000705	11	20.29	B	H	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	H	B	B	B
P0952	11	20.75	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	H	B	B	B
NIAS_Os_ah11000714	11	20.87	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	H	B	B	B
NIAS_Os_ah11000740	11	21.18	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	H	B	B	B
NIAS_Os_ah11000791	11	21.97	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	H	B	B	B
P0511	11	24.73	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	H	B	B	B
NIAS_Os_ae11004459	11	25.14	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	B	B	B
RM2191	11	26.97	–	H	B	B	B	B	B	B	B	B	–	B	B	B	B	–	B	–	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	–	–
RM2064	11	29.33	–	H	B	B	B	B	B	B	B	B	–	B	B	B	B	–	B	–	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	–	–
Chromosome size (Mb)		31.22																																								
NIAS_Os_ah12000026	12	0.74	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	B
NIAS_Os_ah12000107	12	1.93	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	H
P0523	12	3.02	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	H
NIAS_Os_ah12000214	12	3.20	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	H
NIAS_Os_ad12001048	12	3.41	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	H
NIAS_Os_ah12000261	12	3.74	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B	H
P0527	12	6.76	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	H
NIAS_Os_ah12000440	12	8.85	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	H
NIAS_Os_ad12003504	12	9.21	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	H
NIAS_Os_ah12000506	12	9.78	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	H
NIAS_Os_ah12000717	12	14.63	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	H
NIAS_Os_ah12000769	12	16.69	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	H
NIAS_Os_ah12000820	12	18.21	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A	H
RM28305	12	20.10	–	B	B	B	B	B	B	B	B	B	–	B	B	B	B	–	B	–	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A
P0550	12	23.75	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A
NIAS_Os_ah12000969	12	24.05	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A
NIAS_Os_ah12001000	12	24.40	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A
NIAS_Os_ah12001060	12	25.16	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	A	A
NIAS_Os_ah12001184	12	26.85	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H
P1089	12	26.93	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H
Chromosome size (Mb)		27.68																																								
Size of target segment (Mb)			4.1	3.0	9.2	27.8	8.9	10.3	24.9	13.3	5.5	11.3	25.2	17.7	14.6	8.7	5.9	20.5	8.0	3.5	19.2	9.5	3.4	12.9	12.6	14.6	25.9	16.1	19.2	9.6	14.0	14.4	7.0	13.9	22.4	4.9	11.7	20.9	5.3	18.8	20.8	6.8
Size of non-target segment (Mb)			0.0	16.3	0.0	0.0	8.8	10.5	0.0	5.3	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4	0.0	0.0	0.0	1.8	0.0	0.0	0.0	3.6	0.0	0.0	19.7	3.7	0.0	1.7	0.0	0.0	5.3	0.0	5.8	0.0
Size of heterozygous segment (Mb)			1.4	4.6	5.4	0.0	8.9	5.8	3.5	4.5	0.0	0.0	2.8	2.6	0.0	0.0	0.0	0.0	2.7	0.0	0.0	0.0	1.6	0.7	2.2	0.0	1.2	2.7	0.0	0.0	1.3	0.0	0.0	2.0	0.0	0.0	0.0	2.0	8.0	1.7	0.0	38.1

Chr., chromosome number; Mb, positions (Mb) of markers on the IRGSP 1.0 rice reference genome (http://rapdb.dna.affrc.go.jp/);

A, Homozygous Koshihikari allele; B, homozygous IR64 allele; H, heterozygous; –, no data.

Supplemental Table 4. Mean values for grain length and grain width in 31 IRK–BC_4F_2 populations, and graphical genotypes of their parental BC_4F_1 plants

Line name			12–4244	12–4245	12–4246	12–4247	12–4248	12–4249	12–4250	12–4251	12–4252	12–4253	12–4254	12–4255	12–4256	12–4257	12–4258	12–4259	12–4260	12–4261	12–4262	12–4263	12–4264	12–4265	12–4266	12–4267	12–4268	12–4269	12–4270	12–4271	12–4272	12–4273	12–4274
Grain length	Mean±SD (mm)		6.85±0.32	7.11±0.32	7.06±0.32	7.07±0.31	7.25±0.35	7.16±0.34	7.37±0.34	7.59±0.37	7.27±0.33	7.17±0.31	7.20±0.31	7.23±0.35	7.04±0.30	6.92±0.34	6.98±0.32	7.03±0.31	7.15±0.33	7.19±0.30	7.28±0.36	7.06±0.34	7.06±0.32	7.14±0.32	7.02±0.30	6.85±0.34	6.95±0.33	7.31±0.34	7.19±0.34	7.04±0.34	6.96±0.32	7.08±0.34
	QTL detection (Y/N)[a]		Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N	N	Y	Y	Y	N	N	Y	N	N	Y	Y	N	N	N	Y	Y	Y	N
Grain width	Mean±SD (mm)		3.42±0.18	3.39±0.16	3.37±0.15	3.28±0.14	3.40±0.16	3.28±0.18	3.43±0.16	3.41±0.15	3.33±0.16	3.42±0.15	3.55±0.16	3.37±0.15	3.44±0.16	3.41±0.18	3.41±0.17	3.40±0.15	3.46±0.15	3.39±0.14	3.19±0.16	3.39±0.17	3.42±0.15	3.39±0.14	3.38±0.14	3.36±0.15	3.41±0.17	3.32±0.15	3.43±0.15	3.33±0.15	3.35±0.17	3.41±0.14	3.39±0.15
	QTL detection (Y/N)[a]		N	N	N	N	Y	Y	Y	Y	N	N	N	Y	Y	N	N	Y	Y	N	N	N	Y	N	Y	Y	Y	N	Y	Y	Y	N	N
Genotypes[b]																																
Marker	Chr. No	Position (Mb)																														
RM3252	1	0.30	H	A	A	A	A	A	H	H	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A
RM6324	1	2.38	H	A	A	A	A	A	H	H	A	A	A	A	H	H	A	A	A	A	A	H	A	A	A	H	A	A	A	A	A	A
RM8105	1	4.05	H	A	A	A	A	A	H	H	A	A	A	A	H	A	A	A	A	A	A	H	A	A	A	H	A	A	A	A	A	A
RM8111	1	6.27	H	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	H	A	A	A	H	A	A	A	A	A	A
RM6466	1	9.19	H	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM10787	1	12.49	H	H	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	H	A	A	H	A	A	A	A	A	A	A	A	A
RM5365	1	14.52	H	H	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	H	A	A	H	A	A	A	A	A	A	A	A	A
RM11024	1	18.46	H	H	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	H	A	A	H	A	A	A	A	A	A	A	A	A
RM1196	1	21.90	A	H	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	H	A	A	A	H	A	A	A	A	A	A	A	A
RM8129	1	25.07	A	H	H	A	A	A	A	H	A	H	A	A	A	A	A	A	A	H	A	A	H	A	A	A	A	A	A	A	A	A
RM3817	1	28.90	A	H	H	A	A	A	A	H	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A
RM6848	1	32.34	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	H	A	A	A	A	A
RM7594	1	35.47	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A
RM1387	1	40.21	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A
RM8137	1	42.93	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A
RM6938	2	0.98	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	H	A	A	H	A	A	A	A	A	A	A	A	H	A	A
RM5553	2	4.67	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM3828	2	7.65	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM5699	2	8.98	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	H	A	A	A	A	A	A	A
RM5210	2	12.67	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM5812	2	15.90	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM7426	2	16.68	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM2634	2	20.50	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM6379	2	23.57	A	A	A	H	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM1367-1	2	27.07	A	A	A	H	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM13958	2	31.20	A	A	A	H	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM3789-1	2	34.69	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM3850	2	35.43	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM4108	3	0.54	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM4352	3	4.32	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM5442	3	5.53	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM1338-1	3	8.39	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM1371	3	9.94	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM5551	3	12.93	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A
RM6080	3	13.93	A	A	A	A	A	H	H	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	H	A	A	A	A	A
RM1334	3	17.42	A	A	A	A	A	H	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A
RM7134	3	22.01	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A
RM6266	3	23.82	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A
RM6736	3	27.32	A	A	A	H	A	A	H	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM5813	3	30.98	A	A	A	A	A	A	H	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM1352-1	3	32.35	A	A	A	A	A	A	H	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM3329	3	35.60	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM335	4	0.69	A	H	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM7200	4	4.04	A	H	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM6659	4	6.58	A	H	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM16616	4	12.05	A	H	A	A	A	H	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM5633	4	13.08	A	H	A	A	A	H	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM16760	4	17.10	A	H	A	A	A	H	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM1359-1	4	20.03	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM17148	4	24.24	A	A	A	A	A	A	A	A	H	H	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM1354	4	26.30	A	A	A	A	H	A	A	A	H	H	A	A	A	A	H	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A
RM3916	4	28.76	A	A	A	A	A	A	A	A	A	H	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM3534	4	31.16	A	A	A	A	A	A	A	A	A	H	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM3466	4	34.05	A	A	A	A	A	H	A	A	A	H	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A
RM5608	4	35.36	A	A	A	A	A	H	A	A	A	H	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A
RM7030	4	35.38	A	A	A	A	A	H	A	A	A	H	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A
RM1248	5	0.09	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM6517	5	2.91	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM18107	5	6.83	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM4691	5	7.03	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM18194	5	9.35	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM5140	5	13.54	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM1237	5	18.02	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM1386	5	20.06	A	A	A	A	A	A	A	A	A	A	H	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM4501	5	22.11	A	A	A	A	A	A	A	A	A	A	H	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM3476	5	23.91	A	A	A	A	A	A	A	A	A	A	H	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM3809	5	26.65	A	A	A	A	A	A	A	A	A	A	H	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM3286	5	29.54	A	A	A	A	A	A	H	A	H	A	A	H	H	A	A	A	H	A	A	A	A	A	A	H	A	A	A	A	A	A
RM8121	6	0.38	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	H	H	A	A	A	A	A	A
RM3805	6	2.85	A	A	A	A	H	A	A	A	H	H	A	A	A	H	H	A	A	A	A	A	A	A	H	H	A	A	A	A	A	A
RM4608	6	4.30	A	A	A	H	H	A	A	A	H	H	A	A	A	H	H	H	A	A	A	A	A	A	H	H	A	A	A	A	A	A
RM5585-1	6	7.61	A	A	H	A	A	A	A	A	H	H	A	A	A	A	H	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Hd1	6	9.34	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM19830	6	10.57	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	H	A	A	A	A	A	A	A	A	A	A	A	H	A	A
RM19951	6	12.98	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	H	A	A	A	A	A	A	A	A	A	A	A	H	A	A
RM20048	6	16.10	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	H	A	A	A	A	A	A	A	A	A	A	A	H	A	A
RM6818	6	16.58	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	H	A	A	A	A	A	A	A	A	A	A	A	H	A	A
RM20158	6	19.70	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	H	A	A	A	A	A	A	A	A	A	A	A	H	A	A
RM1340-1	6	23.34	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM5509	6	27.83	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM3307	6	28.95	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM5463-1	6	30.99	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM4584	7	0.50	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A
RM5752-1	7	2.57	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	H	H	A	A	A	A	A	A	A	A	A	A	A
RM7479-1	7	4.14	A	A	A	A	A	H	A	A	A	A	H	A	A	A	A	A	A	A	H	A	A	A	A	A	A	H	A	A	A	A
RM8006	7	7.69	A	A	A	A	H	H	A	A	A	A	H	A	A	A	A	A	A	A	H	A	A	A	A	A	A	H	A	A	A	A
RM5499	7	9.99	A	A	A	A	H	H	A	A	A	A	H	A	A	A	A	A	A	A	H	A	A	A	A	A	A	H	A	A	A	A
RM3832	7	12.71	A	A	A	A	H	H	A	A	A	A	H	A	A	A	A	A	A	A	H	A	A	A	A	A	A	H	A	A	A	A
RM5481-1	7	16.20	A	A	A	A	H	H	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A
RM6835	7	17.69	A	A	A	A	H	H	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A
RM3404-1	7	20.11	A	A	A	A	H	H	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A
RM6326	7	24.20	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	H	A
RM1330-1	7	25.66	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	H	A
RM7601	7	29.04	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A
RM1381	8	0.42	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A
RM1148	8	3.74	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A
RM6838	8	5.85	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A
RM22679	8	8.58	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A
RM3395	8	10.29	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A
RM6032	8	11.90	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A
RM22839	8	12.41	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A
RM22934	8	15.97	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A
RM5767	8	18.82	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A
RM7556	8	22.21	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	H	A	A	A	A	A	A	A	A	A	A
RM3155-1	8	27.91	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A
RM4997	8	28.24	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A
RM3609	9	1.16	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A
RM23766	9	3.64	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A
RM23823	9	5.13	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A
RM7481	9	6.59	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A
RM1328	9	9.21	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A
RM6051	9	12.83	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A
RM3700	9	15.43	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	H	A	A	A	A	A	A	A	A
RM6235	9	16.68	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	H	A	A	A	A	A	A	A	A
RM5786-1	9	19.79	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	H	A	A	A	A	A	A	A	A
RM6971	9	21.89	A	A	A	A	A	A	H	A	A	A	A	H	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A
RM6797	9	22.71	A	A	A	A	A	A	H	A	A	A	A	H	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A
RM7492	10	0.05	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	H	A	A	A	A	A	A
RM7545	10	3.81	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	H	A	A	A	A	A	A
RM25151	10	7.62	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	H	A	A	A	A	A	A
RM4455	10	11.74	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	H	A	A	A	A	A	A
RM1859	10	13.56	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	H	A	A	A	A	A
RM5620	10	17.47	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	H	A	H	A	A	A
RM6737	10	18.78	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	H	A	H	A	A	A
RM1162	10	22.43	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	H	A	H	A	A	A
RM6673	10	23.08	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	H	A	H	A	A	A
RM7203	11	1.08	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A
RM1812	11	2.41	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A
RM5704-1	11	5.48	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A
RM7283	11	9.12	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A
RM26567	11	13.39	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	H	A	A	A
RM5824	11	14.53	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	H	A	A	A
RM26616	11	14.68	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	H	A	A	A
RM5312	11	17.63	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	H	A	A	A
RM5349	11	19.65	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A
RM1219	11	21.52	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A
RM2191-1	11	25.13	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A
RM2064	11	27.49	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A
EX000503_3	12	0.08	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	H	A
RM3747	12	2.31	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
RM2724	12	5.51	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	H	A	A
RM2529	12	7.57	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	H	H	A	A
RM27900	12	9.57	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	H	A	A
RM6973-1	12	10.08	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	H	A	A
RM7102-1	12	13.21	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	H	A	A
RM28112	12	16.28	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	H	A	A	A	A	A	H	H	A	A
RM28305	12	19.96	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	H	H	H	A
RM5700-1	12	21.98	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	H	H	H	A
RM5479-1	12	24.41	A	A	A	A	A	A	A	A	A	A	H	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A
RM2197	12	27.38	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	H	A

a Y, presence, and N, absence of a QTL.

b B, Homozygous IR64 allele; H, heterozygous.

Supplemental Table 5. Mean values for grain length and grain width in 37 KSI-BC_4F_2 populations, and graphical genotypes of their parental BC_4F_1 plants

Line name	12-4203	12-4204	12-4205	12-4206	12-4207	12-4208	12-4209	12-4210	12-4211	12-4212	12-4213	12-4214	12-4215	12-4216	12-4217	12-4218	12-4219	12-4220	12-4221	12-4222	12-4223	12-4224	12-4225	12-4226	12-4227	12-4228	12-4229	12-4230	12-4231	12-4232	12-4233	12-4234	12-4235	12-4236	12-4237	12-4238	12-4239
Grain length Mean±SD (mm)	9.38±0.50	9.61±0.57	9.36±0.53	9.46±0.50	9.30±0.46	9.48±0.46	9.41±0.47	9.35±0.53	9.35±0.51	9.38±0.51	9.04±0.45	9.05±0.43	9.28±0.48	9.02±0.46	8.74±0.44	9.12±0.43	9.48±0.52	9.25±0.50	9.31±0.47	9.66±0.52	9.49±0.51	9.38±0.50	9.14±0.50	9.40±0.50	9.11±0.45	9.47±0.52	9.61±0.51	9.55±0.05	9.42±0.47	9.63±0.48	9.38±0.50	9.56±0.45	9.19±0.43	9.45±0.49	9.13±0.47	9.31±0.51	9.43±0.50
QTL detection (Y/N)[a]	Y	Y	Y	Y	Y	Y	Y	N	N	N	Y	N	N	N	Y	N	N	N	Y	N	Y	Y	N	N	N	Y	N	Y	Y	N	N	N	N	N	Y	N	Y
Grain width Mean±SD (mm)	2.44±0.15	2.45±0.17	2.44±0.16	5.25±0.15	2.51±0.15	2.65±0.15	2.56±0.15	2.45±0.15	2.48±0.16	2.51±0.16	2.57±0.15	2.55±0.16	2.53±0.15	2.54±0.16	2.54±0.16	2.78±0.18	2.49±0.16	2.63±0.19	2.65±0.20	2.47±0.16	2.53±0.15	2.48±0.16	2.48±0.16	2.42±0.16	2.45±0.16	2.46±0.16	2.47±0.15	2.47±0.14	2.51±0.15	2.53±0.14	2.38±0.15	2.53±0.15	2.68±0.19	2.45±0.15	2.56±0.16	2.48±0.14	2.48±0.16
QTL detection (Y/N)[a]	Y	Y	Y	Y	N	N	Y	N	Y	N	N	Y	Y	N	Y	N	N	N	Y	N	N	Y	N	N	Y	N	Y	N	Y	Y	N	Y	N	N	N	Y	Y

Genotypes[b]

Marker	Chr. No.	Position (Mb)																																			
RM3252	1	0.30	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM6324	1	2.38	H	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM8105	1	4.05	H	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM8111	1	6.27	–	H	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B
RM6466	1	9.19	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B
RM10787	1	12.49	B	B	H	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	H
RM5365	1	14.52	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B
RM11024	1	18.48	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B
RM1196	1	21.90	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	H	B	B	B	B	B	B	B
RM8129	1	25.07	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM3817	1	28.90	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B
RM6648	1	32.34	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B
RM7594	1	35.47	B	B	B	H	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B
RM1387	1	40.21	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B
RM8137	1	42.93	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B
RM6938	2	0.98	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM5553	2	4.67	B	B	B	B	B	H	H	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B
RM3828	2	7.65	B	B	B	B	B	H	H	B	B	B	B	B	B	B	–	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B
RM5699	2	8.98	B	B	B	B	B	H	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B
RM5210	2	12.67	B	B	B	B	B	H	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B
RM5812	2	15.90	B	B	B	B	B	H	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B
RM7426	2	16.68	B	B	B	B	B	H	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B
RM2634	2	20.50	B	B	B	B	B	H	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM6379	2	23.57	B	H	B	B	B	H	H	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM1367-1	2	27.07	B	H	B	B	B	B	B	H	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM1358	2	31.20	B	H	B	B	B	B	B	H	H	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM3789-1	2	34.69	H	B	B	B	B	B	B	H	H	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B
RM3850	2	35.43	H	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM4108	3	0.54	B	H	B	B	B	B	B	H	B	H	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	–	B	B	B	B	H	B
RM4352	3	4.32	B	B	B	B	B	B	B	B	B	H	H	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	H	B
RM5442	3	5.53	B	B	B	B	B	B	B	B	B	H	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	H	B
RM1338-1	3	8.39	B	B	B	B	B	B	B	B	B	H	H	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B
RM1371	3	9.94	B	B	B	B	B	B	B	B	B	H	H	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B
RM5551	3	12.93	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM6080	3	13.93	B	B	B	B	B	B	B	B	B	H	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM1334	3	17.42	B	B	B	B	H	B	B	B	B	B	H	H	B	H	H	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	H	B	H	B	B
RM7134	3	22.01	B	B	B	B	B	B	B	B	B	B	H	H	B	H	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM6266	3	23.82	B	B	B	B	B	B	B	B	B	B	H	H	B	H	H	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B
RM6736	3	27.32	B	B	B	B	B	B	B	B	B	B	B	H	B	H	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM5813	3	30.98	B	B	B	B	H	B	B	B	B	B	B	H	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM1352-1	3	32.35	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM3329	3	35.60	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM335	4	0.69	B	B	B	B	B	B	B	B	B	B	H	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM7200	4	4.04	B	B	B	B	B	B	B	B	B	B	H	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM6659	4	6.58	B	B	B	B	B	B	B	B	B	B	H	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM16616	4	12.05	B	B	B	B	B	B	B	B	B	B	H	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM5633	4	13.08	B	B	B	B	B	B	B	B	B	B	H	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM16760	4	17.10	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM1359-1	4	20.03	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	H	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B
RM17148	4	24.24	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	H	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B
RM1354	4	26.30	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B
RM3916	4	28.76	B	B	B	B	B	B	B	B	B	B	B	B	B	H	H	B	B	H	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B
RM3534	4	31.16	B	B	B	B	B	B	B	B	B	B	B	B	B	H	H	B	H	H	B	B	B	H	B	H	B	B	B	B	B	B	B	B	B	B	B
RM3466	4	34.05	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM5608	4	35.36	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM7030	4	35.38	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM1248	5	0.09	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM6517	5	2.91	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM18107	5	6.83	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM4691	5	7.03	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM18194	5	9.35	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM5140	5	13.54	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM1237	5	18.02	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM1386	5	20.06	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	–	B	B	B	B
RM4501	5	22.11	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM3476	5	23.91	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	H	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM3809	5	26.65	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM3286	5	29.54	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM8121	6	0.38	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B
RM3805	6	2.85	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	H	B	B	B	B	B	H	B	B	B	B	B	B
RM4608	6	4.30	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B
RM5585-1	6	7.61	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	H	B	H	B	B	B	B
Hd1	6	9.34	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	H	B	B	B	B	B	B	B	B	B	B	H	B	H	B	B	B	B
RM19830	6	10.57	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	H	B	B	B	B	B	B	B	B	B	B	H	B	H	B	B	B	B
RM19951	6	12.98	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B
RM20048	6	16.10	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B
RM6818	6	16.58	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B
RM20158	6	19.70	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B
RM1340-1	6	23.34	B	B	H	B	B	H	B	B	B	B	B	B	B	B	H	B	B	H	B	B	B	B	B	B	B	B	B	B	H	B	H	B	B	H	H
RM5509	6	27.83	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B
RM3307	6	28.95	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B
RM5463-1	6	30.99	B	B	H	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM4584	7	0.50	B	B	B	B	B	B	H	B	B	H	B	B	B	B	B	B	B	H	B	B	B	B	B	B	H	H	B	B	B	B	B	B	B	B	B
RM5752-1	7	2.57	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	H	H	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B
RM7479-1	7	4.14	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	H	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM8006	7	7.69	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	–	B	B	B	B	B	B
RM5499	7	9.99	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM3832	7	12.71	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM5481-1	7	16.20	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM6835	7	17.89	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM3404-1	7	20.11	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM6326	7	24.20	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM1330-1	7	25.66	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM7601	7	29.04	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM1381	8	0.42	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B
RM1148	8	3.74	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B
RM6838	8	5.85	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B
RM22679	8	8.58	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	H	H	B	B	B	B	B	B	B	B	B	B	B	B
RM3395	8	10.29	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	H	H	B	B	B	B	B	B	B	B	B	B	B	B
RM6032	8	11.90	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	H	H	B	B	B	B	B	B	B	B	B	B	B	B
RM22839	8	12.41	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	H	H	B	B	B	B	B	B	B	B	B	B	B	B
RM22934	8	15.97	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	H	H	B	B	B	B	B	B	B	B	B	B	B	B
RM5767	8	18.82	B	B	B	B	B	B	B	B	H	H	B	B	B	B	B	B	B	B	B	B	B	H	H	B	B	B	B	H	B	B	B	B	B	B	B
RM7556	8	22.21	B	H	B	B	B	B	B	H	H	B	B	B	B	B	B	B	B	B	B	B	B	H	H	B	B	B	B	B	B	B	B	B	B	B	B
RM3155-1	8	27.91	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	–	B	B	B	B	H	B	H	B	B	B	B	–	B	B	B	B	B	B
RM4997	8	28.24	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	H	B	B	B	B	B	B	B	B	B	B	B
RM3609	9	1.16	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B
RM23766	9	3.64	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B
RM23823	9	5.13	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B
RM7481	9	6.59	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	H	B	B	B	B	B	B	B	B	B
RM1328	9	9.21	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B
RM6051	9	12.83	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B
RM3700	9	15.43	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	H	B	B	B	B	B	B	B	B
RM6235	9	16.68	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	H	B	B	B	B	B	B	B	B
RM5786-1	9	19.79	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	H	H	B	B	B	B	B	B	B	B	B	B
RM6971	9	21.89	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B
RM6797	9	22.71	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B
RM7492	10	0.05	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B
RM7545	10	3.81	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B
RM25151	10	7.62	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B
RM4455	10	11.74	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B	B
RM1859	10	13.56	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	H	B	B	B	B	B	B	B
RM5620	10	17.47	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B	B	B
RM6737	10	18.78	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	H	B	B	B	B	B	B
RM1162	10	22.43	B	B	B	B	B	H	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	H	B	B	B	B	B	B
RM6673	10	23.08	B	B	B	B	B	H	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	H	B	B	B	B	B	B
RM7203	11	1.08	B	B	H	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM1812	11	2.41	B	B	H	B	B	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM5704-1	11	5.48	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B	B
RM7283	11	9.12	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	H	B	B	B	B
RM26567	11	13.39	B	B	B	B	H	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	H	B	B	B	B
RM5824	11	14.53	B	B	B	B	H	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	H	B	B	B	B
RM28616	11	14.68	B	B	B	B	H	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	H	B	B	B	B
RM5312	11	17.63	B	B	B	B	H	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B
RM5349	11	19.65	H	H	B	B	H	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B	B
RM1219	11	21.52	H	H	B	B	H	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	B	B	B
RM2191-1	11	25.13	B	H	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
RM2064	11	27.49	H	H	B	B	B	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
BX000503_3	12	0.08	H	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	H	H
RM3747	12	2.31	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	H	H	H	H
RM27724	12	5.51	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	H	H	H
RM2529	12	7.57	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	H	H	H
RM27900	12	9.57	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	H	H	H
RM6973-1	12	10.08	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	H	H	H
RM7102-1	12	13.21	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	H	H	H
RM28112	12	16.28	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	H	H	H
RM28305	12	19.96	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H	H
RM5700-1	12	21.98	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H
RM5479-1	12	24.41	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H
RM2197	12	27.38	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	H

a Y, presence, and N, absence of a QTL.

b B, Homozygous IR64 allele; H, heterozygous.