

Appendix A Primers used for polymorphism detection of SINEs

Primer name	Primer sequence
VRTN-sRTIP1-F	GGCAGGGAAGGTGTTTGTTA
VRTN-sRTIP1-R	GACTGGCCTCTGTCCCTTG
VRTN-sRTIP2-F	ACTAGCTGGGTTTCATTACCTG
VRTN-sRTIP2-R	GTCCATGAACACTTTGGGTTT
VRTN-sRTIP3-F	TCCTTTTAACAGAGGAACCAGA
VRTN-sRTIP3-R	CAATGGTGCCTTATCCACTCC

Appendix B Candidate and Length of pig VRTN (genic region, 5 kb 5' flank, and 3 kb 3' flank) in different breeds

Breed	Length/bp		Candidate
	gene	gene and flanks	
Duroc	9567	17567	Sscrofa11.1 chr7:97609707-97627273
Bamei	9576	17570	gb LUXV01053823.1 2406583-2424152
Berkshire	9600	17604	gb LUXW01063014.1 647625-665228
Cross-bred	9567	17570	gb NPJO01000012.1 27306129-27323698
Hampshire	9570	17495	gb LUXS01039667.1 356558-374052
Landrace	9791	17807	gb LUXT01063231.1 646658-664600
Large White	9851	17855	gb LUXX01028809.1 404387-422242
Meishan	10014	18028	gb LUXQ01081143.1 922690-940823
Pietrain	10098	18120	gb LUXU01019237.1 650639-668758
Tibetan	9522	17622	gb AORO02071482.1 1204477-1222098
Wuzhishan	9547	17557	gb AJKK01189318.1 24841-37019 gb AJKK01189319.1 1-5378
Ellegaard	9522	17496	gb AOCR01021370.1 343-5669
Göttingen minipig			gb AOCR01021371.1 1-12169
Jinhua	9426	17352	gb LUXY01046899.1 1-11281 gb LUXY01003818.1 9-6079
Rongchang	9327	17297	gb LUXR01054411.1 1-3579 gb LUXR01083654.1 80021-90323 gb LUXR01005613.1 2-210 gb LUXR01021739.1 1-366 gb LUXR01098618.1 1-400 gb LUXR01064231.1 1-2672

Appendix C Summary of structural variations in *VRTN* and its proximal flanks sequences (5 kb 5' flank and 3 kb 3' flank).

Size of Structural variations	5'Flank	<i>VRTN</i>			3'Flank
		Exon 1	Intron 1	Exon2	
2-5 bp	0	0	7	0	2
5-20 bp	2	0	0	1	0
>100 bp	0	0	3	0	0

Appendix D Structural variations (SVs) in *VRTN* and its proximal flanks sequences (5 kb 5' flank and 3 kb 3' flank)

Region	SV	SV type	location	Breed
5'Flank	CTCCCATAT A	insertion	674-675	Bamei, Jinhua, Meishan, Pietrain, Tibetan, Wuzhishan, Ellegaard Gottingen minipig, Rongchang
	TTTCTG	insertion	4841-4815	Bamei, Jinhua, Meishan, Pietrain, Tibetan, Wuzhishan, Ellegaard Gottingen minipig, Rongchang
Intron 1	TG	deletion	5298-5299	Landrace, Large White, Duroc, Berkshire, Hampshire, Cross-bred, Wuzhishan, Ellegaard Gottingen minipig
	SINEA1 (295 bp)	insertion	6192-6293	Landrace, Large White
	TTCC	insertion	6388-6389	Meishan, Pietrain, Jinhua, Wuzhishan, Ellegaard Gottingen minipig, Rongchagn
	SINEA2 (291 bp)	insertion	10198-10199	Meishan, Pietrain
	GCA	insertion	10378-10379	Meishan, Pietrain, Rongchang
	AG	insertion	10915-10916	Meishan, Pietrain, Rongchang
	AG	insertion	10989-10990	Meishan, Pietrain, Tibetan, Jinhua, Landrace, Large White
	TA	insertion	11185-11186	Bamei, Tibetan, Jinhua
	SINEA2 (276 bp)	insertion	11278-11279	Meishan, Pietrain
Exon2	GGG	deletion	11453-11455	Meishan, Pietrain, Jinhua
	GGACCCTA CAGTCCT	insertion	14407-14407	Meishan, Jinhua, Rongchang
3'Flank	TG	deletion	14837-14838	Hampshire, Bamei, Tibetan, Jinhua, Meishan, Ellegaard Gottingen minipig, Pietrain, Rongchang
	CC	deletion	16087-16088	Bamei, Tibetan, Jinhua, Meishan, Ellegaard Gottingen minipig, Pietrain, Rongchang

Appendix E Distribution information of Retrotransposons in VRTN gene and its flank regions.

Number	Breed	Position in query		Strand	Family	Subclass	Length
		begin	end				
1	Duroc	54	279	+	SINEB6	SINE	225
2	Duroc	419	674	-	SINEA6	SINE	255
3	Duroc	1234	1484	-	SINEA7	SINE	250
4	Duroc	1493	1790	+	ERV16	LTR	297
5	Duroc	1965	2192	-	SINEB2	SINE	227
6	Duroc	8968	9150	-	SINEB3	SINE	182
7	Duroc	9856	10108	-	SINEA8	SINE	252
8	Duroc	10385	10646	-	SINEA6	SINE	261
9	Duroc	10912	11167	+	L1B4	LINE	255
1	Bamei	54	279	+	SINEB6	SINE	225
2	Bamei	417	677	-	SINEA6	SINE	260
3	Bamei	1243	1493	-	SINEA7	SINE	250
4	Bamei	1503	1780	+	ERV16	LTR	277
5	Bamei	1946	2173	-	SINEB2	SINE	227
6	Bamei	8963	9145	-	SINEB3	SINE	182
7	Bamei	9864	10116	-	SINEA8	SINE	252
8	Bamei	10393	10654	-	SINEA6	SINE	261
9	Bamei	10920	11177	+	L1B4	LINE	257
1	Berkshire	54	279	+	SINEB6	SINE	225
2	Berkshire	419	674	-	SINEA6	SINE	255
3	Berkshire	1234	1484	-	SINEA7	SINE	250
4	Berkshire	1493	1789	+	ERV16	LTR	296
5	Berkshire	1964	2191	-	SINEB2	SINE	227
6	Berkshire	8998	9180	-	SINEB3	SINE	182
7	Berkshire	9886	10138	-	SINEA8	SINE	252
8	Berkshire	10415	10676	-	SINEA6	SINE	261
9	Berkshire	10941	11198	+	L1B4	LINE	257
1	Cross-bred	54	279	+	SINEB6	SINE	225
2	Cross-bred	419	674	-	SINEA6	SINE	255
3	Cross-bred	1234	1484	-	SINEA7	SINE	250
4	Cross-bred	1493	1790	+	ERV16	LTR	297
5	Cross-bred	1965	2192	-	SINEB2	SINE	227
6	Cross-bred	8966	9148	-	SINEB3	SINE	182
7	Cross-bred	9854	10106	-	SINEA8	SINE	252
8	Cross-bred	10383	10644	-	SINEA6	SINE	261

9	Cross-bred Ellegaard	10909 54	11166 279	+	L1B4	LINE	257
1	Gottingen minipig Ellegaard	419	678	+	SINEB6	SINE	225
2	Gottingen minipig Ellegaard	1244	1494	-	SINEA6	SINE	259
3	Gottingen minipig Ellegaard	1510	1760	-	SINEA7	SINE	250
4	Gottingen minipig Ellegaard	1935	2162	-	ERV16	SINE	250
5	Gottingen minipig Ellegaard	8916	9098	-	SINEB2	SINE	227
6	Gottingen minipig Ellegaard	9821	10069	-	SINEB3	SINE	182
7	Gottingen minipig Ellegaard	10346	10607	-	SINEA8	SINE	248
8	Gottingen minipig Ellegaard	10873	11130	-	SINEA6	SINE	261
9	Gottingen minipig			+	L1B4	LINE	257
1	Hampshire	54	279	+	SINEB6	SINE	225
2	Hampshire	419	674	-	SINEA6	SINE	255
3	Hampshire	1234	1484	-	SINEA7	SINE	250
4	Hampshire	1513	1728	+	ERV16	LTR	215
5	Hampshire	1894	2121	-	SINEB2	SINE	227
6	Hampshire	8968	9150	-	SINEB3	SINE	182
7	Hampshire	9856	10108	-	SINEA8	SINE	252
8	Hampshire	10385	10646	-	SINEA6	SINE	261
9	Hampshire	10911	11168	+	L1B4	LINE	257
1	Tibetan	54	279	+	SINEB6	SINE	225

2	Tibetan	417	677	-	SINEA6	SINE	260
3	Tibetan	1243	1493	-	SINEA7	SINE	250
4	Tibetan	1660	1888	+	ERV16	LTR	228
5	Tibetan	2054	2281	-	SINEB2	SINE	227
6	Tibetan	8902	9084	-	SINEB3	SINE	182
7	Tibetan	9806	10058	-	SINEA8	SINE	252
8	Tibetan	10335	10595	-	SINEA6	SINE	260
9	Tibetan	10861	11120	+	L1B4	LINE	259
1	Wuzhishan	54	283	+	SINEB6	SINE	229
2	Wuzhishan	419	678	-	SINEA6	SINE	259
3	Wuzhishan	1244	1493	-	SINEA7	SINE	249
4	Wuzhishan	1505	1795	+	ERV16	LTR	290
5	Wuzhishan	1970	2197	-	SINEB2	SINE	227
6	Wuzhishan	8947	9129	-	SINEB3	SINE	182
7	Wuzhishan	9835	10087	-	SINEA8	SINE	252
8	Wuzhishan	10364	10625	-	SINEA6	SINE	261
9	Wuzhishan	10890	11149	+	L1B4	LINE	259
1	Rongchang	54	279	+	SINEB6	SINE	225
2	Rongchang	419	678	-	SINEA6	SINE	259
3	Rongchang	1244	1494	-	SINEA7	SINE	250
4	Rongchang	1510	1761	-	ERV16	SINE	251
5	Rongchang	1936	2163	-	SINEB2	SINE	227
6	Rongchang	8962	9144	-	SINEB3	SINE	182
7	Rongchang	9863	10115	-	SINEA8	SINE	252
8	Rongchang	10277	10545	-	SINEA6	SINE	268
9	Rongchang	10810	10861	+	L1B4	LINE	51
1	Jinhua	54	279	+	SINEB6	SINE	225
2	Jinhua	417	677	-	SINEA6	SINE	260
3	Jinhua	1243	1493	-	SINEA7	SINE	250
4	Jinhua	1510	1761	-	ERV16	SINE	251
5	Jinhua	1936	2163	-	SINEB2	SINE	227
6	Jinhua	8968	9150	-	SINEB3	SINE	182
7	Jinhua	9872	10124	-	SINEA8	SINE	252
8	Jinhua	10401	10661	-	SINEA6	SINE	260
9	Jinhua	10927	11186	+	L1B4	LINE	259
1	Landrace	54	279	+	SINEB6	SINE	225
2	Landrace	419	674	-	SINEA6	SINE	255
3	Landrace	1234	1484	-	SINEA7	SINE	250

4	Landrace	1495	1803	+	ERV16	LTR	308
5	Landrace	1978	2205	-	SINEB2	SINE	227
A	Landrace	6191	6378	+	SINEA1	SINE	187
6	Landrace	9168	9350	-	SINEB3	SINE	182
7	Landrace	10078	10330	-	SINEA8	SINE	252
8	Landrace	10605	10866	-	SINEA6	SINE	261
9	Landrace	11131	11390	+	L1B4	LINE	259
1	Large White	54	279	+	SINEB6	SINE	225
2	Large White	419	674	-	SINEA6	SINE	255
3	Large White	1234	1484	-	SINEA7	SINE	250
4	Large White	1493	1791	+	ERV16	LTR	298
5	Large White	1966	2193	-	SINEB2	SINE	227
A	Large White	6191	6473	+	SINEA1	SINE	282
6	Large White	9258	9440	-	SINEB3	SINE	182
7	Large White	10145	10390	-	SINEA8	SINE	245
8	Large White	10665	10926	-	SINEA6	SINE	261
9	Large White	11191	11450	+	L1B4	LINE	259
1	Meishan	54	279	+	SINEB6	SINE	225
2	Meishan	417	677	-	SINEA6	SINE	260
3	Meishan	1243	1493	-	SINEA7	SINE	250
4	Meishan	1502	1798	+	ERV16	LTR	296
5	Meishan	1973	2200	-	SINEB2	SINE	227
6	Meishan	8945	9127	-	SINEB3	SINE	182
7	Meishan	9845	10097	-	SINEA8	SINE	252
B	Meishan	10226	10354	-	SINEA2	SINE	128
8	Meishan	10559	10820	-	SINEA6	SINE	261
9	Meishan	11084	11346	+	L1B4	LINE	262
C	Meishan	11460	11722	+	SINEA2	SINE	262
1	Pietrain	54	279	+	SINEB6	SINE	225
2	Pietrain	417	677	-	SINEA6	SINE	260
3	Pietrain	1243	1493	-	SINEA7	SINE	250
4	Pietrain	1506	1813	+	ERV16	LTR	307
5	Pietrain	1988	2215	-	SINEB2	SINE	227
6	Pietrain	8919	9101	-	SINEB3	SINE	182
7	Pietrain	9819	10071	-	SINEA9	SINE	252
B	Pietrain	10174	10437	-	SINEA2	SINE	263
8	Pietrain	10642	10903	-	SINEA6	SINE	261
9	Pietrain	11167	11429	+	L1B4	LINE	262

C	Pietrain	11543	11805	+	SINEA2	SINE	262
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