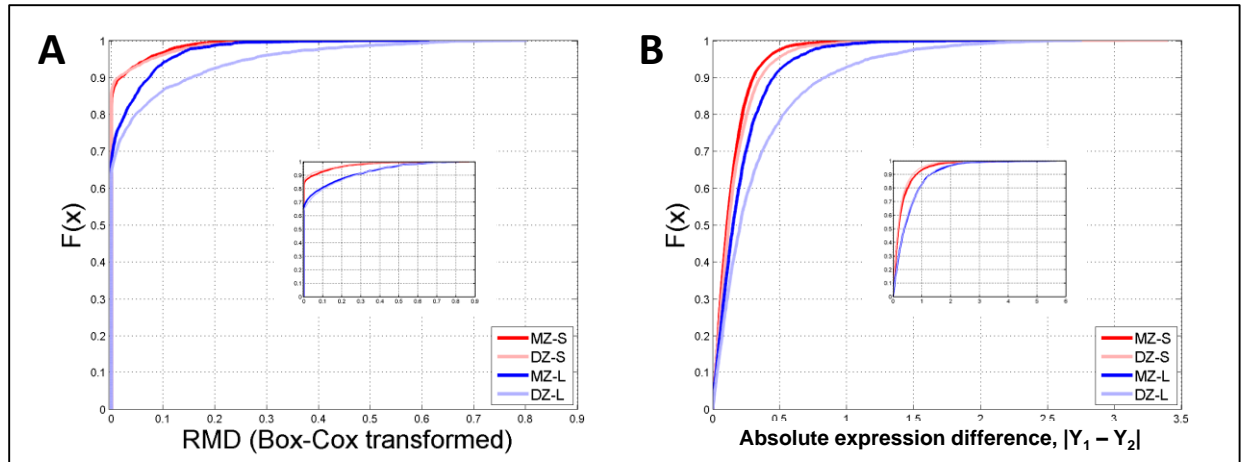
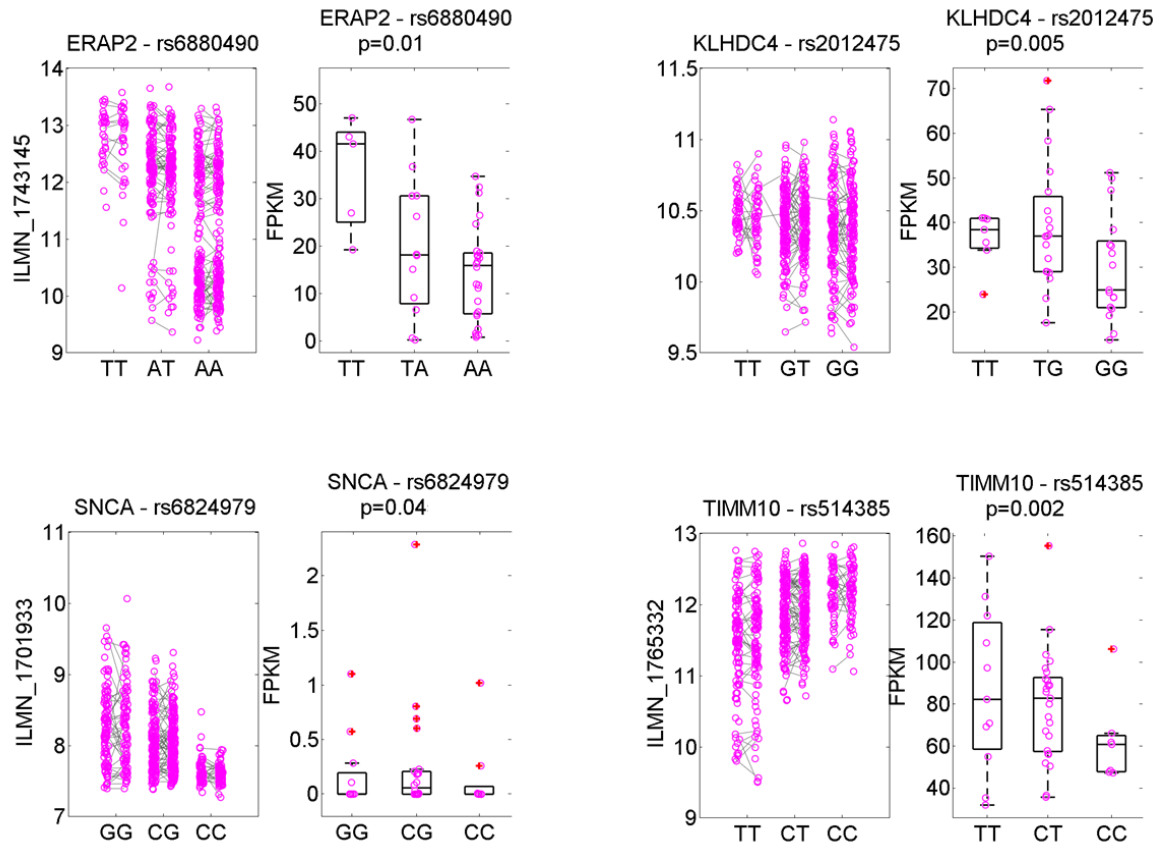


**Figure S1** Normality of expression data measured in LCLs. **(A)** Distributions of skewness and kurtosis. Red dashed lines indicate -0.8 and +0.8 skewness; red solid line indicates kurtosis = 3. **(B)** Profile distributions of expression data for selected probes (i.e., probes involved in evQTLs). (Left) Quantile-normalized expression data; (Right) Box-Cox normalized expression data.

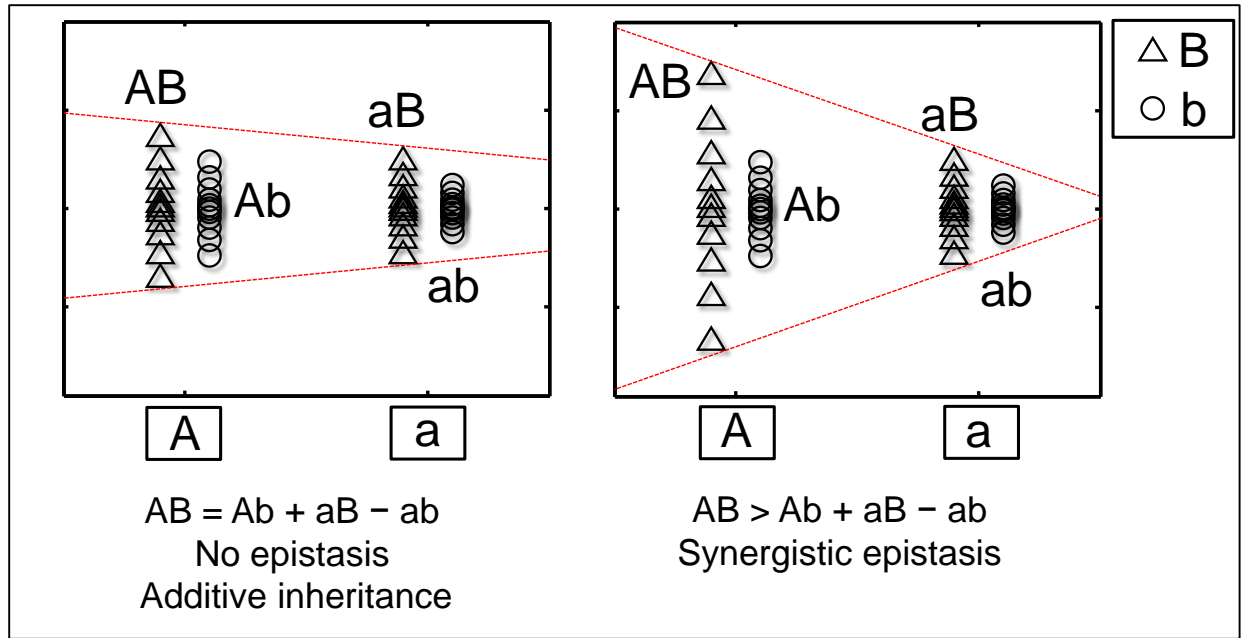




**Figure S3** Comparison between results of the CDF analysis for the expression difference between twin pairs in evQTL genes. **(A)** Results obtained using RMD of Box-Cox normalized  $\log_2$ -transformed data between twin pairs. **(B)** Results obtained using absolute difference of  $\log_2$ -transformed data between twin pairs.



**Figure S4** Comparison between eQTLs depicted using TwinsUK samples (left) and those of the same gene-SNP pairs depicted using RNA-seq data (MONTGOMERY et al. 2010) and the 1,000 Genomes Project genotype data (THE-1000-GENOMES-PROJECT-CONSORTIUM et al. 2012) (right). *P*-value of Levene's test for the equality of variances for expression levels calculated for two homozygous genotype groups is shown in the subtitle of the right panel in each figure.



**Figure S5** Schematic shows that both additive (left) and epistatic (right) effects reate similar evQTL signals. “A” and “a” are two alleles of evSNP, while “B” and “b” are alleles of interacting SNP.

**Table S1** List of evQTLs detected in LCL, skin, and fat tissues.

Tissue		Gene	# of <i>cis</i> -evQTL SNPs	Representative evQTL SNP	Alleles	Allele associated with larger expression variance	Ancestral allele
<b>LCL</b>							
	1	<i>AGTPBP1</i>	61	rs7847905	T/C	C	T
	2	<i>ALG11</i>	171	rs9526819	G/A	G	A
	3	<i>ATP13A1</i>	108	rs4808964	C/A	C	A
	4	<i>AXIN2</i>	2	rs740026	G/A	A	G
	5	<i>BBS2</i>	41	rs14306	C/A	A	G
	6	<i>BRWD2</i>	43	rs729704	T/C	T	T
	7	<i>BTN3A2</i>	107	rs742090	C/A	A	G
	8	<i>C12ORF28</i>	173	rs775439	G/A	A	A
	9	<i>C12ORF54</i>	27	rs2731094	T/C	C	T
	10	<i>C16ORF30</i>	15	rs2076441	G/C	C	G
	11	<i>C17ORF97</i>	2	rs6565724	T/C	T	C
	12	<i>C7ORF28B</i>	3	rs10242703	G/A	A	A
	13	<i>CAPN11</i>	1	rs6938938	G/A	G	G
	14	<i>CDCP1</i>	3	rs6441894	T/C	C	T
	15	<i>CDO1</i>	21	rs698366	T/G	T	C
	16	<i>CHST3</i>	11	rs4148929	C/A	C	C
	17	<i>COPG2</i>	38	rs12706942	G/C	C	G
	18	<i>CORO2A</i>	12	rs12351801	T/C	T	C
	19	<i>COX4NB</i>	24	rs301164	T/C	C	C
	20	<i>CPA4</i>	74	rs6953940	G/A	A	G
	21	<i>CPNE1</i>	205	rs224354	G/C	G	C
	22	<i>DDIT4L</i>	64	rs2866194	G/A	A	A
	23	<i>EEF1G</i>	6	rs1058678	T/C	C	A
	24	<i>EIF5A</i>	1	rs7220464	T/G	T	G
	25	<i>EMR1</i>	2	rs4807916	T/C	C	C
	26	<i>ERAP2</i>	2	rs6880490	T/A	A	T
	27	<i>FLJ10916</i>	15	rs4246598	C/A	A	C
	28	<i>GAD1</i>	1	rs13007861	C/A	C	C
	29	<i>GDA</i>	19	rs7019060	G/A	A?	G
	30	<i>GOLPH4</i>	1	rs13100726	G/A	G	A
	31	<i>HCG22</i>	100	rs1064191	T/C	C	G
	32	<i>HCLS1</i>	2	rs4472078	T/C	T	G
	33	<i>HEY2</i>	36	rs628009	T/G	G?	A
	34	<i>HLA-DPB1</i>	59	rs9277341	T/C	T	C
	35	<i>HLA-DRB1</i>	27	rs9272723	T/C	C	T
	36	<i>HMHB1</i>	3	rs17100739	G/A	A	G
	37	<i>HYAL4</i>	8	rs12674456	T/C	T	T
	38	<i>IKZF1</i>	14	rs7789635	T/C	C	T
	39	<i>IPO8</i>	32	rs1371053	T/C	C	C
	40	<i>IRF5</i>	3	rs10156169	G/A	A	G
	41	<i>ITIH4</i>	26	rs2240915	T/A	T	T
	42	<i>KANK1</i>	17	rs2361106	G/A	G	A
	43	<i>KLHDC4</i>	2	rs2012475	T/G	G	T
	44	<i>LDHC</i>	19	rs3993291	T/C	T	C
	45	<i>LEMD3</i>	77	rs11175680	G/C	G	A
	46	<i>LOC440160</i>	8	rs12052294	G/A	A	G
	47	<i>LOC642290</i>	1	rs7255207	T/C	T	C
	48	<i>LOC648453</i>	3	rs17753176	T/A	A	A
	49	<i>LOC650263</i>	44	rs726920	G/C	G	G
	50	<i>LOC650557</i>	445	rs1980495	C/A	C	G
	51	<i>LTBR</i>	3	rs2364484	C/A	A	A
	52	<i>MED4</i>	53	rs9534912	T/C	T	C
	53	<i>MFF</i>	29	rs7573035	C/A	A	A
	54	<i>MGAT4A</i>	4	rs13032507	C/A	C	A
	55	<i>MMRN1</i>	3	rs7693616	T/G	G	T

	56	<i>MOCOS</i>	5	rs1893269	G/C	C	C
	57	<i>MTERFD2</i>	16	rs3815291	C/A	C	A
	58	<i>MTRR</i>	32	rs327588	G/C	C	G
	59	<i>MXRA7</i>	30	rs11077850	T/C	T	C
	60	<i>MYEOV</i>	24	rs7939250	G/A	G	A
	61	<i>MYH11</i>	18	rs3851702	T/C	C	G
	62	<i>N4BP2</i>	1	rs6824761	C/A	A	A
	63	<i>NLRP2</i>	5	rs11667481	G/A	A	G
	64	<i>NMNAT3</i>	21	rs4367021	C/A	A	C
	65	<i>NUDT2</i>	15	rs1337593	T/C	T	C
	66	<i>OAS1</i>	70	rs1293742	T/C	T	A
	67	<i>PAX8</i>	4	rs2863243	T/C	C	C
	68	<i>PGM5</i>	52	rs12685375	T/C	C	C
	69	<i>PHACS</i>	4	rs7928485	T/C	T	T
	70	<i>PILRB</i>	2	rs5015756	T/C	T	C
	71	<i>PJA2</i>	27	rs12719109	T/C	C	T
	72	<i>PLXDC2</i>	3	rs2038912	T/C	T	C
	73	<i>PPIC</i>	30	rs30063	G/A	G	T
	74	<i>PPIL3</i>	2	rs3731714	T/C	T	G
	75	<i>PRPF31</i>	19	rs254259	T/C	C	A
	76	<i>PTER</i>	8	rs7913889	G/A	A	C
	77	<i>RAMP1</i>	10	rs7578855	T/C	T	T
	78	<i>RGS17</i>	19	rs3870364	G/A	A	G
	79	<i>RPS6KA2</i>	24	rs9356531	G/A	G	A
	80	<i>SCD5</i>	49	rs2125171	T/C	C	G
	81	<i>SEMA4G</i>	20	rs752974	T/C	T	G
	82	<i>SERPINB10</i>	3	rs967538	T/G	G	T
	83	<i>SERPINB6</i>	7	rs7759176	T/C	C	G
	84	<i>SF1</i>	1	rs563536	T/C	C	T
	85	<i>SLC39A8</i>	80	rs151402	G/A	A	A
	86	<i>SNCA</i>	124	rs6824979	G/C	G	G
	87	<i>SNHG5</i>	8	rs12190637	G/A	G	A
	88	<i>STEAP2</i>	101	rs42617	T/A	T	T
	89	<i>TBKBP1</i>	55	rs1912483	G/A	G	A
	90	<i>TIMM10</i>	49	rs514385	T/C	T	C
	91	<i>TIMM22</i>	3	rs2586306	T/A	T	A
	92	<i>UBE3C</i>	8	rs1182392	T/C	T	G
	93	<i>USP6</i>	61	rs6502843	G/A	A	A
	94	<i>WBSCR27</i>	40	rs13244770	T/G	T	T
	95	<i>WDR41</i>	109	rs4704434	G/A	A	A
	96	<i>XRN2</i>	157	rs804384	G/A	A	G
	97	<i>XYLT1</i>	7	rs4238652	T/C	C	C
	98	<i>YPEL4</i>	44	rs633129	G/A	A	C
	99	<i>ZNF544</i>	1	rs260462	G/A	A	G
<b>SKIN</b>							
	1	<i>ACCN1</i>	2	rs7207800	A/G	G	A
	2	<i>ACTC1</i>	4	rs8039278	T/G	G	T
	3	<i>AGR3</i>	2	rs17629719	G/T	G	G
	4	<i>ATP13A1</i>	102	rs741706	A/G	G	A
	5	<i>C10ORF53</i>	1	rs751595	A/G	G	C
	6	<i>C8ORF42</i>	1	rs17665859	C/T	T	T
	7	<i>CACNA1H</i>	1	rs2745167	T/C	T	C
	8	<i>CCL23</i>	28	rs864104	C/T	C	A
	9	<i>CLLU10S</i>	4	rs4760407	T/C	T	C
	10	<i>COPG2</i>	1	rs10863	A/G	A	G
	11	<i>EEF1G</i>	1	rs11231168	T/C	T	C
	12	<i>FLJ10916</i>	7	rs1878809	C/G	G	C
	13	<i>FLJ35429</i>	1	rs6457121	G/A	A	G
	14	<i>FLJ45964</i>	3	rs6713353	G/C	G	C
	15	<i>FTHL7</i>	1	rs7991197	C/T	T	T
	16	<i>GUCY1B2</i>	31	rs9568497	C/T	T	T
	17	<i>HERC6</i>	7	rs713175	C/T	T	C
	18	<i>LOC147650</i>	2	rs8102075	A/G	A	G

	19	<i>LOC283398</i>	1	rs10859604	A/G	A	A
	20	<i>LOC643453</i>	2	rs4876979	G/T	T	C
	21	<i>LOC643747</i>	2	rs12301198	G/A	A	A
	22	<i>LOC644366</i>	2	rs3851781	T/C	T	C
	23	<i>LOC644889</i>	3	rs11024097	G/A	G	C
	24	<i>LOC645351</i>	1	rs7712944	G/A	G	G
	25	<i>LOC645797</i>	9	rs7481311	A/G	G	C
	26	<i>LOC647541</i>	3	rs2808788	A/G	G	G
	27	<i>LOC648226</i>	11	rs7850776	C/T	C	C
	28	<i>LOC652367</i>	2	rs860214	C/T	T	G
	29	<i>LOC653034</i>	1	rs231674	T/C	C	C
	30	<i>LOC653486</i>	1	rs3758653	C/T	C	T
	31	<i>LOC730684</i>	2	rs667470	C/T	T	T
	32	<i>LTBP3</i>	1	rs2236684	G/T	T	A
	33	<i>MDGA1</i>	4	rs7748388	C/T	C	G
	34	<i>MED4</i>	69	rs9567986	T/C	C	T
	35	<i>MUC16</i>	1	rs12459695	C/G	G	G
	36	<i>NOX3</i>	1	rs11756851	C/T	C	T
	37	<i>NUPL1</i>	1	rs9507399	A/G	A	G
	38	<i>PAX8</i>	5	rs7589901	C/T	T	A
	39	<i>PECR</i>	12	rs7570208	C/A	C	G
	40	<i>PKD1L2</i>	10	rs9934926	C/T	T	A
	41	<i>SEMA4G</i>	18	rs807029	C/T	C	G
	42	<i>SH2D4A</i>	7	rs748208	T/C	T	C
	43	<i>SOX5</i>	1	rs17468457	C/T	T	T
	44	<i>SPINK7</i>	95	rs999741	C/T	T	C
	45	<i>TFG</i>	86	rs9878163	A/G	G	A
	46	<i>TIMM10</i>	119	rs7943793	A/G	G	T
	47	<i>TMEM25</i>	3	rs573971	G/A	A	A
	48	<i>UNC45A</i>	8	rs871078	G/C	C	A
	49	<i>UPK1A</i>	15	rs4806197	C/T	T	C
	50	<i>USMG5</i>	27	rs4918003	C/G	G	T
	51	<i>WDR41</i>	39	rs7714170	C/T	T	A
	52	<i>WFIKKN1</i>	20	rs7205409	C/T	C	C
	53	<i>XYLT1</i>	1	rs1045885	G/C	C	C
	54	<i>ZNF365</i>	63	rs7923561	C/T	C	A
	55	<i>ZNF418</i>	63	rs9749429	T/C	T	C
	56	<i>ZNF713</i>	1	rs4948003	A/T	A	T
<b>FAT</b>							
	1	<i>ADH4</i>	30	rs7694844	A/C	A	T
	2	<i>AGTPBP1</i>	33	rs918941	C/T	T	G
	3	<i>ATP13A1</i>	98	rs968525	A/T	T	C
	4	<i>B4GALT4</i>	4	rs4449310	A/G	A	C
	5	<i>BRWD2</i>	45	rs9325569	A/T	T	G
	6	<i>CCL23</i>	13	rs864104	A/G	G	A
	7	<i>CDK6</i>	3	rs982692	C/G	C	T
	8	<i>CHST13</i>	5	rs6786437	C/A	C	C
	9	<i>CLEC12A</i>	5	rs7313235	T/C	C	C
	10	<i>CLUAP1</i>	2	rs6501178	A/C	A	A
	11	<i>COG6</i>	1	rs2180960	T/G	G	G
	12	<i>COPG2</i>	34	rs992859	A/G	A	C
	13	<i>DAPL1</i>	2	rs759033	C/G	C	T
	14	<i>DLG4</i>	4	rs8067250	C/G	G	C
	15	<i>DMKN</i>	2	rs6510492	A/G	G	T
	16	<i>DPYSL4</i>	23	rs902627	G/T	G	G
	17	<i>DSEL</i>	8	rs9946666	C/T	T	T
	18	<i>EIF3H</i>	1	rs1695714	G/T	T	A
	19	<i>EMR2</i>	18	rs8107048	A/G	A	C
	20	<i>FGA</i>	1	rs1316990	C/T	T	C
	21	<i>FLJ10916</i>	7	rs7425197	C/G	G	C
	22	<i>FTHL7</i>	1	rs3945859	G/T	G	T
	23	<i>FUT4</i>	6	rs596855	A/G	G	C



24	<i>GUCA1C</i>	1	rs9821923	C/A	C	A
25	<i>HLA-DPB1</i>	29	rs9469485	T/G	T	C
26	<i>HLA-DRB1</i>	54	rs9275141	A/C	A	G
27	<i>HMHB1</i>	2	rs17100749	C/G	G	G
28	<i>IKZF1</i>	4	rs6952409	A/G	G	G
29	<i>IL1RN</i>	2	rs315948	T/C	T	G
30	<i>IL8</i>	18	rs552582	T/G	T	A
31	<i>IPO8</i>	21	rs9300199	C/T	T	T
32	<i>IRF5</i>	41	rs7808907	A/G	G	C
33	<i>ITGA4</i>	1	rs13429032	A/G	G	G
34	<i>KCTD10</i>	42	rs9593	C/T	?	A
35	<i>KCTD12</i>	2	rs9600792	A/G	G	T
36	<i>KCTD8</i>	7	rs7684615	G/C	C	G
37	<i>LAIR2</i>	1	rs4806747	A/G	A	A
38	<i>LDHC</i>	65	rs7946331	C/G	G	G
39	<i>LEMD3</i>	65	rs990609	A/C	A	C
40	<i>LILRA2</i>	3	rs1671176	A/C	C	C
41	<i>LOC644366</i>	3	rs3851781	C/T	C	C
42	<i>LOC644889</i>	2	rs1544506	T/C	T	C
43	<i>LOC645460</i>	1	rs17762258	G/A	G	A
44	<i>LOC646625</i>	7	rs9554219	G/T	T	T
45	<i>LOC653034</i>	1	rs7225168	G/T	T	G
46	<i>LRRC25</i>	6	rs8101804	G/A	A	C
47	<i>LZTS1</i>	1	rs13264395	G/C	G	C
48	<i>MAPK7</i>	3	rs9911451	A/T	A	A
49	<i>MARCH8</i>	81	rs984955	C/T	T	A
50	<i>MED4</i>	101	rs9595825	C/T	T	T
51	<i>MEGF9</i>	50	rs991121	C/T	T	G
52	<i>MFF</i>	14	rs9646881	A/C	C	G
53	<i>MGC12965</i>	5	rs682229	T/C	C	A
54	<i>MOCOS</i>	2	rs604271	G/A	G	A
55	<i>MYH1</i>	50	rs995362	T/C	T	G
56	<i>NUDT2</i>	15	rs4480190	C/G	C	C
57	<i>PAX8</i>	14	rs895417	T/C	T	A
58	<i>PLIN</i>	1	rs16942690	G/A	G	A
59	<i>PMP2</i>	1	rs13261227	A/G	G	C
60	<i>PPIL3</i>	5	rs7582581	A/G	G	T
61	<i>PRPF31</i>	11	rs42318	G/A	A	G
62	<i>PTCHD3</i>	39	rs7342136	A/G	A	T
63	<i>PTER</i>	2	rs2298126	A/C	C	A
64	<i>RAB37</i>	2	rs3850121	T/C	C	G
65	<i>RIMS2</i>	37	rs4734094	T/A	A	G
66	<i>RNF126P1</i>	14	rs9303389	G/C	G	G
67	<i>RPL14</i>	127	rs9968170	T/C	C	T
68	<i>SEMA4G</i>	30	rs807029	C/T	C	G
69	<i>SFTPD</i>	52	rs9421727	C/T	C	T
70	<i>SILV</i>	4	rs3213122	A/G	A	C
71	<i>SLC39A8</i>	51	rs9705	A/G	G	G
72	<i>STMN2</i>	15	rs4305892	A/G	A	T
73	<i>TFG</i>	109	rs989795	A/G	G	T
74	<i>TIMM10</i>	162	rs929934	A/G	G	G
75	<i>TRPC4AP</i>	17	rs6120827	T/G	T	T
76	<i>USMG5</i>	26	rs7913461	C/G	C	A
77	<i>WBSCR27</i>	31	rs8629	G/C	C	C
78	<i>WDR41</i>	5	rs335655	C/A	C	G
79	<i>ZNF232</i>	87	rs9912506	A/G	A	G

**Table S2 (A) P-values of Kolmogorov-Smirnov (K-S) test of pairwise comparison between groups in the RMD distribution and basic descriptive statistics for the RMD values.** Upper diagonal P-values are from randomly selected non-evQTL genes. Results obtained from the Box-Cox normalized and not normalized data are given. **(B) The per-probe statistics of RMD values for larger variance groups (MZ-L and DZ-L).** Probes with no SNP in either groups are not shown.

<b>A Log2-transformed data</b>				
	MZ-S	DZ-S	MZ-L	DZ-L
MZ-S	-	0.40	0.031	2.94e-04
DZ-S	9.34e-06	-	0.033	0.026
MZ-L	8.82e-18	1.66e-06	-	0.16
DZ-L	1.40e-78	1.66e-52	7.28e-22	-
<b>Box-Cox normalized log2-transformed data</b>				
	MZ-S	DZ-S	MZ-L	DZ-L
MZ-S	-	0.1670	4.49e-08	1.98e-14
DZ-S	0.0486	-	9.60e-11	8.30e-20
MZ-L	1.59e-68	1.57e-80	-	0.0333
DZ-L	2.97e-85	1.69e-99	1.84e-07	-

<b>B</b>	Probe	RMD in MZ-L and DZ-L groups					
		MZ-L			DZ-L		
		# of SNPs	Mean	Median	# of SNPs	Mean	Median
ILMN_1658247	37	0.0126	0.0103	47	0.0366	0.0150	
ILMN_1660086	75	0.0127	0.0091	84	0.0180	0.0123	
ILMN_1664641	6	0.0062	0.0060	31	0.0131	0.0106	
ILMN_1667229	24	0.0138	0.0098	25	0.0212	0.0129	
ILMN_1669032	62	0.0142	0.0098	44	0.0178	0.0175	
ILMN_1670841	6	0.0048	0.0047	3	0.0135	0.0180	
ILMN_1675616	36	0.0102	0.0094	39	0.0111	0.0101	
ILMN_1676528	41	0.0127	0.0083	45	0.0332	0.0181	
ILMN_1676575	29	0.0118	0.0108	35	0.0255	0.0167	
ILMN_1677124	31	0.0079	0.0042	29	0.0141	0.0144	
ILMN_1678974	50	0.0115	0.0085	28	0.0175	0.0148	
ILMN_1682034	124	0.0100	0.0083	178	0.0112	0.0086	
ILMN_1696537	16	0.0139	0.0101	5	0.0090	0.0047	
ILMN_1701933	27	0.0204	0.0176	31	0.0325	0.0238	
ILMN_1704598	4	0.0114	0.0119	2	0.0145	0.0145	
ILMN_1706959	32	0.0068	0.0051	35	0.0115	0.0083	
ILMN_1707137	9	0.0128	0.0089	7	0.0251	0.0083	
ILMN_1709173	6	0.0093	0.0090	2	0.0041	0.0041	
ILMN_1709590	19	0.0172	0.0114	6	0.0126	0.0114	
ILMN_1712400	7	0.0101	0.0084	10	0.0261	0.0237	
ILMN_1713803	9	0.0109	0.0129	7	0.0205	0.0090	
ILMN_1715169	20	0.0214	0.0162	11	0.0323	0.0264	
ILMN_1715693	75	0.0112	0.0090	69	0.0173	0.0130	
ILMN_1716218	11	0.0119	0.0125	9	0.0148	0.0071	
ILMN_1718932	111	0.0148	0.0106	143	0.0277	0.0151	
ILMN_1719170	31	0.0087	0.0075	28	0.0149	0.0115	
ILMN_1719204	50	0.0067	0.0064	53	0.0130	0.0075	
ILMN_1721727	29	0.0117	0.0079	21	0.0233	0.0131	
ILMN_1723984	41	0.0109	0.0093	43	0.0095	0.0076	
ILMN_1724480	47	0.0108	0.0083	35	0.0206	0.0171	
ILMN_1726624	11	0.0088	0.0101	8	0.0175	0.0116	
ILMN_1743836	2	0.0077	0.0077	20	0.0089	0.0087	
ILMN_1745043	11	0.0064	0.0040	8	0.0120	0.0112	
ILMN_1749070	12	0.0082	0.0081	9	0.0129	0.0111	
ILMN_1751559	14	0.0124	0.0087	11	0.0096	0.0066	
ILMN_1752150	7	0.0176	0.0155	7	0.0120	0.0116	
ILMN_1753164	49	0.0079	0.0062	46	0.0260	0.0085	
ILMN_1753312	26	0.0151	0.0118	29	0.0145	0.0117	

ILMN_1756579	41	0.0079	0.0055	33	0.0090	0.0065
ILMN_1764754	35	0.0096	0.0070	27	0.0179	0.0128
ILMN_1765274	24	0.0114	0.0085	17	0.0150	0.0103
ILMN_1765332	38	0.0088	0.0067	42	0.0199	0.0171
ILMN_1766165	27	0.0118	0.0077	31	0.0141	0.0119
ILMN_1778347	21	0.0084	0.0088	10	0.0132	0.0089
ILMN_1778488	14	0.0069	0.0070	14	0.0141	0.0052
ILMN_1780601	8	0.0166	0.0132	7	0.0133	0.0117
ILMN_1781388	19	0.0155	0.0119	6	0.0212	0.0121
ILMN_1784294	32	0.0149	0.0111	31	0.0218	0.0195
ILMN_1787199	62	0.0077	0.0059	53	0.0083	0.0065
ILMN_1795336	52	0.0080	0.0045	54	0.0209	0.0107
ILMN_1809496	27	0.0108	0.0099	17	0.0153	0.0098
ILMN_1813746	18	0.0173	0.0118	13	0.0237	0.0177
ILMN_1835359	9	0.0125	0.0104	3	0.0232	0.0180
ILMN_1836218	29	0.0090	0.0080	31	0.0147	0.0088
ILMN_1851610	2	0.0029	0.0029	22	0.0079	0.0056
ILMN_1854132	13	0.0102	0.0081	10	0.0077	0.0055
ILMN_1864228	1	0.0141	0.0141	11	0.0123	0.0064
ILMN_1885273	14	0.0124	0.0095	6	0.0116	0.0088
ILMN_1897741	12	0.0090	0.0075	8	0.0296	0.0290
ILMN_1900622	1	0.0047	0.0047	1	0.0024	0.0024
ILMN_1900994	10	0.0062	0.0033	5	0.0086	0.0075
ILMN_1904238	53	0.0120	0.0091	46	0.0192	0.0141
ILMN_2086222	61	0.0140	0.0116	61	0.0119	0.0090
ILMN_2120982	4	0.0167	0.0157	7	0.0111	0.0080
ILMN_2134224	15	0.0086	0.0086	7	0.0067	0.0039
ILMN_2147424	21	0.0124	0.0101	24	0.0239	0.0187
ILMN_2154287	3	0.0294	0.0370	1	0.0061	0.0061
ILMN_2173294	45	0.0062	0.0049	28	0.0147	0.0095
ILMN_2181363	20	0.0141	0.0106	12	0.0074	0.0034
ILMN_2183938	20	0.0220	0.0172	11	0.0441	0.0346
ILMN_2196479	14	0.0129	0.0090	13	0.0197	0.0128
ILMN_2198408	15	0.0196	0.0148	11	0.0237	0.0209
ILMN_2200659	109	0.0069	0.0058	131	0.0146	0.0091
ILMN_2223922	4	0.0104	0.0116	1	0.0088	0.0088
ILMN_2233539	55	0.0192	0.0135	58	0.0266	0.0151
ILMN_2237428	10	0.0134	0.0115	5	0.0129	0.0075
ILMN_2246083	53	0.0247	0.0188	40	0.0299	0.0257
ILMN_2262288	91	0.0079	0.0046	113	0.0153	0.0096

**Table S3 LCL evQTLs and interacting SNPs. P-value indicates the linear regression significance between interacting SNP genotype and gene expression of evQTL gene (see Methods). Two genes close to interacting SNPs at *trans*-genomic location are given.**

LCL evQTL gene	evSNP	evSNP position	Interacting SNP	Interacting SNP position	P-value	<i>trans</i> -located gene
<i>PTER</i>	rs7913889	chr10:16559381	rs7909832	chr10:16556710	8.66E-77	
<i>ERAP2</i>	rs6880490	chr5:96185549	rs11135484	chr5:96221889	4.76E-45	
<i>BBS2</i>	rs14306	chr16:56510299	rs13337155	chr16:56504724	5.77E-39	
<i>IPO8</i>	rs1371053	chr12:30845705	rs7968343	chr12:30817004	6.16E-38	
<i>WDR41</i>	rs4704434	chr5:76890568	rs441102	chr5:76738970	4.31E-33	
<i>SEMA4G</i>	rs752974	chr10:102762256	rs12571302	chr10:102742763	4.13E-32	
<i>N4BP2</i>	rs6824761	chr4:40054818	rs4974962	chr4:40115239	4.92E-29	
<i>PPIL3</i>	rs3731714	chr2:202060820	rs7606251	chr2:201736734	7.47E-28	
<i>PILRB</i>	rs5015756	chr7:100013457	rs7341507	chr7:99951315	9.06E-27	
<i>TIMM10</i>	rs514385	chr11:57306011	rs3851118	chr11:57280951	1.36E-23	
<i>LOC440160</i>	rs12052294	chr2:132433268	rs6720375	chr2:132440073	1.15E-21	
<i>C12ORF28</i>	rs775439	chr12:70096374	rs811822	chr12:70107646	1.35E-20	
<i>TIMM22</i>	rs2586306	chr17:909451	rs2241931	chr17:909653	2.05E-20	
<i>SERPINB10</i>	rs967538	chr18:61509075	rs6567399	chr18:61544546	1.60E-19	
<i>BTN3A2</i>	rs742090	chr6:26415637	rs3799378	chr6:26404374	4.29E-19	
<i>SCD5</i>	rs2125171	chr4:83835698	rs6830527	chr4:83798446	7.00E-18	
<i>GOLPH4</i>	rs13100726	chr3:167707035	rs9873288	chr3:167726096	2.77E-17	
<i>NUDT2</i>	rs1337593	chr9:34334015	rs7032924	chr9:34167694	2.59E-16	
<i>LOC642290</i>	rs7255207	chr19:28385923	rs7258333	chr19:28269920	8.94E-16	
<i>NMNAT3</i>	rs4367021	chr3:139420218	rs9822952	chr3:139385257	1.44E-15	
<i>IRF5</i>	rs10156169	chr7:128684571	rs8043	chr7:128607384	9.33E-15	
<i>IKZF1</i>	rs7789635	chr7:50473610	rs10216316	chr7:50462418	5.65E-14	
<i>C12ORF54</i>	rs2731094	chr12:48881661	rs12318285	chr12:48905575	8.20E-14	
<i>LEMDD3</i>	rs11175680	chr12:65605539	rs2133323	chr12:65577453	1.16E-13	
<i>MTRR</i>	rs327588	chr5:7908359	rs1801394	chr5:7870973	1.40E-12	
<i>WBSCR27</i>	rs13244770	chr7:73280691	rs4440516	chr7:73224041	3.61E-12	
<i>XYLT1</i>	rs4238652	chr16:17199665	rs7190386	chr16:17183373	4.25E-12	
<i>ITIH4</i>	rs2240915	chr3:52859526	rs17331178	chr3:52847544	5.13E-12	
<i>ATP13A1</i>	rs4808964	chr19:19603692	rs2304128	chr19:19746151	1.18E-11	
<i>KLHDC4</i>	rs2012475	chr16:87760814	rs2290019	chr16:87741662	2.95E-11	
<i>HCLS1</i>	rs4472078	chr3:121477634	rs12493927	chr3:121378927	7.57E-11	
<i>MTERFD2</i>	rs3815291	chr2:242032540	rs7559967	chr2:242006736	8.75E-10	
<i>HCG22</i>	rs1064191	chr6:31075375	rs2523857	chr6:31021504	2.12E-09	
<i>LOC650557</i>	rs1980495	chr6:32346794	rs3129878	chr6:32408735	3.03E-09	
<i>CDCP1</i>	rs6441894	chr3:45206579	rs7633169	chr3:45185519	1.21E-08	
<i>HLA-DPB1</i>	rs9277341	chr6:33039625	rs9501259	chr6:33055551	1.15E-07	
<i>LDHC</i>	rs3993291	chr11:18479739	rs4757662	chr11:18439738	1.19E-07	
<i>AXIN2</i>	rs740026	chr17:63561681	rs757558	chr17:63561592	1.25E-07	
<i>FLJ10916</i>	rs4246598	chr2:88438050	rs2970924	chr2:88433305	2.24E-07	
<i>MED4</i>	rs9534912	chr13:48588564	rs9526455	chr13:48712474	2.62E-07	
<i>RPS6KA2</i>	rs9356531	chr6:167276965	rs9355601	chr6:167269159	3.29E-07	
<i>C16ORF30</i>	rs2076441	chr16:1590576	rs2235643	chr16:1585115	1.76E-06	
<i>PLXDC2</i>	rs2038912	chr10:20207349	rs1326233	chr10:20238864	2.64E-06	
<i>UBE3C</i>	rs1182392	chr7:157036200	rs10271990	chr7:157037521	3.76E-06	
<i>SERPINB6</i>	rs7759176	chr6:2915664	rs7751676	chr6:2931879	6.59E-06	
<i>COPG2</i>	rs12706942	chr7:130149061	rs10128	chr7:130151694	7.90E-06	
<i>EIF5A</i>	rs7220464	chr17:7210836	rs11078672	chr17:7215142	9.29E-06	
<i>ALG11</i>	rs9526819	chr13:52563475	rs3742289	chr13:52603194	2.63E-05	
<i>SLC39A8</i>	rs151402	chr4:103190486	rs151372	chr4:103174196	2.65E-05	
<i>HMMH1</i>	rs17100739	chr5:143112574	rs10498677	chr6:11466011	3.20E-05	<i>TMEM170B</i>
<i>COX4NB</i>	rs301164	chr16:85813880	rs9923691	chr16:85824190	6.63E-05	
<i>CPNE1</i>	rs224354	chr20:34054609	rs1118233	chr20:34228349	7.84E-05	
<i>YPEL4</i>	rs633129	chr11:57685196	rs12790660	chr11:57667222	9.68E-05	
<i>PRPF31</i>	rs254259	chr19:54606405	rs16985368	chr19:54614590	1.17E-04	
<i>C7ORF28B</i>	rs10242703	chr7:6870635	rs2792574	chr14:48676427	2.86E-04	<i>MDGA2</i>
<i>CPA4</i>	rs6953940	chr7:129947007	rs3807344	chr7:129934219	4.33E-04	



		arthritis Systemic lupus erythematosus Multiple sclerosis Multiple sclerosis Ulcerative colitis Multiple sclerosis Rheumatoid arthritis Arthritis (juvenile idiopathic) Rheumatoid arthritis Type 1 diabetes Rheumatoid arthritis Response to ximelagatran treatment	
	<i>ITIH4</i>	Ulcerative colitis Immune reponse to smallpox (secreted IL-2) Schizophrenia Bipolar disorder	rs9847710-C rs17331151-A rs2239547-? rs736408-C
<b>FAT</b>			
	<i>CDK6</i>	White blood cell types White blood cell count Height Height Rheumatoid arthritis Height Height Height	rs445-C rs445-T rs42235-T rs2282978-? rs42041-G rs2282978-C rs2040494-C rs2282978-C
	<i>FGA</i>	Venous thromboembolism Fibrinogen D-dimer levels Fibrinogen	rs7659024-A rs6050-C rs13109457-A rs6056-A
	<i>IRF5</i>	Systemic lupus erythematosus Ulcerative colitis Systemic lupus erythematosus Systemic sclerosis Systemic sclerosis Systemic sclerosis Systemic sclerosis Systemic sclerosis Primary biliary cirrhosis Systemic lupus erythematosus Systemic lupus erythematosus Ulcerative colitis Primary biliary cirrhosis Rheumatoid arthritis Systemic sclerosis Systemic lupus erythematosus Systemic lupus erythematosus Systemic lupus erythematosus	rs729302-A rs4728142-A rs729302-A rs10488631-? rs10488631-? rs10488631-? rs10488631-? rs10488631-C rs12531711-G rs12531711-G rs10488631-C rs4728142-A rs10488631-C rs10488631-C rs10488631-C rs4728142-A rs12537284-A rs10488631-C
	<i>IKZF1</i>	Systemic lupus erythematosus Red blood cell traits Inflammatory bowel disease Crohn's disease Systemic lupus erythematosus Mean corpuscular volume Acute lymphoblastic leukemia (childhood) Acute lymphoblastic leukemia (childhood) Hippocampal atrophy	rs10276619-G rs12718598-T rs1456896-T rs1456896-T rs4917014-A rs12718597-A rs4132601-C rs11978267-G rs10276619-?
	<i>MEGF9</i>	Response to statin therapy	rs16909449-C
	<i>FUT4</i>	Response to angiotensin II receptor blocker therapy Response to angiotensin II receptor blocker therapy (opposite direction w/ diuretic therapy)	rs11020821-C rs11020821-C
	<i>KCTD8</i>	Response to amphetamines Anticoagulant levels	rs17641529-? rs13130255-?
	<i>PAX8</i>	Renal function-related traits (BUN)	<b>rs11123170-G</b>
	<i>COG6</i>	Psoriasis	rs7993214-?
	<i>TRPC4AP</i>	Prothrombin time	rs2295888-A
	<i>BRWD2</i>	Obesity-related traits Visceral fat	rs2919009-A rs7085142-T
	<i>IL1RN</i>	Obesity-related traits C-reactive protein Protein quantitative trait loci	rs4252023-A rs6734238-G rs6761276-?
	<i>DAPL1</i>	Obesity-related traits	rs16843372-G
	<i>PTER</i>	Obesity	rs10508503-C
	<i>ITGA4</i>	Monocyte count White blood cell types Celiac disease	rs2124440-G rs12988934-T rs13010713-G
	<i>DSEL</i>	Major depressive disorder Cognitive performance	rs17077540-G rs2124349-?
	<i>HLA-DRB1</i>	Lymphoma Epstein-Barr virus immune response (EBNA-1) Leishmaniasis (visceral) Systemic lupus erythematosus Crohn's disease Schizophrenia Ulcerative colitis Hepatocellular carcinoma Immune response to anthrax vaccine  Hypothyroidism IgA nephropathy Multiple sclerosis Nodular sclerosis Hodgkin lymphoma Nodular sclerosis Hodgkin lymphoma Systemic sclerosis Response to interferon beta therapy Rheumatoid arthritis Nephropathy Ulcerative colitis Rheumatoid arthritis Immunoglobulin A  Immunoglobulin A  Lumiracoxib-related liver injury Rheumatoid arthritis Rheumatoid arthritis Systemic lupus erythematosus Multiple sclerosis Multiple sclerosis Ulcerative colitis Multiple sclerosis Rheumatoid arthritis Arthritis (juvenile idiopathic) Rheumatoid arthritis Type 1 diabetes Rheumatoid arthritis Response to ximelagatran treatment	rs9268853-C rs477515-T rs9271858-G rs9270984-T rs7765379-G rs4530903-? rs6927022-A rs9272105-A rs3104402-A rs3129720-C rs660895-G rs3129889-G 5-SNP haplotype 6 5-SNP haplotype 3 rs3129763-? rs9272105-A rs7765379-? rs9275956-? rs9268853-T rs7765379-? rs9271366-? rs2187668-A rs3129900-? rs13192471-G rs6910071-G rs9271100-? rs9271366-G rs3135388-A rs2395185-? rs3129934-T rs6457620-? rs2395148-? rs660895-? rs2647044-A rs615672-? DRB1*07
	<i>DLG4</i>	Liver enzyme levels (alkaline phosphatase)	rs314253-C
	<i>IL8</i>	Inflammatory bowel disease	rs2472649-G
	<i>KCTD10</i>	HDL cholesterol	rs9943753-G
	<i>PTCHD3</i>	Fasting insulin-related traits (interaction with BMI)	rs1334893-?
	<i>ADH4</i>	Esophageal cancer (alcohol interaction)	rs3805322-?
	<i>SLC39A8</i>	Diastolic blood pressure Hypertension Systolic blood pressure Blood pressure Body mass index HDL cholesterol	rs13107325-T rs13107325-T rs13107325-T rs13107325-T rs13107325-T rs13107325-T
	<i>LZTS1</i>	Dental caries Dental caries Major depressive disorder (broad)	rs4922199-? rs10111661-? rs1106634-A
	<i>STMN2</i>	Creutzfeldt-Jakob disease	rs1460163-A
	<i>EIF3H</i>	Corneal curvature Colorectal cancer Colorectal cancer	rs11987235-A rs16892766-? rs16892766-A
	<i>SFTPD</i>	Chronic obstructive pulmonary disease-related biomarkers Chronic obstructive pulmonary disease-related biomarkers	rs7078012-T rs3923564-G
	<i>WDR41</i>	Caudate nucleus volume	<b>rs163030-A</b>
	<i>HLA-DPB1</i>	Aspirin exacerbated respiratory disease in asthmatics Hepatitis B (viral clearance) Hepatitis B (viral	rs1042151-G rs9277535-G rs9277535-G rs9277535-? rs987870-? rs9277535-

		clearance) Hepatitis B vaccine response Systemic sclerosis Hepatitis B Nephropathy Hepatitis B	G rs1883414-? rs9277535-G
	<i>LDHC</i>	Amyloid A Levels	rs2896526-G
<b>SKIN</b>			
	<i>LTBP3</i>	Urate levels Non-alcoholic fatty liver disease histology (lobular)	rs642803-T rs6591182-A
	<i>PAX8</i>	Renal function-related traits (BUN)	<b>rs11123170-G</b>
	<i>ACTC1</i>	Prostate cancer (gene x gene interaction) Refractive error	rs543686-? rs634990-C
	<i>ACCN1</i>	Obesity-related traits vWF and FVIII levels	rs17808461-A rs1354492-A
	<i>SOX5</i>	Non-obstructive azoospermia Systemic sclerosis Systemic sclerosis Response to statin therapy Response to antipsychotic treatment PR interval AIDS	rs10842262-? rs11047102-? rs11047102-? rs7979575-C rs1464500-? rs11047543-A rs1522232-C
	<i>HERC6</i>	Metabolite levels	rs1440581-?
	<i>WDR41</i>	Caudate nucleus volume	<b>rs163030-A</b>
	<i>PKD1L2</i>	Attention deficit hyperactivity disorder and conduct disorder	rs4889240-T
	<i>ZNF365</i>	Atopic dermatitis Crohn's disease Breast size Crohn's disease Intelligence Ewing sarcoma Breast cancer Mammographic density Crohn's disease Breast cancer Crohn's disease	rs10995251-C rs10761659-G rs7089814-C rs7076156-G rs10995170-? rs224278-C rs10822013-T rs10995190-A rs10761659-G rs10995190-G rs10995271-C
	<i>PECR</i>	Alcohol dependence	rs7590720-G