

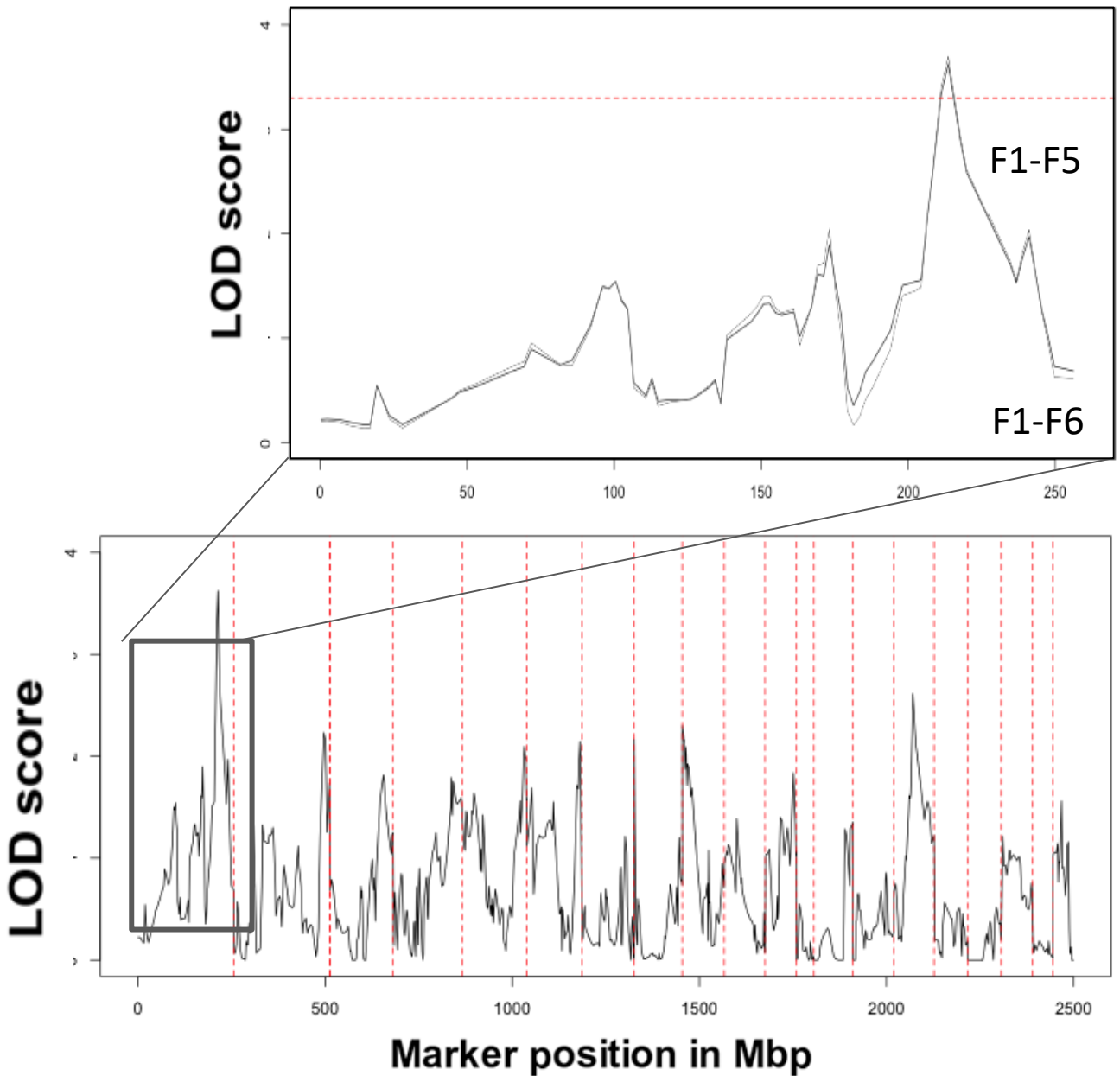
Impulsivity is a heritable trait in rodents and associated with a novel quantitative trait locus on chromosome 1

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Supplementary Figure 1: Genome-wide linkage for average total premature responses. Genome-wide linkage results (F1-F5 generations) on 20 autosomal chromosomes. Dashed red lines indicate chromosomal limits. The impulsivity trait was defined by the average total number of premature responses on the 5CSRTT (non-parametric linkage). **(Inset)** Significant linkage results are observed on chromosome 1 (F1- F5 black line; F1-F6 grey line). The horizontal red line depicts the genome-wide significant LOD score threshold of 3.3. Note no significant difference in LOD scores on chromosome 1 after the addition of data from the F6 generation.

Gene symbol	Gene description	Gene location (Mbp)
<i>Rgma</i>	repulsive guidance molecule A	128.547399
<i>Chd2</i>	chromodomain-helicase-DNA-binding protein 2	128.609727
<i>St8sia2</i>	Alpha-2,8-sialyltransferase 8B	129.158714
<i>snoU109</i>	Small nucleolar RNA U109	129.245228
<i>Sv2b</i>	Synaptic vesicle glycoprotein 2B	130.683153
<i>Akap13</i>	A kinase (PRKA) anchor protein 13	131.224569
<i>U3</i>	Small nucleolar RNA U3	131.537652
<i>Klh25</i>	Ectoderm-neural cortex protein 2	131.540949
<i>Agbl1</i>	Uncharacterized protein	131.756899
<i>U1</i>	U1 spliceosomal RNA	133.650066
<i>Ntrk3</i>	NT-3 growth factor receptor	133.92553
<i>Mrpl46</i>	39S ribosomal protein L46, mitochondrial	134.498792
<i>Mrps11</i>	28S ribosomal protein S11, mitochondrial	134.507836
<i>Det1</i>	DET1 homolog	134.549457
<i>rno-mir-7a-2</i>	rno-mir-7a-2	134.607264
<i>Aen</i>	Apoptosis-enhancing nuclease	134.615998
<i>Isg20</i>	interferon-stimulated gene 20 kDa protein	134.631524
<i>Acan</i>	Aggrecan core protein	134.816598
<i>Hapln3</i>	hyaluronan and proteoglycan link protein 3	134.851846
<i>Mfge8</i>	Lactadherin	134.87003
<i>Abhd2</i>	abhydrolase domain-containing protein 2	135.025144
<i>Rlbp1</i>	retinaldehyde-binding protein 1	135.122063
<i>Polg</i>	DNA polymerase subunit gamma-1	135.197016
<i>rno-mir-9-3</i>	rno-mir-9-3	135.254133
<i>Rhcg</i>	Ammonium transporter Rh type C	135.36142
<i>Kif7</i>	Uncharacterized protein	135.473063
<i>Plin</i>	Perilipin-1	135.497431
<i>Pex11a</i>	Peroxisomal membrane protein 11A	135.513735
<i>Wdr93</i>	WD repeat-containing protein 93	135.527818
<i>Mesp1</i>	mesoderm posterior protein 1	135.571777
<i>Mesp2</i>	mesoderm posterior protein 2	135.59002
<i>Anpep</i>	Aminopeptidase N	135.600751
LOC683402	similar to AP-3 complex subunit sigma-2 (Adapter-related p	135.653108
RGD1311021	RCG24599Uncharacterized protein	135.69698
<i>Znf710</i>	zinc finger protein 710	135.861678
<i>Idh2</i>	Isocitrate dehydrogenase	135.876058
<i>Sema4b</i>	semaphorin 4B	136.001235
<i>Cib1</i>	Calcium and integrin-binding protein 1	136.031865
NGRN_RAT	Neugrin	136.07546
<i>Vps33b</i>	Vacuolar protein sorting-associated protein 33B	136.085931
<i>Prc1</i>	protein regulator of cytokinesis 1	136.112674
<i>Rccd1</i>	Uncharacterized protein	136.134226
<i>Unc45a</i>	Protein unc-45 homolog A	136.143886
<i>Hddc3</i>	HD domain-containing protein 3	136.161425
<i>Fes</i>	tyrosine-protein kinase Fes/Fps	136.199523

Furin	Furin	136.209969
Iqgap1	ras GTPase-activating-like protein IQGAP1	136.552363
Crtc3	Uncharacterized protein	136.763502
Wdr73	WD repeat-containing protein 73	137.088348
Nmb	neuromedin-B	137.097463
Sec11a	Signal peptidase complex catalytic subunit SEC11A	137.109468
Znf592	zinc finger protein 592	137.188336
Alpk3	alpha-protein kinase 3	137.256805
Slc28a1	Sodium/nucleoside cotransporter 1	137.323995
Pde8a	high affinity cAMP-specific and IBMX-insensitive 3',5'-cyclic	137.415852
SNORA44	Small nucleolar RNA SNORA44	137.444624
LOC100365810	40S ribosomal protein S17	137.552232
Cpeb1	Cytoplasmic polyadenylation element-binding protein 1	137.556774
SCARNA15	Small Cajal body specific RNA 15	137.743986
Fsd2	fibronectin type III and SPRY domain-containing protein 2	137.749268
SNORA50	Small nucleolar RNA SNORA50	137.759109
Whamm	WASP homolog-associated protein with actin, membranes a	137.785814
Homer2	Homer protein homolog 2	137.827128
Fam103a1	family with sequence similarity 103, member A1 (Fam103a1	137.980239
RGD1305713	UPF0235 protein C15orf40 homolog	137.998479
Btbd1	BTB/POZ domain-containing protein 1	138.006567
Tm6sf1	transmembrane 6 superfamily member 1	138.058059
Hdgfrp3	Hepatoma-derived growth factor-related protein 3	138.098819
Sh3gl3	Endophilin-A3	138.398334
Fam154b	family with sequence similarity 154, member B (Fam154b), t	138.905988
Eftud1	elongation factor Tu GTP binding domain containing 1	138.92062
SNORA15	Small nucleolar RNA SNORA15	138.942384
Tmc3	Uncharacterized protein	139.842574
Stard5	stAR-related lipid transfer protein 5	139.896272
Il16	pro-interleukin-16	139.908061
RGD1310371	similar to RIKEN cDNA 1700026D08 (RGD1310371), mRN	140.036328
Mesdc1	mesoderm development candidate 1	140.157974
Mesdc2	LDLR chaperone MESD	140.167851
RGD1305254	Uncharacterized protein	140.20304
Fam108c1	abhydrolase domain-containing protein FAM108C1	140.382431
Arnt2	Aryl hydrocarbon receptor nuclear translocator 2	140.535823
Zfand6	AN1-type zinc finger protein 6	140.885729
Vom2r40	vomer nasal 2 receptor, 40	141.602289
Vom2r41	vomer nasal 2 receptor 41	141.861806
Vom2r42	vomer nasal 2 receptor 42	142.010227
Vom2r43	vomer nasal 2 receptor 43	142.267794
Folh1	Glutamate carboxypeptidase 2	142.936379
Nox4	NADPH oxidase 4	143.415816
Tyr	tyrosinase	143.641257
U7	U7 small nuclear RNA	143.647155
Grm5	Metabotropic glutamate receptor 5	143.863506

Ctsc	Dipeptidyl peptidase 1Dipeptidyl peptidase 1 exclusion don	144.629802
Rab38	ras-related protein Rab-38	144.783909
Tmem135	Transmembrane protein 135	145.664797
Fzd4	Frizzled-4	145.953746
Prss23	Serine protease 23	146.081557
Eed	polycomb protein EED	146.563964
Picalm	Phosphatidylinositol-binding clathrin assembly protein	146.754045
Ccdc89	Coiled-coil domain-containing protein 89	147.091688
Crebzf	CREB/ATF bZIP transcription factor	147.124224
Tmem126a	Transmembrane protein 126A	147.129335
Tmem126b	transmembrane protein 126B	147.146187
Dlg2	Disks large homolog 2	148.051658
Ccdc90b	Coiled-coil domain-containing protein 90B, mitochondrial	149.410497
Ankrd42	ankyrin repeat domain 42	149.423846
Pcf11	Uncharacterized protein	149.475611
SNORA73	Small nucleolar RNA SNORA73 family	149.551354
Rab30	ras-related protein Rab-30	149.656373
RGD1559690	nitric oxide-inducible gene protein	149.685958
SNORA70	Small nucleolar RNA SNORA70	149.697952
Prcp	lysosomal Pro-X carboxypeptidase	149.711289
Fam181b	family with sequence similarity 181, member B (Fam181b), t	149.955641
U6	U6 spliceosomal RNA	152.647115
rno-mir-708	rno-mir-708	153.476669
Odz4	teneurin-4	153.808625
Nars2	probable asparaginyl-tRNA synthetase, mitochondrial	154.216134
Gab2	GRB2-associated-binding protein 2	154.348781
Kctd21	BTB/POZ domain-containing protein KCTD21	154.587686
Alg8	probable dolichyl pyrophosphate Glc1Man9GlcNAc2 alpha-	154.607442
Ndufc2	NADH dehydrogenase	154.635889
Thrsp	Thyroid hormone-inducible hepatic protein	154.647341
Kctd14	Uncharacterized protein	154.684785
RGD1561459	similar to RIKEN cDNA 1810020D17 (RGD1561459), mRN	154.786525
Clns1a	Methylosome subunit pICln	154.946673
Aqp11	Aquaporin-11	154.973798
Pak1	Serine/threonine-protein kinase PAK 1	155.057622
Capn5	Calpain-5	155.366703
B3gnt6	UDP-GlcNAc:betaGal beta-1,3-N-acetylglucosaminyltransfe	155.435459
Acer3	Uncharacterized protein	155.455466
Tsku	Tsukushin	155.611107
Lrrc32	leucine rich repeat containing 32	155.761334
Prkrir	52 kDa repressor of the inhibitor of the protein kinase	155.982782
Wnt11	wingless-type MMTV integration site family, member 11	156.126223
RGD1561870	similar to ribosomal protein L27 (RGD1561870), mRNA	156.142284
Dgat2	Diacylglycerol O-acyltransferase 2	156.447588
Mogat2	2-acylglycerol O-acyltransferase 2	156.516533
Map6	Microtubule-associated protein 6	156.592504

Serpinh1	Serpin H1	156.667042
B5DF39_RAT	Gdpd5 protein	156.703241
Klhl35	Uncharacterized protein	156.801077
Rps3	40S ribosomal protein S3	156.811473
SNORD15	Small nucleolar RNA SNORD15	156.812188
Arrb1	Beta-arrestin-1	156.871562
rno-mir-326	rno-mir-326	156.887513
Slco2b1	Solute carrier organic anion transporter family member 2B1	156.992493
Q5RJS1_RAT	Olr35 protein	157.074498
Neu3	Sialidase-3	157.172548
Spcs2	signal peptidase complex subunit 2 homolog	157.199447
SNORA20	Small nucleolar RNA SNORA20	157.319772
LOC100360934	chordin-like protein 2	157.391482
Pold3	DNA polymerase delta subunit 3	157.453059
Lipt2	lipoyl(octanoyl) transferase 2 (putative)	157.538704
Kcne3	Potassium voltage-gated channel subfamily E member 3	157.558044
Pgm2l1	glucose 1,6-bisphosphate synthase	157.605906
P4ha3	Prolyl 4-hydroxylase subunit alpha-3	157.663338
Ppme1	protein phosphatase methylesterase 1	157.725633
Ucp3	Mitochondrial uncoupling protein 3	157.896001
Ucp2	Mitochondrial uncoupling protein 2	157.922179
Dnajb13	dnaJ homolog subfamily B member 13	157.931501
Chchd8	coiled-coil-helix-coiled-coil-helix domain-containing protein	157.965119
Mrpl48	39S ribosomal protein L48, mitochondrial	157.979818
Rab6a	Ras-related protein Rab-6A	158.041088
SNORA4	Small nucleolar RNA SNORA4	158.048843
Plekhb1	Pleckstrin homology domain-containing family B member 1	158.08193
Fam168a	family with sequence similarity 168, member A (Fam168a), t	158.140473
Relt	tumor necrosis factor receptor superfamily member 19L	158.293361
P2ry6	P2Y purinoceptor 6	158.381128
P2ry2	P2Y purinoceptor 2	158.440062
Fchsd2	FCH and double SH3 domains protein 2	158.54883
Q6QI52_RAT	LRRGT00156	158.590389
LOC100364491	ribosomal protein L7a (Rpl7a), mRNA	158.694172
Atg16l2	ATG16 autophagy related 16-like 2	158.787779
Stard10	PCTP-like protein	158.81997
Pde2a	cGMP-dependent 3',5'-cyclic phosphodiesterase	158.921607
rno-mir-139	rno-mir-139	158.976576
Art2	T-cell ecto-ADP-ribosyltransferase 1	159.055461
Clpb	Caseinolytic peptidase B protein homolog	159.126512
5S_rRNA	5S ribosomal RNA	159.2668
Phox2a	Paired mesoderm homeobox protein 2A	159.273524
Inpp1	Phosphatidylinositol-3,4,5-trisphosphate 5-phosphatase 2	159.27813
Folr2	folate receptor beta	159.295773
Folr1	folate receptor alpha	159.315192
RGD1311634	similar to RIKEN cDNA 3200002M19 (RGD1311634), mRN	159.35911

Lrtomt	Transmembrane O-methyltransferase	159.36201
MGC72560	Ragulator complex protein LAMTOR1	159.367471
Lrrc51	Leucine-rich repeat-containing protein 51	159.373973
Il18bp	interleukin-18-binding protein	159.471809
Rnf121	RING finger protein 121	159.475046
TRPC2_RAT	Short transient receptor potential channel 2	159.54282
Art5	Ecto-ADP-ribosyltransferase 5	159.576991
Art1	GPI-linked NAD(P)(+)-arginine ADP-ribosyltransferase 1	159.586246
Chrna10	Neuronal acetylcholine receptor subunit alpha-10	159.590904
Nup98	Nuclear pore complex protein Nup98-Nup96Nuclear pore c	159.598048
Pgap2	Post-GPI attachment to proteins factor 2	159.69692
Rhog	rho-related GTP-binding protein RhoG	159.724016
Stim1	Stromal interaction molecule 1	159.761567
Trim21	52 kDa Ro protein	160.175882
LOC293190	bcl-2-like protein 1 isoform 3	160.254067
SNORA2	Small nucleolar RNA SNORA2/SNORA34 family	161.283594
LOC689064	Hemoglobin subunit beta-2	161.578128
Hbb	Hemoglobin subunit beta-1	161.584858
Hbb-b1	hemoglobin, beta adult major chain	161.590671
Hbg1	hemoglobin, gamma A	161.64024
Hbe2	hemoglobin, epsilon 2	161.647651
Hbe1	hemoglobin, epsilon 1	161.651306
LOC499219	LRRG00121	161.788384
RGD1562433	similar to ubiquilin 1 isoform 2 (RGD1562433), mRNA	161.962308
Ubqln3	ubiquilin-3	161.974585
Ubqln1	Ubiquilin-like protein	161.985144
RGD1310717	similar to RIKEN cDNA E030002O03 (RGD1310717), mRN	161.990223
Trim6	tripartite motif-containing 6	162.066157
Trim5	tripartite motif-containing protein 5	162.096454
Trim30	Uncharacterized protein	162.173307
U4	U4 spliceosomal RNA	162.457008
Fam160a2	FTS and Hook-interacting protein	163.110928
Cnga4	Cyclic nucleotide-gated cation channel alpha-4	163.137544
Cckbr	Gastrin/cholecystokinin type B receptor	163.156914
Prkcdbp	Protein kinase C delta-binding protein	163.212922
Smpd1	sphingomyelin phosphodiesterase	163.27897
Apbb1	Amyloid beta A4 precursor protein-binding family B member	163.282918
Hpx	Hemopexin	163.319509
Trim3	Tripartite motif-containing protein 3	163.331603
Arfip2	Arfaptin-2	163.364861
TIM9B_RAT	Mitochondrial import inner membrane translocase subunit T	163.369752
Dnhd1	Uncharacterized protein	163.462348
Rrp8	Ribosomal RNA-processing protein 8	163.47703
Ilk	Integrin-linked protein kinase	163.481299
Taf10	TAF10 RNA polymerase II, TATA box binding protein (TBP)-	163.487518
Tpp1	Tripeptidyl-peptidase 1	163.490393

Dchs1	dachsous 1	163.49734
RM17_RAT	39S ribosomal protein L17, mitochondrial	163.554719
Syt9	Synaptotagmin-9	164.722168
Olfml1	Olfactomedin-like protein 1	164.953064
Ppfbp2	protein tyrosine phosphatase, receptor-type, F interacting pr	164.979709
NB5R2_RAT	NADH-cytochrome b5 reductase 2	165.131108
LOC499235	LRRGT00141	165.181656
Nlrp10	NACHT, LRR and PYD domains-containing protein 10	166.411647
Ric3	resistance to inhibitors of cholinesterase 3 homolog	166.494113
Lmo1	LIM domain only protein 3	166.706026
snoU13	Small nucleolar RNA U13	167.002996
Trim66	tripartite motif-containing protein 66	167.04954
Rpl27a	60S ribosomal protein L27a	167.115389
SNORA3	Small nucleolar RNA SNORA3/SNORA45 family	167.117372
St5	suppression of tumorigenicity 5 protein	167.119711
RGD1306959	similar to C11orf17 protein (RGD1306959), mRNA	167.324919
LOC499240	similar to predicted gene ICRFP703B1614Q5.5 (LOC49924	167.333129
Tmem9b	transmembrane protein 9B	167.355899
Nrip3	nuclear receptor-interacting protein 3	167.380328
Dennd5a	DENN/MADD domain containing 5A	167.519649
Tmem41b	Transmembrane protein 41B	167.608205
Ipo7	importin-7	167.658312
SNORA23	Small nucleolar RNA SNORA23	167.68657
Zfp143	Zinc finger protein 143	167.704313
Wee1	Wee1-like protein kinase	167.769797
Swap70	switch-associated protein 70	167.888783
RGD1559442	SET binding factor 2	167.974268
Adm	ADMAAdrenomedullinProadrenomedullin N-20 terminal pep	168.380255
Ampd3	AMP deaminase 3	168.533491
rnf141	RING finger protein 141	168.572375
Lyve1	lymphatic vessel endothelial hyaluronic acid receptor 1	168.60146
Mrv1	protein MRV1 isoform b	168.627363
Ctr9	Ctr9, Paf1/RNA polymerase II complex component, homolog	168.784377
snoU97	Small nucleolar RNA U97	168.834306
E9PSI9_RAT	putative polypeptide N-acetylgalactosaminyltransferase-like	169.251525
Usp47	ubiquitin specific peptidase 47	169.836253
Dkk3	dickkopf-related protein 3	169.924618
Mical2	protein MICAL-2	170.076006
Micalcl	MICAL C-terminal-like protein	170.178141
Parva	Alpha-parvin	170.232441
Tead1	transcriptional enhancer factor TEF-1	170.557393
LOC687311	NADH dehydrogenase	170.580048
Arntl	Aryl hydrocarbon receptor nuclear translocator-like protein 1	171.062181
Btbd10	BTB/POZ domain-containing protein 10	171.163522
Pth	Parathyroid hormone	171.240596
Far1	Fatty acyl-CoA reductase 1	171.392301

<i>Spon1</i>	Spondin-1	171.70072
<i>Rras2</i>	ras-related protein R-Ras2	172.026263
<i>Copb1</i>	Coatomer subunit beta	172.199677
<i>Psm1</i>	Proteasome subunit alpha type-1	172.237763
<i>Pde3b</i>	cGMP-inhibited 3',5'-cyclic phosphodiesterase B	172.409282
<i>B5DFA4_RAT</i>	vitamin D 25-hydroxylase	172.593057
<i>Calca</i>	Calcitonin	172.68617
<i>Calcb</i>	Calcitonin gene-related peptide 2	172.777347
<i>Insc</i>	inscuteable homolog (Drosophila) (<i>Insc</i>), mRNA	172.804412
<i>7SK</i>	7SK RNA	173.002191
<i>Sox6</i>	transcription factor SOX-6	173.556967
<i>RGD1311703</i>	small acidic protein	174.173969
<i>Plekha7</i>	pleckstrin homology domain containing, family A member 7	174.204979
<i>Rps13</i>	40S ribosomal protein S13	174.425816
<i>SNORD14</i>	Small nucleolar RNA SNORD14	174.427277
<i>Pik3c2a</i>	phosphatidylinositol-4-phosphate 3-kinase C2 domain-cont	174.430831
<i>Nucb2</i>	Nucleobindin-2	174.605677
<i>SNORA17</i>	Small nucleolar RNA SNORA17	175.033994
<i>YBOX1_RAT</i>	Nuclease-sensitive element-binding protein 1	175.17944
<i>Xylt1</i>	Xylosyltransferase 1	175.68736
<i>Rps15a</i>	40S ribosomal protein S15a	176.321901
<i>Arl6ip1</i>	ADP-ribosylation factor-like protein 6-interacting protein 1	176.332758
<i>SYT17_RAT</i>	Synaptotagmin-17	176.599608
<i>Itpri12</i>	inositol 1,4,5-triphosphate receptor-interacting protein-like 2	176.70669
<i>Coq7</i>	Ubiquinone biosynthesis protein COQ7 homolog	176.741638
<i>Tmc7</i>	transmembrane channel-like protein 7	176.761053
<i>Tmc5</i>	Transmembrane channel-like protein 5	176.84398
<i>Cp110</i>	centrosomal protein of 110 kDa	176.937287
<i>LOC361635</i>	UPF0505 protein C16orf62 homolog	176.965214
<i>SNORA24</i>	Small nucleolar RNA SNORA24	177.060142
<i>RGD1565096</i>	similar to TSG118.1 (RGD1565096), mRNA	177.084712
<i>Gprc5b</i>	G-protein coupled receptor family C group 5 member B	177.205905

Supplementary table 1. List of genes within the QTL region on chromosome 1

Supplementary Table 2: Candidate genes in the QTL region previously reported to be associated with psychiatric and behavioral disorders.

Gene symbol	Gene description	Gene location (Mbp)	Associated disorder
<i>Rgma</i>	Repulsive guidance molecule A	128.547399	Depression ¹
<i>Chd2</i>	Chromodomain-helicase-DNA-binding protein 2	128.609727	Autism ²
<i>St8sia2</i>	Alpha-2,8-sialyltransferase 8B	129.158714	Schizophrenia ³ ; Bipolar ³ ; Autism ⁴
<i>Sv2b</i>	Synaptic vesicle glycoprotein 2B	130.683153	Depression ¹
<i>Homer2</i>	Homer protein homolog 2	137.827128	Schizophrenia ⁵
<i>Folh1</i>	Glutamate carboxypeptidase 2	142.936379	Depression ⁶ ; Schizophrenia ⁷
<i>Tyr</i>	Tyrosinase	143.641257	Bipolar ⁸
<i>Grm5</i>	Metabotropic glutamate receptor 5	143.863506	Schizophrenia ⁹ ; ADHD ¹⁰ ; Addiction ¹¹ ; Autism ¹²
<i>Dlg2</i>	Disks large homolog 2	148.051658	Schizophrenia ¹³ ; Autism ¹⁴
<i>Odz4</i>	Teneurin-4	153.808625	Bipolar ¹⁵ ; Schizophrenia ¹⁶
<i>Arrb1</i>	Beta-arrestin-1	156.871562	Depression ¹⁷ ; Addiction ¹⁸
<i>Plekhb1</i>	Pleckstrin homology domain-containing family B membrane 1	158.08193	ADHD ¹⁹
<i>Folr2</i>	Folate receptor beta	159.295773	Autism ²⁰
<i>Chrna10</i>	Neuronal acetylcholine receptor subunit alpha-10	159.590904	Addiction ²¹
<i>Hbb</i>	Hemoglobin subunit beta-1	161.584858	Depression ²²
<i>Cckbr</i>	Gastrin/cholecystokinin type B receptor	163.156914	Anxiety ²³ ; Suicide ²⁴

<i>Ilk</i>	Integrin-linked protein kinase	163.481299	Addiction ²⁵
<i>Ric3</i>	Resistance to inhibitors of cholinesterase 3 homolog	166.494113	Bipolar ²⁶ ; Schizophrenia ²⁶
<i>Lmo1</i>	LIM domain only protein 3	166.706026	Addiction ²⁷
<i>Rps15a</i>	40S ribosomal protein S15a	176.321901	Anxiety ²⁸

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Gene Name	SNP ID	Chromosome	Position(Mbp)	Reference Allele	Alternative Allele	Location
<i>Chd2</i>	1_128649115_G/C	1	128.649115	G	C	INTRONIC
<i>Sv2b</i>	1_130835497_C/A	1	130.835497	C	A	INTRONIC
<i>Sv2b</i>	1_130837654_G/A	1	130.837654	G	A	INTRONIC
<i>Akap13</i>	1_131315604_G/A	1	131.315604	G	A	INTRONIC
<i>Ntrk3</i>	1_134268648_G/T	1	134.268648	G	T	INTRONIC
<i>Acan</i>	1_134840489_T/C	1	134.840489	T	C	INTRONIC
<i>Abhd2</i>	1_135088391_G/C	1	135.088391	G	C	INTRONIC
<i>lqgap1</i>	1_136631739_C/T	1	136.631739	C	T	INTRONIC
<i>Pde8a</i>	1_137547830_C/T	1	137.547830	C	T	DOWNSTREAM
<i>Cpeb1</i>	1_137582309_A/G	1	137.582309	A	G	INTRONIC
<i>Cpeb1</i>	1_137609354_C/G	1	137.609354	C	G	INTRONIC
<i>Homer2</i>	1_137882265_A/G	1	137.882265	A	G	INTRONIC
<i>Homer2</i>	1_137882278_A/G	1	137.882278	A	G	INTRONIC
<i>Homer2</i>	1_137882369_A/G	1	137.882369	A	G	INTRONIC
<i>Homer2</i>	1_137882379_A/G	1	137.882379	A	G	INTRONIC
<i>Tm6sf1</i>	1_138079519_A/G	1	138.079519	A	G	INTRONIC
<i>Sh3gl3</i>	1_138430747_A/G	1	138.430747	A	G	INTRONIC
<i>Sh3gl3</i>	1_138451888_C/G	1	138.451888	C	G	INTRONIC
<i>Sh3gl3</i>	1_138512033_C/T	1	138.512033	C	T	INTRONIC
<i>Arnt2</i>	1_140531141_C/A	1	140.531141	C	A	DOWNSTREAM
<i>Arnt2</i>	1_140531145_C/A	1	140.531145	C	A	DOWNSTREAM
<i>Arnt2</i>	1_140651827_A/G	1	140.651827	A	G	INTRONIC
<i>Olr11</i>	1_141494096_C/A	1	141.494096	C	A	UPSTREAM
<i>Vom2r40</i>	1_141659141_T/A	1	141.659141	T	A	INTRONIC
<i>Vom2r40</i>	1_141659143_T/G	1	141.659143	T	G	INTRONIC
<i>Folh1</i>	1_142966763_G/T	1	142.966763	G	T	INTRONIC
<i>Folh1</i>	1_142966968_G/A	1	142.966968	G	A	INTRONIC
<i>Grm5</i>	1_143859713_A/T	1	143.859713	A	T	UPSTREAM
<i>Grm5</i>	1_144005117_T/C	1	144.005117	T	C	INTRONIC
<i>Grm5</i>	1_144032182_A/T	1	144.032182	A	T	INTRONIC
<i>Dlg2</i>	1_148421815_C/A	1	148.421815	C	A	INTRONIC
<i>Dlg2</i>	1_148443210_A/T	1	148.443210	A	T	INTRONIC
<i>Dlg2</i>	1_148476775_A/G	1	148.476775	A	G	INTRONIC
<i>Dlg2</i>	1_148502976_G/A	1	148.502976	G	A	INTRONIC
<i>Dlg2</i>	1_148562440_A/G	1	148.562440	A	G	INTRONIC
<i>Dlg2</i>	1_149203589_A/G	1	149.203589	A	G	INTRONIC
<i>Dlg2</i>	1_149203594_A/G	1	149.203594	A	G	INTRONIC
<i>Odz4</i>	1_153937181_G/A	1	153.937181	G	A	INTRONIC
<i>Nars2</i>	1_154235371_C/G	1	154.235371	C	G	INTRONIC
<i>Aqp11</i>	1_154978188_G/A	1	154.978188	G	A	INTRONIC
<i>Fchsd2</i>	1_158557777_G/A	1	158.557777	G	A	INTRONIC
<i>Pde2a</i>	1_158930569_A/G	1	158.930569	A	G	INTRONIC
<i>Pde2a</i>	1_158930585_T/C	1	158.930585	T	C	INTRONIC
<i>Olr119</i>	1_161435537_T/C	1	161.435537	T	C	UPSTREAM
<i>Hbb</i>	1_161590423_T/A	1	161.590423	T	A	UPSTREAM
<i>Ppfibp2</i>	1_165008099_C/G	1	165.008099	C	G	INTRONIC
<i>Olr237</i>	1_165247608_T/C	1	165.247608	T	C	SYNONYMOUS_CODING
<i>LOC690767</i>	1_166068612_C/T	1	166.068612	C	T	NON_SYNONYMOUS_CODING
<i>Ric3</i>	1_166523757_T/C	1	166.523757	T	C	INTRONIC
<i>St5</i>	1_167138083_A/G	1	167.138083	A	G	INTRONIC
<i>Mrv1</i>	1_168714374_A/G	1	168.714374	A	G	INTRONIC
<i>Spon1</i>	1_171742726_T/C	1	171.742726	T	C	INTRONIC
<i>Spon1</i>	1_171777726_C/G	1	171.777726	C	G	INTRONIC
<i>Spon1</i>	1_171904938_G/T	1	171.904938	G	T	INTRONIC
<i>Spon1</i>	1_171904941_G/A	1	171.904941	G	A	INTRONIC
<i>Spon1</i>	1_171998337_T/C	1	171.998337	T	C	INTRONIC
<i>Pde3b</i>	1_172463519_T/C	1	172.463519	T	C	INTRONIC

Supplementary table 3. List of genes in the QTL region that present SNPs

Gene Name	INDEL ID	Chromosome	Start(Mbp)	End(Mbp)	Reference Allele	Alternative Allele	Location
<i>F1M810_RAT</i>	1_129608899_TG/-	1	129.6089	129.6089	TG	-	INTRONIC
<i>Sv2b</i>	1_130739698_-/CA	1	130.7397	130.7397	-	CA	INTRONIC
<i>Sv2b</i>	1_130742599_-/AC	1	130.7426	130.7426	-	AC	INTRONIC
<i>Sv2b</i>	1_130826672_-/GT	1	130.82667	130.82667	-	GT	INTRONIC
<i>F1M811_RAT</i>	1_131129015_-/T	1	131.129015	131.129016	-	T	INTRONIC
<i>F1M811_RAT</i>	1_131134284_T/-	1	131.134284	131.134284	T	-	INTRONIC
<i>Klhl25</i>	1_131540432_TG/-	1	131.540432	131.540433	TG	-	UPSTREAM
<i>F1M814_RAT</i>	1_132456191_-/CA	1	132.45619	132.45619	-	CA	INTRONIC
<i>F1M814_RAT</i>	1_132675878_-/TG	1	132.67588	132.67588	-	TG	INTRONIC
<i>Ntrk3</i>	1_134035794_-/AC	1	134.03579	134.0358	-	AC	INTRONIC
<i>Mrps11</i>	1_134518244_-/CCACACA	1	134.518244	134.518245	-	CCACACA	DOWNSTREAM
<i>Isg20</i>	1_134634753_G/-	1	134.634753	134.634753	G	-	INTRONIC
<i>Mfge8</i>	1_134871094_-/C	1	134.87109	134.8711	-	C	INTRONIC
<i>Abhd2</i>	1_135021727_-/G	1	135.021727	135.021728	-	G	UPSTREAM
<i>Abhd2</i>	1_135029169_-/A	1	135.029169	135.029170	-	A	INTRONIC
<i>Rlbp1</i>	1_135138240_-/TC	1	135.13824	135.13824	-	TC	UPSTREAM
<i>Rhcg</i>	1_135362995_GAGAGAGAGA/-	1	135.362995	135.363004	GAGAGAGAGA	-	SPLICE_SITE,INTRONIC
<i>Wdr93</i>	1_135549549_-/T	1	135.549549	135.549550	-	T	INTRONIC
<i>Wdr93</i>	1_135549838_-/CA	1	135.549838	135.549839	-	CA	INTRONIC
<i>Anpep</i>	1_135598576_-/A	1	135.598576	135.598577	-	A	DOWNSTREAM
<i>ldh2</i>	1_135899068_-/A	1	135.899068	135.899069	-	A	UPSTREAM
<i>D4A0Q8_RAT</i>	1_136069127_-/A	1	136.069127	136.069128	-	A	INTRONIC
<i>Prc1</i>	1_136135140_T/-	1	136.135140	136.135140	T	-	DOWNSTREAM
<i>D4A4J3_RAT</i>	1_136167005_A/-	1	136.167005	136.167005	A	-	DOWNSTREAM
<i>Iggap1</i>	1_136558664_-/CC	1	136.55866	136.55867	-	CC	INTRONIC
<i>Iggap1</i>	1_136641407_-/A	1	136.641407	136.641408	-	A	INTRONIC
<i>Alpk3</i>	1_137269970_GTGTGTGTGTGTGT/-	1	137.26997	137.26998	GTGTGTGTGTGTGT	-	INTRONIC
<i>Slc28a1</i>	1_137334547_-/TG	1	137.33455	137.33455	-	TG	INTRONIC
<i>Homer2</i>	1_137882093_-/C	1	137.88209	137.88209	-	C	INTRONIC
<i>RGD1305713</i>	1_138003252_-/GT	1	138.00325	138.00325	-	GT	INTRONIC
<i>Sh3gl3</i>	1_138533714_AGAGAG/-	1	138.53371	138.53372	AGAGAG	-	DOWNSTREAM
<i>F1M767_RAT</i>	1_138654884_TCTCTCTCTC/-	1	138.65488	138.65489	TCTCTCTCTC	-	INTRONIC
<i>F1M767_RAT</i>	1_138713216_-/AC	1	138.71322	138.71322	-	AC	INTRONIC
<i>D3ZFL6_RAT</i>	1_139143140_-/GT	1	139.14314	139.14314	-	GT	DOWNSTREAM
<i>Tmc3</i>	1_139861479_-/TC	1	139.86148	139.86148	-	TC	INTRONIC
<i>Arnt2</i>	1_140671403_AC/-	1	140.6714	140.6714	AC	-	INTRONIC
<i>FAAA_RAT</i>	1_140858554_TC/-	1	140.85855	140.85856	TC	-	INTRONIC
<i>Nox4</i>	1_143476690_T/-	1	143.47669	143.47669	T	-	INTRONIC
<i>Nox4</i>	1_143480318_-/TCTA	1	143.48032	143.48032	-	TCTA	INTRONIC
<i>Nox4</i>	1_143599429_-/AT	1	143.59943	143.59943	-	AT	INTRONIC
<i>Grm5</i>	1_143897429_-/A	1	143.897429	143.897430	-	A	INTRONIC
<i>Grm5</i>	1_144083448_-/TA	1	144.08345	144.08345	-	TA	INTRONIC
<i>F1LUQ4_RAT</i>	1_146362231_AC/-	1	146.36223	146.36223	AC	-	INTRONIC
<i>LOC680270</i>	1_146899406_-/CAATCA	1	146.89941	146.89941	-	CAATCA	INTRONIC
<i>Dlg2</i>	1_148190578_-/CA	1	148.190578	148.190579	-	CA	INTRONIC
<i>Dlg2</i>	1_148347335_-/A	1	148.34734	148.34734	-	A	INTRONIC
<i>Dlg2</i>	1_148476682_-/TA	1	148.47668	148.47668	-	TA	INTRONIC
<i>Dlg2</i>	1_148487662_AG/-	1	148.48766	148.48766	AG	-	INTRONIC
<i>Dlg2</i>	1_148487707_GT/-	1	148.48771	148.48771	GT	-	INTRONIC
<i>Dlg2</i>	1_148539160_-/T	1	148.53916	148.53916	-	T	INTRONIC
<i>Dlg2</i>	1_148883316_CT/-	1	148.88332	148.88332	CT	-	INTRONIC
<i>Dlg2</i>	1_148988102_ATATATATATATAT/-	1	148.9881	148.98812	ATATATATATATAT	-	INTRONIC
<i>Rab30</i>	1_149659105_-/TG	1	149.65911	149.65911	-	TG	INTRONIC
<i>RGD159690</i>	1_149703024_A/-	1	149.703024	149.703024	A	-	INTRONIC
<i>Odz4</i>	1_153843731_GT/-	1	153.84373	153.84373	GT	-	INTRONIC
<i>Nars2</i>	1_154271062_-/ACAGAC	1	154.27106	154.27106	-	ACAGAC	INTRONIC
<i>Nars2</i>	1_154284900_T/-	1	154.28490	154.28490	T	-	INTRONIC
<i>Gab2</i>	1_154478186_-/CACACACAC	1	154.478186	154.478187	-	CACACACAC	INTRONIC
<i>D3ZZQ6_RAT</i>	1_154718553_-/G	1	154.71855	154.71855	-	G	INTRONIC
<i>D3ZGQ6_RAT</i>	1_154823313_-/A	1	154.823313	154.823314	-	A	INTRONIC
<i>D3ZKE1_RAT</i>	1_156295478_-/GT	1	156.29548	156.29548	-	GT	INTRONIC
<i>D3ZKE1_RAT</i>	1_156328047_-/TCTCTCTCTC	1	156.32805	156.32805	-	TCTCTCTCTC	INTRONIC
<i>Map6</i>	1_156638174_-/A	1	156.638174	156.638175	-	A	INTRONIC
<i>B5DF39_RAT</i>	1_156738188_-/GT	1	156.73819	156.73819	-	GT	INTRONIC
<i>Lipt2</i>	1_157537693_T/-	1	157.537693	157.537693	T	-	UPSTREAM
<i>Fam168a</i>	1_158235825_-/CT	1	158.23583	158.23583	-	CT	INTRONIC
<i>D4ADZ1_RAT</i>	1_158314584_A/-	1	158.314584	158.314584	A	-	DOWNSTREAM
<i>Fchs2</i>	1_158582535_C/-	1	158.582535	158.582535	C	-	INTRONIC
<i>Fchs2</i>	1_158755377_-/A	1	158.755377	158.755378	-	A	INTRONIC
<i>F1LM60_RAT</i>	1_158878464_TT/-	1	158.878464	158.878465	TT	-	INTRONIC
<i>Il18bp</i>	1_159477723_-/C	1	159.477723	159.477724	-	C	UPSTREAM
<i>Rnf121</i>	1_159492697_-/AC	1	159.4927	159.4927	-	AC	INTRONIC
<i>Nup98</i>	1_159629524_A/-	1	159.629524	159.629524	A	-	INTRONIC
<i>Nup98</i>	1_159631695_-/T	1	159.631695	159.631696	-	T	INTRONIC
<i>Stim1</i>	1_159764629_-/AGAGAGAGAG	1	159.76463	159.76463	-	AGAGAGAGAG	INTRONIC
<i>Stim1</i>	1_159884343_AC/-	1	159.88434	159.88434	AC	-	INTRONIC
<i>Olr111</i>	1_161323284_-/CG	1	161.323284	161.323285	-	CG	DOWNSTREAM
<i>Olr135</i>	1_161762982_T/-	1	161.762982	161.762982	T	-	DOWNSTREAM
<i>Trim6</i>	1_162061328_-/A	1	162.061328	162.061329	-	A	UPSTREAM
<i>Olr154</i>	1_162220333_-/GA	1	162.220333	162.220334	-	GA	UPSTREAM
<i>Olr154</i>	1_162223980_TG/-	1	162.2398	162.2398	TG	-	UPSTREAM
<i>Olr168</i>	1_162489797_-/G	1	162.4898	162.4898	-	G	DOWNSTREAM

<i>Olr180</i>	1	162735896	A/-	1	162735896	162735896	A	-	DOWNSTREAM
<i>Olr180</i>	1	162735898	A/-	1	162735898	162735898	A	-	DOWNSTREAM
<i>LOC100362148</i>	1	162868053	-/T	1	162868053	162868054	-	T	UPSTREAM
<i>Olr193</i>	1	162893376	-/A	1	162893376	162893377	-	A	DOWNSTREAM
<i>Olr193</i>	1	162901538	GT/-	1	162.90154	162.90154	GT	-	UPSTREAM
<i>Olr194</i>	1	162932668	C/-	1	162.93267	162.93267	C	-	UPSTREAM
<i>Olr201</i>	1	163075087	-/AC	1	163.07509	163.07509	-	AC	UPSTREAM
<i>Cckbr</i>	1	163157222	C/-	1	163157222	163157222	C	-	INTRONIC
<i>Apbb1</i>	1	163297794	TT/-	1	163297794	163297795	TT	-	INTRONIC
<i>F1LZ18_RAT</i>	1	163701435	TT/-	1	163.70144	163.70144	TT	-	UPSTREAM
<i>Olr229</i>	1	164358981	C/-	1	164358981	164358981	C	-	DOWNSTREAM
<i>Syt9</i>	1	164770760	T/-	1	164770760	164770760	T	-	INTRONIC
<i>Ppfbp2</i>	1	165047610	-/GTGT	1	165.04761	165.04761	-	GTGT	INTRONIC
<i>Ppfbp2</i>	1	165076240	TACACACACACA/-	1	165.07624	165.07625	TACACACACACA	-	INTRONIC
<i>D4A7R5_RAT</i>	1	165190282	-/AGGAAGGAAGGAAGG	1	165.19028	165.19028	-	AGGAAGGAAGGAAGG	DOWNSTREAM
<i>Olr239</i>	1	165268528	T/-	1	165268528	165268528	T	-	UPSTREAM
<i>Olr245</i>	1	165438665	-/GTGTGT	1	165438665	165438666	-	GTGTGT	DOWNSTREAM
<i>Olr260</i>	1	165809567	AAAGA/-	1	165.80957	165.80957	AAAGA	-	DOWNSTREAM
<i>Olr262</i>	1	165823727	ACATGC/-	1	165823727	165823732	ACATGC	-	UPSTREAM
<i>Olr281</i>	1	166472403	G/-	1	166472403	166472403	G	-	FRAMESHIFT_CODING
<i>Olr282</i>	1	166487497	GTGTGTGTGTGTGTGTGT/-	1	166487497	166487514	GTGTGTGTGTGTGTGTGT	-	DOWNSTREAM
<i>Ric3</i>	1	166648228	TCTCTCTCTC/-	1	166.64823	166.64824	TCTCTCTCTC	-	INTRONIC
<i>Lmo1</i>	1	166702862	T/-	1	166702862	166702862	T	-	DOWNSTREAM
<i>Lmo1</i>	1	166729026	-/CA	1	166.72903	166.72903	-	CA	INTRONIC
<i>Tmem9b</i>	1	167367043	-/TC	1	167367043	167367044	-	TC	INTRONIC
<i>Swap70</i>	1	167911659	-/G	1	167911659	167911660	-	G	INTRONIC
<i>Swap70</i>	1	167927999	C/-	1	167927999	167927999	C	-	INTRONIC
<i>F1M683_RAT</i>	1	168065753	T/-	1	168065753	168065753	T	-	INTRONIC
<i>F1M683_RAT</i>	1	168115964	T/-	1	168115964	168115964	T	-	INTRONIC
<i>F1M683_RAT</i>	1	168147706	-/A	1	168147706	168147707	-	A	INTRONIC
<i>E9PSI9_RAT</i>	1	169263659	A/-	1	169263659	169263659	A	-	INTRONIC
<i>E9PSI9_RAT</i>	1	169346363	-/AC	1	169.34636	169.34636	-	AC	INTRONIC
<i>E9PSI9_RAT</i>	1	169368882	-/C	1	169.36888	169.36888	-	C	INTRONIC
<i>Usp47</i>	1	169891406	-/A	1	169891406	169891407	-	A	INTRONIC
<i>Mical2</i>	1	170117853	-/CA	1	170.11785	170.11785	-	CA	INTRONIC
<i>Parva</i>	1	170305167	-/AC	1	170.30517	170.30517	-	AC	INTRONIC
<i>Parva</i>	1	170357189	-/TG	1	170.35719	170.35719	-	TG	INTRONIC
<i>Far1</i>	1	171389151	-/T	1	171389151	171389152	-	T	UPSTREAM
<i>Spon1</i>	1	171777715	-/ACAGACAGACAGAC	1	171.77772	171.77772	-	ACAGACAGACAGAC	INTRONIC
<i>Spon1</i>	1	171818052	GT/-	1	171.81805	171.81805	GT	-	INTRONIC
<i>Spon1</i>	1	171857492	-/A	1	171857492	171857493	-	A	INTRONIC
<i>Spon1</i>	1	171934624	-/CA	1	171.93462	171.93463	-	CA	INTRONIC
<i>Spon1</i>	1	171992012	A/-	1	171992012	171992012	A	-	INTRONIC
<i>Spon1</i>	1	172005216	CA/-	1	172005216	172005217	CA	-	INTRONIC
<i>Rras2</i>	1	172061298	AC/-	1	172.0613	172.0613	AC	-	INTRONIC
<i>Rras2</i>	1	172087391	-/CACA	1	172.08739	172.08739	-	CACA	INTRONIC
<i>Pde3b</i>	1	172488706	-/CT	1	172.48871	172.48871	-	CT	INTRONIC
<i>Calcb</i>	1	172783191	-/T	1	172783191	172783192	-	T	DOWNSTREAM
<i>Insc</i>	1	172823765	TATA/-	1	172.82377	172.82377	TATA	-	INTRONIC
<i>Insc</i>	1	172830913	-/TG	1	172.83091	172.83091	-	TG	INTRONIC

Supplementary table 4. List of genes in the QTL region that present INDEL

GeneSymbol	Description	GeneID	Chrom	Location (Mbp)
Akap13	A kinase (PKA) anchor protein 13	293024	1	131.224569
Alg8	probable dolichyl pyrophosphate Glc1Man9GlcNAc2 alpha-1,3-glycosyltransferase	293129	1	154.607442
Ampd3	AMP deaminase 3	25095	1	168.533491
Ankrd42	ankyrin repeat domain 42	293117	1	149.423846
Appb1	Amyloid beta A4 precursor protein-binding family B member 1	29722	1	163.282918
Appj1	Aquaporin-11	286758	1	154.973798
Arfap1-2	Arfapin-2	293344	1	163.364861
Arfap1	ADP-ribosylation factor-like protein 6-interacting protein 1	293551	1	176.332758
Arnt2	Aryl hydrocarbon receptor nuclear translocator 2	25243	1	140.535823
Arntl	Aryl hydrocarbon receptor nuclear translocator-like protein 1	29657	1	171.062181
Atgl612	ATG16 autophagy related 16-like 2	308865	1	158.787779
Btbd1	BTB/POZ domain-containing protein 1	293060	1	138.006567
Btbtd10	BTB/POZ domain-containing protein 10	308890	1	171.163522
Ccdc90b	Coiled-coil domain-containing protein 90B, mitochondrial	308820	1	149.410497
Cckbr	Gastrin/cholecystokinin type B receptor	25706	1	163.156914
Chnd8	coiled-coil-helix-coiled-coil-helix domain-containing protein 8	499214	1	157.965119
Chnd2	chromodomain-helicase-DNA-binding protein 2	308738	1	128.609727
Cib1	Calcium and integrin-binding protein 1	81823	1	136.031865
Cins1a	Methylosome subunit pICln	65160	1	154.946673
Cibb	Caseinolytic peptidase B protein homolog	65041	1	159.126512
Copb1	Coatomer subunit beta	114023	1	172.199677
Cog7	Ubiquinone biosynthesis protein COQ7 homolog	25249	1	176.741638
Co110	centrosomal protein of 110 kDa	361634	1	176.937287
Cpeb1	Cytoplasmic polyadenylation element-binding protein 1	293056	1	137.556774
Crebzf	CREB/ATF bZIP transcription factor	293112	1	147.124224
Ct9f	Ct9, Paf1/RNA polymerase II complex component, homolog	293184	1	168.784377
Dchs1	dachsous 1	308912	1	163.49734
Denn5a	DENN/MAD domain containing 5A	308942	1	167.519649
Dgat2	Diacylglycerol O-acyltransferase 2	252900	1	156.447588
Dkk3	dickkopf-related protein 3	171548	1	169.924618
Dlg2	Disks large homolog 2	64053	1	148.051658
Eed	polycomb protein EED	293104	1	146.563964
Eftud1	elongation factor Tu GTP binding domain containing 1	308789	1	138.92062
Fam103a1	family with sequence similarity 103, member A1 (Fam103a1), mRNA	293058	1	137.980239
Fam108c1	abhydrolase domain-containing protein FAM108C1	361601	1	140.382431
Fam160a2	F15 and Hook-interacting protein	293343	1	163.110928
Fam168a	family with sequence similarity 168, member A (Fam168a), mRNA	361614	1	158.140473
Fat1	Fatty acyl-CoA reductase 1	293173	1	171.392301
Fchsdd2	FCH and double SH3 domains protein 2	308864	1	158.54883
Folh1	Glutamate carboxypeptidase 2	85309	1	142.936379
Fsd2	fibronectin type III and SPRY domain-containing protein 2	308779	1	137.749268
Furin	Furin	54281	1	136.209969
Gprc5b	G-protein coupled receptor family C group 5 member B	293546	1	177.205905
Grms	Metabotropic glutamate receptor 5	24418	1	143.863506
Hbb	Hemoglobin subunit beta-1	24440	1	161.584858
Hddc3	HD domain-containing protein 3	308758	1	136.161425
Hdgfrp3	Hepatoma-derived growth factor-related protein 3	252941	1	138.098819
Homer2	Homer protein homolog 2	29547	1	137.827128
Ihd12	isocitrate dehydrogenase	361596	1	135.876058
Ii16	pro-interleukin-16	116996	1	139.908061
Ii18bp	interleukin-18-binding protein	84388	1	159.471809
Iik	Integrin-linked protein kinase	170922	1	163.481299
Inpp1	Phosphatidylinositol-3,4,5-trisphosphate 5-phosphatase 2	65038	1	159.27813

Ipp7	importin-7	308939	1	167.658312
Kif7	Uncharacterized protein	293047	1	135.473063
Kln135	Uncharacterized protein	308850	1	156.801077
Lip12	lipoyl(octanoyl) transferase 2 (putative)	365314	1	157.538704
Lmo1	LIM domain only protein 3	245979	1	166.706026
LOC61635	UPIP0505 protein C16orf62 homolog	361635	1	176.965214
LOC683402	similar to AP-3 complex subunit sigma-2 (Adapter-related protein complex 3 sigma-2 subunit) (Sigma-adaptin 3b) (AP-3 complex sigma-3B subunit) (Sigma-3B-adaptin) (LOC683402)	683402	1	135.653108
LOC689064	Hemoglobin subunit beta-2	693064	1	161.578128
Map6	Microtubule-associated protein 6	29457	1	156.592504
Mesdc1	mesoderm development candidate 1	308795	1	140.157974
Mesdc2	LDLR chaperone MESD	308796	1	140.167851
Mesp1	mesoderm posterior protein 1	308766	1	135.571777
Mfag8	Lactadherin	25277	1	134.87003
Mogat2	2-acylglycerol O-acyltransferase 2	681211	1	156.516533
Mmp146	39S ribosomal protein L46, mitochondrial	293054	1	134.498792
Mmp148	39S ribosomal protein L48, mitochondrial	293149	1	157.979818
Mmps11	28S ribosomal protein S11, mitochondrial	499185	1	134.507836
Mvnl1	protein MRV1 isoform b	308899	1	168.627363
Nduifc2	NADH dehydrogenase	293130	1	154.635889
Nmb	neuromedin-B	499194	1	137.097463
Nrhp3	nuclear receptor-interacting protein 3	361625	1	167.380328
Nrk3	NI-3 growth factor receptor	29613	1	133.92553
Nucb2	Nucleobindin-2	59295	1	174.605677
Nup98	Nuclear pore complex protein Nup98-Nup96Nuclear pore complex protein Nup98Nuclear pore complex protein Nup96	81738	1	159.598048
Olfn11	Olfactomedin-like protein 1	361621	1	164.953064
P2ry6	P2Y purinoreceptor 6	117264	1	158.381128
Pak1	Serine/threonine-protein kinase PAK 1	29431	1	155.057622
Pcf11	Uncharacterized protein	361605	1	149.475611
Pde2a	cGMP-dependent 3',5'-cyclic phosphodiesterase	81743	1	158.921607
Pde3b	cGMP-inhibited 3',5'-cyclic phosphodiesterase B	29516	1	172.409282
Pex11a	Peroxisomal membrane protein 11A	85249	1	135.513735
Pgan2	Post-GPI attachment to proteins factor 2	116675	1	159.69692
Pgm211	glucose 1,6-bisphosphate synthase	685076	1	157.605906
Pipain	Phosphatidylinositol-binding clathrin assembly protein	89816	1	146.754045
Pik3c2a	phosphatidylinositol-4-phosphate 3-kinase C2 domain-containing subunit alpha	361632	1	174.430831
Plekhb1	Pleckstrin homology domain-containing family B member 1	64471	1	158.08193
Pold3	DNA polymerase delta subunit 3	293144	1	157.453059
Polg	DNA polymerase subunit gamma-1	85472	1	135.197016
Ppfbp2	protein tyrosine phosphatase, receptor-type, F interacting protein, binding protein 2	308918	1	164.979709
Ppnel	protein phosphatase methyltransferase 1	361613	1	157.725633
Prc1	protein regulator of cytokinesis 1	308761	1	136.112674
Prikdp	Protein kinase C delta-binding protein	85332	1	163.212922
Ptkrr	52 kDa repressor of the inhibitor of the protein kinase	308845	1	155.982782
Prss23	Serine protease 23	308807	1	146.081557
Psm1	Proteasome subunit alpha type-1	29668	1	172.237763
Rab30	ras-related protein Rab-30	308821	1	149.656373
Rab38	ras-related protein Rab-38	252916	1	144.783909
Rab6a	Ras-related protein Rab-6A	84379	1	158.041088
Rit	tumor necrosis factor receptor superfamily member 19L	361615	1	158.293361
RGD1306959	similar to C11orf17 protein (RGD1306959), mRNA	361624	1	167.324919
RGD1311021	RCG24599Uncharacterized protein	308765	1	135.69698
RGD1311634	similar to RIKEN cDNA3200002M19 (RGD1311634), mRNA	293155	1	159.35911
RGD1311703	small acidic protein	293160	1	174.173969
RGD1561459	similar to RIKEN cDNA1810020D17 (RGD1561459), mRNA	361606	1	154.786525

Regma	repressive guidance molecule A	308739	1	128.547399
Ribp1	retinaldehyde-binding protein 1	293049	1	135.122063
Rnf121	RING finger protein 121	308871	1	159.475046
Rnf141	RING finger protein 141	308900	1	168.572375
Rras2	ras-related protein R-Ras2	365355	1	172.026263
Rrp8	Ribosomal RNA-processing protein 8	308911	1	163.47703
Sec1a	Signal peptidase complex catalytic subunit SEC11A	65166	1	137.109468
Semad4	semaphorin 4B	293042	1	136.001235
Serpinh1	Serpinh1	29345	1	156.667042
Sh3g3	Endophilin-A3	81921	1	138.398334
Slo2b1	Solute carrier organic anion transporter family member 2B1	140860	1	156.992493
Snpp1	sphingomyelin phosphodiesterase	308909	1	163.27897
Spcc2	signal peptidase complex subunit 2 homolog	293142	1	157.199447
Spon1	Spondin-1	64456	1	171.70072
Srs	suppression of tumorigenicity 5 protein	308944	1	167.119711
Stard10	PCTP-like protein	293150	1	158.81997
Stard5	stAR-related lipid transfer protein 5	502348	1	139.896272
Stim1	Stromal interaction molecule 1	361618	1	159.761567
Sv2b	Synaptic vesicle glycoprotein 2B	117556	1	130.683153
Swap70	switch-associated protein 70	293410	1	167.888783
Taf10	TAF10 RNA polymerase II, TATA box binding protein (TBP)-associated factor	293345	1	163.487518
Thrsp	Thyroid hormone-inducible hepatic protein	25357	1	154.647341
Thrsf1	transmembrane 6 superfamily member 1	361600	1	138.058059
Timem126a	Trans membrane protein 126A	293113	1	147.129335
Timem126b	transmembrane protein 126B	361626	1	147.146187
Timem41b	Trans membrane protein 41B	293415	1	167.608205
Timem9b	transmembrane protein 9B	293415	1	167.355899
Tippl	Tripeptidyl-peptidase 1	83534	1	163.490393
Trim3	Tripartite motif-containing protein 3	83616	1	163.331603
Trim5	tripartite motif-containing protein 5	308906	1	162.096454
Trim6	tripartite motif-containing 6	293294	1	162.066157
Ucp2	Mitochondrial uncoupling protein 2	54315	1	157.922179
Ucp3	Mitochondrial uncoupling protein 3	293294	1	162.066157
Ucp4	Protein unc-45 homolog A	25708	1	157.896001
Ucp45a	ubiquitin specific peptidase 47	308759	1	136.143886
Usp47	Vacuolar protein sorting-associated protein 33B	308896	1	169.836253
Vps33b	WD repeat-containing protein 73	64060	1	136.085931
Wdr73	WD repeat-containing protein 73	308751	1	137.088348
Wee1	Wee1-like protein kinase	308937	1	167.769797
Zfand6	AN1-type zinc finger protein 6	293067	1	140.885729
Zfp143	Zinc finger protein 143	361627	1	167.704313
Znf592	zinc finger protein 592	293038	1	137.188336

Supplementary Table 5: Genes within the linkage region represented on the array

8039630834	CCACA GCCCAT TCACTACTATAIATACTACTACATAGAGGTGGTGGATATACATTA	A/G	8	39630834	0.639
8041550093	CATGTGATGATGCTAAAGACGTCTTAGTATTTCTGSGAGCCCATGTTTGAAAGAA	C/G	8	41550093	0.883
8049983558	CCCTTATCCACAGGCTGTGCCAAAACCCTTCCTCTAGAAATGAAAGCACCATT	A/T	8	49983558	0.913
8051530223	GGTCCCTCAGGTCTCTTTGATTTAGCATATGATTTCCCTCTCCCTGGTGAA	T/C	8	51530223	0.883
8054887505	TTGAATCTCAGCAGCGCATAGGCTAGAAAGCAGAGGTGAGAGCTCAATCTAC	A/G	8	54887505	0.928
8059837793	CAGGAAACCATACATCATCTACTACTACTACTACTACTACTACTACTACTACT	T/C	8	59837793	0.871
8066417055	ATTATATGACCCAGTAAATATAATTTGATGATGATGATGATGATGATGATG	A/G	8	66417055	0.792
8066103802	ACTCAAGGACCCACCAGTTACTCAGTTCCTCAAGAACACTTATGATGATGATG	T/C	8	66103802	0.777
8067960675	ATGCCCTGTGGATGCTGGCATGCTCACCAGGATGAAAGAGTGTGAGCCACC	A/G	8	67960675	0.957
8072132143	CCMATCTAGACCCAGTCCGCTGAGAGCATTTCCTAATTGAGCTTCCTCCCA	T/C	8	72132143	0.542
8072971857	CCCTCCATGTTCTTCATCGTTCCTGGCCAAAGTTCCCTGGCATGATGATGAT	A/G	8	73971857	0.755
8075515604	CTGTGTGATGATGCTGGCCAGCGGCATGCAAGCCAGCTTGCATATGATG	T/C	8	75515604	0.972
8077028114	GTGTGATGATGATGATGATGATGATGATGATGATGATGATGATGATGAT	A/T	8	77028114	0.716
8081834042	TAATAAATGACCTTATCTATGATTAAGCACTACCAGTTGAGCATAAACAAT	A/T	8	81834042	0.91
8083476331	TCTATGGCATTTACACACATGATACACAGATATACATATGGGAAGGCCAT	T/C	8	83476331	0.961
8085387993	AAGGCACTGTAGTTACTACAGGATCAGAACACCAGATGGCAGATAACCATA	A/G	8	85387993	0.819
80885660225	CTGCTATGAGGCTTAACACTTTAGCCATCTAACAGTCTTAAAGCCACTT	A/T	8	8660225	0.852
8089560225	TTTAACTGATTAGGGGAAAAGCATCTACTAATATGCGAATGTCTAACTACT	A/T	8	91656605	0.979
8099468057	GAATTTCTTAAATAAATAAGATGATGGTGGATGAGGAGGAGGAGGAGGAG	A/G	8	96468057	0.948
8101253044	GAATCAGCCTTTACCAGTGGTGTATTAATCTACTTCTCTTCTGATATTAAT	T/C	8	101253044	0.505
8104373188	GTCCCGGTCCTCAGCATCTGCTCACCATTTGTTTAGATCTCTGGAAAAGCC	T/C	8	104373188	0.704
8109079791	AGTCCCTTTTATGAGCAGATACCTACAGATCGCCTCACAGAAATGATGAT	T/C	8	109079791	0.951
8110621345	CAATTACTCTTTAGAGCTTAAACTCTTATATGATCTACTACTACTACTACTA	A/G	8	110621345	0.987
8112131352	TTCTCCAAAGCACACTTTACTCCTTTCTGATGATGATGATGATGATGATG	T/C	8	112131352	0.932
8113672002	CAACCACTGGCTAGTTGATTTCTTAAATGTTAAACATACCCTTTGAGAGAT	A/T	8	113672002	1
8115787492	TTGGATTTCTAGTTCTGTGCAAGTGTATGTGATGGCGTATGAGCGCTT	T/G	8	116787492	0.786
8118338566	GACACACGACGACAGCTGTGCATGATACCTGTGAGAGGACCTTGATTTCC	A/G	8	118338566	0.882
8120093696	TGGACCAACAACACTTATATAGATTTAAAAATACCAACTTAAAAAGTGT	A/G	8	120093696	0.904
8121605051	CACTCACTACTATGCTGGTCAAGTCCCAACAGGACGATCAACTACAAATAG	T/C	8	121605051	0.869
8123189500	TTTAGAAAGTTCTATAGAACACTTTTATGTGACACTGGTCCCTCAAGAGG	A/G	8	123189500	0.625
8124822775	GGACCCCTGCCATGAGCTAGAGAGCCCCAGCGGTGATTTACTGGCCCTC	C/G	8	124822775	0.974
8126447368	ACTTTAATGGGAAAGGATGCTTGTCTAAAGACCTTAAGCAATTTACTGAT	T/C	8	126447368	0.764
8127969315	AGCCTTACTACTGCAAGCACTTGTATGTGAGAGCGCTTGCATGACCTG	T/C	8	127969315	0.738
9000007599	TAATAATAAATGATAGTACATTTGCTTAAGAACTTAAAGAAATTTGACT	A/G	9	7599	0.924
9000463687	AAACTCTGATAGCTGTAAAGATATGATTTCTACTTCTATTCTGCAAGCTG	A/G	9	463687	0.949
9006153383	ACTTCCTGCAAGGCGGTGTGATGATGATGATGATGATGATGATGATGAT	A/G	9	6153383	0.977
9007696760	CAATCAGAACCTGTAGAACACTGTAGACACTTCATCACTCCTTGTATAA	A/G	9	7696760	0.956
9009290725	TAGACAVGAAAAAACTGGTACTGAAAGTACTGCTCAAAACACAAAGGCC	T/C	9	9290725	0.872
9010824989	TGACCGGGTGTCTGTGCGACGATCCCTGACTAGTCTGACCTGCAAGGAG	A/G	9	10824989	0.664
9012529501	GTTGGGTGCAAGGGAATCCAAACCCACTGCTTAAGAAAGGCCGCTTCTA	A/G	9	12529501	0.716
9014275270	CATTTGAAACAATATATTATTAGTAAACCTTTTTCATCAGAGTGATTTAA	T/C	9	14275270	0.989
9018112709	GAATGATGGTCTTACAGTGTGGGAACCTGTGCAACAGAACCTTGGTGT	A/G	9	18112709	0.977
9019698843	GGTGTGCGGAAATTAACCTAGTCTTTAGAGTGAACCTGACCAAGAGACT	T/C	9	19698843	0.888
9022924893	CCATAATAATTAATGCTTATGGGCGAACTTTCAAAAGCAAACTTTATC	A/G	9	22924893	0.886
9024499905	CAGTTTATTACTGTTCCGACATTAATGACACAAAGTTCAATAAGCCTTCT	A/G	9	24499905	0.876
9026201841	AAACTGCCATTAGATTAATCTAAATAAAGAAATAAAGAACTGAAACCAAA	T/G	9	26201841	0.763

10065987410	CACCATCAGATATTGGGAAAGGCAACACACAGGCTGAAACTGCAAGGTACAGT/C	T/C	10	65987410	0.935
10067572050	TATATTTTGGAGTAGACCTCATATATACCAAGGTGGACTGAACTCAAGATCCTC	A/T	10	67577050	0.642
10069114925	CCTCTGCTCCCTCTGCTATAGCTTGTATTTGCAAGGGTCCAAAGTTTCAI	A/G	10	69114925	0.969
10070676395	GGTATCTTGCAAGAGCTCAGGGCCACTGCACACAGCTAGGATTCACAT/C	T/C	10	70676395	0.922
10072264375	TCGGATTAACCTGTGGAATGAATGCTATCCACAGGGTCTTCACTGATCT	T/G	10	72264375	0.924
10078880423	GAAACAGTATGATGGCTGGAGTGTAGCCACTGACTAGAGAGGGAGAGAT	A/G	10	77287817	0.966
10080464456	TTATTCCGATTCAGGTTTTGCTTGAACCAAGTGAATGACAGGCAAGATG	T/C	10	78880043	0.992
10081985153	GATTTCTCTCAAGACACTAATGTAAAGATTTCAGTCTATGTAGATGACCT	A/C	10	80464456	0.621
10085150354	GCCCCACCAACCTCAGATATCTTGGATGTAGGATGACCTAATGAAM/C	T/C	10	81985153	0.937
10086714378	GGGAAAGAGTGTGAGACACACACATGCTTACCACATCTGCCCCAAGT	A/G	10	85150354	0.819
10088241830	ATGTCTCACACAGCCCCGACACTGTTTGTAGTACGTAAGGCAATGTTG	T/G	10	86714378	0.866
10089766892	TTGCATCCCCAGCTCCGAAAAAAAAAAAAAAAAAGTTCACTGCACATAT	T/C	10	88241830	0.876
10091419662	CTGACCGTTTGTCTCACCAGCTGCTGCTTTGTCTCCCGACTCCATT	T/C	10	89766892	0.989
10094502019	GAGGTTTTTGACTGTTGTTATCAAAAGAGGTGCACCTGGTTAGATTM	A/G	10	91419662	0.941
10099943591	TCGCGTGTGGCTGTTAGAACCCAGGCTACAGAGCCGCCCGTGCAGCT	A/G	10	94502019	0.578
10101611833	TCGATATGTACAGGTTGAGTATATGTTCTCAATGTGGGCA/MGICAT	A/G	10	99943591	0.76
10104629819	TGACGTTTTTGACTGTTGTTATCAAAAGAGGTGCACCTGGTTAGATT	T/C	10	101611833	0.961
10106193291	TGGTATTCACTTCTGCTCCTCCCTCCCAACTCTTCTTGGTACGATG	T/G	10	104629819	0.766
10107819766	TTTCAAGAGCAGGCAAGGCAAGGTTGGCAGCTGATGATGATGAAAT	A/G	10	106193291	0.806
10109399893	CTGCAATAGACAGTCTCTGAGAGTGTACACTGCCCTTGGCTGTGACT	A/G	10	107819766	0.958
10100889960	TTTTAATCTTCTCAACCAACTCATGATAGTGGTGGTGGCTAGGCAAT	A/T	11	109399893	0.834
10100732919	AGAAATACCAATTTAATAAGATGAAATAAAAATCACATTTGGTCTCT	T/G	11	889960	0.965
11009165141	GTTTGAACCTGGATCTACGCTGTGCTGCTGCTGCTGCTGCTGCTG	C/G	11	7329190	0.993
11010882373	AAATTAATTTGAATGATGATGAAATGTTATCCAAATACAGATGGAGT	A/G	11	9165141	0.846
11012641195	CACAGGACGAGGAGGGGATGACAGCAGGATGGAGTCCGGTTCTCACT	T/C	11	10882373	0.733
11012619785	GGTCAATTAAGCAAAATGTAACCACTGACATTAACGCTTACCCCTCG	T/C	11	12641195	0.69
11019203719	AGGTTCCCAATATCCATATCATCTCTCTGACTGCAGCCACCTTAAAC	T/G	11	17619785	0.639
11022388395	TAATAGTATTTGCAATATGGAGGAGGTAGATTAACCACTAGATGAGT	T/C	11	19203719	0.962
11024052265	NN	T/C	11	22388395	0.939
11025582611	TGATGAGAGAGACTATGTTATGCAATACCTGCTCCCTGCTCTGACT	A/T	11	2582611	0.724
11030345623	TGTAACTGTGTCTTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGT	T/C	11	30345623	0.795
11031854195	TCGTGGGCGTACTGCTTACTTCAAGGTTGACTGTGCTGCTGCTGCTG	C/G	11	31854195	0.92
11033435569	AAATTTTAACTCAAAATATTAATATGGAGCTGGTAAAGACTGCTCA	T/C	11	33435569	0.946
11034966294	ATGGCTCAACCTCACTTCTGCTGCTGCTGCTGCTGCTGCTGCTGCT	T/G	11	34966294	0.944
11036509230	CCCTCAAAATTTATTTGTTGTTGTTGTTGTTGTTGTTGTTGTTGTTG	T/C	11	36509230	0.821
11038526316	TTTTTTTTTAAATCAATACCCCAAGGAGGCTGCTGCTGCTGCTGCT	T/C	11	38526316	0.985
11040166875	CTTCTAACTGCTTCACTGATGATGATGATGATGATGATGATGATGAT	A/G	11	40166875	0.546
11045566388	TGTGTGTAAGGTTGGGAGGAAAGCAACCAACTCTTCTGATTCGTTG	T/C	11	45566388	0.894
11049064419	TGTCAATTAAGTATTTGATCACTAATTAACACAGGCTATCACTCA	T/C	11	49064419	0.979
11051063125	ATCATTAATTCACAAATATATGTTCAATAGATGACACATACCTGAT	A/G	11	51063125	0.814
11056214836	GGGTGAAATCTCAGATATGACATTTCCCACTGAAACCAAGGGCT/C	T/C	11	56214836	0.788
11059898195	AAATGCTTTTAAATTAATTAACAAGAGTCAATACACTTATTAAGGTT	T/C	11	5898195	0.744
11062684008	TAGTCTCTTACCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT	T/G	11	62684008	0.903
11064270722	AGTGTGGGCTGTGACCAAGCACTGAGGCTATGGGCACTGTG/G	C/G	11	64270722	0.995
11065981687	CTCATGGGATAGATCCCAAGTGGGCGAGTCACTGCTGCTGCTGCTG	T/C	11	65981687	0.736
11067508537	GAGTCTCTGGAAGGCTCTTGACCATCTCCAGCTAGGACTACTTAAAM	A/G	11	67508537	0.742
11075571033	GACAGGAGCTGATATAGTGTCTATTAGAGGCACTGCTAGAGTCTT	T/C	11	75571033	0.606

20000042516	TCACGGATTGTTCTACTAATATGTATGTCMACTCCGTCCTTATTAGAACCTTTCTTCTGTCCTTCTGTAACCTTACTGTGTTTACGCTTCAAGACTCAGGCTCAGGGTGC	C/G	20	47516	0.749
20001565758	TCAGCGAGTCCCAAGGAGGAGGTCAGAGCGAGTCACTAAACTCTACTGGTACTAATTTTCCTGACTTTAAAGGAAATGGGAGATGAACCTCAAGCTGTCTTTTAAAGCGTGTGTA	T/C	20	1565758	0.862
20003130757	AGTTAGACTCTCCAGCCCTGAAGCCCATTTCTACCCTTTCGGATGCTAGTCCGTAAATTCAGAGGAGCAAGAGGTTGAGCCCTACAGATTCAGAGTTATGCTCCGGAAAGAAAGC	T/C	20	3130757	0.873
20004715045	ACCCAGAGGTGGGGCTAAGAGCAATGGCTGCTGCAGGGAGCAATGAGTTAGTTTTCCTA/GJGACCCACTGTGTTCATATTTAAAGGAACTTTGAGAAAGTGGGTT	A/G	20	4715045	0.937
20007904736	AGTGGACGGTAAAGTCTCTGACCAAGTTGTATGTAAATGAAGCCCTCAAGGCTCA/GJGCGCTCCCTCTGTGCTGTTTGGCCCGTGGCTCAAGCTGAGGAGTGTGTAACCC	A/G	20	7904736	0.731
20009466499	CAACTACACACAGAGAGGGGGGGCCCTCCTTGCTACATCAGCTACAGACA/GJGTATGACCAAACTTTGAAAGATATATAGATTCCTATCAAGTGTGATGGGATA/G	A/T	20	9466499	0.907
20012527514	AAACCTTACCATAATTAGTTAGTAAAGAAAGATGGGGGCGGACTTTCTTATGTATATATAGCAAGTTTTTGAAATGCATATGATCTTTTCCACAGGCCAA	A/T	20	12527514	0.973
20014310650	AGAAGCTGAACCCCTCAAGCCCTCAACTCTTCAAGGGTAAAGTGAAGGCAAGAGCC/A/GJCTTTCCAGGAATGCACTCACCGCACCTGTCCACCAGTTCACCAAGGA	A/G	20	14310650	0.726
20016047305	CCCTGAAGCTGTTGAGCCGAGGCTCTATGGAAGGATGAAAGAGCTCCAAAAGCCCT/CJGGTGGTAGGAGGTTTTCTAGCCAGAAAGTTGCCCCCTCGCTCATAGAGCCCC	T/C	20	16047305	0.951
20017608327	CGTTATGAATATACCAGGACCAAGCTTTGCGTACTGTCTGCACCTGTGTGGCTGTGCATAAATACAGAGATTTGGATAGGCTGTCTATGGTCTCTGTGACAC	T/G	20	17608327	0.988
20019324306	TAGGCTTCCAATCCCACTAATTTTTGGTTAGAGAGTTGGCTTGAAGAGCAGCGGCT/A/GJTGCTCAAGGTTACAGGGCCAAAGTGTACTCATGCCCTTTCACCAAGCATG	A/G	20	19324306	0.82
20020966417	GAACCTAATGTTGATTTAAATATGAATAGATTTAAGCCGTTAGAGGCTCAGCAGTCCACTTTAAAGGTTTTGAATGTCTAGGTTAT	A/G	20	20966417	0.849
20022594060	TAGCCATTTCCAGGCGAGTGTGAAATTTGCCCTTTCCAGAATTTCCATAGATTT/CJTGTCCTCCAAATGAATGGTGTCTGGCTGAGAAAGTTAAAGCTT	T/C	20	22594060	0.974
20025197576	GCCTCAACCACAAGGCAATCTCTCTGTGAGCATGTGAAGCCAGAGTTAAACAAAGTCCCT/A/GJTGCTCAAGGTTAGAGGAGGAAAGGTTAAGTGCCTTTCACCAAGCATG	A/G	20	25197576	0.892
20026707550	TCCCAAGCTCACCTCAAGTCACATGCTTTCTTCAAGCAGGCTTCGTTTACAACCTCCT/A/GJGACAGCTTACCAACCCCAAGGAGGAGTGTGATGAGGCAAGGCTTAC	A/G	20	26707550	0.812
20028878254	GGATGACCCTGACCACTGATGATCTTCTCTGCTACTAGAGAACCTCAGTTTACTCTT/CJGGTAGGAAATGCAATCATGGCCCTTGACCTTAGGAGTTAGCTTCCATGAGCTGCC	T/C	20	28878254	0.954
20031071864	ATGACTCACAAACCTTCAAGTCAAGTTGTTTCAAGAGATCTCACCCCTCCTGTGA/TGJTGCTTCCGAAGGCAACCGAATATACAAAGTTATACAAAGCATACACGCAAGCACTCACCCACGT	T/C	20	31071864	0.806
20032653341	AGTTCCTGTTGAGTTCGAAGCTCAGCACTGACCCACTTCTTATGACAAGTCTT/CJGACAGCTTACCAACCCCAAGGAGGAGTGTGATACCTTGGCACAAGGCTACGGAA	T/C	20	32653341	0.963
20034235827	CCCTTAAAGCCATGAAGTCAGCTGACTGCTCTTCACTGAAATCTGCCCTGGGAGGCAATGGCCCTTGCACCTTAGGAGTGTCTTCCCATAGAAAGACTTCCACGTTCCACCAA	T/C	20	34235827	0.558
20035793807	CCTCTGTTAACTTACGTAAGGAACTCAACATGAGTTGGGAAGTAAGTAA/GJCTCTCAGAGTTGTTCATATACTACTGGACCCGATCTGGCCGTGGAGTTCC	A/G	20	35793807	0.808
20037370145	GTTGATATGCCAACCCTCAGGATTTAACTAAGTGTGGAGATCTAAACTCAGGTTTAT/CJACACTGTTTCCCTGGTCAGCTAGACACAGACTGAGCAGGAGCTGACTCCCAAGCTGAGCA	T/C	20	37370145	0.663
20040509529	TAAATAAGTCTTCCATCGCCCAAGCCATCATGTCGAAAGGTTAGATGTTCTTCTG/A/GJTCACACTATGATTTGAAACTTTGTCTTCAATTTGCTTATTTCACTGAAACT	A/G	20	40509529	0.918
20042016047	GAGGTACTAATAATATACACATTTGAATTTATCGCTTGTAGCTTCCATAAATC/TGJATTCACTTTGAAAAGTTTCTTGTGGATTACTTCTGATACTCTTCTCT	T/C	20	42016047	0.916
200435663914	TGGTTGGGTTTAGCAACCAAGTACTGGAAGGAAAGTGGGAGTATTGACACCTTGA/GJGTCTCTTAACTGGAGGTGACCTTGGAGGCAAAACGTTCTTACTGGGAACCTCCTCA	A/G	20	435663914	0.919
20045068619	TGCTGGGTTAAATCAATCATCCGATACATGAAATAGTTACATCGCTGTACAT/TGJTAGACCTGTGGTCAMCAGAGCTACTGACATTGTCTTAAACCGGCGATGGCGGA	T/C	20	45068619	0.915
20046634456	TCACTGGGAGTTGCCAACCAAGCAACCTCACACCCAAAACCGAAAGGCTTCC/A/GJGGAGAGCTCCAAAGCAACCAACCGAGCGCTTCTGGAACTAAGCAAGAGTGC	A/G	20	46634456	0.761
20048250172	TCTCTACAACCTTCTGTAAACTGTAACTCCAGAGCGAACAAGTTAATGAAAAC/TGJGAGACTAGGACAAACTCTCCCATGCATGGGGTGAAAAGAAATGAAGATGGCAACTC	T/C	20	48250172	0.904
20049799754	TCTTACCATAGAATCATTAATGTTGGCATTAAATAAATCTTAAATGTAGAGT/CJTTAGTGTATGAAAGATGGTAAATAATTTGTTTCATGAACATGGAGAAAATGGAAATG	T/C	20	49799754	0.686
20051345604	CTTTGGACAGTAGGATAGAAGGAGGAGGTTGAGAACTTATTAACCTAGGAT/TGJTTAAAATCTAAGCATACAGAAAGCAATTTTTGACATACTGTACCAGTTCTTTATATAT	T/G	20	51345604	0.525
20052872439	AGAATTTAAGCAAGCTTATATGAAAGTCTCTAAGCAGTTTCTAAGAAAACAGCATATCC/A/GJACAGAGTAGAAATACCCGAAAATTTTTCAATAACTTATGATGAGAAAAGAAAATTTCA	A/G	20	52872439	0.689
20054465630	TCTCTGCATGATTTCTCTTGCTGGCTTCACTGATGATGTTGGAATTT/CJGATTCAACTTCTTCTCTCTGATATTCATTTGTCTTAACCTTTGAGAGAAAATGCACCA	C/G	20	54465630	0.967

Supplementary table 6. SNPs (n=894) selected for linkage analysis.

Marker Name	Sequence	Nucleotide Variant	Chromosome
Rn34_1146593376	CTATGCAAGTAAAGAAAAAGAAAGAAAAATCCATATTTTGTGCAAGGGGACTTTGAGATTA/GGAAGGTTTCTTTCAACTGTATCAAAAGCCAGCACATGTTTAAAGTCTAAGACAAAA	A/G	1
Rn34_1148739042	CTGAGACCCAAAGAGCTAGTGTGAAATTCCTCAATGCTTGAAGAACAGTACTAAAN/GTATCTTAGCTTTCTAATGCTTAGCCTGTGTTTACTATATCTGCTTGAAMAACGTG	A/G	1
Rn34_1173205180	CCCATTGGCTATTAGAGGACATATTTGTATTAGATGAGGCTGGGGCTTGGCTTGT/A/CCTCCACTAACCAAGTAAAGGAAAGCTCAAGGAGTCAAAAGGAGTAGCTGAGGGCTGCC	A/C	1
Rn34_1211246657	TGAAGGATTTACAAAGCAGAGGCTGGTGAAGACTGTGCAATACCAAGGGGTCTAACCGTAAAGAN/GGGAGCTGCCGGAGGCTTTTCGATTCAACAGGGGCAATTAAACTTTGGTTGGAACTGC	A/G	1

Supplementary table 7. SNPs within the QTL region, selected for Taqman genotyping.