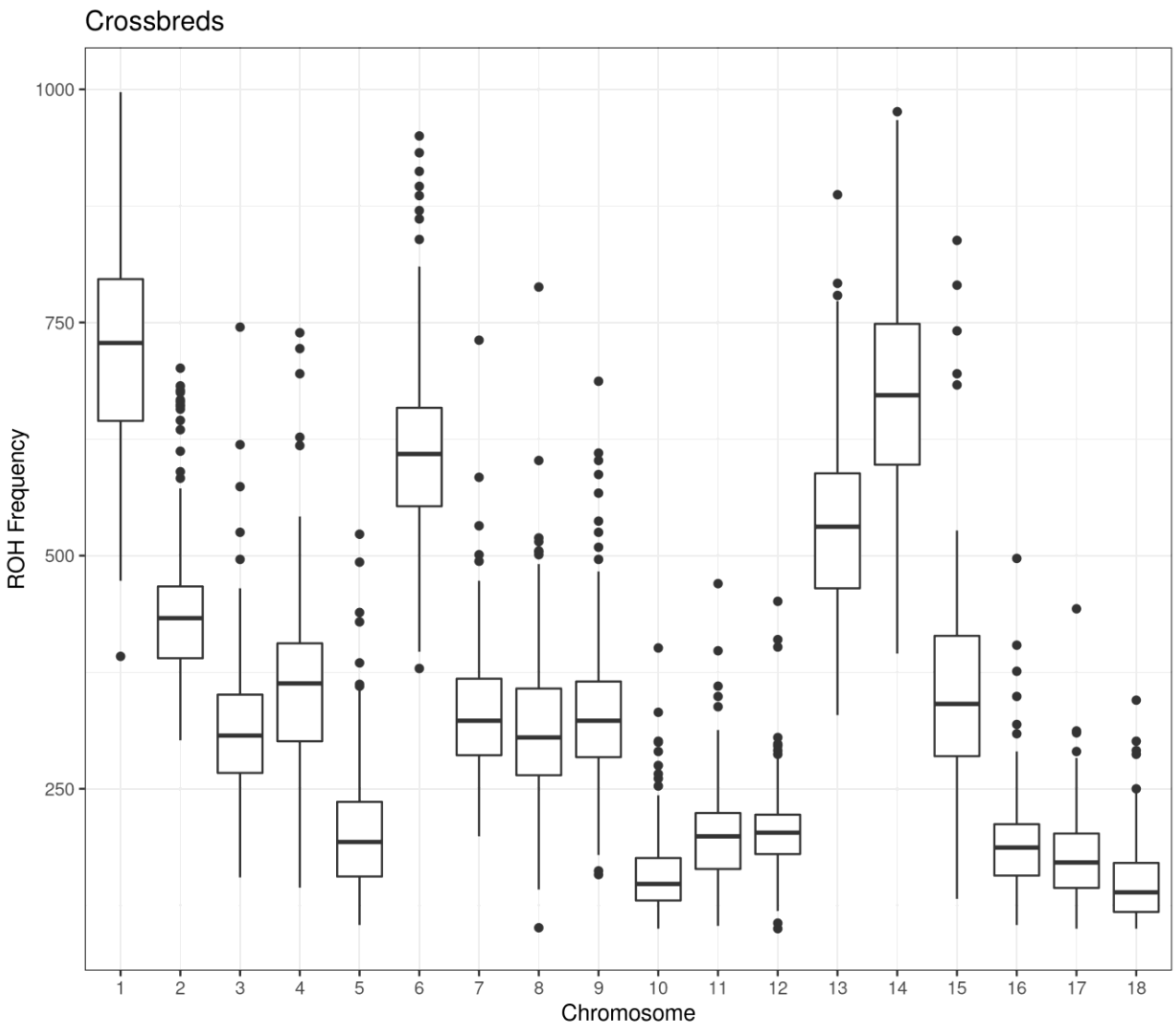
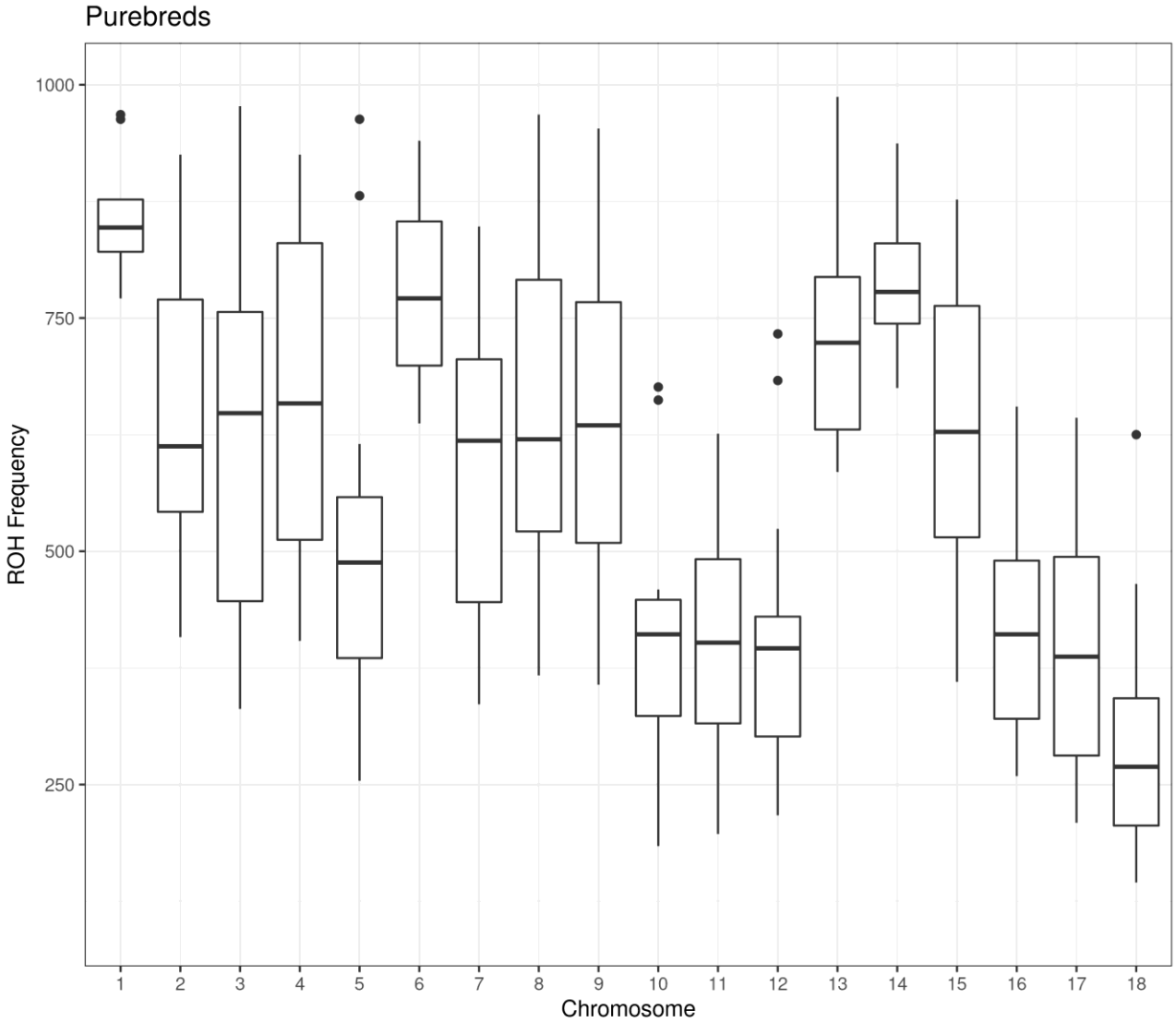
Persistence of autozygosity in crossbreds between autochthonous and cosmopolitan breeds of swine: a simulation study

Maria Chiara Fabbri[1]*, Emmanuel Lozada-Soto[2], Francesco Tiezzi[1], Marjeta Čandek-Potokar[3], Samuele Bovo[4], Giuseppina Schiavo[4], Luca Fontanesi[4], Maria Muñoz[5], Cristina Ovilo[5], Riccardo Bozzi[1]

Animal Journal



Supplementary Figure S1: Runs of Homozygosity (ROH) frequency distribution in pig crossbreds for each chromosome.



Supplementary Figure S2: Runs of Homozygosity (ROH) frequency distribution in pig purebreds for each chromosome.

Supplementary Table S1: Runs of homozygosity (ROH) frequency for each pig crossbred.

Crosses	N. ROH
ALE_ALE	14935
ALE_APU	6084
ALE_BIS	6105
ALE_BAS	6993
ALE_BLA	6272
ALE_CAS	5759
ALE_CIS	7262
ALE_DUR	4766
ALE_GAS	6202
ALE_IBE	13732
ALE_KRS	5407
ALE_LAN	4816

ALE_LAR	4558
ALE_LIN	5786
ALE_LIW	4783
ALE_MAJ	8175
ALE_MOR	6039
ALE_MKA	6126
ALE_NER	6733
ALE_SAR	5975
ALE_SCH	5048
ALE_SWM	7845
ALE_TUR	7341
APU_APU	9859
APU_BIS	6248
APU_BAS	5517
APU_BLA	6092
APU_CAS	5942
APU_CIS	6589
APU_DUR	6423
APU_GAS	5885
APU_IBE	5998
APU_KRS	6151
APU_LAN	6572
APU_LAR	6677
APU_LIN	6516
APU_LIW	6889
APU_MAJ	6067
APU_MOR	6269
APU_MKA	6014
APU_NER	6455
APU_SAR	6306
APU_SCH	5864
APU_SWM	5525
APU_TUR	5697
BIS_BIS	9370
BIS_CAS	6185
BIS_CIS	6207
BIS_DUR	5337
BIS_GAS	6639
BIS_IBE	6021
BIS_KRS	6606
BIS_LAN	7489
BIS_LAR	7383
BIS_LIN	7305
BIS_LIW	7329
BIS_MAJ	5967
BIS_MOR	5953
BIS_MKA	6657
BIS_NER	6335
BIS_SAR	6352

BIS_SCH	6473
BIS_SWM	5675
BIS_TUR	5736
BAS_BIS	6253
BAS_BAS	17020
BAS_BLA	6306
BAS_CAS	5509
BAS_CIS	6276
BAS_DUR	4717
BAS_GAS	9546
BAS_IBE	6954
BAS_KRS	5906
BAS_LAN	5666
BAS_LAR	5839
BAS_LIN	6335
BAS_LIW	5920
BAS_MAJ	6739
BAS_MOR	5665
BAS_MKA	6138
BAS_NER	6062
BAS_SAR	6022
BAS_SCH	5645
BAS_SWM	6629
BAS_TUR	6016
BLA_BIS	6051
BLA_BLA	8240
BLA_CAS	6010
BLA_CIS	6823
BLA_DUR	5813
BLA_GAS	6293
BLA_IBE	6180
BLA_KRS	6439
BLA_LAN	6296
BLA_LAR	5955
BLA_LIN	6670
BLA_LIW	6094
BLA_MAJ	6227
BLA_MOR	6247
BLA_MKA	6654
BLA_NER	6040
BLA_SAR	6337
BLA_SCH	5768
BLA_SWM	6954
BLA_TUR	6507
CAS_CAS	8238
CAS_CIS	6093
CAS_DUR	5548
CAS_GAS	5693
CAS_IBE	5713

CAS_KRS	5691
CAS_LAN	6177
CAS_LAR	6347
CAS_LIN	6419
CAS_LIW	6250
CAS_MAJ	6075
CAS_MOR	6061
CAS_MKA	5842
CAS_NER	6049
CAS_SAR	6151
CAS_SCH	5796
CAS_SWM	5843
CAS_TUR	5644
CIS_CIS	11255
CIS_DUR	6057
CIS_GAS	6503
CIS_IBE	7190
CIS_KRS	5863
CIS_LAN	5815
CIS_LAR	6105
CIS_LIN	6481
CIS_LIW	6025
CIS_MAJ	7190
CIS_MOR	7033
CIS_MKA	6363
CIS_NER	6385
CIS_SAR	6319
CIS_SCH	5513
CIS_SWM	6625
CIS_TUR	6733
DUR_DUR	17532
DUR_GAS	5318
DUR_IBE	5363
DUR_KRS	6894
DUR_LAN	4857
DUR_LAR	5376
DUR_LIN	5820
DUR_LIW	4898
DUR_MAJ	4862
DUR_MOR	10039
DUR_MKA	5644
DUR_NER	4881
DUR_SAR	6061
DUR_SCH	4540
DUR_SWM	4704
DUR_TUR	4914
GAS_GAS	13156
GAS_IBE	6257
GAS_KRS	6148

GAS_LAN	6460
GAS_LAR	6997
GAS_LIN	6934
GAS_LIW	6827
GAS_MAJ	6032
GAS_MOR	5770
GAS_MKA	6661
GAS_NER	6316
GAS_SAR	6350
GAS_SCH	5922
GAS_SWM	5880
GAS_TUR	6086
IBE_IBE	14538
IBE_KRS	5385
IBE_LAN	4588
IBE_LAR	4639
IBE_LIN	5639
IBE_LIW	4815
IBE_MAJ	7978
IBE_MOR	6200
IBE_MKA	5985
IBE_NER	6774
IBE_SAR	5937
IBE_SCH	5127
IBE_SWM	7825
IBE_TUR	7347
KRS_KRS	8612
KRS_LAN	7265
KRS_LAR	6795
KRS_LIN	6695
KRS_LIW	6823
KRS_MAJ	5566
KRS_MOR	6387
KRS_MKA	6687
KRS_NER	5839
KRS_SAR	6465
KRS_SCH	6642
KRS_SWM	5481
KRS_TUR	5843
LAN_LAN	12107
LAN_LAR	7138
LAN_LIN	6870
LAN_LIW	6881
LAN_MAJ	5300
LAN_MOR	5932
LAN_MKA	7294
LAN_NER	5857
LAN_SAR	6588
LAN_SCH	7409

LAN_SWM	4997
LAN_TUR	5155
LAR_LAR	12351
LAR_LIN	8862
LAR_LIW	10482
LAR_MAJ	4912
LAR_MOR	6086
LAR_MKA	6834
LAR_NER	6243
LAR_SAR	7296
LAR_SCH	6472
LAR_SWM	4657
LAR_TUR	5009
LIN_LIN	10132
LIN_LIW	9218
LIN_MAJ	5886
LIN_MOR	6258
LIN_MKA	6677
LIN_NER	6403
LIN_SAR	7020
LIN_SCH	6523
LIN_SWM	5351
LIN_TUR	5968
LIW_LIW	11674
LIW_MAJ	5069
LIW_MOR	5920
LIW_MKA	6732
LIW_NER	6183
LIW_SAR	7165
LIW_SCH	6981
LIW_SWM	4832
LIW_TUR	5168
MAJ_MAJ	13475
MAJ_MOR	5988
MAJ_MKA	6112
MAJ_NER	6475
MAJ_SAR	6086
MAJ_SCH	5344
MAJ_SWM	7084
MAJ_TUR	7115
MOR_MOR	11437
MOR_MKA	5909
MOR_NER	6038
MOR_SAR	6225
MOR_SCH	5289
MOR_SWM	5761
MOR_TUR	5569
MKA_MKA	8082
MKA_NER	6211

MKA_SAR	6316
MKA_SCH	6512
MKA_SWM	6750
MKA_TUR	6224
NER_NER	7916
NER_SAR	6264
NER_SCH	5914
NER_SWM	6166
NER_TUR	6291
SAR_SAR	6924
SAR_SCH	5910
SAR_SWM	5804
SAR_TUR	5856
SCH_SCH	9485
SCH_SWM	4705
SCH_TUR	5619
SWM_SWM	12766
SWM_TUR	7616
TUR_TUR	12795

Abbreviations: ALE = Alentejana; APU = Apulo Calabrese; BAS = Basque; BLA = Black Slavonian; BIS = Bisara; CAS = Casertana; CIN = Cinta Senese; DUR = Duroc; GAS = Gascon; IBE = Iberian; KRS = Krskopolje; LAN = Landrace; LAR = Large White; LIN = Lithuanian Native; LIW = Lithuanian White Old Type; MAJ = MajorcanBlack; MOR = Mora Romagnola; MKA = Moravka; NER = Nero Siciliano; SAR = Sarda; SCH Schwäbisch-Hällisches Schwein; SWM = Swallow-Bellied Mangalitsa; TUR = Turopolje.

Supplementary TableS2: Average of genomic inbreeding coefficient (F_{ROH}) for each pig crossbred.

breed1	breed2	Average F_{ROH}	SD F_{ROH}
MOR	MOR	0.502	0.061
TUR	TUR	0.467	0.170
BAS	BAS	0.425	0.041
DUR	DUR	0.334	0.040
GAS	GAS	0.293	0.038
APU	APU	0.289	0.105
SWM	SWM	0.272	0.066
LIW	LIW	0.255	0.071
LIN	LIN	0.251	0.061
CIN	CIN	0.248	0.096
CAS	CAS	0.224	0.159
LAR	LAR	0.219	0.052
ALE	ALE	0.206	0.057

LAN	LAN	0.204	0.041
SCH	SCH	0.201	0.078
MAJ	MAJ	0.197	0.037
KRS	KRS	0.188	0.056
IBE	IBE	0.188	0.042
BIS	BIS	0.163	0.056
BLA	BLA	0.159	0.083
ALE	IBE	0.156	0.020
MKA	MKA	0.155	0.069
DUR	MOR	0.145	0.025
LAR	LIW	0.142	0.028
BAS	GAS	0.129	0.018
LIN	LIW	0.123	0.020
LAR	LIN	0.112	0.018
NER	NER	0.098	0.038
SAR	SAR	0.094	0.056
LAN	SCH	0.094	0.020
BIS	LAN	0.093	0.015
LAN	MKA	0.091	0.017
LAR	SAR	0.090	0.020
KRS	LAN	0.090	0.015
LAN	LAR	0.090	0.016
BIS	LAR	0.090	0.013
BIS	LIW	0.088	0.015
DUR	KRS	0.088	0.017
BLA	CIN	0.087	0.068
GAS	LAR	0.087	0.014
KRS	SCH	0.087	0.030
LAN	LIW	0.086	0.016
LIW	SAR	0.086	0.016
APU	LAN	0.085	0.015
APU	LIW	0.085	0.012
LAN	LIN	0.083	0.013
LIN	SAR	0.083	0.014
GAS	LIW	0.083	0.014
BIS	LIN	0.082	0.012
GAS	LIN	0.082	0.011
LIW	SCH	0.081	0.014
APU	DUR	0.081	0.014
KRS	LIW	0.081	0.011
APU	LAR	0.081	0.013
BLA	TUR	0.080	0.094
CIN	MOR	0.080	0.013
LAN	SAR	0.079	0.016
KRS	LAR	0.079	0.013
GAS	LAN	0.079	0.012
LAR	MKA	0.079	0.014
CIN	DUR	0.077	0.029
LIW	MKA	0.077	0.013

KRS	LIN	0.077	0.013
ALE	MAJ	0.077	0.009
BIS	KRS	0.077	0.011
APU	LIN	0.077	0.011
KRS	SAR	0.076	0.016
SWM	TUR	0.076	0.009
KRS	MKA	0.076	0.012
MKA	SWM	0.076	0.020
BIS	MKA	0.075	0.013
IBE	MAJ	0.075	0.009
CAS	LAR	0.075	0.012
CAS	LAN	0.075	0.013
LIN	MKA	0.075	0.012
LIN	SCH	0.075	0.018
BIS	GAS	0.075	0.012
GAS	MKA	0.074	0.011
MKA	SCH	0.074	0.015
DUR	SAR	0.074	0.017
BLA	MKA	0.074	0.011
KRS	MOR	0.074	0.013
BLA	LIN	0.074	0.012
LAR	MOR	0.074	0.017
ALE	SWM	0.073	0.008
IBE	SWM	0.073	0.007
LAR	SCH	0.073	0.018
APU	CIN	0.073	0.012
APU	MOR	0.073	0.011
GAS	SAR	0.073	0.012
CAS	LIW	0.073	0.011
APU	BIS	0.073	0.013
CAS	LIN	0.072	0.011
APU	CAS	0.072	0.017
CIN	LAR	0.072	0.014
LAR	NER	0.072	0.017
LIN	MOR	0.072	0.012
BLA	LAN	0.072	0.015
APU	KRS	0.072	0.012
BLA	DUR	0.071	0.018
BIS	SCH	0.071	0.012
BLA	KRS	0.071	0.012
BLA	SWM	0.071	0.011
APU	SAR	0.071	0.013
MOR	SAR	0.071	0.013
MKA	SAR	0.070	0.014
BIS	CAS	0.070	0.013
CIN	LIN	0.070	0.009
LIN	NER	0.070	0.013
LIW	NER	0.070	0.015
LIW	MOR	0.070	0.011

CIN	GAS	0.070	0.009
CIN	MKA	0.070	0.010
BLA	SAR	0.070	0.012
BIS	SAR	0.070	0.012
LAN	MOR	0.069	0.011
BLA	GAS	0.069	0.012
CAS	SAR	0.069	0.012
APU	NER	0.069	0.011
ALE	CIN	0.069	0.010
GAS	NER	0.069	0.011
BLA	MOR	0.069	0.012
DUR	LIN	0.069	0.012
CIN	IBE	0.069	0.009
APU	MKA	0.069	0.012
BLA	LAR	0.069	0.015
DUR	MKA	0.069	0.018
GAS	KRS	0.069	0.010
CIN	SAR	0.068	0.011
BAS	MAJ	0.068	0.008
ALE	TUR	0.068	0.007
SAR	SCH	0.068	0.017
IBE	TUR	0.068	0.008
NER	SAR	0.068	0.012
CIN	MAJ	0.068	0.009
GAS	SCH	0.068	0.017
BIS	NER	0.067	0.011
BIS	CIN	0.067	0.010
MAJ	TUR	0.067	0.008
BAS	LIN	0.067	0.009
CIN	LIW	0.067	0.012
MAJ	SWM	0.067	0.008
APU	GAS	0.067	0.010
CAS	DUR	0.067	0.013
BAS	IBE	0.067	0.007
MOR	MKA	0.067	0.009
APU	SCH	0.067	0.017
ALE	BAS	0.067	0.008
CAS	CIN	0.066	0.010
MKA	NER	0.066	0.011
APU	BLA	0.066	0.011
BIS	MOR	0.066	0.012
LAN	NER	0.066	0.014
BLA	LIW	0.066	0.013
BAS	MKA	0.066	0.009
CIN	KRS	0.066	0.009
CAS	MOR	0.066	0.012
BAS	BIS	0.066	0.009
CAS	KRS	0.066	0.010
CAS	MKA	0.065	0.011

CIN	TUR	0.065	0.012
BLA	BIS	0.065	0.010
CIN	LAN	0.065	0.011
BAS	CIN	0.065	0.008
BLA	CAS	0.065	0.011
BLA	SCH	0.064	0.017
NER	SCH	0.064	0.014
MOR	NER	0.064	0.010
BAS	LIW	0.064	0.010
DUR	LAR	0.064	0.038
BIS	DUR	0.064	0.012
BAS	LAR	0.064	0.008
CIN	SWM	0.064	0.009
MKA	TUR	0.064	0.010
CIN	NER	0.064	0.010
ALE	NER	0.064	0.010
BLA	NER	0.064	0.011
BAS	BLA	0.063	0.009
CAS	NER	0.063	0.011
BAS	KRS	0.063	0.009
BAS	SAR	0.063	0.010
IBE	NER	0.063	0.009
KRS	NER	0.063	0.013
CAS	SCH	0.063	0.015
GAS	MOR	0.063	0.009
CAS	GAS	0.062	0.010
BAS	SWM	0.062	0.007
BAS	LAN	0.062	0.010
MAJ	NER	0.062	0.010
BLA	MAJ	0.062	0.009
BAS	NER	0.062	0.010
GAS	TUR	0.062	0.009
MAJ	MKA	0.062	0.010
GAS	IBE	0.061	0.008
ALE	GAS	0.061	0.008
ALE	BLA	0.061	0.010
MAJ	MOR	0.061	0.009
GAS	MAJ	0.061	0.009
LIN	TUR	0.060	0.010
NER	TUR	0.060	0.009
IBE	MOR	0.060	0.008
MAJ	SAR	0.060	0.010
LIN	MAJ	0.060	0.010
CAS	MAJ	0.060	0.009
GAS	SWM	0.060	0.008
BAS	SCH	0.060	0.012
BIS	MAJ	0.060	0.010
DUR	IBE	0.059	0.015
DUR	GAS	0.059	0.009

BLA	IBE	0.059	0.009
APU	BAS	0.059	0.008
ALE	MKA	0.058	0.009
SAR	TUR	0.058	0.008
BAS	MOR	0.058	0.008
ALE	BIS	0.058	0.008
APU	MAJ	0.058	0.009
CIN	SCH	0.058	0.010
ALE	MOR	0.058	0.007
KRS	TUR	0.057	0.009
NER	SWM	0.057	0.009
IBE	MKA	0.057	0.008
BIS	IBE	0.057	0.008
ALE	APU	0.057	0.009
APU	IBE	0.057	0.008
MOR	SCH	0.057	0.012
ALE	LIN	0.057	0.009
SAR	SWM	0.057	0.009
APU	TUR	0.057	0.009
KRS	MAJ	0.056	0.009
BAS	CAS	0.056	0.009
IBE	SAR	0.056	0.008
BIS	SWM	0.056	0.009
CAS	SWM	0.056	0.008
ALE	SAR	0.056	0.008
MOR	SWM	0.056	0.008
SCH	TUR	0.056	0.014
LAN	MAJ	0.056	0.010
CAS	TUR	0.055	0.009
BIS	TUR	0.055	0.008
BAS	TUR	0.054	0.007
ALE	CAS	0.054	0.008
KRS	SWM	0.054	0.009
DUR	LIW	0.054	0.008
MOR	TUR	0.054	0.007
CAS	IBE	0.054	0.008
LAN	TUR	0.054	0.011
IBE	KRS	0.053	0.008
IBE	LIN	0.053	0.008
APU	SWM	0.053	0.008
DUR	LAN	0.053	0.009
ALE	KRS	0.053	0.007
LIN	SWM	0.052	0.009
MAJ	SCH	0.052	0.013
LIW	MAJ	0.052	0.010
DUR	NER	0.052	0.013
LAN	SWM	0.052	0.010
LAR	MAJ	0.051	0.009
LAR	TUR	0.051	0.010

LIW	TUR	0.050	0.008
BAS	DUR	0.049	0.008
DUR	SWM	0.049	0.010
ALE	SCH	0.049	0.012
DUR	SCH	0.049	0.012
DUR	MAJ	0.049	0.010
DUR	TUR	0.048	0.007
ALE	LAN	0.047	0.009
ALE	DUR	0.047	0.009
IBE	SCH	0.047	0.010
LIW	SWM	0.047	0.008
LAR	SWM	0.047	0.008
SCH	SWM	0.046	0.011
ALE	LIW	0.044	0.007
IBE	LIW	0.044	0.009
IBE	LAN	0.044	0.008
IBE	LAR	0.043	0.008
ALE	LAR	0.043	0.008

Abbreviations: ALE = Alentejana; APU = Apulo Calabrese; BAS = Basque; BLA = Black Slavonian; BIS = Bisara; CAS = Casertana; CIN = Cinta Senese; DUR = Duroc; GAS = Gascon; IBE = Iberian; KRS = Krskopolje; LAN = Landrace; LAR = Large White; LIN = Lithuanian Native; LIW = Lithuanian White Old Type; MAJ = MajorcanBlack; MOR = Mora Romagnola; MKA = Moravka; NER = Nero Siciliano; SAR = Sarda; SCH Schwäbisch-Hällisches Schwein; SWM = Swallow-Bellied Mangalitsa; TUR = Turopolje.

Supplementary Table S3: List of Quantitative Trait Loci (QTL) identified in pig crossbreds; where APU = Apulo Calabrese; CAS = Casertana; CIN = Cinta Senese; DUR = Duroc; LAN = Landrace; LAR = Large White; MOR = Mora Romagnola; NER = Nero Siciliano; SAR = Sarda.

CHR	START	END	QTL	APU DUR	APU LAN	APU LAR	CAS DUR	CAS LAN	CAS LAR	CIN DUR	CIN LAN	CIN LAR	MOR DUR	MOR LAN	MOR LAR	NER DUR	NER LAN	NER LAR	SAR DUR	SAR LAN	SAR LAR
1	172499255	34417414	Melanoma susceptibility QTL		X	X						X						X			X
1	119556997	119557001	Sperm motility QTL					X													
1	119556997	119557001	Mean corpuscular volume QTL					X													
1	119676878	119676882	Meat color score QTL					X													
1	119676878	119676882	pH 24 hr post-mortem					X													
1	120908437	120908441	Phosphate level QTL					X													
1	139600665	139600669	Linoleic acid content QTL					X													
1	139600665	139600669	Monounsaturated fatty acid to saturated fatty acid ratio QTL					X													
1	139786879	139786883	Gestation length QTL					X													
1	172499255	34417414	Melanoma susceptibility QTL					X													
1	133504634	133504638	Shoulder weight QTL						X												
1	133504634	133504638	Lymphocyte number QTL						X												
1	134171670	134171674	Backfat at tenth rib QTL						X												
1	137394979	137394983	Average daily gain QTL						X												
1	137462209	137462213	Palmitoleic acid content QTL						X												
1	137501134	137501138	Interleukin-12 level QTL						X												
1	172499255	34417414	Melanoma susceptibility QTL						X												
1	242165686	242165690	Teat number QTL						X												
1	242741851	242741855	Feed conversion ratio QTL						X												
1	172499255	34417414	Melanoma susceptibility QTL													X	X				
1	178188859	178188863	Average backfat thickness QTL														X				
1	178188859	178188863	Loin muscle area QTL														X				
1	178188859	178188863	Lean meat percentage QTL														X				
1	176065652	176065656	Average daily gain QTL															X			
1	176065652	176065656	Backfat at tenth rib QTL															X			
1	172499255	34417414	Melanoma susceptibility QTL																X		
1	172499255	34417414	Melanoma susceptibility QTL																	X	
1	30481051	30584097	Drip loss QTL																		X
2	79760741	79760745	Lean meat percentage QTL			X															
2	80486382	80486386	Mean corpuscular volume QTL			X															
2	80974582	80974586	LDL cholesterol QTL			X															

2	80998774	80998778	Body depth QTL			X															
2	80998774	80998778	Body width QTL			X															
2	81346163	64363151	Percentage type IIa fibers QTL			X															
2	81409631	81409635	Hip structure QTL			X															
2	81409631	81409635	Front foot size QTL			X															
2	81629716	81629720	Chest width QTL			X															
2	81675736	81675740	Right teat number QTL			X															
2	82281459	82429137	Scrotal/inguinal hernia QTL			X															
2	87106231	87106235	Triglyceride level QTL			X															
2	87163626	87163630	Age at puberty QTL			X															
2	87274371	87274375	Number of stillborn QTL			X															
2	87495573	87495577	Rump circumference QTL			X															
2	87768391	87768395	Conductivity 45 minutes post-mortem QTL			X															
2	87792346	87792350	Coping behavior QTL			X															
2	88055466	88055470	Dihomo-gamma-linolenic acid content QTL			X															
2	96840084	97000069	tenderness score QTL			X															
2	96840084	97000069	Humerus length QTL			X															
2	106976773	106976777	Shear force QTL				X														
2	106976876	106976880	Juiciness score QTL				X														
2	106976876	106976880	tenderness score QTL				X														
2	106976876	106976880	chew score QTL				X														
2	106976876	106976880	Off-flavor score QTL				X														
2	106976876	106976880	Flavor score QTL				X														
2	106976876	106976880	Cooking loss QTL				X														
2	106976876	106976880	Drip loss QTL				X														
2	134560511	134560515	Meat color L* QTL						X												
2	134993754	134993758	Meat color a* QTL						X												
2	16645930	16645934	Immunoglobulin G level QTL								X										
2	9820610	9968289	Percentage type I fibers QTL									X									
2	9943676	10017515	Salmonella count in spleen QTL									X									
2	9943676	10017515	Salmonella count in liver QTL									X									
2	9943676	10017515	Salmonella shedding status QTL									X									
2	10286570	10286574	Backfat at first rib QTL									X									
2	10286570	10286574	Obesity index QTL									X									
2	10352121	10352125	muscle protein percentage QTL									X									
2	18558247	18669006	pH 24 hr post-mortem									X									

2	18665150	18665154	Average daily gain QTL									X									
2	18828503	18828507	Average feeding rate QTL									X									
2	61520343	55133254	Muscle moisture percentage QTL													X					
2	88859716	88859720	Number of stillborn QTL																X		
2	89042041	89042045	Mean corpuscular hemoglobin content QTL																X		
2	89042041	89042045	Mean corpuscular volume QTL																X		
2	89137124	89137128	Platelet count QTL																X		
2	89502468	89502472	Litter weight, piglets born alive QTL																X		
2	89541400	89541404	Polyunsaturated fatty acid to saturated fatty acid ratio QTL																X		
2	89541400	89541404	Coping behavior QTL																X		
2	37589360	37589364	Mean corpuscular volume QTL																	X	
2	38516127	38516131	Coping behavior QTL																	X	
2	16414	16418	Polyunsaturated fatty acid content QTL																		X
2	16414	16418	Oleic acid content QTL																		X
2	16414	16418	Monounsaturated fatty acid content QTL																		X
2	16414	16418	Polyunsaturated fatty acid to saturated fatty acid ratio QTL																		X
2	211099	211103	Tongue weight QTL																		X
2	211099	211103	Ham meat percentage QTL																		X
2	211099	211103	Lean meat percentage QTL																		X
2	251445	251449	Monounsaturated fatty acid to polyunsaturated fatty acid ratio QTL																		X
2	251445	251449	Linoleic acid content QTL																		X
2	365307	365311	Average backfat thickness QTL																		X
2	59489738	59489742	Teat number QTL																		X
2	59498847	59498851	Body depth QTL																		X
2	59498847	59498851	Body width QTL																		X
2	59498847	59498851	Rib shape QTL																		X
2	59597175	59597179	LDL cholesterol QTL																		X
2	59597175	59597179	Mean corpuscular hemoglobin content QTL																		X
2	59957367	59957371	Mean corpuscular volume QTL																		X
2	59957367	59957371	Red cell distribution width QTL																		X

3	57180689	57180693	CD3-negative, CD8-negative leukocyte percentage QTL		X																
3	57187515	57187519	CD8-positive leukocyte percentage QTL		X																
3	57187515	57187519	CD8-negative leukocyte percentage QTL		X																
3	86105720	86105724	Mean platelet volume QTL		X																
3	86301290	86458059	Hemoglobin QTL		X																
3	86301290	86458059	Daily feed intake QTL		X																
3	55915177	55915181	CD8-positive leukocyte percentage QTL			X															
3	55949227	55949231	CD8-negative leukocyte percentage QTL			X															
3	56746315	56746319	CD8-negative leukocyte percentage QTL				X														
3	72434494	72434498	CD3-negative, CD8-negative leukocyte percentage QTL				X														
3	72477090	72477094	CD8-positive leukocyte percentage QTL				X														
3	56074356	56074360	CD8-negative leukocyte percentage QTL					X													
3	56106381	56106385	Mycoplasmal pneumonia susceptibility QTL					X													
3	56106381	56106385	CD8-positive leukocyte percentage QTL					X													
3	56106381	56106385	CD3-negative, CD8-negative leukocyte percentage QTL					X													
3	67376788	67376792	CD8-positive leukocyte percentage QTL							X											
3	67376788	67376792	CD3-negative, CD8-negative leukocyte percentage QTL							X											
3	67376788	67376792	Backfat at rump QTL							X											
3	67377828	67377832	CD8-negative leukocyte percentage QTL							X											
3	48519673	48519677	CD8-negative leukocyte percentage QTL								X										
3	48555584	48555588	CD8-positive leukocyte percentage QTL								X										
3	72758698	72758702	CD8-negative leukocyte percentage QTL										X								
3	72758698	72758702	CD3-negative, CD8-negative leukocyte percentage QTL										X								

3	72760166	72760170	CD8-positive leukocyte percentage QTL										X								
3	65386967	65386971	CD8-positive leukocyte percentage QTL											X							
3	65386967	65386971	CD8-negative leukocyte percentage QTL											X							
3	65386967	65386971	CD3-negative, CD8-negative leukocyte percentage QTL											X							
3	53568456	53568460	CD8-negative leukocyte percentage QTL													X					
3	53568456	53568460	CD3-negative, CD8-negative leukocyte percentage QTL													X					
3	53568456	53568460	CD8-positive leukocyte percentage QTL													X					
3	1456144	1456148	Functional teat number QTL															X			
3	1460910	1460914	Coping behavior QTL															X			
3	52990303	52990307	Marbling QTL															X			
3	53003879	53003883	CD8-negative leukocyte percentage QTL															X			
3	57219019	57219023	CD8-positive leukocyte percentage QTL															X			
3	64188470	64188474	CD8-positive leukocyte percentage QTL																X		
3	64188470	64188474	CD8-negative leukocyte percentage QTL																X		
3	64188470	64188474	CD3-negative, CD8-negative leukocyte percentage QTL																X		
3	28786811	28786815	CD8-negative leukocyte percentage QTL																	X	
3	28823085	28879074	Femur length QTL																	X	
3	75136680	75136684	CD3-negative, CD8-negative leukocyte percentage QTL																	X	
3	75159932	75159936	CD8-positive leukocyte percentage QTL																	X	
3	75708190	76032926	Meat color score QTL																	X	
3	75917748	75917752	Obesity index QTL																	X	
3	89951802	89951806	Rump width QTL																	X	
3	59529152	59529156	CD8-positive leukocyte percentage QTL																		X
3	59736166	59736170	CD3-negative, CD8-negative leukocyte percentage QTL																		X
3	59884489	59884493	CD8-negative leukocyte percentage QTL																		X

4	47312980	47312984	Front leg conformation QTL	X																	
4	58591006	25407688	Mean corpuscular volume QTL	X																	
4	63923827	63923831	Oleic acid to stearic acid ratio QTL	X																	
4	63923827	63923831	Fatty acid thrombogenic index QTL	X																	
4	63923827	63923831	Monounsaturated fatty acid content QTL	X																	
4	63923827	63923831	Monounsaturated fatty acid to saturated fatty acid ratio QTL	X																	
4	63923827	63923831	Saturated fatty acid content QTL	X																	
4	126731799	126786557	Meat color b* QTL	X																	
4	132231276	132231280	Gestation length QTL	X																	
4	132466080	132466084	Fat androstenone level QTL	X																	
4	131768989	131768993	Monocyte percentage QTL			X															
4	58591006	25407688	Mean corpuscular volume QTL				X														
4	63957510	63957514	Oleic acid content QTL				X														
4	63957510	63957514	Stearic acid content QTL				X														
4	63957510	63957514	Palmitoleic acid content QTL				X														
4	58591006	25407688	Mean corpuscular volume QTL						X												
4	63952249	63952253	Stearic acid content QTL						X												
4	63952249	63952253	Oleic acid content QTL						X												
4	63952249	63952253	Palmitic acid content QTL						X												
4	63957510	63957514	Saturated fatty acid content QTL						X												
4	63957510	63957514	Monounsaturated fatty acid content QTL						X												
4	25899173	25899177	Left teat number QTL							X											
4	26036939	26036943	Teat number QTL							X											
4	26218106	26272864	Cholesterol level QTL							X											
4	26218106	26272864	LDL cholesterol QTL							X											
4	26324823	26324827	Drip loss QTL							X											
4	33447339	33447343	Intramuscular fat content QTL							X											
4	33718637	33718641	Days to 110 kg QTL							X											
4	33852151	33852155	Days to 115 kg QTL							X											
4	45777646	29678808	Abdominal fat percentage QTL							X											
4	45829939	45829943	Basophil percentage QTL							X											
4	45986313	45986317	Fat androstenone level QTL							X											
4	58591006	25407688	Mean corpuscular volume QTL							X											

4	63982650	63982654	Palmitic acid content QTL							X											
4	63982650	63982654	Fatty acid thrombogenic index QTL							X											
4	63982650	63982654	Oleic acid content QTL							X											
4	63982650	63982654	Stearic acid content QTL							X											
4	63982650	63982654	Palmitoleic acid content QTL							X											
4	63988610	63988614	Saturated fatty acid content QTL							X											
4	63988610	63988614	Monounsaturated fatty acid content QTL							X											
4	63988839	63988843	Feed conversion ratio QTL							X											
4	65719777	65719781	Ulna length QTL							X											
4	74095576	74095580	PH for Longissimus dorsi QTL							X											
4	74150784	74150788	Tongue length QTL							X											
4	74150784	74150788	Head weight QTL							X											
4	74150784	74150788	Tongue weight QTL							X											
4	88160299	65413847	Average daily gain QTL												X						
4	88160299	65413847	Backfat at rump QTL												X						
4	88160299	65413847	Feed conversion ratio QTL												X						
4	1730351	1807012	Drip loss QTL													X					
4	1730351	1807012	Estimated carcass lean content QTL													X					
4	1810628	1810632	Enterotoxigenic E. coli susceptibility QTL													X					
4	1922760	1922764	Sperm abnormality rate QTL													X					
4	2035613	2035617	Adrenal gland weight QTL													X					
4	63968898	63968902	Stearic acid content QTL														X				
4	63968898	63968902	Oleic acid content QTL														X				
4	63968898	63968902	Palmitic acid content QTL														X				
4	63968898	63968902	Monounsaturated fatty acid content QTL														X				
4	63968898	63968902	Saturated fatty acid content QTL														X				
4	63976408	63976412	Palmitoleic acid content QTL														X				
4	71890323	71890327	Head weight QTL														X				
4	71890323	71890327	Tongue length QTL														X				
4	72687661	72687665	Iris pigmentation QTL														X				
4	60406530	60406534	Cannon bone circumference QTL															X			
4	82888772	82888776	Shoulder weight QTL															X			
4	82971115	82971119	Age at puberty QTL															X			

4	82971115	82971119	Head weight QTL															X			
4	82971115	82971119	Tongue weight QTL															X			
4	83025849	83025853	Body weight QTL															X			
4	88160299	65413847	Backfat at rump QTL															X			
4	88160299	65413847	Feed conversion ratio QTL															X			
4	63923827	63923831	Monounsaturated fatty acid to saturated fatty acid ratio QTL																X		
4	63923827	63923831	Palmitoleic acid to palmitic acid ratio QTL																X		
4	63923827	63923831	Stearic acid content QTL																X		
4	63923827	63923831	Oleic acid to stearic acid ratio QTL																X		
4	63923827	63923831	Fatty acid thrombogenic index QTL																X		
4	63923827	63923831	Monounsaturated fatty acid content QTL																X		
4	19603346	19734765	Teat number QTL																	X	
4	19761931	19761935	Shoulder weight QTL																	X	
4	91696278	91696282	Eicosadienoic acid content QTL																	X	
4	29558808	29558812	Average daily gain QTL																		X
5	44251001	22469420	Front feet conformation QTL			X															
5	81776462	44633134	pH 24 hr post-mortem			X															
5	73096201	73096205	Spinal curvature QTL							X											
5	81776462	44633134	pH 24 hr post-mortem							X											
5	81776462	44633134	pH 24 hr post-mortem								X										
5	44251001	22469420	Front feet conformation QTL									X									
5	47782624	47782628	Feed conversion ratio QTL									X									
5	25824296	25824300	Fat androstenone level QTL											X							
5	93970077	93970081	Teat number QTL														X				
5	94167460	94167464	Coping behavior QTL														X				
5	252856	252860	Right teat number QTL															X			
5	423261	423265	Front leg conformation QTL															X			
5	423261	423265	Fat androstenone level QTL															X			
5	679472	679476	Gait score															X			
5	679472	679476	Front foot size QTL															X			
5	679472	679476	Hind foot size QTL															X			
5	819685	819689	Palmitoleic acid content QTL															X			
5	894182	894186	Total number born alive QTL															X			
5	1046888	1046892	Thoracic vertebra number QTL															X			

5	68199985	68199989	tenderness score QTL																	X	
5	68257795	68257799	Calcium to phosphorus ratio QTL																	X	
5	68326346	68326350	Cooking yield QTL																	X	
5	68326346	68326350	Backfat between 3rd and 4th last ribs QTL																	X	
5	81776462	44633134	pH 24 hr post-mortem																	X	
5	41151241	41151245	Feed conversion ratio QTL																		X
5	42304914	42304918	Cortisol level QTL																		X
5	44251001	22469420	Front feet conformation QTL																		X
5	84955808	85032235	Backfat at tenth rib QTL																		X
5	84955808	85032235	Meat color-L QTL																		X
5	84955808	85032235	Carcass length QTL																		X
5	84955808	85032235	Marbling QTL																		X
5	84955808	85032235	Average glycogen QTL																		X
6	87086500	13646707	Salmonella count in spleen QTL				X														
6	53032839	53080168	Drip loss QTL					X													
6	53157138	53157142	Mean platelet volume QTL					X													
6	53164045	53164049	Conductivity 45 minutes post-mortem QTL					X													
6	53526886	53526890	Interleukin-10 level QTL					X													
6	87086500	13646707	Salmonella count in spleen QTL					X	X												
6	90715105	69574541	Fat to meat ratio QTL						X												
6	87086500	13646707	Salmonella count in spleen QTL							X											
6	54946841	54946845	pH 45 minutes post mortem QTL								X										
6	54949993	54949997	Interleukin-10 level QTL								X										
6	54957577	55028571	pH 24 hr post mortem								X										
6	54957577	55028571	Conductivity 24 hours postmortem								X										
6	55051092	55051096	Impedance 24 hours postmortem QTL								X										
6	55432533	55432537	Conductivity 45 minutes post-mortem QTL								X										
6	55763194	55763198	Front leg conformation QTL								X										
6	56251253	56298582	HDL/LDL ratio QTL								X										
6	56716661	56819208	HDL cholesterol QTL								X										
6	57249815	57249819	Teat number QTL								X										
6	57268194	57268198	Loin muscle depth QTL								X										
6	57685507	57685511	Conformation score QTL								X										
6	87086500	13646707	Salmonella count in spleen QTL								X									X	

6	3505732	3505736	skatole, laboratory QTL									X									
6	3655948	3655952	Cryptorchidism QTL									X									
6	4169569	4169573	Seminiferous tubule diameter QTL									X									
6	135815106	135815110	Average backfat thickness QTL										X								
6	136078564	136078568	Red blood cell count QTL										X								
6	136078564	136078568	Backfat at last rib QTL										X								
6	136078564	136078568	Backfat at last lumbar QTL										X								
6	136084446	136084450	Backfat at tenth rib QTL										X								
6	136582902	136582906	Gestation length QTL										X								
6	87086500	13646707	Salmonella count in spleen QTL												X						
6	49826911	49826915	Loin muscle depth QTL														X				
6	50006714	50006718	Meat color a* QTL														X				
6	50259055	50259059	Fat androstenone level QTL														X				
6	50532883	50532887	Mean corpuscular hemoglobin concentration QTL														X				
6	50638889	50638893	Average daily gain QTL														X				
6	50784682	50934559	Total number born alive QTL														X				
6	50784682	50934559	pH 45 minutes post mortem QTL														X				
6	51843871	51843875	Daily feed intake QTL														X				
6	52805859	52805863	Conductivity 45 minutes post-mortem QTL														X				
6	53032839	53080168	Drip loss QTL														X				
6	53157138	53157142	Mean platelet volume QTL														X				
6	53526886	53526890	Interleukin-10 level QTL														X				
6	53774336	54058314	Connective tissue protein QTL														X				
6	53774336	54058314	Side fat thickness QTL														X				
6	53774336	54058314	Average glycolytic potential QTL														X				
6	54946841	54946845	Impedance 24 hours postmortem QTL														X				
6	54957577	55028571	pH 24 hr post mortem														X				
6	86081160	86081164	Days to 100 kg QTL														X				
6	86276692	86276696	Ham weight QTL														X				
6	87086500	13646707	Salmonella count in spleen QTL														X				
6	90715105	69574541	Fat to meat ratio QTL														X				
6	91251507	91361943	Carcass length QTL														X				
6	92177409	92177413	Marbling QTL														X				
6	92560752	92560756	Mean corpuscular volume QTL														X				

6	95834592	96000245	Skin weight QTL														X				
7	35667314	35667318	Cannon bone circumference QTL	X																	
7	35667314	35667318	Mean corpuscular hemoglobin concentration QTL	X																	
7	35709333	35709337	Gait score	X																	
7	35709333	35709337	Body length QTL	X																	
7	35709333	35709337	Body height QTL	X																	
7	35709333	35709337	Tibia length QTL	X																	
7	14274726	14386314	Hematocrit QTL		X																
7	14569025	14569029	Loin muscle area QTL		X																
7	14618075	14746830	Litter size QTL		X																
7	14618075	14746830	Total number born alive QTL		X																
7	14618075	14746830	skatole, laboratory QTL		X																
7	14618075	14746830	indole, laboratory QTL		X																
7	14838991	14838995	Meat color L* QTL		X																
7	14901073	14901077	Mean corpuscular hemoglobin concentration QTL		X																
7	14978591	15055844	Adipocyte diameter QTL		X																
7	14978591	15055844	Umbilical hernia QTL		X																
7	15108788	15108792	Backfat between 3rd and 4th last ribs QTL		X																
7	15330523	15373442	Salmonella shedding status QTL		X																
7	15373442	15450696	Segmented neutrophil number QTL		X																
7	15373442	15450696	Monocyte percentage QTL		X																
7	15373442	15450696	Red blood cell count QTL		X																
7	15373442	15450696	CD4-positive, CD8-positive leukocyte percentage QTL		X																
7	15373442	15450696	Red cell distribution width QTL		X																
7	16442857	16442861	Head weight QTL		X																
7	16442857	16442861	Lip thickness QTL		X																
7	16557995	16721086	Backfat at first rib QTL		X																
7	16929995	16929999	Mean corpuscular volume QTL		X																
7	17049495	17049499	Saturated fatty acid content QTL		X																
7	33926271	33926275	Mean corpuscular hemoglobin concentration QTL			X															
7	33966516	33966520	Backfat between 3rd and 4th last ribs QTL			X															
7	33966516	33966520	Head weight QTL			X															
7	52789878	43776972	Average backfat thickness QTL				X														

7	52789878	43776972	Leaf fat weight QTL				X														
7	60171877	48412180	Melanoma susceptibility QTL				X														
7	65570973	65570977	Age at puberty QTL				X														
7	65928033	65928037	Dressing percentage QTL				X														
7	66051725	66120395	Umbilical hernia QTL				X														
7	87152576	87152580	Carcass length QTL					X													
7	87152576	87152580	body mass index QTL					X													
7	87725618	79656921	Nonfunctional nipples QTL					X													
7	87847149	87847153	Teat number QTL					X													
7	87914969	87914973	Loin weight QTL					X													
7	33115874	33115878	Head weight QTL						X												
7	33182157	33182161	Mean corpuscular hemoglobin concentration QTL						X												
7	33360248	33360252	Anovulation QTL						X												
7	33574485	33574489	Backfat between 3rd and 4th last ribs QTL						X												
7	32267615	32267619	Loin muscle area QTL							X											
7	32332609	32332613	Litter size QTL							X											
7	32728354	32728358	Mean corpuscular hemoglobin concentration QTL							X											
7	60171877	48412180	Melanoma susceptibility QTL								X										
7	71497452	71497456	Meat color b* QTL								X										
7	71531705	71531709	Number of non-viable fetuses QTL								X										
7	71727028	71727032	Intramuscular fat content QTL								X										
7	75430746	75430750	Age at puberty QTL								X										
7	75561369	75561373	Number of stillborn QTL								X										
7	77275075	77275079	skatole, laboratory QTL								X										
7	77275075	77275079	Feed intake per feeding QTL								X										
7	81884464	81884468	Dressing percentage QTL								X										
7	87725618	79656921	Nonfunctional nipples QTL								X										
7	88970581	88970585	Number of litters QTL								X										
7	88970581	88970585	Total number born alive QTL								X										
7	34803562	34803566	Hemoglobin QTL									X									
7	707736	707740	Lean meat percentage QTL										X								
7	16442857	16442861	Lip thickness QTL														X				
7	86909078	86909082	Litter size QTL														X				
7	87599730	87599734	Piglet mortality QTL														X				
7	52789878	43776972	Average backfat thickness QTL															X			
7	52789878	43776972	Leaf fat weight QTL															X			

7	8553818	8553822	Age at puberty QTL																	X	
7	8686724	8721059	45 min-24 h pH decline QTL																	X	
7	14660993	14832668	Total number born alive QTL																	X	
7	14838991	14838995	Meat color L* QTL																	X	
7	17218942	17244693	Ovary weight QTL																	X	
7	17366632	17366636	Lip thickness QTL																	X	
7	17480591	17480595	Spinal curvature QTL																	X	
7	17639544	17673879	Backfat at last rib QTL																	X	
7	103232785	103232789	Number of ribs QTL																	X	
7	103232785	103232789	Loin muscle area QTL																	X	
7	103232785	103232789	Loin muscle depth QTL																	X	
7	103279176	103279180	Thoracic vertebra number QTL																	X	
8	66396850	24186593	Ham weight QTL	X																	
8	16404005	16404009	Feed efficiency QTL		X																
8	16445412	16445416	Teat number QTL		X																
8	25141197	25141201	Carcass length QTL		X																
8	66396850	24186593	Ham weight QTL		X																
8	66396850	24186593	Ham weight QTL					X	X												
8	66396850	24186593	Ham weight QTL							X											
8	31367225	31367229	Lymphocyte number QTL								X										
8	79128134	79128138	body mass index QTL								X										
8	79682683	79682687	Red blood cell count QTL								X										
8	66396850	24186593	Ham weight QTL										X								
8	66396850	24186593	Ham weight QTL													X					
8	124212850	124212854	Scrotal/inguinal hernia QTL														X				
8	66396850	24186593	Ham weight QTL															X			
8	27426672	27426676	Palmitoleic acid content QTL																X		
8	27620068	27620072	Age at puberty QTL																X		
8	66396850	24186593	Ham weight QTL																X		
8	43195902	43195906	Red blood cell count QTL																		X
8	43425756	43425760	Conductivity 45 minutes post-mortem QTL																		X
8	43425756	43425760	Mycoplasmal pneumonia susceptibility QTL																		X
9	2023199	2023203	Red cell distribution width QTL			X															
9	7550068	7550072	Red blood cell count QTL			X															
9	7550068	7550072	Hematocrit QTL			X															
9	7560120	7560124	Average daily gain QTL			X															
9	7629457	7629461	Feed conversion ratio QTL			X															

9	7742818	7872225	Conductivity 24 hours postmortem			X															
9	117994279	117994283	Dihomo-gamma-linolenic acid content QTL				X														
9	118353175	118353179	Muscle pH QTL				X														
9	85737393	85737397	Antibody response to Brucella suis QTL					X													
9	85926550	85926554	Coping behavior QTL					X													
9	4238060	4410602	Conductivity 24 hours postmortem							X											
9	26679294	26938107	Carcass length QTL								X										
9	152989335	152989339	Tumor necrosis factor alpha level QTL										X								
9	136804174	136814958	Average daily gain QTL													X					
9	137134218	137134222	CD4-positive, CD8-positive leukocyte percentage QTL													X					
9	137157683	137157687	Feed conversion ratio QTL													X					
9	137224745	137343368	Body weight QTL													X					
9	152109777	152109781	Intramuscular fat content QTL															X			
9	152204063	152204067	Litter size QTL															X			
9	152575789	152575793	Loin muscle area QTL															X			
9	152575789	152575793	Tumor necrosis factor alpha level QTL															X			
9	128255462	128255466	Daily feed intake QTL																		X
10	30893170	12606934	Marbling QTL		X																
10	30893170	12606934	Marbling QTL			X															
10	81753500	81809119	PH for Longissimus dorsi QTL					X													
10	30893170	12606934	Marbling QTL						X										X		
10	72149299	72149303	Loin muscle depth QTL							X											
10	72248718	72248722	Platelet distribution width QTL							X											
10	79102336	62107693	Haptoglobin concentration QTL							X											
10	30893170	12606934	Marbling QTL											X							
10	31208343	13224921	Melanoma susceptibility QTL											X							
10	49859016	49859020	skatole, laboratory QTL												X						
10	49993852	49993856	Left teat number QTL												X						
10	50035838	50035842	Hind leg conformation QTL												X						
10	79102336	62107693	Haptoglobin concentration QTL												X						
10	44751615	44751619	Residual feed intake QTL													X					
10	13257222	13257226	Hemoglobin QTL																X		
10	13377543	13377547	Hind leg conformation QTL																X		

10	45666946	45666950	body mass index QTL																X		
10	30893170	12606934	Marbling QTL																	X	
11	3733269	3733273	Total number born alive QTL																X		
11	3927284	3927288	Loin weight QTL																X		
12	22051273	22051277	White blood cell number QTL						X												
12	22449963	22517431	Cooking loss QTL						X												
12	55962021	55962025	Coping behavior QTL						X												
12	49712641	49757620	Ovary weight QTL							X											
12	49872025	49872029	Meat color a* QTL							X											
12	55575874	55575878	Coping behavior QTL							X											
12	55575874	55575878	Marbling QTL							X											
12	55575874	55575878	Muscle moisture percentage QTL							X											
12	55575874	55575878	Meat color score QTL							X											
12	55710232	55710236	Backfat between 3rd and 4th last ribs QTL							X											
12	1569488	1569492	Eicosadienoic acid content QTL								X										
12	55883012	55883016	Coping behavior QTL									X									
12	55883012	55883016	Neutrophil count QTL									X									
12	55883012	55883016	Teat number QTL									X									
12	74107931	74220378	Number of mummified pigs QTL									X									
12	74276601	74276601	C3c concentration QTL									X									
12	49712641	49757620	Ovary weight QTL													X					
12	42253582	42253586	Litter size QTL																X		
12	43452716	43452720	Backfat at last rib QTL																X		
12	15517630	15556987	Haptoglobin concentration QTL																	X	
12	15630077	15680678	Lymphocyte number QTL																	X	
12	15720337	15720341	Meat color a* QTL																	X	
12	15854970	15916816	Time spent socializing QTL																	X	
12	15883729	15883733	Red blood cell count QTL																	X	
12	15911193	15973039	Sarcocystis miescheriana IgG levels QTL																	X	
12	16574628	16613985	Number of viable embryos QTL																	X	
12	18221971	18362529	Litter size QTL																	X	
12	18401886	18463731	Palmitoleic acid content QTL																	X	
12	18576178	18688624	Dressing percentage QTL																	X	
12	18576178	18688624	Fat-cuts percentage QTL																	X	
12	18576178	18688624	Lean meat percentage QTL																	X	
12	20594594	20639573	Small intestine length QTL																	X	
12	20767798	20767802	Carcass weight																	X	

12	21200774	21200778	Body weight QTL																	X	
12	21200774	21200778	Average daily gain QTL																	X	
12	21696571	21713438	Number of stillborn QTL																	X	
12	43452716	43452720	Backfat at last rib QTL																		X
12	54713751	54713755	Coping behavior QTL																		X
12	54817717	54840206	Number of mummified pigs QTL																		X
13	186014630	186125854	LDL cholesterol QTL						X												
13	188567753	188567757	Birth weight variability QTL							X											
13	188638799	188638803	Feed efficiency QTL							X											
13	200730119	200730123	Rib shape QTL							X											
13	200730119	200730123	Brucellosis susceptibility QTL							X											
13	2097371	2097371	Chronic pleuritis QTL											X							
13	2696247	2696251	Red blood cell count QTL											X							
13	2696247	2696251	Interleukin-10 level QTL											X							
13	13006367	13006371	Rump circumference QTL											X							
13	78511080	78511084	Monounsaturated fatty acid to saturated fatty acid ratio QTL												X						
13	79287008	79588902	Scapula length QTL														X				
13	101490307	101490311	Calcium level QTL																X		
13	105838187	105838191	Loin muscle depth QTL																X		
14	120219995	120219999	Palmitic acid content QTL	X																	
14	120219995	120219999	Oleic acid content QTL	X																	
14	120219995	120219999	Stearic acid content QTL	X																	
14	120219995	120219999	Palmitoleic acid content QTL	X																	
14	20476795	20711368	Docosapentaenoic acid content QTL		X																
14	41518667	41518671	Obesity index QTL		X																
14	41705137	41705141	Age at puberty QTL		X																
14	42057416	42057420	Phosphate level QTL		X																
14	45280088	45280092	White blood cell number QTL		X																
14	45655178	45655182	Chest circumference QTL		X																
14	46049355	46049359	Abdominal circumference QTL		X																
14	46284431	46284435	LDL cholesterol QTL		X																
14	120986863	120986867	Cryptorchidism QTL		X																
14	122040584	122040588	Palmitic acid content QTL		X																

14	122935132	122935136	Unsaturated to saturated fatty acid ratio QTL		X																
14	122937626	122937630	Stearic acid content QTL		X																
14	122937626	122937630	Palmitoleic acid content QTL		X																
14	122937626	122937630	Oleic acid content QTL		X																
14	122937626	122937630	Monounsaturated fatty acid content QTL		X																
14	98869714	98869718	Cooking loss QTL			X															
14	98924631	98924635	Hind leg conformation QTL			X															
14	98924697	98924701	Hind foot size QTL			X															
14	117949585	117949589	Monounsaturated fatty acid content QTL			X															
14	117949585	117949589	Stearic acid content QTL			X															
14	117949585	117949589	Palmitic acid content QTL			X															
14	117949585	117949589	Palmitoleic acid content QTL			X															
14	117956767	117956771	Oleic acid content QTL			X															
14	117956767	117956771	Saturated fatty acid content QTL			X															
14	120915476	120915480	Palmitic acid content QTL				X														
14	120915476	120915480	Monounsaturated fatty acid content QTL				X														
14	120915476	120915480	Saturated fatty acid content QTL				X														
14	122782962	122782966	Stearic acid content QTL					X													
14	122787864	122787868	Oleic acid content QTL					X													
14	122787864	122787868	Palmitoleic acid content QTL					X													
14	122787864	122787868	Palmitic acid content QTL					X													
14	122787864	122787868	Saturated fatty acid content QTL					X													
14	122787864	122787868	Monounsaturated fatty acid content QTL					X													
14	120206709	120206713	Stearic acid content QTL								X										
14	120206709	120206713	Oleic acid content QTL								X										
14	120206709	120206713	Monounsaturated fatty acid content QTL								X										
14	120206709	120206713	Saturated fatty acid content QTL								X										
14	121695782	121695786	Palmitoleic acid content QTL								X										
14	121695782	121695786	Palmitic acid content QTL								X										
14	118097273	118097277	Palmitoleic acid content QTL									X									
14	118097273	118097277	Palmitic acid content QTL									X									
14	118099507	118099511	Red blood cell count QTL									X									
14	118099507	118099511	Hematocrit QTL									X									

14	118104531	118104535	Stearic acid content QTL									X									
14	118104531	118104535	Oleic acid content QTL									X									
14	57263277	23043294	Melanoma susceptibility QTL										X								
14	123395534	123395538	Monounsaturated fatty acid content QTL										X								
14	123398665	123398669	Saturated fatty acid content QTL										X								
14	123398665	123398669	Palmitic acid content QTL										X								
14	123398665	123398669	Oleic acid content QTL										X								
14	123398665	123398669	Palmitoleic acid content QTL										X								
14	123398665	123398669	Stearic acid content QTL										X								
14	42679885	42679889	Phosphate level QTL											X							
14	120142934	120142938	Palmitic acid content QTL											X							
14	120147206	120147210	Oleic acid content QTL											X							
14	122323093	122323097	Unsaturated to saturated fatty acid ratio QTL											X							
14	122323093	122323097	Unsaturated index QTL											X							
14	122323093	122323097	Fatty acid atherogenic index QTL											X							
14	122323093	122323097	Fatty acid thrombogenic index QTL											X							
14	122323093	122323097	Palmitoleic acid to palmitic acid ratio QTL											X							
14	122323093	122323097	Stearic acid to palmitic acid ratio QTL											X							
14	122323093	122323097	Oleic acid to stearic acid ratio QTL											X							
14	122323093	122323097	Saturated fatty acid content QTL											X							
14	120200081	120200085	Palmitic acid content QTL												X						
14	120206709	120206713	Palmitoleic acid content QTL												X						
14	120206709	120206713	Stearic acid content QTL												X						
14	120206709	120206713	Oleic acid content QTL												X						
14	120206709	120206713	Monounsaturated fatty acid content QTL												X						
14	120206709	120206713	Saturated fatty acid content QTL												X						
14	120210615	120210619	Palmitoleic acid to palmitic acid ratio QTL												X						
14	120210615	120210619	Stearic acid to palmitic acid ratio QTL												X						
14	120210615	120210619	Oleic acid to stearic acid ratio QTL												X						

14	120210615	120210619	Unsaturated to saturated fatty acid ratio QTL												X						
14	120210615	120210619	Fatty acid thrombogenic index QTL												X						
14	122718230	122718234	Unsaturated to saturated fatty acid ratio QTL													X					
14	122718230	122718234	Unsaturated index QTL													X					
14	122718230	122718234	Fatty acid atherogenic index QTL													X					
14	122718230	122718234	Fatty acid thrombogenic index QTL													X					
14	122718230	122718234	Palmitoleic acid to palmitic acid ratio QTL													X					
14	122718230	122718234	Stearic acid to palmitic acid ratio QTL													X					
14	122718230	122718234	Oleic acid to stearic acid ratio QTL													X					
14	50614766	50614770	White blood cell number QTL														X				
14	50652196	50652200	Umbilical hernia QTL														X				
14	103663339	103663343	Backfat between 3rd and 4th last ribs QTL														X				
14	104029251	104029255	Age at puberty QTL														X				
14	117666617	117666621	Red blood cell count QTL														X				
14	117666617	117666621	Hematocrit QTL														X				
14	59546264	59546268	Backfat between 3rd and 4th last ribs QTL															X			
14	123877156	123877160	Saturated fatty acid content QTL															X			
14	123877156	123877160	Stearic acid content QTL															X			
14	118040642	118040646	Saturated fatty acid content QTL																X		
14	118040642	118040646	Oleic acid content QTL																X		
14	22546552	22643141	Meat color b* QTL																	X	
14	63223116	63223120	Number of mummified pigs QTL																	X	
14	117971082	117971086	Palmitic acid content QTL																	X	
14	117971082	117971086	Stearic acid content QTL																	X	
14	117971082	117971086	Monounsaturated fatty acid content QTL																	X	
14	117971082	117971086	Oleic acid content QTL																	X	
14	117971082	117971086	Saturated fatty acid content QTL																	X	
14	42679885	42679889	Phosphate level QTL																		X
14	42724762	42724766	Neck weight QTL																		X
14	49772547	49772551	White blood cell number QTL																		X

14	118125773	118125777	Stearic acid content QTL																		X
14	118125773	118125777	Palmitoleic acid content QTL																		X
14	118125773	118125777	Palmitic acid content QTL																		X
14	120619406	120619410	Saturated fatty acid content QTL																		X
15	56468515	56468519	Coping behavior QTL	X																	
15	157525943	157525947	Loin muscle depth QTL	X																	
15	31495862	31495866	Arachidonic acid content QTL				X														
15	31519098	31519102	Intramuscular fat content QTL				X														
15	82480903	82480907	Cryptorchidism QTL					X													
15	83426310	83426314	Residual feed intake QTL					X													
15	83426310	83426314	Number of stillborn QTL					X													
15	59703209	59703213	Loin muscle depth QTL						X												
15	150958164	58734142	Salmonella count in liver and spleen QTL							X											
15	4129179	4129183	Days to 110 kg QTL											X							
15	4129179	4129183	Omega-3 fatty acid content QTL											X							
15	4224291	4236977	Abdominal fat weight QTL											X							
15	4405841	4405845	Cooking loss QTL											X							
15	150958164	58734142	Salmonella count in liver and spleen QTL											X	X						
15	150958164	58734142	Salmonella count in spleen QTL											X							
15	1946337	1946341	Rump width QTL												X						
15	2748412	2748416	Hematocrit QTL												X						
15	2798631	2798635	Days to 110 kg QTL												X						
15	2844020	2844024	Birth weight variability QTL												X						
15	22438918	22438922	Teat number, difference between sides QTL												X						
15	22476294	22476298	Monocyte number QTL												X						
15	22515267	22515271	Body weight QTL												X						
15	22515267	22515271	Cannon bone circumference QTL												X						
15	22580296	22770580	45 min-24 h pH decline QTL												X						
15	93955842	93955846	Seminiferous tubule diameter QTL														X				
15	94186744	94186748	Hind leg conformation QTL														X				
15	133738340	133738344	Meat color a* QTL															X			
15	133805572	133805576	Meat color b* QTL															X			
15	133805572	133805576	Thawing loss QTL															X			
15	133805572	133805576	Cooking loss QTL															X			

15	133836469	133836473	PH for Longissimus dorsi QTL															X			
15	133929896	133929900	Drip loss QTL															X			
15	133929896	133929900	pH 24 hr post-mortem															X			
15	133964453	133964457	pH 24 hr post mortem															X			
15	135199208	135199212	Juiciness score QTL															X			
15	135199208	135199212	tenderness score QTL															X			
15	135199208	135199212	Shear force QTL															X			
15	150958164	58734142	Salmonella count in liver and spleen QTL															X			
15	150958164	58734142	Salmonella count in spleen QTL															X			
15	150958164	58734142	Salmonella count in liver and spleen QTL																X		
15	150958164	58734142	Salmonella count in spleen QTL																X		
15	37205128	37205132	Left teat number QTL																	X	
15	37382665	37382669	Feed intake per feeding QTL																	X	
15	51139395	51139399	Hair amount QTL																		X
15	53826516	53826520	Hematocrit QTL																		X
15	53936602	53936606	Mean corpuscular hemoglobin concentration QTL																		X
16	6619647	6619651	Plateletcrit QTL		X																
16	6890888	6890892	Sperm motility QTL		X																
16	35111311	35111315	Meat color a* QTL		X																
16	35111311	35111315	Feed conversion ratio QTL		X																
16	18720493	18720497	Cortisol level QTL					X													
16	19022066	19022070	Thoracolumbar vertebra number QTL					X													
16	19421725	19514964	Hind leg conformation QTL								X										
16	19442050	19442054	Monocyte number QTL								X										
16	59316873	59316877	Oleic acid to stearic acid ratio QTL									X									
16	59605945	59605949	Eicosenoic acid to eicosanoic acid ratio QTL									X									
16	59605945	59605949	Arachidic acid to stearic acid ratio QTL									X									
16	38745956	38745960	Eicosenoic acid to eicosanoic acid ratio QTL													X					
16	40783783	40783787	Arachidic acid to stearic acid ratio QTL													X					
16	40932268	40932272	Cis-11-Eicosenoic acid to oleic acid ratio QTL													X					
16	40932268	40932272	Cis-11-Eicosenoic acid to arachidic acid ratio QTL													X					
16	41222724	41222728	Loin muscle area QTL													X					

16	41222724	41222728	Loin muscle depth QTL													X					
16	84289991	84289995	Backfat at rump QTL																	X	
16	84586190	84586194	Hip structure QTL																	X	
16	84586190	84586194	Hind leg conformation QTL																	X	
17	4535925	4535929	Number of mummified pigs QTL	X																	
17	17981230	17981234	Carcass length QTL	X																	
17	17981230	17981234	body mass index QTL	X																	
17	18259897	18259901	Periweaning failure to thrive syndrome QTL	X																	
17	20750924	20750928	Granulocyte percentage QTL	X																	
17	29174063	15377462	Melanoma susceptibility QTL	X																	
17	103191340	103191344	Fat androstenone level QTL					X													
17	30670291	30670295	Backfat between 3rd and 4th last ribs QTL								X										
17	70233325	70535125	Percentage type I fibers QTL								X										
17	70233325	70535125	Relative area of type IIa fibers QTL								X										
17	13605156	13605160	Platelet count QTL											X							
17	73775889	73783075	Age at slaughter QTL											X							
17	73775889	73783075	Average daily gain QTL											X							
17	73775889	73783075	Meat color-L QTL											X							
17	49835907	49835911	Thoracolumbar vertebra number QTL															X			
17	68063234	68171020	Estimated carcass lean content QTL																	X	
17	68357849	68379406	Ham weight QTL																	X	
17	70233325	70535125	Percentage type I fibers QTL																	X	
17	70233325	70535125	Relative area of type IIa fibers QTL																	X	
18	48577632	28569361	Backfat at tenth rib QTL												X						
18	48577632	28569361	Backfat at tenth rib QTL														X				
18	46838205	47003402	Carcass length QTL															X			
18	50863333	50863337	Cannon bone circumference QTL																		X
18	51098333	51098337	Umami flavor intensity QTL																		X
18	51227630	51227634	Thoracic vertebra number QTL																		X
18	53158461	53158465	Blood alanine transaminase level QTL																		X
X	1182387	1182391	Intramuscular fat content QTL	X	X				X			X			X		X				
X	3744914	3744918	Intramuscular fat content QTL			X															
X	4325779	4325783	Intramuscular fat content QTL					X													

X	23353045	23497333	Maternal infanticide QTL							X											
X	2556819	2556823	Feed conversion ratio QTL								X			X						X	
X	2560200	2560204	Hematocrit QTL								X			X						X	
X	2560200	2560204	Mean corpuscular hemoglobin concentration QTL								X			X						X	
X	2560200	2560204	Mean corpuscular volume QTL								X			X							
X	2560200	2560204	Plateletcrit QTL								X										
X	63135729	63135733	Mean corpuscular hemoglobin content QTL								X										
X	3024535	3024539	Intramuscular fat content QTL											X							
X	1645941	1645945	Left teat number QTL													X		X			
X	2108184	2108188	Intramuscular fat content QTL													X					
X	1645941	1645945	Left teat number QTL														X				
X	37678422	37678426	Feed conversion ratio QTL																X		
X	37947365	37947369	Red cell distribution width QTL																X		
X	41481237	41481241	Humerus length QTL																X		
X	3024535	3024539	Intramuscular fat content QTL																	X	

Abbreviations: CHR = Chromosome