

A

Region		EXON 1		EXON 5															
Position		41	314	318	587	589	590	591	592	593	594	597	598	599	611	683	782	833	970
Nip		A	A	T	TT	T	C	A	T	G	C	C	A	T	G	T	G	CG	T
Type 1	DEP1-3	A	A	T	TT	T	C	A	T	G	C	C	A	T	G	T	G	CG	T
Type 2	DEP1-1	A	A	T	AG	A	T	C	C	T	T	T	T	625 del					
Type 3	DEP1-4	G	A	T	TT	T	C	A	T	G	C	C	A	T	G	T	G	CG	T
Type 4	DEP1-6	A	G	T	TT	T	C	A	T	G	C	C	A	T	A	A	G	GG	A
Type 5	DEP1-9	A	G	T	TT	T	C	A	T	G	C	C	A	T	A	A	G	CG	A
Type 6	DEP1-5	A	G	T	TT	T	C	A	T	G	C	C	A	T	G	A	G	CG	A
	DEP1-2	A	G	C	TT	T	C	A	T	G	C	C	A	T	G	A	G	CG	A
Type 7	DEP1-8	A	G	C	TT	T	C	A	T	G	C	C	A	T	G	A	A	CG	A
Type 8	DEP1-7	A	G	C	TT	T	C	A	T	G	C	C	A	T	G	A	G	GG	A

B

Region		EXON 1					EXON 2		EXON 3		EXON 4	
Position		161	235	319	353	567	741	828	1247	1346	1466	1613
Nip		G	-	G	A	C	C	C	-	C	G	T
Type 1	GN1a-3	G	-	G	A	C	C	C	-	C	G	T
Type 2	GN1a-7	C	12 del	G	G	C	C	C	-	C	G	G
	GN1a-5	C	12 del	G	G	C	A	A	-	C	G	G
	GN1a-2	C	12 del	G	G	C	C	C	-	C	A	G
Type 3	GN1a-4	C	6 ins	G	G	C	C	C	-	C	G	G
Type 4	GN1a-6	C	6 ins	T	G	C	C	C	-	C	G	G
Type 5	GN1a-8	C	6 ins	T	G	C	C	C	2 ins	C	G	G
Type 6	GN1a-1	C	6 ins	G	G	T	C	C	-	1 del	A	G

C

Region		EXON 1																			
Position		26	56	74	96	132	177	222	256	306	323	461	536	569	651	659	674	819	828	878	893
Nip		A	T	A	T	C	G	G	T	A	A	A	GCG	A	C	A	A	-	C	TT	A
Type 1	GHD8-1	A	T	A	T	C	G	G	T	A	A	A	GCG	A	C	A	A	-	C	TT	A
	GHD8-4	A	T	A	T	C	G	T	T	A	A	A	GCG	A	C	A	A	-	C	TT	A
Type 2	GHD8-9	A	T	A	T	C	C	G	T	A	A	A	GCG	A	C	A	A	-	C	TT	A
Type 3	GHD8-5	A	C	C	G	C	G	G	G	C	A	C	2 GCG	C	T	C	A	-	9 del	TT	A
Type 4	GHD8-7	A	C	C	G	C	G	G	G	C	A	C	2 GCG	C	T	C	A	-	C	TT	G
Type 5	GHD8-2	A	C	C	G	C	G	G	G	C	A	C	2 GCG	C	T	C	A	-	9 del	TT	G
Type 6	GHD8-3	A	C	C	G	C	G	G	G	C	1 del	C	2 GCG	C	T	C	A	-	9 del	TT	G
Type 7	GHD8-8	A	C	C	G	C	G	G	G	C	A	C	6 del	C	T	C	A	-	C	TT	G
Type 8	GHD8-6	T	C	C	G	T	G	G	G	C	A	C	6 del	C	C	C	1 del	6 ins	C	GA	G

D

Region	EXON 1														EXON 2					
Position	71	248	316	334	440	466	469	487	512	517	646	660	661	779	1000	1062	1170	1216	1324	
Nip	-	GC	C	-	A	C	C	G	A	-	-	C	-	G	TT	A	-	-	G	
Type 1	HD1-1	-	GC	C	-	A	C	C	G	A	-	-	C	-	G	TT	A	-	-	G
Type 2	HD1-3	-	GC	T	36 ins	A	C	C	G	A	-	-	C	-	G	TT	A	-	-	G
Type 3	HD1-4	-	GC	C	36 ins	A	C	C	G	A	-	-	C	-	G	TT	A	-	-	G
Type 4	HD1-8	-	GC	C	36 ins	A	C	C	G	A	-	-	G	-	A	TT	A	-	4 del	G
Type 5	HD1-2	-	AA	C	36 ins	G	A	A	A	G	-	33 del	-	-	A	2 del	C	-	-	A
Type 6	HD1-5	3 del	AA	C	36 ins	G	A	A	A	G	129 ins	-	C	6 del	A	2 del	C	-	-	A
Type 7	HD1-6	-	AA	C	36 ins	G	A	A	A	G	129 ins	6 del	C	6 del	A	2 del	C	-	-	A
Type 8	HD1-7	-	AA	C	36 ins	G	A	A	A	G	129 ins	-	C	6 del	A	2 del	C	-	-	A
Type 9	HD1-9	-	AA	C	36 ins	G	A	A	A	G	-	33 del	-	-	A	TT	C	3 del	-	A

Additional file 7 Haplotypes of four genes. (A) *DEP1* (B) *GN1a* (C) *GHD8* (D) *HD1*. Nip, nipponbare; Type, candidate protein type; ins, insertion; del, deletion. Light blue boxes denote position of non-synonymous polymorphism. Orange box means mutational event causing frame shift and premature stop