Supplementary Figures

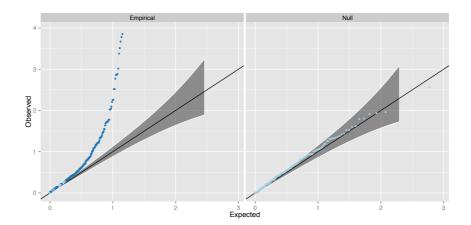


Figure S1: Q-Q plots of interaction p-values from replication datasets, excluding the 30 points significant at the Bonferroni level The right panel (Null) shows the interaction p-values from a meta analysis across two independent datasets on 434 randomly drawn SNP pairs. The left panel (Empirical) shows the interaction p-values from the 404 putative interactions that were not significant at the Bonferroni correction threshold. Dark blue points represent p-values that surpass the 2.5% FDR level, as in Figure 3.

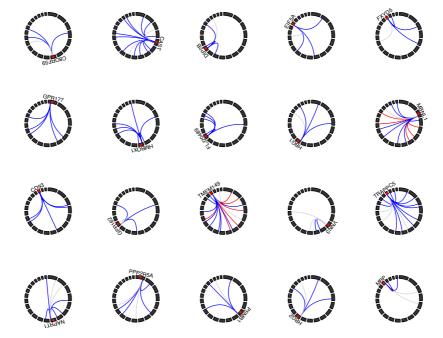


Figure S2: Gene expression traits with four or more genetic interactions Circle plots represent the genomic positions for SNPs (linking lines) and expression probes (red points). Chromosomes are represented by black blocks and ordered from 1 to 22 clockwise, starting from the top. Grey lines represent no evidence for replication, blue lines denote interactions that are outside the 97.5% confidence interval or the Q-Q plot (Figure 3), and red lines denote replication at the Bonferroni correction level. Most interactions are characterised as being *cis-trans* to the expression probe.

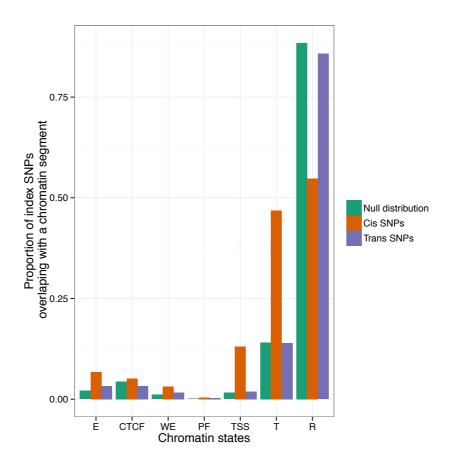


Figure S3: Location of SNPs relative to genomic features We used chromatin segmentation 27 as a method for labelling genomic features. All SNPs within 1Mb and $r^2 > 0.8$ of each cis- and trans-SNP were taken to find which genomic features (x-axis) were covered by the SNPs that compose the 501 significant interactions. Green bars represent the proportion (y-axis) of the 528,509 SNPs used in the analysis that fall within the range of the different genomic features. There is enrichment for cis-acting SNPs (red bars) in promotor regions, but trans-acting SNPs (blue bars) are not enriched for genomic features. The labels on the x-axis are as follows: E = Predicted enhancer, CTCF = CTCF enriched element, E = Predicted weak enhancer or open chromatin cis regulatory element, E = Predicted promoter flanking region, E = Predicted promoter region including transcriptional start site, E = Predicted transcribed region, E = Predicted Repressed or Low Activity region

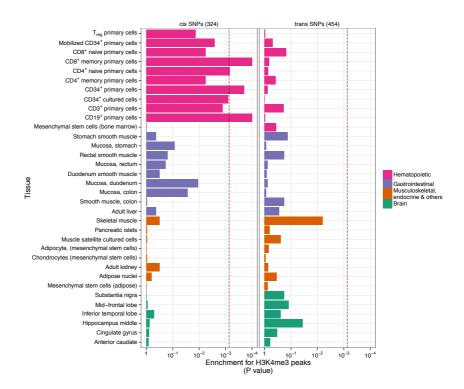


Figure S4: Tissue specific enrichment of SNPs in transcriptionally active regions The locations of transcriptional activity can be predicted by chromatin marks, assayed by $\rm H3K4me3.^{26}$ Enrichment p-values are calculated using permutation analysis for 34 different cell types (y-axis) in four tissue types (Rows of boxes). The dotted red line denotes significance (Bonferroni correction for 34 cell types, x-axis). There is enrichment for cis-acting SNPs in Haematopoietic tissue types only. Trans-acting SNPs have no tissue specificity.

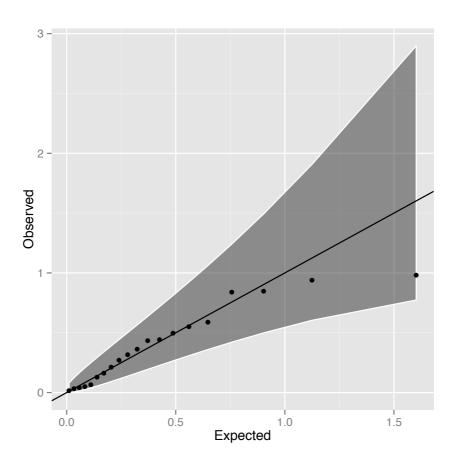


Figure S5: **Q-Q plot of interaction** *p***-values in the CDHWB dataset** Twenty of the 501 discovery SNP pairs passed filtering in the CDHWB dataset (mainly due to small sample size). There is no evidence for enrichment of interaction terms, most likely due to insufficient power given the limited sample size.

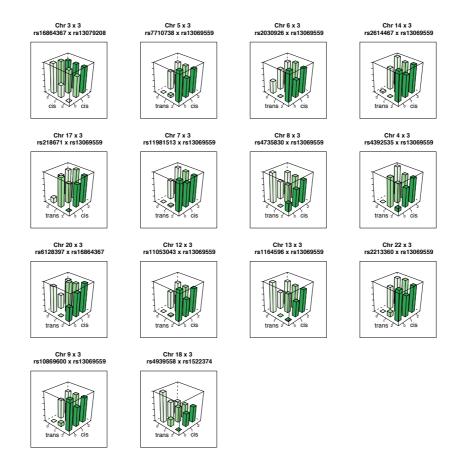


Figure S6: Genotype-phenotype maps for 14 interactions influencing the expression of MBNL1 Each bar represents the mean phenotypic value for individuals in that genotype class. The rs13069559 SNP typically has a cis-additive decreasing effect on the expression of MBNL1, but in many of these interactions the cis effect is masked when the trans SNP is homozygous for the masking allele.

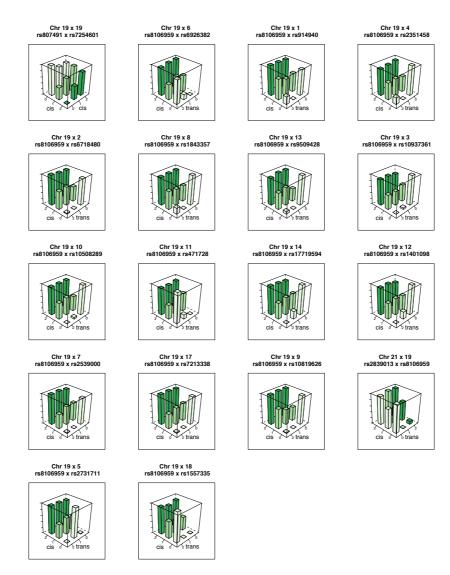


Figure S7: Genotype-phenotype maps for 19 interactions influencing the expression of TMEM149 Each bar represents the mean phenotypic value for individuals in that genotype class. The rs13069559 SNP typically has a cis-additive decreasing effect on the expression of TMEM149, but in many of these interactions the cis effect is masked when the trans SNP is homozygous for the masking allele.

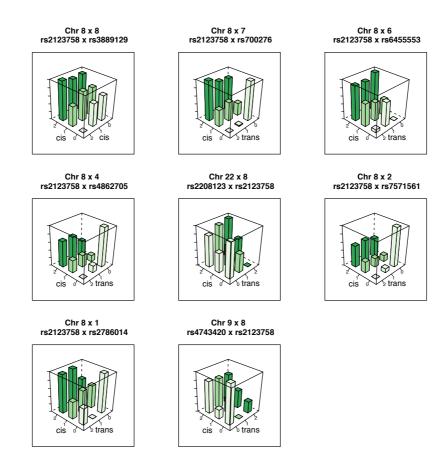


Figure S8: Genotype-phenotype maps for 8 interactions influencing the expression of NAPRT1 Each bar represents the mean phenotypic value for individuals in that genotype class.

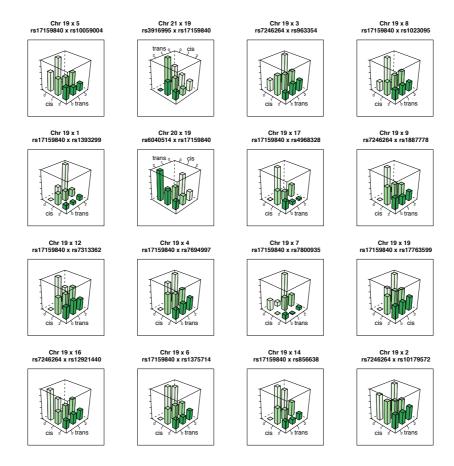


Figure S9: Genotype-phenotype maps for 16 interactions influencing the expression of TRAPPC5 Each bar represents the mean phenotypic value for individuals in that genotype class.

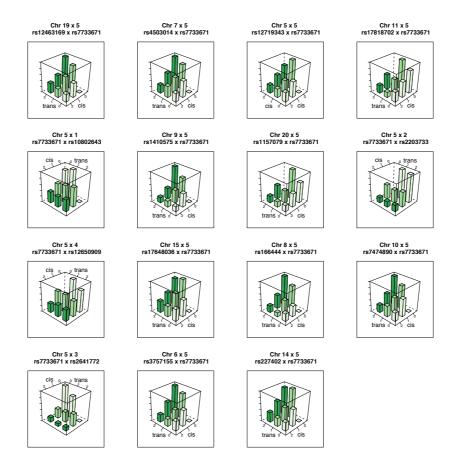


Figure S10: Genotype-phenotype maps for 15 interactions influencing the expression of CAST Each bar represents the mean phenotypic value for individuals in that genotype class.

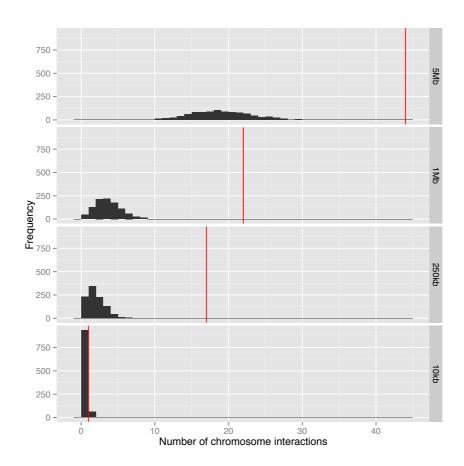


Figure S11: Number of overlaps between chromosome interactions and epistatic interactions Interacting chromosome regions may be a possible mechanism underlying epistatic interactions. The number of epistatic interactions within 20kb, 500kb, 2Mb and 10Mb of known chromosome interacting regions are shown by red vertical lines. The histograms represent the null distribution based on random sampling of 1,000 datasets for each window size.

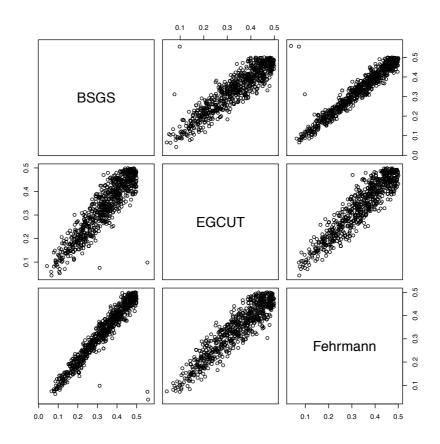


Figure S12: Comparison of allele frequencies for 781 SNPs involved in genetic interactions across independent populations Outliers were removed from the analysis as part of the filtering stage during replication.

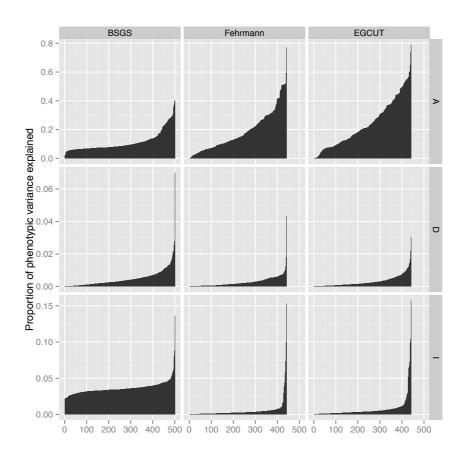


Figure S13: Comparison of variance explained by additive, dominant and epistatic effects from different cohorts How does the estimated variance decomposition change in different cohorts? The proportion of the phenotypic variance that is additive (A), dominant (D), or epistatic (I) for each putative interaction is shown on the y-axis (Note: different scales for each row). BSGS has 501 interactions whereas Fehrmann and EGCUT have 434 (x-axis). The variance estimates in each plot are ordered from lowest additive to highest. This is done independently for each cohort to depict the distribution of estimated effects.

Supplementary Tables

Table S1: Details on 501 interactions discovered in BSGS dataset

Grame ID** Proble ID** Chr. First D** Chr.	E	Expression trait				SNP 1				SNP 2		Intera	Interaction statistic / $-\log_{10} p$ -values	$' = \log_{10} p$	-values	
ILMN 174205 19 1047722 19 1047161 ABCAT 1040478 1041784 11 1047764 11 1047464 11 10477744 11 1047764 11 1047764 11 1047764 11 1047764 11 1047764 11 1047764 11 1047764 11 1047764 11 1047764 11 1047764 11 1047764 11 1047764 11 1	Gene ID ^a	Probe ID ^b	Chr.	rs ID	Chr.	Pos/Mbc		rs ID	Chr.	Pos/Mb ^c	Association	BSGSe	Fehrmann ^f	$EGCUT^{f}$	Metag	Distance / Mbh
ILMN 167874 1 1 1 1 1 1 1 1 1	ABCA7	ILMN_1743205	19	rs3752237	19	1047161	ABCA7	rs596183	9	158100199		22.82	0.38^{1}	0.02^{i}	0.09	
ILMN 1898777 14 128270 et al. 1 10820 1230 1220 12203	ABCAZ	ILMIN-1743205	12	rs3/5223/	10	10471161	ABCA7	rs914737	1 0	139522101		02.20	0	-	i c	
ILMN 1088777	ABCC3	1LMN_1677814	7 -	rs9455	7.	108207393	ABCC3	rs4732202	- 0	72001517		6.50	0.02	1.01	0.00	
ILMN 235952 10 12.299000	ACALL	ILMIN-1800008	7 7	1822/004	77.	100201030	ACALI ADGV	124144004	n -	10000001			1.04	0 -	9 0	
ILMN 3299130 10 7644830 10 7644830 10 7644830 10 7644830 10 7644830 10 7644830 10 7644830 10 7644830 10 7644830 10 7644830 10 7644830 10 7644830 10 7644830 10 7644830 10 7712137 10 7644830 10 7712131 10	ADCKI	ILMN 1698777	14	rs12451690	1.1	88462550	ADONI	rs12431896	4 4	78088813	ADCK1	0.00	2.04	1.14	20.0	
ILMN 1798308	ADK	ILMN_2358626	101	rs2395095	10	76446305	ADK	rs10824092	10	75929517		69.9	18.33	21.21	39.82	0.517
ILANN.1708308 2 res0.239971 6 57721127 7 res84.247 2 6 6 6 6 6 6 6 6 6	AGAP6	ILMN_3239130	10	rs2611512	10	51515534	AGAP8	rs2547996	ıo	95174319		6.22				
ILANN.1708308	AHSA2	ILMN_1798308	61	rs10881585	6	137112421		rs842647	73	61119471		7.15	1.83	1.93	2.88	
ILANN 1665682 16 r7789919 16 55572127 r19332406 16 55548976 AKTIP r1940265 16 r7789919 16 55572127 r1940565 17 r3778919 16 55578345 AKTIP r1940565 17 r3778919 16 55578345 AKTIP r1970012 17 r3778919 16 55578345 AKTIP r1970012 17 r3778919 16 55578345 AKTIP r1970012 16 5032825 ALDIAN 1765837 16 r19646651 17 r3778919 15 r9103289 AND r19466516 5 r032825 ALDIAN 1765837 15 r11077891 15 r0453774 17 r3768463 15 r0453774 17 r3768463 17 r4466463 17 r4664443 17 r4664631 17 r4664443 17 r4664631 17 r4664831 18 r4684931 18 r4684934 18 r4684934 18 r4664831 18 r4684934 18 r4664831 18 r4684934 18 r4664831 18	AHSA2	ILMN_1798308	73	rs2523971	9	29938258	HLA-G	rs1177303	7	61388355	AHSA2	5.45	0.92	0.64	0.94	
ILANN_1665682 16 r7788919 16 55356345 AKTIP r1482022 7 152543391 ILANN_1665682 16 r7788919 16 55356345 AKTIP r1482010 7 15543391 ILANN_2405614 17 r3770489 17 15581000 ALDHAA2 r1472011 3 151906349 3 30526349 ILANN_1765887 15 r11077891 15 910838990 ANG r4466651 3 30526349 3 4 17601914 3 4 4 4 4 4 4 4 4	AKTIP	ILMN_1665982	16	rs2896940	16	57721127		rs13332406	16	53489705	AKTIP	6.91	0.16	0.99	0.57	4.231
LIMN_1068924 16 F47189819 16 53536436 AKTIP 14172017 4 179924702 11 LIMN_2401641 1 16569549 17 19581090 ANCF 154505165 5 161996549 18172017 18172	AKTIP	ILMN_1665982	16	rs7189819	16	53536345	AKTIP	rs1362032	4	125543391		5.93	0.71	0.20	0.42	
LMN_1769787 17 res970489 LMN_176987 18 res9822855 14 21153299 ANDEP res9823283 7 154211163 30320289 LMN_1769887 15 res1073891 15 509033995 ANPEP res982323 7 154211163 ARL17B res9823823 7 154211163 ARL17B Res982382 Res982382 7 res982382	AKTIP	ILMN_1665982	16	rs7189819	16	53536345	AKTIP	rs1473017	4	179323762		6.18	0.27	0.30	0.23	
LIMN_1766377	ALDH3A2	ILMN_2401641	17	rs3760489	17	19581009	ALDH3A2	rs11720112	8	161996349		6.26	0.33	1.37	1.01	
ILMN_1768837 15 re11078801 15 90683995 ANPEP re6846031 7 15 15 15 15 15 15 15	ANG	ILMN_1760727	14	rs9322855	14	21153299	ANG	rs4866516	32	3032625		5.75	0.02	0.20	0.04	
ILMN_1768867	ANPEP	ILMN_1763837	15	rs11073891	15	90363995	ANPEP	rs3823523	-	154511163		5.85	0.44	1.09	06.0	
ILMN.17765076 1 1 1 1 1 1 1 1 1	ANPEP	ILMN_1763837	15	rs11073891	15	90363995	ANPEP	rs6846031	4	178019148		6.31	0.47	0.17	0.26	
ILMN 231952 Tries079215	AP3B1	ILMN_1768867	10	rs6453374	ю	77508159	AP3B1	rs4684443	3	4818792		5.94	0.02			
ILMN 231952 17 1812947860 17 75768225 180004521 17 44004851 180004521 180004521 180004521 180004521 180004521 180004521 180004521 17 180007215 17 180007215 17 180007215 17 180007215 17 180007215 17 18000451 17 18000451 17 18000451 17 180007215 17 180007215 17 18000451 17 18000451 17 18000451	APPL2	ILMN_1765076	12	rs935251	12	105580918	APPL2	rs2769594	6	87918528		5.60	08.0	1.02	1.16	
ILMN 2311952 17 rs8072215 17 44064851 ARL17B rs2195646 14 94722497 ARL17B rs2195645 17 rs8072215 18 rs808280 18 rs8080820 1	ARL17B	ILMN_3231952	17	rs12947580	17	75768225		rs8079215	17	44064851	ARL17B	5.96				31.703
ILMN 231952 17 rs8079215 17 44064851 ARL17B rs195777 12 125831249 ILMN 231952 17 rs8079215 17 44064851 ARL17B rs2197777 12 125831249 ILMN 231952 17 rs8079215 17 44064851 ARL17B rs2197777 12 125831249 ILMN 231952 17 rs8079215 17 44064851 ARL17B rs2197777 12 125831249 ILMN 231952	ARL17B	ILMN_3231952	17	rs2834541	21	35932619		rs8079215	17	44064851	ARL17B	6.65				
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ILMN 231952 17 1786079215 17 44064851 ARL17B 178284789 15 9942045 1842045	ARL17B	ILMN_3231952	17		17	44064851	ARL17B	rs2197777	12	125831219		6.26				
ILMN 1234224 1 1 1 1 1 1 1 1 1	ARL17B	ILMN_3231952	17	rs8079215	17	44064851	ARL17B	rs2684789	15	99492045		5.98				
ILMN_127244	ARL17B	ILMN_3231952	17	rs8079215	17	44064851	ARL17B	rs9834627	3	191203546		5.72				
ILMN 1702886	ATP13A1	ILMN_2134224	19	rs4284750	19	19810050		rs873870	19	19738554		5.30	12.18	3.25	14.23	0.071
LMN_1272984	BID	ILMN_1763386	22	rs8919	22	18213057	BID	rs9804943	12	129906275		5.84	0.00	0.40	0.14	
ILMN_2196550 13 re2106061 11 8886280 C110RF17 re5653384 4 18150656 13 re21010603 14 re1006320 13 re21010603 14 re10063346 14 re10063204 14 re10063204 14 re10063204 15 re10063204 14 re10063204 15 re10063204 15 re10063204 15 re10063204 15 re10063204 16 re10063204	BID	ILMN_2372413	22	rs181405	22	18233000	1	rs10888267		248059423		09.9	0.87	0.16	0.50	
8 ILMN 2196550 13 re5/1763 16 622982 130RF18 re6/3763 4 62130RF18 re6/3764 4 13361016 C130RF18 re6/3763 4 15361016 C130RF18 re6/3763 4 15361016 C130RF18 re6/3763 4 15361016 C140RF173 7 ILMN 239945 14 re308334 1 105189604 C140RF173 7 1	CHORFIT	ILMN_1752988	11	rs2568061	11	8886260	C110RF17	rs6553184	4	189150656	0 0 0 0 0	5.66	1.15	0.04	0.54	
ILMN_1299345	C130RF18	ILMN_2196550	13	rs2110603	16	6259852		rs674754	13	46913416	C13ORF18	99.9	0.28	0.28	0.22	
Table Tabl	CISORFIS	ILMN_2196550	13	rs674754	13	46913416	CISORFIS	rs6857876	7;	153610164	000000	3.87	0.38	0.50	0.43	
ILMN 2020156	C14ORF173	ILMIN-2393450	77	rs11089825	N =	37575398		rs4983382	77	105189504	C14ORF173	6.02	0.60	20.00	0.80	
ILMN_1804396	CI4ORFI73	ILMIN_2393450	4.	rs3933344	1.5	92276674	1000	rs4983382	14	100189004	CI4ORF173	0 1	0.31	0.28	0.24	
ILINN 18 04396	C14ORF1/3	ILMIN 1804396	14	rs4903302	7 2	13819673	C140RF 1/3	rs10/54644	14	77574438		7.10	0.42	0.0	0.33	
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ILINN.1804396	C14ORF4	ILMN_1804396	14	rs2655991	14	77574438		rs6445340	000	63371601		4.40				
ILMN_1804396	C14ORF4	ILMN_1804396	14	rs2655991	14	77574438		rs9787151	1	63179138		4.05				
ILMN_1804396	C14ORF4	ILMN_1804396	14	rs4793445	17	70416307		rs2655991	14	77574438		3.85				
ILMN-178049	C14ORF4	ILMN_1804396	14	rs6010061	22	51151724		rs2655991	14	77574438		4.61				
0. ILMN 1772689 1 res207787 1 63502633 res257182 1 COTORREO ILMN 207720 1 res234423 1 res257182 1 2082666 CIORF66 ILMN 207770 1 res275474 18 46384412 1 2202566 CIORF66 7 ILMN 207770 1 res276742 1 2571983 CIORF66 7 ILMN 207770 1 res276000 1 2119833 CIORF66 7 ILMN 1798836 21 res978658 2 1 4407038 2/RF64 7 ILMN 1758836 21 res978658 2 1 4467038 2/RF64 1 ILMN 1758745 5 res26555 5 16434855 C5ORF4 1 ILMN 1763305 8 res246556 8 8 8 8 1 ILMN 1763305 8 res286565 8 8 8 8 1 ILMN 1763305 8	C14ORF4	ILMN_1804396	14	rs7245800	19	52083552		rs2655991	14	77574438		4.69				
ILMN_17087790	C17ORF60	ILMN_1747347	17	rs9907897	17	63502633		rs7405659	17		C17ORF60	6.79	0.53	0.02	0.19	
ILMN 2097790	C10RF86	ILMN_1726989	1	rs2334323	9	110577257		rs2257182	П	2082566	C10RF86	5.90	0.01	0.50	0.13	
ILMN_176836 21 re4481977 re481977 re481978 re481977 re481977 re481978 re481977 re481977 re481978 re481977 re481978 re481978 re481977 re481978 re481978 re481977 re481978 re	C10RF86	ILMN_2097790	1	rs2279474	18	46384412		rs2460002	1	2119833	CIORF86	5.65		0.03		
7 II.MN.1.765836 21 re-481597 21 4602288 re-910964 12 48676038 ZNF64.1 7 II.MN.1.765836 21 re-978658 21 46027054 re-1701361 21 47764.477 7 II.MN.1.765830 8 re-12420804 13 46577930 re-2896455 8 6102223 CSORF99 II.MN.1.653206 8 re-12420804 13 36577930 re-2896452 8 86102223 CSORF99 II.MN.1.653206 8 re-12445461 8 81127238 re-1701361 4 55242655 Re-1701361	C10RF86	ILMN_2097790	-	rs7188668	16	25711358		rs2460002		2119833	C10RF86	5.59	0.29	0.50	0.37	
7 ILMN_17728742 5 resignated to respect to the result of t	C21ORF57	ILMN_1795836	21	rs4819271	21	48052838		rs901964	12	48676038	ZNF641	4.91	0.65	0.08	0.28	
ILMN_1053205 F. 121224564 A. 52273663 F. 2286452 S. 15424555 C. 50C NF4 ILMN_1053205 F. 1212459644 A. 5227366 F. 5286452 S. 6102223 C. 8ORF59 ILMN_1053205 F. 122864645 S. 6102223 C. 8ORF59 ILMN_1053205 F. 12286452 S. 6102223 C. 8ORF59 ILMN_1053205 F. 122824 A. 52273663 C. 8ORF59 ILMN_1053205 F. 12282645 F. 122826452 C. 8ORF59 ILMN_1053205 F. 12282645 F. 122826452 F. 122826452 C. 8ORF59 ILMN_1053205 F. 12282644 F. 122826452 F	C21ORF57	ILMN_1795836	21	rs9978658	21	48027084		rs11701361	21	47764477	0	9.42	80.9	16.36	21.67	0.263
LIANN_1653205	C5ORF4	ILMN_1728742	10	rs1122762	18	45866512		rs286595	10	154348552	C5ORF4	5.55	0.72	0.04	0.27	
LIANA_1653205	CSORF59	ILMN_1653205	00	rs12429804	13	36577930		rs2896452	œ	86102223	CSORF59	5.49	0.29	0.02	0.07	
	CSORF59	ILMN_1653205	00 (rs12454561	18	31272238	9 0	rs2896452	œ ·	86102223	CSORF59	5.45	0.31			
ILMIN_LIG55205 8 rs/152284 14 52273063 rs/2899452 8 85102223 C8ORF59	CSORF59	ILMN_1653205	00 (rs2896452	00 ;	86102223	CSORF59	rs1004564	4 0	55242625	0000	7.62	0.38	0.18	0.21	
	CSORF59	ILMN_1653205	x	rs7152284	14	52273663		rs2896452	x	86102223	CSORF59	5.67	2.18	0.07	1.33	
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	Distance / Mbh	\ I							0 0	29.369																							7 001	14.03/					15.781													01:0
sen s	50	1	0.37	0.34		0.42	0.62	1.75		1.20	0.78	0.37	0.41	1.09	0.01	_	0.12	1.72	0.23	0.93	0.50	0.54	0.15	0.22	0.31	0.14	0.02	0.02	1.20	0.42	0.08	1.16	0.45	10.0				0.11	0.45	0.48	1.44	000		0.44	0.36	0.67	0.73		0.05	1.39	0.01)
- loga o a-values	EGCUT	10001	0.01	00.00		98.0	0.96	2.82	,	1.57	1.34	0.52	0.03	0.59	0.01		0.33	1.56	0.12	0.78	0.78	0.87	0.26	0.30	0.37	0.18	0.01	0.03	0.24	08.0	0.27	1.67	0 0	0.10				0.14	0.02	0.12	0.10	0.10		0.20	0.02	1.28	0.36	0.27	0.07	0.28	0.01	
Interaction statistic /	Fehrmannf	1 30	0.96	0.94		60.0	0.23	0.02	0	0.36	0.13	0.27	0.97	1.15	0.11		0.07	0.92	0.49	0.75	0.23	0.22	0.19	0.26	0.33	0.23	0.15	80.0	1.74	0.13	0.04	0.24	0.71	70.0				0.21	0.95	0.90	2.10 5.10	0.23		0.72	0.92	0.07	0.95		0.07	1.92	0.10	
Interactio	BSGSe F		6.36	6.36	5.81	6.61	7.07	5.73	7.00	7.68	6.55	7.01	7.81	6.62	6.12	6.87	7.24	5.88	6.74	7.42	7.42	6.07	6.93	6.41	5.68	5.62	6.93	5.09	90.9	5.71	5.56	6.31	0 100	7.73	7.02	6.13	80.9	5.46	5.47	6.15	7 O.O.	98.9	5.65	5.74	4.75	5.55	7.54	5.55	7.56	6.33	6.34	
	Associationd	CSOBEFG		CABC1		INPP5E	CAST	CAST	CAST	CAST	CAST	CAST	CAST	CAST	CAST	CAST	CAST	CAST	CAST					CAT	CCDC88B		VAMP8	CD55					6000	CDas				CDC16	CDK5R1	CEACAMZI		ANAPC13		CHPT1		CLEC12A		CLTB			CPVI,	
SNP 2	Pos/Mbc	86109993	242029101	227174210	82128660	139266496	96000269	96000269	96000269	96000269	96000269	96000269	96000269	96000269	96000269	96000269	96000269	96000269	96000269	238120177	170192890	224093101	195531841	34447586	64125142	96998193	85816334	207502534	157182040	7992632	196721395	125145394	38434472	238899903	136500554	74439542	77264482	115008038	30833162	42066556	180945044	134247706	235248562	102087844	81937002	10132283	134236688	175595960	63121080	67713633	61738094 29188475	
o.	Chr.	×	-	П	1	6	ıo:	ເດເ	ه ۱	ı۵ ا	ıo	10	ເດ	ю	ıo	ıo	ıo	ĸ	ю	1	4	7	8	11	11	10	73	1	-1	4	n	7.	500	7 -	+ 00	18	17	13	17	1.9	0 4	H or	61	12	11	12	10	ĸ	16	13	4 1-	
SNP 2	rs ID	re2806452	rs2526698	rs3738725	rs684040	rs4077515	rs7733671	rs7733671	rs7733671	rs7733671	rs7733671	rs7733671	rs7733671	rs7733671	rs7733671	rs7733671	rs7733671	rs7733671	rs7733671	rs10802643	rs12650909	rs2203733	rs2641772	rs11032695	rs541207	rs12771349	rs1254900	rs6700168	rs10255470	rs4696726	rs7622580	rs838875	1890/0388	rs10025747	rs2873420	rs4328531	rs4789981	rs7324744	rs11655031	rs4803481	rs2421050	rs13079012	rs772788	rs2695290	rs867578	rs7313235	rs3903088	rs6863172	rs169130	rs7336017	rs1455268	
TG PIGET	Associationd	TOO COOK	C9ORF72		INPP5E															CAST	CAST	CAST	CAST			CCDC88B			CD93	CD93	CD93	CD93	CD93	CD 93	CD 93	CD93	CD93		HOXB2	10111	CEACAM21	100	CES1						ABCA7	ABCA7		
SNP 1	Pos/Mbc	7188393	27556780	4353908	139289825	6026661	6778978	17321669	81840122	125369113	78255630	78392770	27311111	86107920	70496867	15166804	136458593	31149140	59590078	96000269	96000269	96000269	96000269	66175386	17099980	64097233	80280117	76033374	23074375	23074375	23074375	23074375	23074375	23076914	23076914	23076914	23076914	104162263	46614102	51956250	13069782	101350298	55861794	38838122	102277782	84471642	10156646	96929337	1047161	1047161	145569535 26115562	1
	Chr.	18	9 6	10	6	11	20	13	16	io i	6	00	12	11	14	21	9	7	10	10	10	ю	10	18	19	11	4	11	20	20	20	070	0 0	0.0	20	20	20	14	17	0.77	2 0	4.	16	13	12	16	12	11	19	19	20 <u>2</u>	
	rs ID	re8051751	- 01	rs12765847		rs4573661	rs1157079	rs12463169	rs12599264	rs12719343	rs1410575	rs166444	rs17648036	rs17818702	rs227402	rs2822124	rs3757155	rs4503014	rs7474890	rs7733671	rs7733671	rs7733671	rs7733671	rs872311	rs2353203		rs3211834	rs750801	rs1884655	rs1884655	rs1884655	rs1884655	rs1884655	rs2808304	rs4813479	rs4813479	rs4813479	rs861544	rs9905940	rs200609	rs4803481		rs8192935	rs591967	rs6539014	rs429790	rs7305054			rs3752237	rs4333645 rs12596791	
	Chr.	· · · ·	0	-	6	6	ın:	ıo ı	ه ۱	i0 :	ıo	ın:	ıo.	rO.	rO.	rO	ю	r0	70	rO.	10	10	10	11	11	11	-	-	20	20	20	20	0 0	0.00	200	20	20	13	17	61	5 00	9 00	16	175	12	12	12	ıo	19	19	× 1×	
Expression trait	Probe ID ^b	II.MN 1653205	ILMN_1741881	ILMN_1731064	ILMN_1712532	ILMN_1712532	ILMN_1717234	ILMN_1717234	ILMIN_1717234	ILMIN_1717234	ILMN_1717234	ILMN_1651705	ILMN_1772208	ILMN_1772208	ILMN_1784863	ILMN_1800540	ILMN_1704730	ILMN_1704730	ILMN_1704730	ILMIN_1704730	ILMIN_1704730	ILMN 1704730	ILMN_1704730	ILMN_1704730	ILMN_1704730	ILMN_2339796	ILMN_1730928	ILMIN_1745949	ILMN 1703754	II.MN 1787808	ILMN_2359945	ILMN_2202940	ILMN_2202940	ILMN_1663142	ILMN_2403228	ILMN_1674609	ILMN_1770290	ILMN_1770290	ILMN_1654545 ILMN_1682928	0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 -												
Exp	Gene IDa	CSOREGO	C9ORF72	CABC1	CARD9	CARD9	CAST	CAST	CAST	CAST	CAST	CAST	CAST	CAST	CAST	CAST	CAST	CAST	CAST	CAST	CAST	CAST	CAST	CAT	CCDC88B	CCDC88B	CD36	CD55	CD93	CD93	CD93	CD93	CDB3	CDas	CD93	CD93	CD93	CDC16	CDK5R1	CEACAM21	CEACAMZI	CEP63	CES1	CHPT1	CHPT1	CLEC12A	CLEC12A	CLTB	CNN2	CNN2	CPSF1 CPVI,	

	Distance / Mbh			000	0.033			0.040						12.255																66.920	0.052																	i c	10.736	od on next news
aou ao	Metas	0.04	0.12	0.15	42.27	1.03	0.73	33.53	0.03	0.34	0.04	1.47	0.36	0.44	09.0	0.44	0.14	0.42	0.44	0.10	0.73	33	3 24		0.10		0.19		0.01	0.11	0.97	1.12	0.70	0.35	0.79	0.10	0.24	0.41	0.02	0.03	0.41		0.35	0.81	60.0	0.08	1.06	0.44	0.23	٦ä
- Josephan - 2001 -	EGCUT	0.03	0.10	0.36	16.72	0.74	0.80	15.06	0.01	0.53	0.02	1.87	0.83	0.10	0.86	0.41	0.08	0.25	0.29	0.41	0.07	1.1.0	5.0		0.05	0.58	0.22		0.02	0.00	1.45	0.27	0 1.0	0.16	0.47	0.11	0.08	0.59	0.02	1.12	0.40		0.58	1.20	0.11	0.04	1.03	0.19	1.38	
Interaction etatistic /	Februannf	0.19	0.28	0.10	25.20	0.92	0.49	18.76	0.21	0.23	0.20	0.39	0.02	0.87	0.29	84.0	0.00	0.64	0.61	0.00	90.0	0.00	000	00.0	0.32		0.30	0.37	0.09	0.48	0.23	1.58	0.15	0.64	0.90	0.23	0.56	0.28	0.08	0.05	0.45		0.20	0.25	0.20	0.29	0.67	0.74	0.27	
Interact	BSGSe	5.55	5.47	6.18	11.99	5.67	5.84	7.16	5.42	5.89	5.68	5.81	5.53	00.00	5.42	5.44	9.12	29.0	5.31	4.0	0.00	6.00	. r	7.64	4.65	4.87	5.31	4.40	5.03	5.92	5.79	6.17	6.01	5,58	86.9	5.56	5.44		5.35	0.02	1 10	6.03	5.70	5.43	6.11	5.65	5.63	6.83	5.61	
	Associationd	CPVL	CRIPT		CHMINA	CIMMAI	CTSC		CWF19L1	CYBRD1	CYBRD1	CYBRD1	CYBRD1		CYP27A1	DAB2				401000	COC.	DHESO	DHRSO	DHRSo	LASS5		LASS5			LASS5	DNAJB6	DPH3	ECHDG2	ECHDC2	EHD4	EIF2B2				EMES	EM B2		EPHX2	ERICH1	ERICH1	ERICH1	000	EXOC3	FAHD1 COQ10A	-
ious page	Pos/Mbc	29188475	46843631	62406408	45198355	108679892	88087357	88077479	102027407	172368120	172368120	172368120	172368120	160112881	219650616	39381357	82076988	187475208	32451144	000204000	16,000,000	169960422	169893419	169893419	50610976	153134888	50730458	61971140	115214154	51074199	157163614	16320360	53402552	53402552	42192040	75590340	99603119	49359676	129624067	126387391	14879034	102480759	27400604	578742	607161	578742	182786760	428236	1972548 137810259	
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Table S1 – continued from previous page	rs ID	rs245884	rs1531133	rs1473927	183761385	rs7079264	rs7128352	rs556895	rs12784396	rs888427	rs888427	rs888427	rs888427	rs7591849	rs933994	rs835223	rs1343244	rs2378341	rs7042042	182019010	rs10120023	rs7566044	re9161037	re2161037	rs11169322	rs2872008	rs7134595	rs1808634	rs4532958	rs12427378	rs3779589	rs1566972	rs11206043	rs11206043	rs1048166	rs175450	rs1269096	rs1553474	112197210	rs4471434	rs9305048	rs3007765	rs13269963	rs12115088	rs4735900	rs12115088	rs1517297	rs12188164	rs344363 rs10120023	
Table S1 -	Associationd			CRLS1		CTSC								CYBRD1			6	DDI	401000	COCTOA						LASS5		LASS5	LASS5			1000	1,500				EIF5A	EIF5A	EIFDA	EIFOA		EMR2					ERICH1			
SNP 1	Pos/Mbc	39202070	188859908	5986234	45230974	88139983	26250645	88117962	11456027	129994690	140698856	12318284	23344590	172368120	36571928	110451383	43111688	24248761	125962645	13/810239	171001001	147139505	20050453	187776431	29161503	50636364	41711815	50730458	50744171	117994348	157216093	93409054	241911027	17675900	53244938	60218334	7221707	7221707	7221707	221707	18761714	14879034	127909396	134611176	45337329	31187910	600729	55228462	12708208 129591144	
	Chr.	21	4	20	121	1 10	22	11	11	4	6	10	20	7	20	7	17	77	11	, :	1 5	1 17	- 10	1	17	12	19	12	12	12	4	15	2 6	20	19	18	17	17	7. T	21	20	19	11	11	22	18	œ ç	10	12	
	rs ID	10			rs9979356	rs2457684			rs7108734	rs2592948	rs7852475	rs11257679	rs6137908		rs6021982	rs7778910	rs9900173	185760102	rs4937097	rs10120023	TS12303027	re1528530		re7661304		rs11169335	rs338585	rs7134595		rs871257		rs12232308	rs140522	rs5992637	rs10403312	rs6567288	rs7216490		rs7216490	rs/216490		rs9305048	rs1107764	rs10894861				rs187076	rs1560104 rs12580388	
	Chr.	7	7	20	7 12	. [11	11	10	7	61	73	01	7	7	ا د،	17	7.7	D -	٠,	- c	40	10	10	121	17	12	12	12	12	-	n 9	77		15	14	17	17	7.1	7 10	61	19	œ	œ	œ	œ	00 k	ر د د	16	
Expression trait	Probe ID ^b	ILMN_1682928	ILMN_1813256	ILMN_1737685	TI MIN 1804854	ILMN_1696347	ILMN_1696347	ILMN_2242463	ILMN_1651886	ILMN_1712305	ILMN_1712305	ILMN_2087692	ILMN_2087692	ILMN_2087692	ILMN_1704985	ILMN_2128428	ILMN_1811648	1LMN-1690982	ILMN_1797001	ILMIN-1700000	11 MM 1499006	ILMN 1733008	ILMN 2384181	II.MN 2384181	ILMN_1755589	ILMN_1755589	ILMN_1755589	ILMN_1755589	ILMN_1755589	ILMN_1755589	ILMN_1793770	ILMN_2349610	II.MN 1671568	ILMN_1671568	ILMN_1720083	ILMN_1713380	ILMN_1794522	ILMN_1794522	ILMIN-1794522	ILMIN_1794522	ILMN 2353633	ILMN 2353633	ILMN_1709237	ILMN_1731001	ILMN_1731001	ILMN_1731001	ILMN_2104696	ILMN_1789419	ILMN_2246661 ILMN_1668063	
Ä	Gene IDa	CPVL	CRIPT	CRLS1	CSTB	CTSC	CTSC	CTSC	CWF19L1	CYBRD1	CYBRD1	CYBRD1	CYBRD1	CYBRD1	CYP27A1	DABZ	DCAKD	DDT	DDX38	DEMI	DEMI	DHESS	DHRSO	DHRSo	DIP2B	DIP2B	DIP2B	DIP2B	DIP2B	DIP2B	DNAJB6	DPH3	ECGF.	ECHDC2	EHD4	EIF2B2	EIF5A	EIF5A	EIF5A	EIFOA	EMB2	EMB2	EPHX2	ERICH1	ERICH1	ERICH1	ERICH1	EXOC3	FAHD1 FCN1	

	Distance / Mbh					68.867							3.962	0.063								0.007										1	12.104																				od on next next
semes	Metag	0.16	0.14	0.11	99.0	0.29	0.03	0.04	0.36	0.21	0.53	0.13	0.18	59.95	90.0	0.17	0.15	0.02	0.22		0.14	32.60	0.17	0.28	0.11	0.87	0	0.33	42.0	0.13	0	0.39	0.00	0.0	24.0	0.22	1,50	0.13	09.0	0.23	0.04	0.41	0.16	0.79		0.65	0.23	0.32	0.19	0.12	0.21	0.10	Continu
semex-a oraol — /	EGCUT	0.33	0.28	0.25	0.11	0.70	0.11	0.03	0.47	0.17	0.95	0.06	0.64	29.39	0.30	0.41	0.48	0.17	0.51		0.37	12.99	0.39	0.78	0.11	0.63	0.42	0.35	0.03	0.45	9	0.40	0.03	0.00	0.00	0.40	1.43	0.11	0.21	0.34	0.24	0.20	0.19	1.14		99.0	0.31	0.48	0.66	0.24	0.02	0.46	
Interaction statistic	Februannf	0.14	0.14	0.12	1.20	90.0	0.03	0.19	0.31	0.38	0.14	0.39	0.00	28.24	0.01	60.0	0.03	0.07	0.09	0.28	0.08	19.98	0.11	0.01	0.26	0.83	0	0.38	0.55	0.02	0	0.30	0.70	0.70	0.30	000	0.79	0.31	0.95	0.24	0.01	0.68	0.27	0.27		0.52	0.27	0.25	0.00	0.13	0.00 0.00	0.01	
Interacti	BSGSe	ı	6.59	5.69	5.49	5.81	101	5.74	6.49	6.90	6.04	5.48	5.44	16.16	6.41	3.70	6.58	5.70	00.9	6.10	5.19	13.91	5.65	5.85	5.72	5.47	6.22	6.57	90.1	0.70	5.72	9.43	0.0	5.47	0.27 2.21 2.21	5.76	6.50	5.43	6.04	5.86	6.50	5.88	6.11	5.91	6.77	6.36	6.52	5.70	5.47	5.98	8.73	6.06	
	Associationd	FEZ2	FEZ2	FGD2	FGD2	FLJ20489	000	FLJ20489	FLJ20489	FLJ20489	FLJ20718	FLJ43093			FUCA1		FXYD5								GAPT	GATS	GATS			GNLY	GPN3	GPR162	GF R102		GPR177	GPR177	GPR177	GPR177	GPR177	GPR177	GPR177		GSTM1	GSTM1	GSTM1				HBG2	HBG2	LUKI	HBG2	
ious page	Pos/Mbc	36791226	36810133	37001267	36999682	48169526	167695661	48169526	48169526	48169526	50106594	36667610	32705248	80827903	24168019	98328559	35660450	141709563	95331048	47567329	76554604	78146016	132678089	235695228	57786110	99827148	99827148	48572632	128972357	85935282	111164237	2002000	0202002	100004000	68732810	68732819	68732819	68732819	68732819	68732819	68732819	101508261	110266754	110266754	110253241	77919015	85877017	19532546	5271671	5271671	213088494	141533832	
m previo	Chr.	2	1 (2)	9	9	12	4 0	7 7	7 .	17	16	9	9	17	1	13	19	ю	8	7	4	17	12	61	<u>د</u>	<u> </u>		4.	4 (21 0	7 7	7 .	7 0	n c	o -	٠.	-	1	1	1	1	15	1	1	1	61	15	21	11	Π-	- -	11	
Table S1 – continued from previous page	rs ID	rs13406184	rs11691600	rs831486	rs831489	rs3782908	rs897511	rs3782908	rs3782908	rs3782908	rs2287197	rs6906101	rs13214069	rs9892064	rs12744386	rs788178	rs2285515	rs11739594	rs13067700	rs17036504	rs1553985	rs12602462	rs10902506	rs7605821	rs10070522	rs2950520	rs2950520	rs2197465	rs1015111	rs7577293	rs7960552	rsz707210	152/0/210	rs4/40848	rs982/054	rs12065581	rs12065581	rs12065581	rs12065581	rs12065581	rs12065581	rs4965745	rs11101992	rs11101992	rs3754446	rs4853333	rs6497007	rs9983949	rs2855039	rs2855039	rs12042181	rs12503379 rs16912979	
Table S1 -	Associationd						FLJ20489						FLJ43093					FXYD5	FXYD5	FXYD5			GAA	GAPT			000	GDPD3	GDPD3				001005	GPR162	GFR102							GSDMB								- CO GI	HBG2	HBGZ	
1 d N S	Pos/Mbc	44321776	159963132	46205050	133943951	117036766	48169526	7992118	97033129	50626195	43818790	107276627	36667610	80890638	1346063	35695200	55609148	35660450	35660450	35660450	29390239	78153130	78100731	57786110	128038717	66460742	35056572	30102802	30156963	110899955	26084476	0478898	00000000	2002009	194369491	120468039	127939793	11169683	82986268	70506011	171399321	38028634	53192833	85344527	96159560	38399979	38399979	38399979	4523167	35723501	5271671	527.1671 4523167	
	Chr.	19	4	19	10	12	1 5	17	15	16	21	14	9	17	7	19	20	19	19	19	-	17	17	ro.	10	14	20	16	16	51.	16	9 5	7 5	2 5	2 5	100	-	16	13	18	e	17	10	13	13	22	55	25	17	19	7 7	17	
	rs ID	rs2356400	rs969010	rs4803848		rs17615703	rs3782908	rs4792199	rs4984440	rs7204135		rs17112712	rs6906101	rs898095	rs4971478	rs1633921	rs17398183	rs2285515	rs2285515	rs2285515	rs10230232	rs11150847	rs8068856	rs10070522			rs2425256	rs3809624			rs7198646	rs1860363	1822/2300	rs2/0/210	rs2/0/210	rs12527241	rs12532999	rs725613	rs9575097	rs6566669	rs9290426	rs11557467		rs1547574	rs6492807	rs139898	rs139898	rs139898		rs12975066	rs2855039	rs2855039 rs11078523	
	Chr.	2	1 (7)	9	9	12	77	7 7	1.5	1.5	16	9	9	17	П	19	19	19	19	19	4	17	17	io.	ເດ	 -		16	16	21 0	7 7	7 .	7 .	7 5	7 -	-	-	-	1	П	-	17	-		-	22	22	55	=======================================	===	= =	111	1
Expression trait	Probe IDb	ILMN-1739586	ILMN_1739586	ILMN_2115005	ILMN_2115005	ILMN_1778144	ILMN_1778144	ILMN-1778144	ILMIN_1778144	ILMIN_1778144	ILMN_1763663	ILMN_2123450	ILMN_2123450	ILMN_1652333	ILMN_1752728	ILMN_2309848	ILMN_2309848	ILMN_2309848	ILMN-2309848	ILMN_2309848	ILMN_2381758	ILMN_2410783	ILMN_2410783	ILMN_1675191	ILMN_1675191	ILMN_1699631	ILMIN_1699631	ILMN_1774901	ILMIN_1774901	ILMIN_I790692	ILMN_3239426	ILMIN-1730816	ILMIN_1730516	ILMIN_1730816	ILMN-1/30816	II.MN 1660549	ILMN_1660549	ILMN_1660549	ILMN_1660549	ILMN_2283325	ILMN_2283325	ILMN_2347193	ILMN_2391861	ILMN_2391861	ILMN_2201580	ILMN_1757467	ILMN_1757467	ILMN_1757467	ILMN_1796678	ILMN_1796678	ILMN_1796678	ILMN_1796678 ILMN_2084825	
Ext	Gene IDa	FEZ2	FEZ2	FGD2	FGD2	FLJ20489	FLJ20489	FLJ20489	FLJ20489	FLJ20489	FLJ20718	FLJ43093	FLJ43093	FN3KRP	FUCA1	FXYD5	FXYD5	FXYD5	FXYD5	FXYD5	G3BP2	GAA	GAA	GAPT	GAPT	GATS	GATS	GDPD3	GDPD3	GNLY	GPN3	GPR162	GFR102	GPR162	GPR162	GPR177	GPR177	GPR177	GPR177	GPR177	GPR177	GSDMB	GSTM1	GSTM1	GSTM2	H1F0	H1F0	H1F0	HBG1	HBG1	HBG1	HBG2	

	Distance / Mhh	\ I										103.850				0.041													0000	0.037														811.0	077]
201100	Metag	- WICOG	0.21	0.10		0.32	1.22	0.86	1.34	0.46	2.52	0.44	2.20	0.52	0.45	10.37				06.0	0.44	1.55	0.02	0.33	0.77	0.37	0.28	0.00	0.31	42.64	0.87	0.0		0.15	0.07	0.03	0.49	0.59	1.09		0.54	1.37	1.34	80.17	20.10	5.23	0.70	м С	20:00
- 100	EGCITT	13001	0.54	0.46		0.59	0.34	0.47	1.1	1.01	3.13	0.34	0.03	99.0	0.26	3.01				0.50	0.23	0.84	0.26	0.13	0.89	08.0	0.08	0.04	0.47	11.22	0.40	0.03	0.13	0.35	0.15	0.03	0.36	0.88	1.11		0.27	2.21	0.03	0.30	8.80	5.82	0.72	66.6	44:4
Interaction statistic / = logs < n-values	Februannf	0.08	0.00	0.00		0.15	1.61	1.00	0.92	0.05	0.39	0.55	3.38	0.34	0.67	80 .03 .03				0 10	0.69	1.46	0.02	0.65	0.46	80.0	0.64	0.33	0.24	10.00	0.35	0.33		0.11	0.13	0.13	0.61	0.25	0.63	1.18	0.79	0.08	1.43	16.95	0.91	0.62	0.52	1.67	P1 F0
Interactio	RSCS ^e F		6.84	5.98	5.75	10 10 80 00 00 00 00 00 00 00 00 00 00 00 00	0.01 0.01	5.69	6.54	6.62	5.80	6.58	88.9	6.12	5.45	15.38	5.51	6.51	6.61	06.9	57.53	5.53	8.16	5.64	4.74	5.53	5.45	00.1 00.1	5.72	6.00	5.00	6.13	5.89	5.68	5.61	5.30	6.31	5.62	5.93	5.78	7.96	6.70	1.00	13.70	7.10	7.63	6.05	6.94	F 1.5
	Associationd	HRG9	LQK1		HDAC7	CONSTR	HEADC HI.A.DRB6	HLA-H	HMBOX1	HMBOX1	HMBOX1	HMBOX1			HMBOX1		HSPC157	HSPC157	HSPC157		IL32	INPP5E				KTELC1	KTELC1		LAP3	LDLBAD1	LDLINALI			LRRC25		1.7.2			MAD2L1BP	MAP1LC3A	MBNL1	MBNL1	MBNLI	MBNLI	MBNL1	MBNL1	MBNL1	MBNL1	MEDIATI
SND 2	Pos /Mhc	5971671	213088494	141533832	48173352	135220622	32411646	29695713	28876221	28751381	28904086	28876221	189533772	158276926	28904086	178991794	22439520	22439520	22439520	131757163	3115628	139335599	28288174	5570771	189055298	119119433	119195913	233438952	17588950	203760391	179608360	71561497	127804531	18496107	78946879	69734641	130319560	127011798	43528441	33351864	152187431	152187431	152187431	15218/431	152187431	152187431	152187431	152187431	102101701
m previ	,	11	1 .	4	12	1 œ	- 4	ဗ	oc	00	œ	œ	8	7	œ	ro.		.,		- 6-	19	6	7	11	4	3	8	н.	4 -		ΗĽ	2 00	10	19	⊣ 1	- 61	1 0:	n	9	20	က	က	n	n 0	o en) e9	ಣ	00 0	,
Table St - continued from previous page	Tr II	10 15	rs12042181	rs12503379	rs4760636	rs17686635	rs/21305/	rs2523404	rs7837237	rs4732890	rs8180944	rs7837237	rs4553956	rs7810884	rs8180944	rs4700810	rs4654783	rs4654783	rs4654783	rs4759890	rs1554999	rs1127152	rs849341	rs424299	rs6419960	rs727905	rs6414283	rs1294338	rs7658240	rs10900320	re11749797	rs714789	rs1278387	rs8101804	rs1543675	rs11981725	rs2253135	rs6414306	rs1096699	rs6060034	rs13069559	rs13069559	rs13069559	rs13059559	rs13069559	rs13069559	rs13069559	rs13069559	TSTOODOOOO
- Iable St	Associationd	Topociation	HBG2	HBG2		HEBP1							HMBOX1	HMBOX1					CWETOLI	II.32				KCNJ15	KIR2DL1			L3MBTL2				LILB A5	LINSI		LY86	L12	LYZ	MAD1L1											
SND 1	Pos/Mhc	25723501	5271671	5271671	6036851	13145613	77539679	75467313	98670849	42112794	127237464	132725731	28904086	28904086	110897444	179032488	88882257	46486900	121229893	3115628	2560423	81603771	47970693	39606769	55324635	84597119	183109012	41519362	132602868	50071635	26083302	54827248	101120963	51151350	6588881	77276964	69734641	1923385	103203146	29435869	78225815	9932070	9.7100681	152234166	114067127	6604708	34291750	16038535	22110100
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	Tre ID	re19975066	rs2855039	rs2855039	rs2109029	rs3782567	rs1942/19	rs11660982	rs12435486	rs2837803	rs4765451	rs587639	rs8180944		rs9521666	rs6894268	rs555812	rs6063164	rs002/39	re1554999	rs765044	rs8044524	rs757355	rs2186344	rs649216	rs4349034	rs6815953	rs4822006	rs7042087	rs1691432	rs1945052	rs3859532	rs11247226	rs6009951	rs977785	rs2168029	rs2168029	rs7783715	rs7983718	rs974607	rs10869600	rs11053043	11001110	rs11981513	rs2030926	rs218671	rs2213360	rs2305802	105570781
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Expression trait	Probe IDb	II.MN 2084825	ILMN_2084825	ILMN_2084825	ILMN_3266186	ILMN_1802557	ILMIN_1741180	ILMN-1762861	ILMN 1720059	ILMN_1720059	ILMN_1720059	ILMN_1720059	ILMN_1720059	ILMN_1720059	ILMN_1720059	ILMN_2101920	ILMN_3194087	ILMN_3194087	ILMIN_3194087	II.MN 1778010	ILMN 2368530	ILMN_1811301	ILMN_1682727	ILMN_1675756	ILMN_1691803	ILMN_1811104	ILMN_1811104	ILMN_2336109	ILMN_1683792	ILMIN-1769762	II.MN 2412214	II.MN 2357419	ILMN_2338197	ILMN_2150196	ILMN_1807825	ILMIN_1815205	ILMN 2162972	ILMN_2358069	ILMN_1694711	ILMN_1776188	ILMN_2313158	ILMN_2313158	ILMN-2313158	ILMIN_2313158	ILMN 2313158	ILMN_2313158	ILMN_2313158	ILMN_2313158	THINTIA TO TO TO TO
H A	Gene IDa	HBC3	HBG2	HBG2	HDAC7	HEBPI	HEADC HLA-DRA	HLA-F	HMBOX1	HNRPH1	HSPC157	HSPC157	HSPC157	II.32	IL32	INPP5E	JAZF1	KCNJ15	KIR2DS5	KTELC1	KTELC1	L3MBTL2	LAPS	LAAI	LGALSO	LILBAS	LINS1	LRRC25	LY86	1.7.2	LYZ	MAD1L1	MAD2L1BP	MAP1LC3A	MBNL1	MBNL1	MBNLI	MBNLI	MBNL1	MBNL1	MBNL1	MBNL1	MILITARITA						

	Distance / Mbh										71.0	0.010																	10 401	105-01			38.948			0	00.00								010 0	0.00]
201100	Metas	3 02	90.00	0.07	1.73	9.28	0.05	0.02	20.0	0.40	20.14	7.07	1.1	17.0	1 0	0.05	0.02	0.40	0.04	1.35	0.19		0.22	0.64	0.46	0.28	2.86	0.00	0.73	0.00	0.02	0.40	1.77	0.04	0.30	0.18	20.72	1.01	2.77	0.23	0.63	0.08	0.40	1.12	19.70	0.22	0.35	0.06		-
- 100-0-	EGCITT	4.33	4.21	0.27	1.15	7.89	0.03	0.23	0.70	0.00	91.01	1 00	1.00	0.00	0.0	0.12	0.08	0.27	0.23	1.08	0.18		0.44	0.70	0.63	0.25	1.87	0.02	0.90	0.92	80.0	0.15	0.59	0.03	0.43	0.48	16.08	0.76	2.58	0.47	0.88	0.17	0.10	1.10	0.44	0.18	0.34	0.04		
Interaction etatietic / = logs c nevalues	Fehrmannf	0.02	0.32	0.03	1.34	2.55	0.10	0.03	0.07	0.10	0.03	00.7	0.13	0.0	0.50	0.11	0.05	0.57	0.01	0.97	0.34	0.26	0.14	0.46	0.31	0.41	1.87	0.46	0.11	0.23	0.04	0.74	2.00	0.20	0.27	0.07	15.12	0.87	1.10	0.13	0.29	0.12	0.82	0.67	7 5.11	0.39	0.42	0.24		
Interecti	BSGSe	ı	6.74	7.72	7.22	7.92	6.26	0.00	0.19	0.00	0.0 M	0.40	7.00	. r.	, r	7.05	4.17	5.45	5.90	5.64	68.9	5.71	6.56	7.48	6.85	6.21	5.18	5.31	9.00	. r.	5.70	6.02	5.54	5.65	5.46	80.08	6 70 6 6 6 6	6.12	98.9	6.03	09.9	5.50	02.02	0.1	0.00	. 80	6.84	5.90	5.45 5.53	
	Associationd	MBNI.1	MBNL1			MBNL1	MBP	MBF		MDD	MDF	MECEO	MEGE 9	711 7111	MGC12057	MGC13057		MGST3		MPZL2	MRPL36	MRPL43	MRPL52	MRPS10	MRPS10	MKPSIO				MVRDC3	MYBPC3		N4BP1	NAAA	NAAA						NAPRT1	NAPRT1				ND UFA 12		NOD2	NRBF2 NRBF2	
SNP 2	Pos/Mbc	152187431	152187431	152235530	152234166	152187431	74715653	14715653	EE004939	74715659	74725087	10045001	12050501	171860073	50408445	50428445	137526799	165600146	154708716	118076069	1782046	102746503		42194916	42158596	42164401	42068689	90014096	20100302	47486885	47529947	134485237	48632478	76870229	76870229	234897243	187445552	167811764	146189057	213386267	144663661	144663661	98391111	95976932	234721287	95386791	183114008	50719103	65133822	0
m previ	Chr.	e		က	3	n	8 9	φ, ο	0 10	0 0	0 0	0 0	n	٠,	11	٠١.	00	г	4	11	r0	10	14	9	9	φ,	14	14	٥.	7 -	11	00	16	4	4	- 0	ю 4	9	7	73	œ	œ	o ;	01	N C	12	, eo	16	10	
Table St - continued from previous page	rs ID	rs13069559	rs13069559	rs1522374	rs16864367	rs13069559	rs2051344	rsZU51344	rs1120009	182019040	rs2001344	20066306	re4846085	re11795347	re12718598	rs12718598	rs2660665	rs4147592	rs11771552	rs1805	rs750495	rs2863095	rs3811188	rs722269	rs2395803	rs13217993	rs12431444	rs11160227	rs49/3801	re1317149	rs7124681	rs2737422	rs11649236	rs6826085	rs6826085	rs2786014	rs3889129	rs6455553	rs700276	rs7571561	rs2123758	rs2123758	rs930280	rs10882406	rs/5//13/	rs11107847	rs12490878	rs9302752	rs7923609	
rapie SI –	Associationd							MDD	MDF	MIDI				MG C1 2057	10001001		MGC72104		MPZL2								MTMK10					MYOM1				NAPRTI	NAPRII	NAPRTI	NAPRT1	NAPRT1			NAPSB	NAPSB	NAPSB		NMT2			
SNP 1	Pos/Mbc	41513423	895841	46278591	57253132	22101322	15462611	74715659	74715659	000000000000000000000000000000000000000	74747494	14141424	109401737	504080405	6907070	82628245	26197931	55779644	118076069	19953193	8436432	80641040	26710271	110202230	15063214	52453567	31215935	42795027	42793027	61593110	109550561	3247256	87580855	147638723	37770630	144663661	144663661	144663661	144663661	144663661	48214812	103488089	50882619	50882619	232301670	37101890	15239498	7067773	5209048 69876894	
	Chr.	4	œ	18	20	io.	50	7 7	9 9	0 0	5 0	0 0	2 6	1 5	- 00	16	20	17	11	12	10	16	14	œ	50	16	15	77.	120	7 7	13	18	16	7	22	oc (o o	oc	œ	œ	22	6	19	19	6T	1 2 2	10	19	12	
	rs ID	rs4392535	rs4735830	rs4939558				rs139568			rs4603021	180092455	1813039089	151969699	1012110000	rs8058318	rs845787		rs1805	rs7316716	rs17469061	rs6564769	rs1950857	rs10955512	rs11698155	rs1420537	rs7178375	rs459498	18409490	re10134030	rs7322768	rs4798075	rs12444224	rs2707575	-	ကျ	rs2123/58	000	~	rs2123758				rs1405655	rs1405655	rs2746971	rs10906857	rs2967636	rs11063498 rs2375269	
	Chr.	67	0 00	က	9	e ;	90 0	× 9	0 0	0 0	0 0	0 0	n -	٠, ٥	10	10	20	1	11	11	ro.	10	14	9	9	9 ;	12	77.0	7 5	7 -	: :	18	16	4	4	oc 0	o 00	000	œ	œ	œ	œ	13	67	67	12	10	16	10	
Expression trait	Probe IDb	II.MN 2313158	ILMN_2313158	ILMN_2313158	ILMN_2313158	ILMN_2313158	ILMN_2331544	ILMN_2398939	ILMIN-2398939	II MIN 2206030	ILMIN-2396939	ILMIN-2398939	II.MN 1651385	11.MN 1787526	II.MN 1787596	II.MN 1787526	ILMN_1688318	ILMN_1751956	ILMN_1752932	ILMN_1752932	ILMN_1800197	ILMN_2258774	ILMN_1713966	ILMN_1663664	ILMN_1663664	ILMN_1663664	ILMN_2152178	ILMN-1662338	TI MIN 1662338	II.MN 1781184	ILMN_1781184	ILMN_1680344	ILMN_2201966	ILMN_1668605	ILMN_2391512	ILMN_1710752	ILMN-1710752	ILMN-1710752	ILMN_1710752	ILMN_1710752	ILMN_1710752	ILMN_1710752	ILMN_1784040	ILMN-2109416	ILMN-2109416	ILMN_1737738	ILMN_1656378	ILMN_1762594	ILMN_3237385 ILMN_3237385	
H	Gene IDa	MBNI.1	MBNL1	MBNL1	MBNL1	MBNL1	MBP	MBF	MDF	MDD	MBP	MDF	MEGE 9	MCC13057	MGC13057	MGC13057	MGC72104	MGST3	MPZL2	MPZL2	MRPL36	MRPL43	MRPL52	MRPS10	MRPS10	MRPSIO	MTMR15	MAI	MY	MVBPC3	MYBPC3	MYOMI	N4BP1	NAAA	NAAA	NAPRTI	NAPRII	NAPRTI	NAPRT1	NAPRT1	NAPRT1	NAPRT1	NAPSA	NAPSB	NATAB	NDUFA12	NMT2	NOD2	NRBF2 NRBF2	

	Dietance / Mbh	Distance / MD					0.039						128.140				120.688				46.389				1.137											900	11.228	0.287														the second second
oon oz	MotoR	Merc		0.17	0.15	2.03	3.86	0.76	0.14	0.02	0.49	0.62	0.88	0.82	0.59	0.16	0.32	0.13	0.67	0.24	0.70	0.03	0.33	0.48	0.15	0.04	0.56	0.26	0.19	99.0	0.46	0.17	1.21	0.12	0.16	0.44	0.72	4.06)	0.04	0.27	1.78	98.0	0.15	0.38	0.11	1.00	0.00	80.0	0.92	0.17	0.07
- 100	ECCITE	10051		0.05	0.46	1.55	0.81	0.46	90.0	00.00	0.87	80.0	1.48	1.21	0.44	0.26	0.71	0.09	0.36	0.65	06.0	0.01	0.87	1.19	0.42	0.04	0.78	0.33	0.42	0.48	0.95	0.13	0.28	90.0	0.30	0.14	0.03	4.47	0.44	0.26	0.21	0.64	0.32	0.48	0.08	0.40	1.25	0.00	0.31	0.37	0.09	0.26
Interaction statistic / = logs > n-values	February f	enrmann		0.47	0.03	1.27	4.12	0.87	0.42	0.36	0.16	1.20	0.13	0.25	99.0	0.19	0.09	0.34	0.87	0.03	0.36	0.20	0.02	0.00	0.05	0.16	0.31	0.29	0.12	0.72	80.0	0.36	1.69	0.37	0.16	0.81	0.03	0.69		0.00	0.44	1.95	1.18	0.03	0.80	0.05	1.03	0.23	0.03	0.58	0.41	0.04
Interesti	Beres I	1	5.45	6.13	5.44	8.59	4.13	4.38	5.64	5.00	5.42	5.42	5.43	6.04	5.59	6.20	5.85	5.74	5.64	6.51	5.51	5.60	5.23	7.11	4.12	6.35	5.15	4.44	5.81	5.63	5.72	5.61	5.65	5.95	5.72	10.43	7.54 60	20.7	5.79	5.14	5.44	4.58	5.42	5.00	5.90	5.70	0.70	0.00	9 5	5.23	4.32	5.40
	Acceptational	Association	NKBF2 NRBF2		NUDT18			OAS1	OPTN	OSBPL5	OSTF1		OVGP1	OVGP1	HPCAL4		PEX5	PEX5	PFAAP5		PHCA				PISD	PNKD	PNPLA7	PPFIBP2	PPP2R3C	PPP2R5A	PPP2R5A	PPP2R5A	PPP2R5A	PPP2R5A	PPP2R5A	PRDAS		C21ORE57	PSMB1	PSMB1	PSMB1		PSMB1	PTDSS1	PTDSS1	Prossi	JUPK .			RCN1		
ious page	Doe /Mbc	r 0s/mp	65133822	52334047	21964378	163997467	113409260		13169066	3149249	77755469	179590952	111992823	111969719	40139553	21395989	7364442	7364442	33126737	21982957	26708086	61728597	30398876	18236681	32097775	219182481	140487108	7559930	35619816	212447167	212447167	212447167	212447167	212447167	212447167	64082807	31407346	47776382	170877444	170890384	170823379	225797957	170877444	5221825	5221825	5221825	17526682	70233726	26938488	32136436	141177468	102740645
n previou	, a	CIII.	010	1	œ	9	12	12	10	11	6	20	П	-	1	က	12	12	13	14	11	1	14	1	22	61	6	11	14		-	-	-	-	;	11	0 %	21	9	9	9	-	9	11	11	11	4.0	7 -	1 12	11	00	-
Table S1 – continued from previous page	TD.	TO00000	rs7923609	rs6588415	rs1005901	rs1047944	rs2072133	rs3741981	rs17512962	rs998639	rs2273770	rs7718088	rs1264898	rs1264894	rs784600	rs2731939	rs4329748	rs4329748	rs7328733	rs1263806	rs10736812	rs2065841	rs10498313	rs954627	rs6518754	rs4672884	rs928046	rs4758001	rs11156875	rs12120009	rs12120009	rs12120009	rs12120009	rs12120009	rs12120009	rs11600990	rs10492/93	rs11701058	rs13207114	rs6928843	rs9295415	rs2769689	rs13207114	rs11036212	rs11036212	rs11036212	rs10020773	rs/3030/	rs1863464	rs4922579	rs11166957	rs1341899
Table S1 -	Dacitationa A	Association										OSTF1			PAM	PCYOX1L				PGLYRP1		PIK3IP1	PISD	PISD													C91OBE57					PSMB1						127070	AKTIP	_	RCN1	RCN1
SND 1	A /MBC		56157341 19819016	240680022	25453482	113480510	113448652	49160255	74286646	26662543	70624189	77755469	240132968	140148107	102149795	148726162	128052636	27246462	49151303	46529456	123097386	31675185	32263131	31999127	33234931	158781604	4527109	49668255	58350896	166399467	123595064	66222691	107417238	135030045	27148475	95040482	77031653	48063862	121774705	43983954	30347832	170890384	131727816	95478823	76598123	126852438	106348246	40760766	53526551	41147155		32136436
Ü	142	CIII.	202	101	11	12	12	19	16	21	17	6	П	က	ю	ıo	12	15	22	19	11	22	22	22	22	10	16	20	15	61	12	13	11	9	6;	14	31	21	1 ::	18	20	9	12	14	17	11	9 6	7 7	16	17	11	
	T. T.	18 1D	rs6025645	rs4852124	rs5017351	rs11613438	rs13311	rs2892233	rs7192613	rs2829679	rs17780195	rs2273770	rs10802822	rs347331	rs28092	rs2438490	rs10444467	rs7495797	rs131969	rs12982353	rs493642	rs4141404	rs470072	rs6518752	rs715572	rs6869411	rs11639998	rs911019	rs12914603	rs10930170	rs12423255	rs1889083	rs682334	rs7757871	rs7871178	rs8019823	rs2188333	rs2839372	rs3862607	rs4890648	rs6060930	rs6928843	rs7299749	rs2353567	rs4969205	rs631562	rs4946705	rs241/30	rs9931702	rs10879131	rs4922579	rs4922579
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Evanageion trait	Probe IDb	TIONE ID	ILMN_3237385	ILMN_1800897	ILMN_1787885	ILMN_1658247	ILMN_1658247	ILMN_1675640	ILMN_2381899	ILMN_2307032	ILMN_1742456	ILMN_1742456	ILMN_1734542	ILMN_1734542	ILMN_2313901	ILMN_1815951	ILMN_1660232	ILMN_1660232	ILMN_1797893	ILMN_1704870	ILMN_1812552	ILMN_1719986	ILMN_1793934	ILMN_1793934	ILMN_1793934	ILMN-1774604	ILMN_1662587	ILMN_1675656	ILMN_1662617	ILMN_1738784	ILMN_1738784	ILMN_1738784	ILMN_1738784	ILMN_1738784	ILMN_1738784	ILMN_1711606	ILMIN_1715003	ILMN 1675038	ILMN_1789176	ILMN_1789176	ILMN_1789176	ILMN_1789176	ILMN_1789176	ILMN_1743049	ILMN_1743049	ILMN-1743049	ILMN_1672443	ILMIN-1805197	ILMN-1756999	ILMN_1800276	ILMN_1800276	ILMN_1800276
E S	Cone IDa	Gene in	NRBF2 NBBF2	NRD1	NUDT18	OAS1	OAS1	OAS1	OPTN	OSBPL5	OSTF1	OSTF1	OVGP1	OVGP1	PAM	PCYOX1L	PEX5	PEX5	PFAAP5	PGLYRP1	PHCA	PIK3IP1	PISD	PISD	PISD	PNKD	PNPLA7	PPF1BP2	PPP2R3C	PPP2R5A	PPP2R5A	PPP2R5A	PPP2R5A	PPP2R5A	PPP2R5A	PRDA5	PRACEI	PRMT2	PSMB1	PSMB1	PSMB1	PSMB1	PSMB1	PWP1	PWP1	PWP1	QUPR	DADA01	RBL2	RCN1	RCN1	RCN1

	Distance / Mach	Distance / MD-										0.135																									0.324	14.040														op on the transfer
	MotoR	Metao	1.17	0.21	0.26	0.26	80.0		0.64	0.13	1.28	17.24	0.38	0.02	0.19	0.15	0.22		1.17	0.15	0.10	0.31	0.35	0.30	0.53	0.13	0.17	60.0	90.0	0.19	1.24	0.40	0.26	0.06	0.07	0.72	23.22				0.83	2	0.33	0.31	0.30	00.0	-	0.14	0.24	0.03	0.15	Continu
	- log10 p-values	EGCOI-	1.23	0.33	09.0	0.21	0.22		0.46	0.30	0.52	14.41	0.73	90.0	0.20	0.37	0.45		1.73	0.51	0.06	0.51	0.12	0.51	0.71	0.18	0.18	0.24	0.10	0.13	0.82	0.07	0.58	0.09	0.62	1.03	10.96				1.41	9	0.12	0.17	0.24	0.02		0.16	0.31	0.13	0.76	
(o) 100 100 00 00 00 00 00 00 00 00 00 00 0	\		0.61	0.21	0.08	0.42	0.09		0.71	0.11	1.48	3.79	0.13	0.09	0.32	0.10	0.13		0.22	0.03	0.31	0.21	0.70	0.20	0.32	0.22	0.29	0.09	0.15	0.39	1.10	0.86	60.0	0.17	0.39	0.29	13.11			,	0.13	5	0.67	0.57	0.46	0.01		0.26	0.28	0.03	0.07	
Total	Dece r	-	0.00	5.12	5.71	5.48	5.11	4.37	5.59	6.27	4.32	4.98	5.55	5.46	5.86	4.59	4.33	6.48	5.70	5.50	5.67	5.60	5.52	5.97	5.23	7.40	5.74	5.47	5.70	6.15	5.88	5.95	5.52	6.52	0.00	6.60	7.31	80.9	5.96	6.33	0.4 0.4 0.4	5.44	5.65	5.88	5.51	7.05	5.83	6.14	7.47	0.00 7.00	5.23 5.23	
	Pasitoison	Association -	RERE	RERE	RERE		RNASE6						RPL23AP7				RPL8	SEC13	SEMA4A	SESN3	SESN3		PPBP	PPBP	PPBP	SH3GLB2		SLC22A18			SLC41A3		SLC46A3	SMG7	SUHUS	SNORD14A		SNORD89	SNORD89	SNORD89		SPATA51.1		STYXL1		TUFM	TUFM	SURF6	SYTL2	THESS	TIPRE	
ious page	Des /MILC	FOS/MD	8501786	8501786	8501786	100601327	21182800	54668512	36348968	201983242	201983242	89513234	114450028	138038093	66137260	234585790	145984615	10342876	156147326	94906111	94906111	134606425	56849749	56849749	56849749	131785369	60489510	2923826	153224179	241678528	125801067	174598073	29259349	183489203	119225940	17291499	17015557	101889306	101889306	101889306	81888905	45652086	72509713	75616105	180439236	28550667	28550667	136281753	85495269	155162067	155194980	
m previo	2	Cur.		1	1	13	14	13	8	1	1	16	73	6	9	1	œ	3	1	11	11	œ	0	е	3	6	4	11	7	73	က	ro.	13		N T	11	11	73	61	61	9 8	- -	11	7	4	16	16	6	11			
Table S1 – continued from previous page	OI on	rs ID	rs301819	rs301819	rs301819	rs7324365	rs11628398	rs4884857	rs11706900	rs2819365	rs2819365	rs2965817	rs4849261	rs17495030	rs1502991	rs1619856	rs2958482	rs696221	rs7695	rs684856	rs684856	rs7004947	rs1354034	rs1354034	rs1354034	rs17455517	rs6842739	rs367035	rs3110874	rs3772054	rs6771703	rs7701916	rs7981190	rs10911353	rs116//515	rs214097	rs6486334	rs750783	rs750783	rs750783	rs/185362	rs4774580	rs1000620	rs17685	rs939294	rs3785354	rs3785354	rs3118663	rs485485	rs4072037	rs2049805 rs1320993	
Table S1 -	Pacitaiocov	Association				RNASE6			RNF167					RPL36AL	RPL36AL	RPL8						SESN3					SIRPG		SLC22A18	SLC22A18		SLC45A4			SMCA						SNOFN				SULF2							
1	Dec /MfbC	FOS/IMD	135248366	13174312	112844086	21182800	8106521	4875566	4839930	46127549	67153386	89648580	80320056	50103816	50020817	145984615	4741304	80913946	95388015	104412137	46591793	94906111	43893658	66383979	88280502	18196922	1612819	52181798	2923826	2923826	24616743	142337734	55602091	97403923	4151500	46259108	17339127	115929241	122986326	26778066	46376528	41117869	90174526	104947517	46153148	74332954	40119768	56013994	103410782	95422867	16745523	
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	CI on	rs ID	rs4982958	rs11085829	rs3852011	rs11628398	rs6603134	rs238230	rs400688	rs1107121	rs8071611	rs352935	rs1401202	rs3007033	rs4900928	rs2958482	rs4143674	rs4889214	rs17085428	rs12147460	rs355391	rs684856	rs10838191	rs2545385	rs6845304	rs1034120	rs1535883	rs11673260	rs367035	rs367035	rs1912136	rs6985508	rs949805	rs8035259	rs8118313	rs1520429	rs2634462	rs10445863	rs11605822	rs2135064	rs8134646	rs1131620	rs2221406	rs4073164	rs11700063	rs1463965	rs2836657	rs6099626	rs1375719	rs1939875	rs2823245	
	2	Cur.			-	14	14	17	17	-	-	16	7	14	14	œ	œ	6	г	11	11	11	9	9	9	6	20	11	11	11	8	œ	13	- 0	0 4	11	11	7	73	01	3 F	2 12	=======================================	-	20	16	16	6	Ξ.			1
1 000	Pression trait	Frobe 1D	ILMIN-1802380	ILMN_2327795	ILMN_2327795	ILMN_1780533	ILMN_1780533	ILMN_1794726	ILMN_1794726	ILMN_1738347	ILMN_1738347	ILMN_2413278	ILMN_2222250	ILMN_2189933	ILMN_2189936	ILMN_1764721	ILMN_1764721	ILMN_3297880	ILMN_1702787	ILMN_1694027	ILMN_1694027	ILMN_1694027	ILMN_1762764	ILMN_1762764	ILMN_1762764	ILMN_2158336	ILMN_1771801	ILMN_2382505	ILMN_2382505	ILMN_2382505	ILMN_2356111	ILMN_1745778	ILMN_1658639	ILMN_1706553	ILMIN 3309349	ILMN_1799381	ILMN_1799381	ILMN_3238662	ILMN_3238662	ILMN_3238662	ILMIN-1733932	II.MN 1729179	ILMN_1717052	ILMN_2210729	ILMN_2345142	ILMN_2336133	ILMN_2336133	ILMN_1778032	ILMN_2336609	ILMN_1804663	ILMN_1781457	
Ē	Conc. IDa	Gene ID	RERE	RERE	RERE	RNASE6	RNASE6	RNF167	RNF167	RNPEP	RNPEP	RPL13	RPL23AP7	RPL36AL	RPL36AL	RPL8	RPL8	SEC13	SEMA4A	SESN3	SESN3	SESN3	SH3BGRL2	SH3BGRL2	SH3BGRL2	SH3GLB2	SIRPG	SLC22A18	SLC22A18	SLC22A18	SLC41A3	SLC45A4	SLC46A3	SMG7	SMICA	SNORD14A	SNORD14A	SNORD89	SNORD89	SNORD89	SNOPN	SPATASL	STARD10	STYXL1	SULF2	SULT1A4	SULT1A4	SURF6	SYTL2	THESS	TIPRE	

	١-	Distance / Mb-				0.122																			0.031		12.131				1	0.389														7 P.	020.02		
aou lao	Values No. 1 - P	Metae	0.70			145.78	20:00	3,78	2.52	0.03	2.87	6.00	8.00	2.27	0.19	3.51	7.36	10.72	2.10	9.20	4.47	0 33	0.00	0.00	20.04	0.29	0.36	1.07	0.68	0.08	0.59	0.16	0.25	0.22	0.16	0.08	Č	1.01	0.56	0.13	0.40	69.0	0.11	1.69	0.39	00.00			
- 1001	- log10 P-	EGCOL	0.48			45.78	00.0	1.18	1.00	0.07	0.77	3.33	9.61	1.52	0.33	3.62	5.15	08.80	3.14	6.96	0.10	0.13	41.0	0.13	1.89	0.40	0.01	1.60	0.87	0.18	0.47	42.0	0.65	0.36	0.33	0.07	i	0.78	0.55	0.26	0.86	06.0	0.25	1.23	0.91	0.18			
Interaction statistic / = logs < n-values	To I statistic /	Fehrmann	0.06		0.76	81.55	1.55	3.61	2.41	0.08	3.06	3.72	0.04	1.57	0.19	06.0	3.31	3.06	0.07	3.30	0.10	0.64	0.0	1 03	3.19	0.28	0.93	0.21	0.37	0.12	0.63	0.21	0.04	0.20	0.15	0.24	0	0.80	0.51	0.14	0.08	0.36	0.11	1.20	0.04	0.07			
Thteres	Danciac	BSGS	9.70 8.11	6.79	11.09	12.16	0 00 0 00 0 00 0 00	8.39	7.37	6.95	6.93	6.21	7.30	6.70	5.92	8.89	8.55	2.80	5.49	6.22	9. m	0.00 40	7		0.00	5.61	5.52	5.97	6.92	7.79	6.43	0.38	7.08	5.86	6.27	6.73	1 00	7.73	8.10	7.34	7.05	7.41	5.42	5.92	6.46	6.00	5.51	6.34	0.13
	Aii-d	Association	TMED4	TMEM149	TMEM149	TMEM149															Themason	TMEMSA	IREK	IDDE	o mir	TRAPPC4	TRAPPC4										TRAPPC5	TRAPPCS	TRAFFC5		RAPGEF1		TREM1	TREM1	TRIM38	TSPAN14	LOLWING		
SND 2	D CAGE	Fos/Mp	36219525	36219525	36219525	36147315	133025756	188359436	128884559	64268976	90932598	13822381	113317583	147619772	171792273	129595460	233879066	161683974	80357420	242889492	20807417	225027.323	128593948	198503048	23498358	118887887	118887887	166970604	132022957	156404902	242329791	2309415	129644342	9947811	146690926	85439550	7758194	7758194	7758194	30408765	134635088	157393770	41264577	41264577	26044369	2273079	137947208	238746880	85147633
om previ		Chr.	19	19	19	10	0,7	9 69	12	18	14	œ	4	7	N	11	73	9	17	٦,	0 -	7 =	1 1	- 1	- 1-	- 11	11	10	œ	9		1 6	12	4	4	14	19	19	57	16	6	6	9	9	9 9	110	9	019	ΩТ
Table St - continued from previous page	9	rs ID	rs17725246 rs8106959	rs8106959	rs8106959	rs7254601	rs10508289	rs10937361	rs1401098	rs1557335	rs17719594	rs1843357	rs2351458	rs2539000	rs2731711	rs471728	rs6718480	rs6926382	rs7213338	rs914940	189009420	rs4149226	184903120	1510466630	rs11770192	rs3916581	rs3916581	rs10059004	rs1023095	rs1375714	rs1393299	rs17703399	rs7313362	rs7694997	rs7800935	rs856638	rs17159840	rs17159840	rs17159840	rs12921440	rs1887778	rs963354	rs2395771	rs2395771	rs2032447	rs10748526	rs620607	rs1198819	rs4783120
- Ispie SI	A	Association				SNX26	TMEM149	TMEM149	TMEM149	TMEM149	TMEM149	TMEM149	TMEM149	TMEM149	TMEM149	TMEM149	TMEM149	TMEM149	TMEM149	TMEM149	INENI49							TRAPPC5	TRAPPC5	TRAPPC5	TRAPPC5	TRAPPOS	TRAPPC5	TRAPPC5	TRAPPC5	TRAPPC5										MVBDC3	TSPAN32	ECGF1	ECGFI
SNP 1	D-1040-C	Fos/MD	132389627	27925288	45207005	36268923	36219525	36219525	36219525	36219525	36219525	36219525	36219525	36219525	36219525	36219525	36219525	36219525	36219525	36219525	20213020	7.2890503	4859303	22287303	23528927	113531675	131018917	7758194	7758194	7758194	7758194	7758194	7758194	7758194	7758194	7758194	22740855	45128454	7762978	7762978	7762978	7762978	85749398	108256422	158808416	27194634	2317951	50971266	50966914
		Chr.	21	22	20	13	5 0	19	19	19	19	19	19	19	19	19	19	19	19	61	5 -	10	e 0	600	1 10	13	11	19	19	19	19	61	19	19	19	19	222	21	07.	19	19	19	12	10	r 1	1.7	: ::	55	77
	- 27	rs ID	rs1940400	rs5762235	rs6090518	rs807491	rs8106959	rs8106959	rs8106959	rs8106959	rs8106959	rs8106959	rs8106959	rs8106959	rs8106959	rs8106959	rs8106959	rs8106959	rs8106959	rs8106959	rsoluces9	rs1234086	151046410	15103/140		rs1278760	rs1793823	rs17159840	rs380708	rs3916995	rs5040514		rs7246264	rs7246264		rs12412964	rs2527180	rs968726	rs12800998	rs140522	rs4/0119								
	Ę	Chr.	19	19	19	13	5 0	19	19	19	19	19	19	19	19	19	19	19	19	61	- F	7 =	1 1	- 1-	- 1-	- 17	11	19	19	19	19	51	19	19	19	19	19	19	57 0	13	19	19	9	9	9 9	10	1 11	55	77
Expression trait	Design train	Probe ID	ILMN_1804148 ILMN_1786426	ILMN_1786426	ILMN_1786426	ILMN_1786426	ILMN 1786426	ILMN_1786426	ILMIN_1786426	ILIMIN 17106420	ILMN 1708489	II.MN 1683811	II.MN 1689911	ILMN 1731043	ILMN_1814650	ILMN_1814650	ILMN_2372639	ILMN_2372639	ILMN_2372639	ILMN_2372639	ILMN 2372639	ILMN_2372639	ILMN_2372639	ILMN_2372639	ILMN_2372639	ILMN_2372639	ILMN_2372639	ILMN 2372639	ILMN 2372639	ILMN_2372639	ILMN_2372639	ILMN_1688231	ILMN_1688231	ILMN_1697971	ILMN_1718691	ILMN_2389970	ILMN_3223126	ILMIN-3223126											
E A		Gene ID	TMED4 TMEM149	TMEM149	TMEM149	TMEM149	TMEM149	TMEM149	TMEM149	TMEM149	TMEM149	TMEM149	TMEM149	TMEM149	TMEM149	TMEM149	TMEM149	TMEM149	TMEM149	TMEM149	TMENT49	TMEMBSA	TNPO3	TNDO3	TRAZA	TRAPPC4	TRAPPC4	TRAPPC5	TRAPPC5	TRAPPC5	TRAPPCS	TRAFFCS	TRAPPC5	TRAPPC5	TRAPPC5	TRAPPC5	TRAPPCS	TRAPPOS	TRAPPCS	TRAPPCS	TRAPPC5	TRAPPC5	TREM1	TREM1	TRIM38	TSPAN14	TSPAN32	TYMP	T M K

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	V MPp			1.643	0.088																					
	Distance /																									
values	Metag	0.52	1.10	0.03	4.95	0.46	0.57		0.19	0.41	0.31	0.17	0.04	1.21	0.16	0.57	0.26	1.47	60.0	1.22	0.35	2.25	1.63	0.15	0.46	200
$/ - \log_{10} p$	$EGCUT^{f}$	0.42	1.29	0.14	5.14	0.15	0.69		0.19	0.74	0.48	0.17	0.19	1.15	0.02	0.54	0.17	1.38	0.13	1.35	0.61	1.43	0.17	0.36	0.27	
Interaction statistic / $-\log_{10} p$ -values	$Fehrmann^f$	0.59	0.48	0.03	0.94	0.84	0.39		0.33	0.16	0.23	0.31	0.03	0.73	0.46	0.53	0.48	0.81	0.19	0.57	0.18	1.64	2.38	0.09	0.67	90 0
Interacti	BSGS _e I	5.91	6.01	5.71	5.09	5.64	5.44	5.72	5.77	6.44	5.74	6.44	5.82	6.12	4.83	5.60	5.71	2.88	5.88	6.34	5.85	4.86	5.48	5.79	5.29	0.04
	Associationd					VNN2	VNN2	VNN2	VNN2	VNN3	VNN3	VNN3	VNN3	VNN3	VNN3			VSTM1	WDR48	WDR48	WDR48	WDR6		ZFP90	ZNF 500	277
SNP 2	Pos/Mb^{c}	83600397	214514361	75151717	45974668	133077063	133072650	133072650	133072650	133067782	133067782	133067782	133067782	133067782	133067782	71024750	123098249	54553697	39091812	39067925	39044116	49194331	93119799	68573945	4799041	149009994
ß	Chr.	16	1	17	19	9	9	9	9	9	9	9	9	9	9	18	10	19	3	3	3	3	15	16	16	1
	rs ID	rs7201194	rs7512594	rs7225546	rs2276470	rs1883613	rs1883617	rs1883617	rs1883617	rs2267952	rs2267952	rs2267952	rs2267952	rs2267952	rs2267952	rs4552100	rs7895870	rs10500316	rs6778963	rs883349	rs7619193	rs11715581	rs12591171	rs1182968	rs2290560	10001000
	Associationd	UBASH3A	UBASH3A	USP36												VSTM1	VSTM1			RAPGEF1			XAF1			
SNP 1	Pos/Mb^{c}	43855067	43855067	76794981	46063167	105252718	9116155	49927332	16834510	151662184	73006453	75547169	83262064	16594253	51692548	54553697	54553697	30261219	188927822	134635088	102624790	123371708	6673170	37040648	48283177	0000000
w	Chr.	21	21	17	19	7	20	22	11	-1	œ	6	14	21	13	19	19	22	4	6	13	11	17	21	22	00
	rs ID	rs1893592	rs1893592	rs2279308	rs1264226	rs10435352	rs13044386	rs134447	rs216495	rs10278073	rs1443946	rs348462	rs7157055	rs2823165	rs9596457	rs10500316	rs10500316	rs9625870	rs1388935	rs1887778	rs9554833	rs12362253	rs1533031	rs909446	rs4823723	
	Chr.	21	21	17	19	9	9	9	9	9	9	9	9	9	9	19	19	19	8	က	8	8	17	16	16	1
Expression trait	Probe ID ^b	ILMN_2338348	ILMN_2338348	ILMN_1697227	ILMN_1743646	ILMN_1678939	ILMN_1678939	ILMN_1678939	ILMN_1678939	ILMN_1804935	ILMN_1804935	ILMN_1804935	ILMN_1804935	ILMN_2387680	ILMN_2387680	ILMN_1763455	ILMN_1763455	ILMN_1763455	ILMN_1762103	ILMN_1762103	ILMN_1762103	ILMN_1669484	ILMN_2370573	ILMN_1684628	ILMN_1700238	TI NAM 170107E
Exl	Gene IDa	UBASH3A	UBASH3A	USP36	VASP	VNN2	VNN2	VNN2	VNN2	VNN3	VNN3	VNN3	VNN3	VNN3	VNN3	VSTM1	VSTM1	VSTM1	WDR48	WDR48	WDR48	WDR6	XAF1	ZFP90	ZNF500	277

a phenotypes are expression levels of RefSeq Genes
b Illumina probe ID used to measure gene expression
c Physical SNP position in base pairs (HG19)
d RefSeq Gene in base pairs (HG19)
10⁻¹¹
110⁻¹¹
10⁻¹²
10⁻¹³
10⁻¹⁴
Interaction - log₁₀ p-value from discovery dataset
f interaction - log₁₀ p-value from replication dataset
f interaction in the sequence of the properties of the p

Table S2: Estimation of additive and non-additive variance components from pedigree information Taken from previous analysis in Powell et al 2013^{21}

		Additi	ve	Non-add	itive
Gene	Probe	Variance	s.e.	Variance	s.e.
NAPRT1	ILMN_1710752	0.37	0.03	0.14	0.05
TMEM149	$ILMN_{-}1786426$	0.41	0.04	0.09	0.04
MBNL1	$ILMN_2313158$	0.18	0.03	0.11	0.04
TRAPPC5	$ILMN_2372639$	0.32	0.04	0.13	0.05
CAST	ILMN_1717234	0.31	0.03	0.10	0.04