

Supplementary Tables (ST1-18) for manuscript *Multi-trait Genetic Association Analysis identifies 50 new risk loci for gastroesophageal reflux, seven new loci for Barrett's esophagus and provides insights into clinical heterogeneity in reflux diagnosis*

## Contents

Brief overview .....	3
Important - Generic column names and abbreviations .....	4
ST1. Description of individual meta-GWAS study used for the multi-trait GWAS analysis for GERD.....	5
ST2. Identified independent SNPs associated with GERD in the MTAG model and replication statistics in 23andMe.....	6
ST3. Association between genome-wide significant GERD loci with BMI, MDD and EDU. ....	12
ST4. MTAG Barrett Esophagus GWAS findings and replication analysis in 23andMe cohort.....	16
ST5. Comparison of MTAG BE loci effect sizes with and without depression and education attainment component in the multi-trait model.....	19
Important note for ST6-9 .....	21
ST6(a). MTAG GERD metaXcan analysis using eQTL information from Gastro-esophageal junction tissue.....	22
ST6(b). MTAG GERD metaXcan analysis using eQTL information from Esophageal Mucosa tissue .....	28
ST6(c). MTAG GERD metaXcan analysis using eQTL information from Esophageal Muscularis tissue .....	34
ST7. MultiXcan top associated genes with GERD susceptibility.....	40
ST8(a). MTAG GERD metaXcan analysis using eQTL information from the Gastro-esophageal junction tissue.....	56
ST8(b). MTAG GERD metaXcan analysis using eQTL information from the Esophageal Muscularis tissue .....	57
ST8(c). MTAG BE metaXcan analysis using eQTL information from the Esophageal Mucosa tissue .....	58
ST9. MultiXcan top associated genes with BE susceptibility .....	59
ST10. Selected candidate genome-wide GERD loci stratified into obesity-driven and depression-driven GERD genetic subgroups. ....	64

ST11. Queried obesity-driven GERD gene in FUMA (gene2func) .....	67
ST12. Queried depression-driven GERD gene in FUMA (gene2func).....	69
ST13. Parameters for the Gene2func FUMA analysis for the subgroup GERD genes .....	71
ST14. Additional analysis - subgroup-specific GERD genes enrichment analysis (MAGMA).....	72
ST15. GWAS Summary statistics for the 88 GERD loci on BE, EA and BEEA combined (BEACON, Cambridge, Bonn data).....	108
ST16. Estimation of the genetic heterogeneity in GERD effect sizes on BEEA via the Cochran Q statistics.....	113
ST17. Estimation of the genetic association between GERD loci and risk of BE/EA combined adjusting for the genetic association with BMI	114
ST18. Lookup on the genetic association of MTAG BE loci on GERD susceptibility .....	115

**Brief overview**

<b>Table Prefix</b>	<b>Description</b>
ST1	Description of individual meta-GWAS study used for the multi-trait GWAS analysis for GERD
ST2	Identified independent SNPs associated with GERD in the MTAG model and replication statistics in 23andMe
ST3	Association between genome-wide significant GERD loci with BMI, MDD and EDU.
ST4	Identified independent SNPs associated with Barrett Esophagus in the MTAG model and replication statistics in 23andMe
ST5	Comparison of MTAG BE loci effect sizes with and without depression and education attainment component in the multi-trait model
ST6	MTAG GERD MetaXcan complete result using eQTL information from (a) Gastroesophageal Junction, (b) Esophageal Mucosa and (c) Esophageal Muscularis tissues
ST7	MTAG GERD MultiXcan complete result using weighted eQTL information across human tissues
ST8	MTAG BE MetaXcan complete result using eQTL information from (a) Gastroesophageal Junction, (b) Esophageal Mucosa and (c) Esophageal Muscularis tissues
ST9	MTAG BE MultiXcan complete result using weighted eQTL information across human tissues
ST10	Selected candidate genome-wide GERD loci stratified into obesity-driven and depression-driven GERD genetic subgroups
ST11	Mapped gene names for each putative obesity-driven GERD loci
ST12	Mapped gene names for each putative depression-driven GERD loci
ST13	Parameters for the FUMA gene2func analysis on genetic subgroups of obesity-driven and depression-driven GERD
ST14	Tissue enrichment analysis on subgroup-specific GERD genes using FUMA MAGMA
ST15	Association between genome-wide significant MTAG GERD loci with BMI, BE, EA and BEEA.
ST16	Estimation of the genetic heterogeneity in GERD effect sizes on BEEA via the Cochran Q statistics
ST17	Estimation of the genetic association between GERD loci and risk of BE/EA combined adjusting for the genetic association with BMI
ST18	Lookup on the genetic association of MTAG BE loci on GERD susceptibility

**Important - Generic column names and abbreviations**

SNP=Single nucleotide polymorphism. Name usually given in RSID number (b37).

CHR=Chromosome of the SNP

BP=Basepair position of the SNP

EA=Effect allele (usually refers to as “A1” in most GWAS softwares)

NEA=Non-effect allele

EAF=Effect allele frequency

BETA=the magnitude association between the effect allele of the SNP and the trait of interest (GERD, BE, BMI etc)

23andMe= Estimates derived from the 23andMe cohort dataset

MTAG=Estimates derived from the MTAG model

Z=Z-score of the SNP association

Pval (or P)=Pvalue of the SNP association or the relevant test statistics unless otherwise stated.

**ST1. Description of individual meta-GWAS study used for the multi-trait GWAS analysis for GERD**

Trait	PMID (if available)	Approx. effective N	Ncases	Ncontrols	Total*	Participating cohort studies, consortium.	Phenotype definition
<b>GERD</b>	31527586	55600	78707	288734	367441	UK Biobank, QSKIN. 23andMe cohort excluded.	use of GERD medication, ICD-10 records, clinical diagnosis and self-report
<b>BE</b>	31527586	8284	9680	31211	40891	UK Biobank, BEACON, Bonn, Cambridge, Oxford.	ICD-10 records (for UK Biobank samples), pathological reports and clinical diagnosis.
<b>BMI</b>	30124842	681275	-	-	681275	UK Biobank, GIANT consortium	Measurement
<b>Education Attainment</b>	30038396	766345	-	-	766345	SSGAC	self-report
<b>MDD</b>	30718901	107118	170756	329443	500199	Psychiatric Genomics Consortium, UK Biobank. 23andMe cohort excluded.	self-report, ICD-10 records, DSM-IV/V criteria and clinical validation

\*Only participants of European descent were included.

**ST2. Identified independent SNPs associated with GERD in the MTAG model and replication statistics in 23andMe**

<i>Main GERD MTAG analysis</i>												<i>Replication cohort (23andMe)</i>				
SNP	CHR	BP	MAGMA genes	GENES eQTL	EA	NEA	EAF	Orig Z	MTAG beta	MTAG z	mtag_GERD_Pvalue	23andMe_NEA	23andMe_EA	23andMe_Pvalue	23andMe_beta	23andMe_se
rs12357321	10	21790476	NEBL	CASC10, SKIDA1, MLLT10, MIR1915	G	A	0.69	-4.167	-0.032	-6.063	1.33E-09	A	G	1.83E-06	-0.015	0.003
rs1021363	10	106610839	SORCS3	SORCS3	A	G	0.36	3.978	0.031	6.216	5.10E-10	A	G	3.34E-06	-0.014	0.003
rs761777	10	134938075	KNDC1	KNDC1	A	G	0.75	-4.665	-0.035	-6.228	4.71E-10	A	G	4.01E-09	0.022	0.004
rs10837002	11	38565727			C	G	0.65	-4.046	-0.028	-5.490	4.03E-08	C	G	6.85E-07	0.015	0.003
rs7942368	11	76465362	TSKU	TSKU, GUCY2EP	C	T	0.79	3.587	0.034	5.739	9.54E-09	C	T	7.14E-11	-0.023	0.004
rs10789931	11	112842773	NCAM1	NCAM1	C	T	0.88	-4.878	-0.042	-5.604	2.09E-08	C	T	0.000122123	0.018	0.005
rs2734839	11	113286490	TTC12, ANKK1	DRD2, ANKK1, MIR4301, TTC12	C	T	0.39	3.299	0.028	5.753	8.79E-09	C	T	1.68E-05	-0.013	0.003
rs1479405	12	15387519	RERG	RERG	C	T	0.68	-5.368	-0.031	-6.112	9.85E-10	C	T	3.16E-09	0.018	0.003
rs773109	12	56374695	CDK2, SUOX, ERBB3, RAB5B	CDK2, SUOX	G	A	0.66	5.417	0.038	7.459	8.71E-14	A	G	0.000110165	0.012	0.003
rs324769	12	83969240			C	T	0.55	2.735	0.027	5.539	3.05E-08	C	T	3.75E-07	-0.015	0.003
rs1716171	12	123716376	MPHOSPH9, C12orf65	C12orf65	C	T	0.21	-4.015	-0.038	-6.504	7.82E-11	C	T	1.78E-05	0.015	0.004
rs9542729	13	31833578	B3GALTL	B3GALTL	C	G	0.80	3.709	0.036	6.054	1.41E-09	C	G	0.00237389	-0.011	0.004

rs1334297	13	583353 75	PCDH17	PCDH17	G	A	0.27	3.308	0.039	7.112	1.14E-12	A	G	0.003729 455	0.010	0.003
rs9540720	13	669227 05	<b>PCDH9</b>	<b>PCDH9</b>	A	G	0.52	-3.951	- 0.027	-5.541	3.01E-08	A	G	3.32E-07	0.015	0.003
rs9517313	13	991058 92	STK24, FARP1	STK24, FARP1	G	C	0.62	-4.199	- 0.033	-6.703	2.05E-11	C	G	9.77E-08	-0.016	0.003
rs957345	14	752760 79	<b>YLPM1, PROX2, EIF2B2</b>	<b>YLPM1, PROX2</b>	C	G	0.46	-4.087	- 0.029	-6.023	1.72E-09	C	G	1.43E-06	0.014	0.003
rs1770193 4	14	893944 74	TTC8		T	C	0.56	4.673	0.026	5.466	4.60E-08	C	T	0.087243 6	0.005	0.003
rs942065	14	940320 65	UNC79, COX8C	UNC79	G	A	0.37	-3.484	- 0.031	-6.136	8.45E-10	A	G	5.83E-09	-0.018	0.003
rs1013311 1	14	103377 321	TRAF3, AMN	TRAF3, AMN, CDC42BP B	G	A	0.84	-4.365	- 0.042	-6.421	1.35E-10	A	G	0.012570 332	-0.010	0.004
rs1164528 8	16	511726 77	<b>SALL1</b>	<b>SALL1</b>	G	A	0.81	-4.311	- 0.034	-5.555	2.78E-08	A	G	0.781204 435	0.001	0.004
rs9940128	16	538007 54	FTO	FTO	G	A	0.58	-0.577	- 0.033	-6.838	8.06E-12	A	G	2.06E-05	-0.013	0.003
rs1259891 6	16	606587 51			C	G	0.73	5.175	0.033	6.169	6.87E-10	C	G	6.47E-05	-0.013	0.003
rs7206608	16	828726 28	CDH13	CDH13, LOC10192 8446	C	G	0.68	-4.393	- 0.029	-5.666	1.46E-08	C	G	2.61E-05	0.013	0.003
rs1245301 0	17	503161 31	CA10		C	T	0.61	-6.294	- 0.030	-6.020	1.75E-09	C	T	1.01E-13	0.022	0.003
rs1296785 5	18	351382 45	CELF4	CELF4	A	G	0.33	3.964	0.037	7.119	1.09E-12	A	G	1.36E-13	-0.023	0.003
rs1431196	18	508321 02	DCC	DCC	A	G	0.57	-4.013	- 0.032	-6.665	2.65E-11	A	G	1.18E-06	0.014	0.003
rs1942262	18	528733 17	TCF4	TCF4	G	A	0.71	-4.742	- 0.032	-5.955	2.60E-09	A	G	0.001924 348	-0.010	0.003
rs7241572	18	775807 12	KCNG2	KCNG2	G	A	0.79	-3.444	- 0.037	-6.118	9.49E-10	A	G	0.000172 186	-0.014	0.004

rs9636202	19	184492 38	PGPEP1	PGPEP1, LSM4, GDF15	G	A	0.73	4.476	0.035	6.404	1.51E-10	A	G	1.04E-14	0.026	0.003
rs2023878	19	188341 24	C19orf60 , CRTC1	CRTC1	C	T	0.81	5.887	0.036	5.930	3.04E-09	C	T	2.99E-11	-0.025	0.004
rs569356	1	291366 86	OPRD1, YTHDF2 , SESN2	OPRD1, YTHDF2	A	G	0.86	4.360	0.038	5.488	4.07E-08	A	G	0.015336 537	-0.010	0.004
rs3766823	1	321972 57	COL16A 1	MIR4254	G	A	0.83	-4.605	- 0.039	-6.164	7.09E-10	A	G	2.30E-05	-0.016	0.004
rs2782641	1	440133 55	ST3GAL 3, CCDC24 , PTPRF	PTPRF	G	A	0.39	-3.195	- 0.027	-5.477	4.33E-08	A	G	0.798664 947	-0.001	0.003
rs1937450	1	664788 40	PDE4B	PDE4B	T	G	0.46	-4.897	- 0.032	-6.519	7.07E-11	G	T	8.71E-05	-0.012	0.003
rs2815749	1	728147 83	NEGR1		A	G	0.20	-3.739	- 0.039	-6.456	1.07E-10	A	G	7.40E-12	0.026	0.004
rs1737956 1	1	983401 39	DPYD	DPYD	A	T	0.86	-5.359	- 0.053	-7.730	1.08E-14	A	T	0.001750 928	0.013	0.004
rs861575	1	184725 099	EDEM3	EDEM3, FAM129A	T	C	0.58	-4.637	- 0.028	-5.647	1.63E-08	C	T	0.080061 027	-0.005	0.003
rs7527682	1	189172 684			A	G	0.46	4.839	0.027	5.534	3.13E-08	A	G	1.83E-05	-0.013	0.003
rs7541875	1	190957 589			A	G	0.57	-5.331	- 0.027	-5.649	1.61E-08	A	G	2.18E-09	0.018	0.003
rs903678	1	201809 918	NAV1, LMOD1, IPO9	IPO9, MIR1231	G	A	0.66	-2.507	- 0.028	-5.455	4.89E-08	A	G	0.195211 75	-0.004	0.003
rs1883842	20	412230 62	PTPRT	PTPRT	T	G	0.72	-4.809	- 0.031	-5.744	9.27E-09	G	T	1.11E-09	-0.020	0.003
rs2834005	21	342917 08			T	C	0.69	-4.376	- 0.030	-5.741	9.42E-09	C	T	0.002380 513	-0.010	0.003
rs2183588	21	426268 82	BACE2	BACE2	A	G	0.35	-3.669	- 0.029	-5.697	1.22E-08	A	G	0.608676 54	0.002	0.003
rs2838771	21	465015 76	ADARB 1	ADARB1	G	C	0.35	3.677	0.028	5.547	2.91E-08	C	G	3.32E-06	0.014	0.003



rs9615905	22	48875699	FAM19A5	FAM19A5	C	T	0.54	-4.290	-0.028	-5.698	1.21E-08	C	T	4.67E-06	0.014	0.003
rs4300861	2	22549441			C	T	0.62	-4.232	0.031	-6.206	5.43E-10	C	T	0.05116689	0.006	0.003
rs12997558	2	41704580			G	A	0.64	-3.864	0.028	-5.539	3.04E-08	A	G	0.023923049	-0.007	0.003
rs1011407	2	60665768	BCL11A	BCL11A	A	G	0.88	3.767	0.042	5.716	1.09E-08	A	G	4.97E-05	-0.019	0.005
rs4851239	2	100489966	LYG1, AFF3	AFF3	C	T	0.62	6.221	0.033	6.635	3.24E-11	C	T	4.85E-09	-0.018	0.003
rs6711584	2	104421692			G	A	0.55	-3.957	0.032	-6.664	2.66E-11	A	G	0.032727535	-0.006	0.003
rs13409451	2	144257639	ARHGA P15	ARHGAP15	A	G	0.61	3.012	0.028	5.618	1.93E-08	A	G	0.006388081	-0.008	0.003
rs2358016	2	162007430	TANK	TANK	C	G	0.50	-3.714	0.028	-5.877	4.17E-09	C	G	NA	0.006	0.003
rs1596747	2	193802478			A	G	0.51	-4.346	0.031	-6.466	1.00E-10	A	G	1.71E-08	0.016	0.003
rs7600261	2	212622818	ERBB4	ERBB4	C	T	0.69	-3.614	0.034	-6.475	9.47E-11	C	T	5.64E-07	0.016	0.003
rs7612999	3	35678337	ARPP21	ARPP21	G	A	0.75	-4.389	0.031	-5.455	4.90E-08	A	G	0.396749529	-0.003	0.003
rs6441814	3	44049114			G	A	0.53	4.630	0.028	5.890	3.86E-09	A	G	3.22E-09	0.017	0.003
rs2240326	3	50128386	RBM5, RBM6, AMT	RBM5, RBM6	G	A	0.53	5.256	0.047	9.799	1.13E-22	A	G	NA	0.011	0.009
rs2016933	3	65653157	<b>MAG11</b>	<b>MAG11</b>	C	G	0.27	4.097	0.031	5.724	1.04E-08	C	G	0.018477378	-0.008	0.003
rs6780459	3	104624105	ALCAM		A	T	0.25	-4.574	0.031	-5.533	3.14E-08	A	T	0.004809081	0.010	0.003
rs7685686	4	3207142	GRK4, HTT, MSANTD1	HTT, MSANTD1	A	G	0.58	2.519	0.028	5.708	1.14E-08	A	G	0.000916318	-0.010	0.003
rs2164300	4	67813017			C	T	0.48	3.137	0.026	5.485	4.13E-08	C	T	2.70E-05	-0.012	0.003

rs7675588	4	807349 78		PCAT4	C	A	0.21	4.585	0.034	5.630	1.80E-08	A	C	7.96E-05	0.014	0.004
rs920559	4	102218 715	FLJ2002 1	PPP3CA	C	G	0.85	-4.194	- 0.038	-5.607	2.06E-08	C	G	1.24E-09	0.025	0.004
rs1310732 5	4	103188 709	SLC39A 8	SLC39A8	C	T	0.93	-4.616	- 0.070	-7.638	2.20E-14	C	T	6.45E-17	0.045	0.005
rs1510719	4	140938 116	MAML3	MAML3	T	C	0.62	5.861	0.039	7.860	3.84E-15	C	T	6.89E-05	0.012	0.003
rs1001096 3	4	159839 313	RAPGEF 2, FNIP2, C4orf45	FNIP2, C4orf45	C	T	0.38	2.760	0.027	5.454	4.92E-08	C	T	0.032678 313	-0.006	0.003
rs1592757	5	103889 998			G	C	0.64	-2.453	- 0.031	-6.190	6.00E-10	C	G	0.035156 798	-0.006	0.003
rs1195306 1	5	120144 025			C	T	0.66	-3.436	- 0.028	-5.536	3.10E-08	C	T	3.72E-06	0.014	0.003
rs329122	5	133864 599	JADE2	JADE2	G	A	0.58	3.774	0.029	5.929	3.05E-09	A	G	0.000283 336	0.011	0.003
rs6939294	6	169506 31			C	T	0.77	4.083	0.036	6.314	2.71E-10	C	T	1.20E-05	-0.015	0.003
rs2145318	6	264966 03	HMG4, BTN2A1 , BTN2A2 , BTN1A1 , BTN3A3	HCG11, HMG4, BTN2A1, BTN1A1, BTN3A3	T	A	0.51	-5.568	- 0.035	-7.347	2.03E-13	A	T	3.31E-08	-0.016	0.003
rs4713692	6	338076 38		MLN	C	T	0.63	3.202	0.028	5.538	3.07E-08	C	T	4.37E-06	-0.014	0.003
rs205262	6	345631 64	UHRF1B P1	SPDEF	A	G	0.73	-4.777	- 0.035	-6.418	1.38E-10	A	G	1.36E-09	0.020	0.003
rs9372625	6	983440 31			G	A	0.62	4.367	0.038	7.616	2.62E-14	A	G	2.33E-08	0.017	0.003
rs9373363	6	143150 043	<b>HIVEP2</b>	<b>HIVEP2</b>	A	G	0.75	3.919	0.033	5.879	4.13E-09	A	G	5.42E-10	-0.021	0.003
rs1220471 4	6	152235 339	ESR1	ESR1	C	T	0.37	3.280	0.029	5.770	7.92E-09	C	T	NA	-0.008	0.003

rs11762636	7	2061111	FTSJ2, MADIL1	MADIL1	C	A	0.82	5.006	0.051	8.229	1.88E-16	A	C	5.30E-11	0.024	0.004
rs10242223	7	3521573	SDK1	SDK1	A	G	0.33	5.773	0.028	5.500	3.79E-08	A	G	4.01E-05	-0.013	0.003
rs2043539	7	12253880	<b>TMEM106B</b>	<b>TMEM106B</b>	G	A	0.58	-3.056	-0.027	-5.592	2.24E-08	A	G	3.87E-05	-0.012	0.003
rs215614	7	32347335	PDE1C	PDE1C	G	A	0.37	4.396	0.033	6.601	4.08E-11	A	G	2.17E-06	0.014	0.003
rs2396133	7	109197067			A	G	0.52	-3.874	0.029	-6.093	1.11E-09	A	G	1.95E-12	0.021	0.003
rs2396766	7	114318071	FOXP2	FOXP2	G	A	0.53	-5.345	0.032	-6.683	2.33E-11	A	G	0.000170071	-0.011	0.003
rs2106353	7	126506598	GRM8	GRM8	G	T	0.77	-5.502	0.037	-6.419	1.37E-10	G	T	1.33E-06	0.017	0.004
rs3863241	8	73890335	TERF1	TERF1, KCNB2	C	T	0.47	-5.608	0.032	-6.749	1.49E-11	C	T	0.000167602	0.011	0.003
rs903959	8	142630782			T	A	0.60	-3.742	0.029	-5.932	2.99E-09	A	T	0.896580398	0.000	0.003
rs3793577	9	23737627	ELAVL2	ELAVL2	A	G	0.46	-4.063	0.027	-5.574	2.49E-08	A	G	1.00E-05	0.017	0.004
rs7032155	9	122672771			C	A	0.41	-3.758	0.028	-5.648	1.63E-08	A	C	0.026847471	-0.007	0.003
rs4382592	9	134870755	MED27	MED27	T	G	0.30	3.194	0.030	5.764	8.20E-09	G	T	0.365033828	0.003	0.003

**ST3. Association between genome-wide significant GERD loci with BMI, MDD and EDU.**

SNP	CHR	EA	NEA	EAF	BMI_beta	BMI_P	EDU_beta	EDU_P	MDD_beta	MDD_P
rs569356	1	A	G	0.87	-0.001	6.60E-01	0.011	1.53E-05	0.03	1.05E-02
rs3766823	1	A	G	0.18	0.013	7.40E-07	-0.016	3.27E-12	0.02	1.03E-01
rs2782641	1	A	G	0.61	0.002	2.40E-01	-0.017	4.22E-23	0.005	5.70E-01
rs1937450	1	T	G	0.46	-0.013	3.20E-11	-0.006	2.35E-04	-0.02	1.16E-02
rs2815749	1	A	G	0.18	-0.031	4.00E-37	0.002	2.76E-01	-0.044	1.60E-05
rs17379561	1	A	T	0.85	-0.018	6.80E-11	-0.019	1.73E-15	0.013	2.35E-01
rs861575	1	T	C	0.59	-0.008	8.60E-05	-0.009	3.35E-07	-0.011	1.51E-01
rs7527682	1	A	G	0.47	0.004	5.10E-02	0.006	2.10E-04	-0.003	7.39E-01
rs7541875	1	A	G	0.59	-0.006	3.20E-03	-0.003	9.66E-02	-0.005	5.03E-01
rs903678	1	A	G	0.34	0.024	3.50E-31	-0.011	1.54E-09	0.017	4.27E-02
rs4300861	2	T	C	0.39	0.006	4.80E-03	-0.008	6.24E-06	0.032	9.20E-05
rs12997558	2	A	G	0.36	0.012	1.00E-08	0.008	2.87E-06	0.008	3.25E-01
rs1011407	2	A	G	0.88	0.017	9.10E-09	0.014	1.05E-07	0.035	4.24E-03
rs4851239	2	T	C	0.37	-0.002	2.30E-01	-0.01	4.45E-08	-0.015	6.52E-02
rs6711584	2	A	G	0.45	0.013	1.60E-11	-0.01	2.12E-09	0.011	1.62E-01
rs13409451	2	A	G	0.61	0.004	5.10E-02	0.016	1.59E-20	0.013	1.06E-01
rs2358016	2	C	G	0.52	-0.005	1.60E-02	-0.016	7.43E-22	0	9.76E-01
rs1596747	2	A	G	0.51	-0.007	1.50E-04	-0.012	3.42E-12	-0.019	1.56E-02
rs7600261	2	T	C	0.3	0.004	5.20E-02	0.014	2.41E-14	0.019	2.51E-02
rs7612999	3	A	G	0.25	0.013	2.10E-08	0.009	7.57E-06	0.001	9.27E-01
rs6441814	3	A	G	0.46	-0.013	1.90E-10	0.003	4.18E-02	-0.016	3.92E-02
rs2240326	3	A	G	0.49	-0.025	1.50E-37	0.02	1.80E-32	-0.018	2.63E-02
rs2016933	3	C	G	0.29	0.006	1.20E-02	-0.01	1.02E-07	0.022	1.08E-02
rs6780459	3	A	T	0.25	-0.014	1.60E-09	-0.005	9.38E-03	-0.015	1.04E-01

rs7685686	4	A	G	0.57	0.007	5.20E-04	0.012	2.61E-12	0.011	1.69E-01
rs2164300	4	T	C	0.51	-0.011	6.80E-08	-0.013	7.16E-14	-0.016	4.51E-02
rs7675588	4	A	C	0.79	-0.014	1.50E-08	0.004	3.47E-02	-0.015	1.11E-01
rs920559	4	C	G	0.85	-0.016	6.60E-09	0.005	5.41E-02	-0.021	1.04E-01
rs13107325	4	T	C	0.07	0.047	1.60E-36	0.019	4.45E-08	-0.022	1.92E-01
rs1510719	4	T	C	0.63	0.012	3.70E-09	0.01	1.69E-08	0.026	1.33E-03
rs10010963	4	T	C	0.61	-0.008	1.70E-04	-0.011	1.83E-09	-0.027	9.75E-04
rs1592757	5	C	G	0.37	0.008	1.10E-04	-0.01	5.89E-09	0.053	1.90E-10
rs11953061	5	T	C	0.34	0.005	3.10E-02	-0.011	3.78E-10	0.023	5.88E-03
rs329122	5	A	G	0.42	-0.014	8.40E-13	-0.008	1.47E-06	-0.026	1.30E-03
rs6939294	6	T	C	0.23	-0.008	9.30E-04	-0.015	3.21E-13	-0.015	1.06E-01
rs2145318	6	A	T	0.49	0.003	1.40E-01	0.011	2.63E-10	0.032	5.20E-05
rs4713692	6	T	C	0.34	-0.012	7.50E-09	-0.007	6.50E-05	-0.007	3.80E-01
rs205262	6	A	G	0.72	-0.027	1.80E-35	0.006	3.05E-03	0.002	8.08E-01
rs9372625	6	A	G	0.38	-0.016	1.30E-14	0.024	6.76E-42	0.001	8.87E-01
rs9373363	6	A	G	0.75	0.006	5.40E-03	-0.009	1.14E-06	0.018	4.61E-02
rs12204714	6	T	C	0.65	-0.001	4.80E-01	-0.015	3.51E-17	-0.028	6.27E-04
rs11762636	7	A	C	0.19	-0.016	5.70E-10	0.018	6.93E-16	-0.034	6.56E-04
rs10242223	7	A	G	0.33	-0.001	7.80E-01	0.006	1.26E-03	0.022	9.75E-03
rs2043539	7	A	G	0.42	0.009	8.10E-06	0.004	3.92E-02	0.032	6.52E-05
rs215614	7	A	G	0.64	-0.016	1.90E-14	-0.01	3.01E-09	-0.02	1.60E-02
rs2396133	7	A	G	0.52	-0.01	3.10E-07	0.006	5.45E-04	-0.028	3.69E-04
rs2396766	7	A	G	0.45	0.013	1.40E-11	-0.008	1.87E-06	0.016	4.16E-02
rs2106353	7	T	G	0.22	0.004	6.80E-02	0.011	3.37E-08	0.009	3.60E-01
rs3863241	8	T	C	0.54	0.009	2.30E-06	-0.006	8.77E-04	0.021	7.08E-03
rs903959	8	A	T	0.4	0.012	7.10E-09	-0.016	2.02E-19	-0.01	2.47E-01
rs3793577	9	A	G	0.47	0.001	8.00E-01	-0.007	2.69E-05	-0.019	1.98E-02

rs7032155	9	A	C	0.61	0.008	1.90E-04	-0.007	1.04E-04	0.033	6.34E-05
rs4382592	9	T	G	0.31	0.01	1.90E-06	-0.016	1.01E-18	0.014	9.50E-02
rs12357321	10	A	G	0.32	0.019	3.10E-19	-0.008	8.31E-06	0.001	8.75E-01
rs1021363	10	A	G	0.37	0.003	2.10E-01	-0.008	8.53E-06	0.024	2.97E-03
rs761777	10	A	G	0.72	-0.009	9.20E-05	-0.008	3.66E-05	-0.024	1.77E-02
rs10837002	11	C	G	0.65	-0.009	2.00E-05	0.008	2.04E-05	-0.014	1.02E-01
rs7942368	11	T	C	0.22	-0.015	3.10E-10	-0.013	1.63E-09	-0.027	5.22E-03
rs10789931	11	T	C	0.12	0.007	2.60E-02	0.01	8.86E-05	0.031	1.18E-02
rs2734839	11	T	C	0.6	-0.008	1.60E-04	-0.007	2.28E-05	-0.027	7.21E-04
rs1479405	12	T	C	0.33	0.008	3.70E-04	0.009	1.94E-07	-0.003	7.53E-01
rs773109	12	A	G	0.32	-0.014	2.50E-11	-0.016	2.00E-19	-0.003	7.64E-01
rs324769	12	T	C	0.45	-0.005	6.40E-03	-0.011	1.35E-10	-0.015	6.24E-02
rs1716171	12	T	C	0.79	0.003	3.00E-01	-0.021	6.50E-24	0.024	2.79E-02
rs9542729	13	C	G	0.8	0.002	3.70E-01	0.012	1.59E-08	0.032	1.24E-03
rs1334297	13	A	G	0.73	-0.011	4.30E-07	0.024	3.06E-37	-0.023	8.27E-03
rs9540720	13	A	G	0.51	-0.007	4.80E-04	-0.007	9.85E-05	-0.016	4.35E-02
rs9517313	13	C	G	0.37	0.01	3.50E-07	0.01	3.55E-08	0.012	1.51E-01
rs957345	14	C	G	0.46	-0.006	2.30E-03	-0.006	5.56E-04	-0.026	9.35E-04
rs17701934	14	T	C	0.57	0.005	6.20E-03	-0.005	1.68E-03	0.015	6.03E-02
rs942065	14	A	G	0.64	0.02	2.80E-23	0.007	5.62E-05	0.016	5.00E-02
rs10133111	14	A	G	0.17	0.021	3.50E-15	0.007	2.43E-03	0.018	8.92E-02
rs11645288	16	A	G	0.2	0.002	3.40E-01	0.011	3.85E-07	0.033	9.94E-04
rs9940128	16	A	G	0.42	0.074	1.30E-305	0.003	1.14E-01	0.021	8.29E-03
rs12598916	16	C	G	0.73	0.003	1.90E-01	0.007	4.29E-04	0.024	6.02E-03
rs7206608	16	C	G	0.69	-0.013	2.30E-10	-0.007	2.39E-04	-0.01	2.31E-01
rs12453010	17	T	C	0.39	0.003	9.20E-02	0.006	4.02E-04	0.011	1.82E-01
rs12967855	18	A	G	0.33	-0.004	4.70E-02	0.019	1.07E-26	0.027	1.25E-03

rs1431196	18	A	G	0.56	-0.002	3.70E-01	-0.013	4.76E-14	-0.031	8.37E-05
rs1942262	18	A	G	0.3	0.002	4.40E-01	0.007	2.44E-04	0.024	4.79E-03
rs7241572	18	A	G	0.19	0.005	3.10E-02	0.012	6.60E-09	0.035	5.90E-04
rs9636202	19	A	G	0.26	-0.018	2.00E-15	-0.006	1.66E-03	-0.013	1.69E-01
rs2023878	19	T	C	0.19	-0.02	2.50E-15	0.001	6.00E-01	-0.007	4.64E-01
rs1883842	20	T	G	0.73	-0.003	1.50E-01	-0.009	1.00E-06	-0.008	3.48E-01
rs2834005	21	T	C	0.69	-0.006	3.60E-03	0.01	1.46E-07	-0.018	3.31E-02
rs2183588	21	A	G	0.35	-0.012	1.90E-08	-0.013	1.46E-13	0.003	7.17E-01
rs2838771	21	C	G	0.65	-0.014	3.60E-12	0.007	2.11E-04	-0.022	7.02E-03
rs9615905	22	T	C	0.45	0.012	4.60E-09	-0.007	1.45E-04	0.003	6.80E-01

**ST4. MTAG Barrett Esophagus GWAS findings and replication analysis in 23andMe cohort**

Locus number	SNP	CHR	BP	E A	NE A	EA F	Mtag beta	mtag_z	mtag_pval	In Gharahkhani et al. 2016	LD with GERD	23andMe NEA/EA	23andMe EAF	23andMe pvalue	Rep	23andMe BETA	23andMe SE
1	rs3072	2	20878406	T	C	0.63	0.113	-7.14	9.29E-13	YES		C/T	0.62	6.95E-10	YES	-0.061	0.010
1	rs7255	2	20878820	T	C	0.45	0.107	6.95	3.75E-12	x		C/T	0.47	2.16E-10	YES	0.061	0.010
1	rs10199768	2	21244000	G	T	0.55	0.085	5.56	2.62E-08	x		G/T	0.43	1.06E-04	YES	-0.038	0.010
1	rs520354	2	21259612	A	G	0.53	0.090	-5.97	2.44E-09	x		A/G	0.46	8.96E-04	YES	0.032	0.010
2	rs17369434	2	56004396	A	G	0.92	0.178	-6.16	7.34E-10	NEW		A/G	0.07	8.53E-01	NO	0.003	0.018
2	rs10207635	2	56040035	A	T	0.87	0.136	-6.18	6.34E-10	x		A/T	0.13	1.45E-01	NO	0.021	0.014
3	rs2861695	2	67846727	A	G	0.19	0.110	5.81	6.23E-09	NEW		A/G	0.80	8.90E-08	YES	-0.064	0.012
4	rs1868915	2	200015561	C	A	0.41	0.091	-5.91	3.51E-09	YES		A/C	0.43	2.31E-12	YES	-0.068	0.010
5	rs2597301	3	70909494	C	G	0.31	0.119	7.32	2.56E-13	YES		C/G	0.68	1.59E-07	YES	-0.054	0.010
5	rs2077610	3	70911271	T	A	0.45	0.095	6.15	7.84E-10	x		A/T	0.46	1.43E-06	YES	0.047	0.010
6	rs10080150	5	593160	A	G	0.62	0.094	-6.06	1.33E-09	NEW		A/G	0.37	3.77E-09	YES	0.058	0.010
7	rs10039754	5	28986950	A	G	0.45	0.085	-5.65	1.63E-08	NEW		A/G	0.54	6.70E-04	YES	0.033	0.010



8	rs93937 35	6	2658232 7	A	G	0.8 6	0.13 5	6.11	9.70E- 10	x		A/G	0.12	9.35E- 01	NO	-0.001	0.015
8	rs12215 773	6	2703923 3	T	C	0.7 7	0.10 3	5.67	1.45E- 08	NEW	rs21453 18	C/T	0.81	1.11E- 02	NO	0.031	0.012
8	rs13219 181	6	2713622 5	A	G	0.8 1	0.10 7	5.44	5.23E- 08	x		A/G	0.16	1.67E- 01	NO	-0.018	0.013
8	rs13195 040	6	2741392 4	A	G	0.8 9	0.15 9	6.45	1.14E- 10	x		A/G	0.08	NA	NO	-0.031	0.065
8	rs20096 8	6	2785956 8	T	C	0.8 0	0.11 1	5.71	1.14E- 08	x		C/T	0.84	1.13E- 02	NO	0.034	0.013
8	rs77524 48	6	2830109 9	A	G	0.8 7	0.13 5	5.82	5.83E- 09	x		A/G	0.10	7.01E- 01	NO	-0.006	0.016
9	rs62221 7	6	1607667 70	T	C	0.5 2	0.09 3	6.17	6.94E- 10	NEW		C/T	0.50	3.28E- 04	YES S	0.035	0.010
9	rs25049 30	6	1608452 19	T	C	0.2 0	0.10 7	-5.75	8.95E- 09	x		C/T	0.21	2.71E- 01	NO	-0.013	0.012
10	rs48412 11	8	9599512	A	G	0.2 6	0.09 6	5.55	2.83E- 08	YES		A/G	0.75	3.59E- 02	NO	-0.023	0.011
10	rs10104 032	8	9616664	C	A	0.6 3	0.09 0	-5.75	8.73E- 09	x		A/C	0.63	NA	NO	-0.030	0.010
11	rs21271 28	8	1143492 9	C	T	0.3 3	0.08 8	5.49	4.07E- 08	x		C/T	0.68	6.00E- 06	YES S	-0.046	0.010
11	rs10108 511	8	1143551 6	T	C	0.4 7	0.08 7	5.77	8.08E- 09	YES		C/T	0.46	1.64E- 07	YES S	0.050	0.010
12	rs10982 622	9	1003045 31	A	G	0.5 4	0.08 8	5.76	8.59E- 09	YES		A/G	0.47	2.07E- 09	YES S	-0.058	0.010
13	rs11792 928	9	1294015 50	C	T	0.7 1	0.09 8	-5.89	3.85E- 09	NEW		C/T	0.29	9.28E- 04	YES S	0.035	0.011
14	rs12479 42	12	1146737 23	G	C	0.5 9	0.09 9	6.41	1.45E- 10	YES		C/G	0.60	4.13E- 07	YES S	0.050	0.010
15	rs44489 48	16	7256923 6	A	T	0.9 2	0.15 7	5.49	4.02E- 08	x		A/T	0.06	2.44E- 01	NO	-0.023	0.020
15	rs73941 4	16	7309795 6	C	T	0.2 6	0.10 3	5.82	5.77E- 09	NEW		C/T	0.74	1.93E- 05	YES S	-0.046	0.011

16	rs71873 65	16	8651191 5	T	C	0.1 8	0.11 3	5.78	7.52E- 09	NEW		C/T	0.18	4.28E- 04	YE S	0.044	0.012
17	rs12985 909	19	1843938 3	C	T	0.4 5	0.08 6	5.61	2.03E- 08	x		C/T	0.54	2.67E- 06	YE S	-0.046	0.010
17	rs81020 46	19	1879557 8	T	G	0.4 4	0.09 6	6.30	2.97E- 10	x		G/T	0.45	NA	NO	0.077	0.010
17	rs72587 22	19	1880891 5	T	A	0.6 0	0.09 6	6.17	6.69E- 10	YES	rs20238 78	A/T	0.60	7.68E- 11	YE S	0.066	0.010

For the column "In Gharakhani et al. 2016", entries with "x" are ignored as the same loci have been tagged by another SNP in high LD from the same locues (see locus number).

**ST5. Comparison of MTAG BE loci effect sizes with and without depression and education attainment component in the multi-trait model**

MTAG BE+BMI+GERD only												MTAG BE+BMI+MDD+EDU+GERD			
SNP	CHR	BP	EA	NEA	Z	N	FRQ	Beta	SE	Z	Pval	Beta	SE	Z	Pval
rs1247942	12	1.1E+08	G	C	6.48	6331.32	0.59	0.099	0.015	6.41	1.45E-10	0.096	0.015	6.26	3.81E-10
rs4448948	16	7.3E+07	A	T	4.87	5816.35	0.92	0.157	0.029	5.49	4.02E-08	0.159	0.029	5.57	2.53E-08
rs739414	16	7.3E+07	C	T	5.02	5920.71	0.26	0.103	0.018	5.82	5.77E-09	0.101	0.018	5.74	9.74E-09
rs7187365	16	8.7E+07	T	C	5.11	6546.58	0.18	0.113	0.020	5.78	7.52E-09	0.111	0.020	5.70	1.20E-08
rs12985909	19	1.8E+07	C	T	3.99	6158.4	0.45	0.086	0.015	5.61	2.03E-08	0.087	0.015	5.67	1.44E-08
rs8102046	19	1.9E+07	T	G	4.89	6392.6	0.44	0.096	0.015	6.30	2.97E-10	0.092	0.015	6.07	1.31E-09
rs7258722	19	1.9E+07	T	A	4.20	6295.73	0.60	0.096	0.015	6.17	6.69E-10	0.092	0.015	5.98	2.24E-09
rs3072	2	2.1E+07	T	C	-5.97	6217.95	0.63	-0.113	0.016	-7.14	9.29E-13	-0.110	0.016	-7.01	2.31E-12
rs7255	2	2.1E+07	T	C	5.99	6176.51	0.45	0.107	0.015	6.95	3.75E-12	0.105	0.015	6.87	6.30E-12
rs10199768	2	2.1E+07	G	T	4.13	6235.76	0.55	0.085	0.015	5.56	2.62E-08	0.083	0.015	5.45	4.97E-08
rs520354	2	2.1E+07	A	G	-4.46	6336.37	0.53	-0.090	0.015	-5.97	2.44E-09	-0.088	0.015	-5.80	6.71E-09
rs17369434	2	5.6E+07	A	G	-5.19	6167.13	0.92	-0.178	0.029	-6.16	7.34E-10	-0.177	0.029	-6.14	8.06E-10
rs10207635	2	5.6E+07	A	T	-5.20	6401.44	0.87	-0.136	0.022	-6.18	6.34E-10	-0.137	0.022	-6.21	5.19E-10
rs2861695	2	6.8E+07	A	G	3.90	6550.76	0.19	0.110	0.019	5.81	6.23E-09	0.107	0.019	5.69	1.28E-08
rs1868915	2	2E+08	C	A	-5.92	6293.51	0.41	-0.091	0.015	-5.91	3.51E-09	-0.089	0.015	-5.82	5.86E-09
rs2597301	3	7.1E+07	C	G	6.03	6458.9	0.31	0.119	0.016	7.32	2.56E-13	0.114	0.016	7.04	1.92E-12
rs2077610	3	7.1E+07	T	A	5.47	6101.71	0.45	0.095	0.015	6.15	7.84E-10	0.092	0.015	5.99	2.07E-09
rs10080150	5	593160	A	G	-4.89	6358.02	0.62	-0.094	0.016	-6.06	1.33E-09	-0.091	0.016	-5.88	4.00E-09
rs10039754	5	2.9E+07	A	G	-4.37	6448.7	0.45	-0.085	0.015	-5.65	1.63E-08	-0.084	0.015	-5.57	2.59E-08
rs9393735	6	2.7E+07	A	G	5.10	5945.45	0.86	0.135	0.022	6.11	9.70E-10	0.139	0.022	6.32	2.69E-10

rs12215773	6	2.7E+07	T	C	3.80	6052.84	0.77	0.103	0.018	5.67	1.45E-08		0.107	0.018	5.88	4.21E-09
rs13219181	6	2.7E+07	A	G	4.03	6049.62	0.81	0.107	0.020	5.44	5.23E-08		0.109	0.020	5.58	2.47E-08
rs13195040	6	2.7E+07	A	G	5.36	5621.96	0.89	0.159	0.025	6.45	1.14E-10		0.162	0.025	6.60	4.11E-11
rs200968	6	2.8E+07	T	C	4.08	5930.44	0.80	0.111	0.019	5.71	1.14E-08		0.113	0.019	5.81	6.17E-09
rs7752448	6	2.8E+07	A	G	4.49	5843.54	0.87	0.135	0.023	5.82	5.83E-09		0.136	0.023	5.89	3.86E-09
rs622217	6	1.6E+08	T	C	5.81	6392.32	0.52	0.093	0.015	6.17	6.94E-10		0.091	0.015	6.06	1.37E-09
rs2504930	6	1.6E+08	T	C	-5.38	6397.77	0.20	-0.107	0.019	-5.75	8.95E-09		-0.106	0.019	-5.68	1.35E-08
rs48412112	8	9599512	A	G	5.33	6445.13	0.26	0.096	0.017	5.55	2.83E-08		0.098	0.017	5.68	1.32E-08
rs10104032	8	9616664	C	A	-5.43	6371.05	0.63	-0.090	0.016	-5.75	8.73E-09		-0.093	0.016	-5.95	2.63E-09
rs2127128	8	1.1E+07	C	T	5.89	6331.02	0.33	0.088	0.016	5.49	4.07E-08		0.088	0.016	5.47	4.49E-08
rs10108511	8	1.1E+07	T	C	6.21	6407.11	0.47	0.087	0.015	5.77	8.08E-09		0.086	0.015	5.70	1.22E-08
rs10982622	9	1E+08	A	G	6.12	6278.76	0.54	0.088	0.015	5.76	8.59E-09		0.085	0.015	5.63	1.76E-08
rs11792928	9	1.3E+08	C	T	-5.23	6261	0.71	-0.098	0.017	-5.89	3.85E-09		-0.098	0.017	-5.88	4.16E-09

**Important note for ST6-9**

Data from ST6,ST7,St8,ST9 are generated from the metaXcan and multiXcan software. It is important to review the software manuals prior to interpreting these results. Please refer to <https://github.com/hakyimlab/MetaXcan> for specific description of column headers.

**ST6(a). MTAG GERD metaXcan analysis using eQTL information from Gastro-esophageal junction tissue**

Gene ID	Gene name	Z	Effect size	Pval	Var_g	pred_perf_r2	pred_perf_pval	pred_perf_qval	n_snps_unsed	n_snps_in_cov	n_snps_in_model
ENSG0000000453 4.10	RBM6	- 9.78	-0.08	1.33E- 22	0.16	0.33	8.24E-19	NA	43	65	65
ENSG0000016406 8.11	RNF123	7.60	0.46	2.96E- 14	0.00	0.05	0.003753	NA	3	22	22
ENSG0000013953 1.8	SUOX	7.35	0.18	2.04E- 13	0.02	0.16	1.57E-08	NA	9	18	18
ENSG0000019772 8.5	RPS26	- 6.90	-0.06	5.35E- 12	0.16	0.69	9.22E-55	NA	23	33	33
ENSG0000022484 3.2	LINC0024 0	- 6.44	-0.14	1.21E- 10	0.03	0.04	0.008003	NA	6	8	8
ENSG0000005182 5.10	MPHOSP H9	- 6.14	-0.10	8.06E- 10	0.05	0.13	2.61E-07	NA	14	17	17
ENSG0000011234 3.8	TRIM38	5.96	0.14	2.56E- 09	0.02	0.13	4.55E-07	NA	12	18	18
ENSG0000016381 2.9	ZDHHC3	- 5.67	-0.12	1.41E- 08	0.03	0.05	0.00218	NA	8	13	13
ENSG0000006506 0.12	UHRF1BP 1	5.50	0.03	3.72E- 08	0.28	0.48	5.96E-30	NA	65	75	75
ENSG0000017354 0.8	GMPPB	5.46	0.12	4.65E- 08	0.03	0.12	1.53E-06	NA	13	19	19
ENSG0000017814 9.12	DALRD3	- 5.28	-0.16	1.31E- 07	0.01	0.08	0.000154	NA	5	9	9
ENSG0000018395 5.8	SETD8	- 5.27	-0.13	1.38E- 07	0.02	0.04	0.004652	NA	5	6	6
ENSG0000011640 6.14	EDEM3	- 5.16	-0.06	2.47E- 07	0.10	0.20	3.74E-11	NA	14	17	17
ENSG0000027287 1.1	RP11- 408A13.4	5.10	0.09	3.35E- 07	0.04	0.06	0.000841	NA	9	10	10
ENSG0000014502 0.10	AMT	- 5.09	-0.06	3.51E- 07	0.08	0.30	3.54E-16	NA	25	32	32

ENSG0000012396 5.12	PMS2P5	- 5.00	-0.15	5.88E- 07	0.01	0.18	1.59E-09	NA	1	7	7
ENSG0000020443 8.6	GPANK1	4.94	0.25	7.91E- 07	0.00	0.12	2.00E-06	NA	3	46	46
ENSG0000011132 8.2	CDK2AP1	4.93	0.08	8.08E- 07	0.05	0.17	3.01E-09	NA	26	40	40
ENSG0000020436 6.3	ZBTB12	4.92	0.16	8.49E- 07	0.01	0.11	4.36E-06	NA	7	53	53
ENSG0000015919 9.9	ATP5G1	4.80	0.09	1.60E- 06	0.03	0.06	0.000595	NA	9	12	12
ENSG0000015206 1.17	RABGAP 1L	- 4.76	-0.05	1.93E- 06	0.13	0.29	1.59E-15	NA	25	29	29
ENSG0000016708 1.12	PBX3	- 4.72	-0.05	2.32E- 06	0.10	0.29	3.76E-16	NA	13	15	15
ENSG0000007513 1.5	TIPIN	4.72	0.04	2.34E- 06	0.15	0.22	6.09E-12	NA	56	63	63
ENSG0000023185 2.2	CYP21A2	4.69	0.11	2.78E- 06	0.02	0.03	0.01231	NA	6	32	32
ENSG0000018647 0.9	BTN3A2	4.68	0.03	2.90E- 06	0.29	0.50	1.06E-31	NA	28	31	31
ENSG0000025453 1.1	AP001816 .1	- 4.66	-0.04	3.20E- 06	0.14	0.19	4.71E-10	NA	60	68	68
ENSG0000024829 0.1	TNXA	4.52	1.98	6.16E- 06	0.00	0.03	0.012776	NA	1	6	6
ENSG0000014145 2.5	C18orf8	- 4.44	-0.06	9.00E- 06	0.06	0.07	0.000443	NA	26	30	30
ENSG0000012538 8.15	GRK4	4.41	0.04	1.03E- 05	0.15	0.28	9.08E-15	NA	25	28	28
ENSG0000013877 8.7	CENPE	- 4.40	-0.09	1.08E- 05	0.02	0.09	2.22E-05	NA	20	23	23
ENSG0000014145 8.8	NPC1	- 4.40	-0.06	1.10E- 05	0.06	0.15	1.31E-08	NA	11	14	14
ENSG0000012335 3.5	ORMDL2	4.37	0.07	1.24E- 05	0.04	0.04	0.006424	NA	14	19	19

ENSG0000025141 7.1	RP11- 1348G14.4	- 4.32	-0.07	1.60E- 05	0.04	0.15	1.22E-07	NA	10	13	13
ENSG0000025998 2.1	CDC37P1	4.30	0.04	1.71E- 05	0.11	0.20	1.25E-10	NA	23	31	31
ENSG0000020435 1.7	SKIV2L	4.29	0.27	1.82E- 05	0.00	0.47	2.78E-29	NA	11	50	50
ENSG0000026094 7.1	RP11- 384P7.7	- 4.28	-0.03	1.86E- 05	0.13	0.31	6.10E-17	NA	17	20	20
ENSG0000024005 3.8	LY6G5B	- 4.27	-0.15	1.96E- 05	0.01	0.21	2.84E-11	NA	5	53	53
ENSG0000001025 6.6	UQCRC1	4.25	0.14	2.10E- 05	0.01	0.03	0.032358	NA	5	7	7
ENSG0000020433 8.4	CYP21A1 P	4.20	0.10	2.71E- 05	0.02	0.26	5.59E-14	NA	8	74	74
ENSG0000016082 8.13	STAG3L2	- 4.19	-0.04	2.77E- 05	0.09	0.34	1.69E-18	NA	23	42	42
ENSG0000016973 8.3	DCXR	4.19	0.12	2.83E- 05	0.01	0.18	2.26E-09	NA	9	16	16
ENSG0000019716 5.6	SULT1A2	4.18	0.04	2.89E- 05	0.14	0.19	1.28E-09	NA	24	38	38
ENSG0000012454 9.10	BTN2A3P	4.15	0.03	3.33E- 05	0.22	0.25	3.59E-13	NA	99	123	123
ENSG0000011739 4.15	SLC2A1	4.14	0.15	3.41E- 05	0.01	0.04	0.009736	NA	4	5	5
ENSG0000019727 9.3	ZNF165	4.14	0.11	3.41E- 05	0.02	0.05	0.002956	NA	7	10	10
ENSG0000017895 2.4	TUFM	4.13	0.05	3.60E- 05	0.07	0.21	5.40E-11	NA	24	30	30
ENSG0000026350 3.1	RP11- 707O23.5	- 4.06	-0.24	4.81E- 05	0.00	0.43	7.25E-26	NA	5	51	51
ENSG0000013644 8.7	NMT1	4.06	0.06	4.81E- 05	0.06	0.20	2.04E-10	NA	8	9	9
ENSG0000014929 2.12	TTC12	4.06	0.02	4.86E- 05	0.51	0.60	5.22E-44	NA	55	69	69



ENSG0000027042 4.1	RP11- 1348G14.6	4.06	0.06	4.88E- 05	0.04	0.08	0.000147	NA	25	32	32
ENSG0000019614 1.8	SPATS2L	4.05	0.07	5.11E- 05	0.05	0.10	1.40E-05	NA	12	13	13
ENSG0000016603 7.6	CEP57	- 4.03	-0.07	5.58E- 05	0.04	0.10	1.01E-05	NA	64	66	66
ENSG0000027162 3.1	RP11- 435I10.5	- 4.02	-0.08	5.85E- 05	0.02	0.08	0.000216	NA	8	10	10
ENSG0000010566 4.6	COMP	4.01	0.06	6.06E- 05	0.05	0.07	0.000262	NA	17	19	19
ENSG0000018889 5.7	MSL1	- 3.99	-0.09	6.58E- 05	0.02	0.07	0.000542	NA	6	6	6
ENSG0000004924 5.8	VAMP3	- 3.98	-0.05	6.96E- 05	0.09	0.13	4.03E-07	NA	41	46	46
ENSG0000017880 9.7	TRIM73	- 3.97	-0.06	7.04E- 05	0.05	0.14	2.78E-07	NA	9	19	19
ENSG0000024897 1.2	KRT8P46	3.96	0.06	7.55E- 05	0.04	0.14	3.16E-07	NA	18	28	28
ENSG0000023006 9.3	LRRC37A 15P	3.92	0.05	9.00E- 05	0.06	0.12	2.44E-06	NA	36	39	39
ENSG0000016262 3.11	TYW3	- 3.91	-0.07	9.15E- 05	0.03	0.05	0.003321	NA	43	49	49
ENSG0000021939 2.1	RP1- 265C24.5	3.91	0.05	9.17E- 05	0.05	0.13	6.44E-07	NA	46	62	62
ENSG0000014315 6.9	NME7	- 3.91	-0.03	9.21E- 05	0.26	0.43	1.82E-25	NA	32	34	34
ENSG0000020413 8.8	PHACTR4	- 3.90	-0.04	9.79E- 05	0.16	0.21	4.19E-11	NA	56	75	75
ENSG0000012894 4.9	KNSTRN	- 3.89	-0.02	1.01E- 04	0.49	0.66	3.20E-53	NA	20	23	23
ENSG0000023344 8.2	PMS2P9	- 3.88	-0.07	1.03E- 04	0.03	0.19	2.78E-10	NA	34	54	54
ENSG0000010449 7.9	SNX16	3.88	0.02	1.04E- 04	0.34	0.51	5.49E-33	NA	56	60	60

ENSG0000023682 9.5	Z97634.3	- 3.88	-0.07	1.06E- 04	0.04	0.05	0.002091	NA	24	43	43
ENSG0000020558 3.9	STAG3L1	- 3.87	-0.05	1.08E- 04	0.08	0.34	1.37E-19	NA	15	26	26
ENSG0000025836 5.1	RP11- 1105G2.3	- 3.86	-0.05	1.12E- 04	0.06	0.05	0.003158	NA	31	34	34
ENSG0000014502 9.7	NICN1	- 3.82	-0.08	1.31E- 04	0.02	0.13	4.34E-07	NA	15	20	20
ENSG0000017254 3.3	CTSW	- 3.81	-0.05	1.39E- 04	0.06	0.31	1.64E-16	NA	8	12	12
ENSG0000018333 6.7	BOLA2	- 3.80	-0.31	1.42E- 04	0.00	0.04	0.007624	NA	4	6	6
ENSG0000024261 2.2	DECR2	3.80	0.02	1.43E- 04	0.29	0.47	4.01E-28	NA	10	22	22
ENSG0000012900 7.10	CALML4	3.79	0.07	1.54E- 04	0.03	0.09	3.28E-05	NA	8	9	9
ENSG0000008909 4.12	KDM2B	3.78	0.14	1.54E- 04	0.01	0.02	0.040223	NA	18	27	27
ENSG0000010933 2.15	UBE2D3	3.78	0.10	1.58E- 04	0.01	0.02	0.041363	NA	4	7	7
ENSG0000016395 9.5	SLC51A	- 3.77	-0.06	1.63E- 04	0.05	0.18	2.71E-09	NA	27	39	39
ENSG0000020476 4.8	RANBP17	3.76	0.19	1.69E- 04	0.01	0.03	0.030754	NA	4	5	5
ENSG0000003380 0.9	PIAS1	3.74	0.04	1.81E- 04	0.09	0.13	1.11E-06	NA	28	30	30
ENSG0000011253 0.7	PACRG	- 3.72	-0.03	1.96E- 04	0.19	0.30	4.12E-16	NA	28	28	28
ENSG0000026181 9.1	RP11- 680G24.4	- 3.72	-0.09	1.98E- 04	0.03	0.07	0.000314	NA	18	21	21
ENSG0000016261 3.12	FUBP1	- 3.72	-0.04	2.01E- 04	0.08	0.03	0.013216	NA	21	22	22
ENSG0000011615 7.5	GPX7	- 3.70	-0.03	2.16E- 04	0.22	0.34	2.57E-18	NA	17	18	18

ENSG0000018279 6.8	TMEM19 8B	3.70	0.05	2.18E- 04	0.06	0.07	0.000209	NA	24	29	29
ENSG0000019650 2.7	SULT1A1	- 3.69	-0.05	2.24E- 04	0.07	0.10	7.22E-06	NA	20	26	26
ENSG0000000754 1.10	PIGQ	3.69	0.12	2.29E- 04	0.01	0.02	0.035486	NA	9	14	14
ENSG0000016999 4.14	MYO7B	3.66	0.10	2.52E- 04	0.02	0.07	0.000248	NA	3	3	3
ENSG0000016794 5.1	PRR25	3.65	0.53	2.59E- 04	0.00	0.07	0.000224	NA	6	17	17
ENSG0000017787 9.10	AP3S1	- 3.65	-0.20	2.65E- 04	0.00	0.04	0.008016	NA	7	9	9
ENSG0000019756 2.5	RAB40C	- 3.64	-0.03	2.68E- 04	0.13	0.30	1.32E-17	NA	20	32	32
ENSG0000024341 4.4	TICAM2	3.64	0.15	2.78E- 04	0.01	0.05	0.002264	NA	4	4	4
ENSG0000019890 9.3	MAP3K3	- 3.63	-0.11	2.87E- 04	0.01	0.07	0.000436	NA	19	23	23
ENSG0000016430 8.12	ERAP2	3.62	0.02	3.00E- 04	0.55	0.68	7.62E-57	NA	27	30	30
ENSG0000014908 4.7	HSD17B1 2	- 3.61	-0.02	3.05E- 04	0.44	0.58	1.91E-39	NA	101	114	114
ENSG0000027213 0.1	RP11- 360I2.1	- 3.60	-0.25	3.24E- 04	0.00	0.25	3.70E-13	NA	7	12	12
ENSG0000010790 2.9	LHPP	3.57	0.03	3.56E- 04	0.20	0.09	2.51E-05	NA	80	104	104
ENSG0000017009 2.10	AC018720 .10	3.56	0.06	3.64E- 04	0.04	0.18	1.99E-09	NA	5	6	6

**ST6(b). MTAG GERD metaXcan analysis using eQTL information from Esophageal Mucosa tissue**

gene	Gene name	z	Effect size	Pval	var_g	pred_perf_r2	pred_perf_pval	pred_perf_qval	n_snps_used	n_snps_in_cov	n_snps_in_model
ENSG000000453 4.10	RBM6	-10.02	-0.06	1.21E-23	0.29	0.51	1.05E-54	NA	21	34	34
ENSG0000018561 4.4	FAM212A	9.71	0.39	2.71E-22	0.01	0.35	4.37E-31	NA	7	32	32
ENSG0000016407 8.8	MST1R	9.65	0.21	5.01E-22	0.02	0.03	0.005033	NA	15	24	24
ENSG0000018217 9.6	UBA7	-9.02	-0.08	1.86E-19	0.14	0.28	8.71E-25	NA	10	20	20
ENSG0000012454 9.10	BTN2A3P	8.28	0.11	1.26E-16	0.07	0.12	1.22E-09	NA	36	46	46
ENSG0000000375 6.12	RBM5	-7.45	-0.45	9.57E-14	0.00	0.02	0.006475	NA	13	23	23
ENSG0000011281 2.11	PRSS16	-7.13	-0.32	1.04E-12	0.01	0.02	0.019411	NA	9	10	10
ENSG0000014502 9.7	NICN1	-6.76	-0.13	1.42E-11	0.03	0.05	5.19E-05	NA	23	32	32
ENSG0000020478 9.3	ZNF204P	-6.68	-0.23	2.44E-11	0.01	0.02	0.0071	NA	10	13	13
ENSG0000016406 8.11	RNF123	6.65	0.23	2.93E-11	0.01	0.02	0.01176	NA	27	53	53
ENSG0000018864 1.8	DPYD	6.34	0.12	2.32E-10	0.03	0.06	1.21E-05	NA	21	23	23
ENSG0000016406 2.8	APEH	-6.26	-0.09	3.86E-10	0.06	0.12	4.85E-10	NA	23	33	33
ENSG0000011132 8.2	CDK2AP1	6.08	0.05	1.18E-09	0.22	0.46	1.83E-46	NA	32	43	43
ENSG0000023474 5.5	HLA-B	6.02	1.02	1.74E-09	0.00	0.19	7.08E-16	NA	4	59	59

ENSG0000022631 4.3	ZNF192P 1	5.95	0.24	2.63E- 09	0.01	0.05	0.000105	NA	23	52	52
ENSG0000012341 1.10	IKZF4	-5.95	-0.13	2.65E- 09	0.03	0.08	5.94E-07	NA	10	17	17
ENSG0000018395 5.8	SETD8	-5.86	-0.20	4.66E- 09	0.01	0.03	0.004232	NA	6	7	7
ENSG0000019772 8.5	RPS26	-5.85	-0.04	4.89E- 09	0.31	0.71	2.07E-98	NA	49	82	82
ENSG0000015096 7.13	ABCB9	-5.82	-0.15	5.81E- 09	0.02	0.02	0.009521	NA	13	20	20
ENSG0000014502 0.10	AMT	-5.71	-0.04	1.10E- 08	0.22	0.45	1.15E-44	NA	30	36	36
ENSG0000006506 0.12	UHRF1B P1	5.51	0.05	3.58E- 08	0.17	0.30	1.08E-25	NA	31	34	34
ENSG0000013092 1.3	C12orf65	5.44	0.09	5.27E- 08	0.04	0.11	6.73E-09	NA	14	15	15
ENSG0000012456 2.5	SNRPC	-5.38	-0.07	7.38E- 08	0.07	0.16	1.92E-13	NA	39	47	47
ENSG0000013953 1.8	SUOX	5.35	0.37	8.68E- 08	0.00	0.04	0.001025	NA	3	6	6
ENSG0000019850 2.5	HLA- DRB5	-5.24	-0.44	1.61E- 07	0.00	0.60	6.96E-71	NA	10	34	34
ENSG0000013689 1.9	TEX10	5.23	0.43	1.71E- 07	0.00	0.02	0.024762	NA	5	6	6
ENSG0000016343 1.11	LMOD1	-5.16	-0.07	2.41E- 07	0.07	0.09	4.27E-08	NA	22	28	28
ENSG0000017353 1.11	MST1	-5.11	-0.07	3.14E- 07	0.06	0.13	6.35E-11	NA	16	23	23
ENSG0000017693 3.4	TOB2P1	-5.05	-0.16	4.43E- 07	0.01	0.04	0.000602	NA	4	4	4
ENSG0000019727 9.3	ZNF165	-5.03	-0.10	4.90E- 07	0.02	0.07	2.13E-06	NA	11	17	17
ENSG0000026181 9.1	RP11- 680G24.4	-4.95	-0.07	7.29E- 07	0.06	0.07	1.31E-06	NA	16	21	21

ENSG0000026178 6.1	RP4- 555D20.2	-4.93	-0.08	8.39E- 07	0.05	0.11	5.88E-09	NA	10	11	11
ENSG0000013594 5.5	REV1	4.91	0.07	8.95E- 07	0.06	0.11	4.61E-09	NA	34	34	34
ENSG0000007513 1.5	TIPIN	4.90	0.06	9.80E- 07	0.09	0.12	4.90E-10	NA	55	64	64
ENSG0000012538 8.15	GRK4	4.89	0.03	9.84E- 07	0.27	0.36	8.95E-34	NA	21	25	25
ENSG0000016082 8.13	STAG3L2	-4.89	-0.04	1.00E- 06	0.19	0.44	9.67E-44	NA	24	45	45
ENSG0000018219 6.9	ARL6IP4	4.88	0.17	1.05E- 06	0.01	0.04	0.000264	NA	6	9	9
ENSG0000011234 3.8	TRIM38	4.84	0.05	1.30E- 06	0.09	0.17	8.58E-15	NA	39	46	46
ENSG0000024005 3.8	LY6G5B	-4.79	-0.19	1.66E- 06	0.01	0.24	1.13E-20	NA	4	63	63
ENSG0000013322 6.12	SRRM1	4.78	0.38	1.75E- 06	0.00	0.03	0.001721	NA	2	3	3
ENSG0000016325 7.6	DCAF16	-4.74	-0.08	2.17E- 06	0.04	0.09	7.80E-08	NA	8	8	8
ENSG0000019706 2.7	RP5- 874C20.3	4.73	0.16	2.30E- 06	0.01	0.13	7.28E-11	NA	12	42	42
ENSG0000016863 1.7	DPCR1	-4.69	-0.47	2.75E- 06	0.00	0.04	0.000651	NA	4	28	28
ENSG0000017461 1.7	KY	-4.67	-0.09	2.98E- 06	0.03	0.07	2.35E-06	NA	10	13	13
ENSG0000025998 2.1	CDC37P1	4.64	0.07	3.49E- 06	0.05	0.16	2.83E-13	NA	9	17	17
ENSG0000014405 7.11	ST6GAL2	-4.62	-0.06	3.92E- 06	0.07	0.10	1.48E-08	NA	21	23	23
ENSG0000015755 4.14	ERG	-4.60	-0.06	4.19E- 06	0.06	0.11	1.46E-09	NA	17	24	24
ENSG0000018647 0.9	BTN3A2	4.58	0.02	4.59E- 06	0.39	0.60	1.25E-71	NA	53	61	61

ENSG0000014145 2.5	C18orf8	-4.56	-0.26	5.10E-06	0.00	0.02	0.033187	NA	2	2	2
ENSG0000018444 5.7	KNTC1	-4.56	-0.13	5.21E-06	0.02	0.05	4.41E-05	NA	10	21	21
ENSG0000014145 8.8	NPC1	-4.54	-0.05	5.73E-06	0.11	0.18	8.31E-15	NA	19	33	33
ENSG0000016058 4.11	SIK3	4.53	0.16	5.98E-06	0.01	0.04	0.000949	NA	8	9	9
ENSG0000024897 1.2	KRT8P46	4.52	0.05	6.12E-06	0.08	0.18	9.20E-15	NA	15	18	18
ENSG0000019716 5.6	SULT1A2	4.51	0.08	6.56E-06	0.03	0.22	4.44E-18	NA	20	27	27
ENSG0000015438 0.12	ENAH	-4.49	-0.05	7.28E-06	0.09	0.07	1.25E-06	NA	26	29	29
ENSG0000011640 6.14	EDEM3	-4.44	-0.06	9.17E-06	0.06	0.10	1.12E-08	NA	15	17	17
ENSG0000020433 8.4	CYP21A1 P	4.43	0.08	9.64E-06	0.03	0.25	1.02E-21	NA	8	69	69
ENSG0000017818 8.10	SH2B1	-4.42	-0.10	9.81E-06	0.02	0.02	0.030996	NA	21	25	25
ENSG0000016603 7.6	CEP57	-4.37	-0.04	1.24E-05	0.19	0.30	8.84E-26	NA	53	53	53
ENSG0000018889 5.7	MSL1	-4.37	-0.06	1.24E-05	0.07	0.11	3.47E-09	NA	11	15	15
ENSG0000013741 1.12	VAR52	-4.32	-0.65	1.58E-05	0.00	0.26	1.35E-23	NA	1	49	49
ENSG0000017895 2.4	TUFM	4.29	0.05	1.79E-05	0.10	0.17	3.78E-14	NA	13	16	16
ENSG0000012993 3.16	MAU2	-4.27	-0.08	1.95E-05	0.03	0.03	0.001413	NA	28	34	34
ENSG0000025688 5.1	AP00187 7.1	-4.26	-0.07	2.09E-05	0.05	0.15	1.04E-12	NA	58	59	59
ENSG0000010489 9.4	AMH	4.26	0.04	2.09E-05	0.14	0.27	1.07E-23	NA	24	51	51

ENSG0000023008 8.1	KRT16P5	-4.23	-0.11	2.30E-05	0.02	0.10	1.38E-08	NA	22	39	39
ENSG0000010933 2.15	UBE2D3	4.23	0.08	2.31E-05	0.03	0.10	1.42E-08	NA	27	32	32
ENSG0000016920 3.12	RP11-231C14.4	4.22	0.08	2.43E-05	0.03	0.15	6.08E-12	NA	12	23	23
ENSG0000017020 9.4	ANKK1	4.22	0.11	2.50E-05	0.02	0.05	0.000108	NA	13	13	13
ENSG0000019650 2.7	SULT1A1	-4.21	-0.16	2.50E-05	0.01	0.12	1.28E-09	NA	8	22	22
ENSG0000017149 7.4	PPID	4.20	0.06	2.64E-05	0.06	0.14	6.57E-12	NA	5	5	5
ENSG0000013527 2.5	MDFIC	-4.18	-0.06	2.91E-05	0.07	0.06	3.02E-05	NA	35	41	41
ENSG0000016765 3.4	PSCA	-4.16	-0.03	3.15E-05	0.20	0.32	8.03E-28	NA	17	18	18
ENSG0000013019 3.7	THEM6	-4.15	-0.06	3.29E-05	0.05	0.12	3.70E-10	NA	21	23	23
ENSG0000016088 6.9	LY6K	-4.13	-0.03	3.70E-05	0.24	0.33	1.80E-29	NA	32	33	33
ENSG0000001111 4.10	BTBD7	4.12	0.11	3.71E-05	0.02	0.05	8.38E-05	NA	17	20	20
ENSG0000019785 2.8	FAM212B	-4.11	-0.11	3.92E-05	0.02	0.04	0.000242	NA	15	21	21
ENSG0000019889 2.6	SHISA4	-4.10	-0.12	4.13E-05	0.01	0.03	0.001294	NA	9	10	10
ENSG0000011316 3.11	COL4A3BP	4.09	0.07	4.30E-05	0.05	0.05	6.65E-05	NA	16	16	16
ENSG0000015660 3.10	MED19	-4.07	-0.05	4.80E-05	0.09	0.13	3.62E-11	NA	26	27	27
ENSG0000017263 8.8	EFEMP2	4.03	0.06	5.60E-05	0.06	0.10	2.76E-08	NA	23	35	35
ENSG0000010024 2.11	SUN2	-4.02	-0.05	5.84E-05	0.07	0.17	1.06E-13	NA	11	14	14



ENSG0000011750 0.8	TMED5	-4.01	-0.13	6.18E-05	0.01	0.04	0.000349	NA	6	7	7
ENSG0000010589 4.7	PTN	-4.00	-0.04	6.29E-05	0.14	0.29	2.00E-25	NA	13	14	14
ENSG0000026094 7.1	RP11-384P7.7	-3.99	-0.03	6.55E-05	0.17	0.28	3.11E-24	NA	39	42	42
ENSG0000025974 7.1	RP11-275I4.2	-3.98	-0.03	6.80E-05	0.19	0.31	8.62E-27	NA	42	45	45
ENSG0000020476 4.8	RANBP17	3.97	0.16	7.20E-05	0.01	0.04	0.000357	NA	44	47	47
ENSG0000019665 3.7	ZNF502	-3.96	-0.03	7.53E-05	0.20	0.25	3.64E-21	NA	29	34	34
ENSG0000010449 7.9	SNX16	3.95	0.03	7.73E-05	0.19	0.30	5.56E-26	NA	33	37	37
ENSG0000024347 7.1	NAT6	3.94	0.07	8.01E-05	0.04	0.06	1.99E-05	NA	11	20	20
ENSG0000014315 6.9	NME7	-3.94	-0.04	8.11E-05	0.13	0.27	2.07E-23	NA	31	34	34
ENSG0000010488 6.5	PLEKHJ1	-3.93	-6.02	8.41E-05	0.00	0.02	0.015701	NA	1	3	3
ENSG0000011615 7.5	GPX7	-3.93	-0.03	8.49E-05	0.18	0.27	2.94E-23	NA	49	54	54
ENSG0000024261 2.2	DECR2	3.92	0.02	8.86E-05	0.37	0.51	1.39E-53	NA	12	20	20
ENSG0000015921 0.5	SNF8	3.92	0.09	9.03E-05	0.02	0.03	0.001638	NA	12	14	14
ENSG0000012894 4.9	KNSTRN	-3.90	-0.02	9.65E-05	0.25	0.40	9.72E-39	NA	11	14	14
ENSG0000017361 1.13	SCAI	3.90	0.10	9.77E-05	0.02	0.05	4.94E-05	NA	9	9	9

**ST6(c). MTAG GERD metaXcan analysis using eQTL information from Esophageal Muscularis tissue**

gene	Gene name	Z	Effect size	Pval	var_g	pred_perf_r2	pred_perf_pval	pred_perf_qval	n_snps_used	n_snps_in_cov	n_snps_in_model
ENSG00000004534.10	RBM6	-9.67	-0.07	3.98E-22	0.21	0.48	5.69E-46	NA	19	24	24
ENSG00000164068.11	RNF123	9.62	0.32	6.62E-22	0.01	0.18	4.25E-14	NA	23	54	54
ENSG00000173540.8	GMPPB	8.67	0.22	4.42E-18	0.02	0.16	1.83E-12	NA	9	16	16
ENSG00000203813.4	HIST1H3H	7.97	0.24	1.58E-15	0.01	0.02	0.036367	NA	39	58	58
ENSG00000228008.1	CTD-2330K9.3	7.65	0.20	1.96E-14	0.02	0.05	0.000147	NA	8	13	13
ENSG00000197728.5	RPS26	-6.70	-0.05	2.07E-11	0.19	0.71	3.61E-94	NA	6	13	13
ENSG00000145029.7	NICN1	-6.55	-0.08	5.82E-11	0.09	0.17	4.66E-14	NA	35	51	51
ENSG00000139531.8	SUOX	6.46	0.09	1.03E-10	0.06	0.22	3.68E-17	NA	6	9	9
ENSG00000051825.10	MPHOSPH9	-6.36	-0.07	2.07E-10	0.09	0.15	1.63E-11	NA	14	23	23
ENSG00000178057.10	NDUFAB3	-6.35	-0.11	2.22E-10	0.03	0.03	0.002063	NA	7	15	15
ENSG00000124549.10	BTN2A3P	6.28	0.06	3.34E-10	0.13	0.23	5.00E-18	NA	35	41	41
ENSG00000124562.5	SNRPC	-6.17	-0.07	6.69E-10	0.08	0.15	2.20E-11	NA	14	14	14
ENSG00000111325.12	OGFOD2	-5.97	-0.26	2.40E-09	0.01	0.03	0.001828	NA	13	16	16
ENSG00000130921.3	C12orf65	5.88	0.14	4.11E-09	0.02	0.07	8.15E-06	NA	8	11	11
ENSG00000227207.2	RPL31P12	-5.85	-0.06	4.83E-09	0.10	0.20	1.74E-15	NA	21	26	26

ENSG0000006874 5.10	IP6K2	5.81	0.20	6.20E-09	0.01	0.09	1.08E-07	NA	12	15	15
ENSG0000016325 7.6	DCAF16	-5.59	-0.08	2.32E-08	0.05	0.10	7.78E-09	NA	15	16	16
ENSG0000011132 8.2	CDK2AP1	5.52	0.10	3.39E-08	0.04	0.10	2.57E-08	NA	18	25	25
ENSG0000016082 8.13	STAG3L2	-5.50	-0.07	3.72E-08	0.08	0.39	7.44E-34	NA	13	26	26
ENSG0000019821 8.6	QRICH1	5.50	0.13	3.73E-08	0.02	0.11	1.81E-08	NA	29	38	38
ENSG0000023474 5.5	HLA-B	5.50	0.49	3.84E-08	0.00	0.07	6.76E-06	NA	5	117	117
ENSG0000014502 0.10	AMT	-5.38	-0.04	7.31E-08	0.19	0.48	8.15E-46	NA	26	35	35
ENSG0000021939 2.1	RP1-265C24.5	5.27	0.05	1.34E-07	0.13	0.23	7.37E-19	NA	19	23	23
ENSG0000013693 3.12	RABEPK	5.25	0.07	1.52E-07	0.07	0.09	1.88E-07	NA	27	31	31
ENSG0000014145 8.8	NPC1	-5.25	-0.06	1.56E-07	0.08	0.14	6.47E-11	NA	19	22	22
ENSG0000006506 0.12	UHRF1BP1	5.17	0.03	2.40E-07	0.36	0.55	1.72E-56	NA	68	81	81
ENSG0000011281 2.11	PRSS16	-5.14	-0.05	2.74E-07	0.14	0.09	1.26E-07	NA	58	76	76
ENSG0000024829 0.1	TNXA	5.13	0.09	2.90E-07	0.04	0.22	5.23E-18	NA	10	30	30
ENSG0000025453 1.1	AP001816.1	-5.09	-0.08	3.63E-07	0.04	0.13	2.08E-10	NA	25	30	30
ENSG0000011640 6.14	EDEM3	-5.04	-0.06	4.69E-07	0.09	0.26	8.32E-21	NA	19	25	25
ENSG0000022737 3.1	RP11-160H22.5	-5.00	-0.16	5.80E-07	0.01	0.06	5.29E-05	NA	16	23	23
ENSG0000014502 2.4	TCTA	-4.99	-0.11	5.92E-07	0.03	0.05	0.00013	NA	37	48	48

ENSG0000015919 9.9	ATP5G1	4.99	0.06	6.16E-07	0.08	0.11	5.27E-09	NA	40	42	42
ENSG0000018767 6.7	B3GALTL	-4.94	-0.07	7.69E-07	0.05	0.13	6.41E-10	NA	18	21	21
ENSG0000022484 3.2	LINC00240	-4.91	-0.07	8.96E-07	0.04	0.11	6.26E-09	NA	17	24	24
ENSG0000018647 0.9	BTN3A2	4.91	0.02	8.99E-07	0.36	0.58	2.19E-61	NA	32	36	36
ENSG0000022585 1.1	HLA-S	4.90	0.47	9.47E-07	0.00	0.29	6.46E-24	NA	9	87	87
ENSG0000011894 6.7	PCDH17	4.83	0.13	1.36E-06	0.02	0.02	0.029622	NA	42	49	49
ENSG0000012538 8.15	GRK4	4.83	0.04	1.38E-06	0.16	0.27	5.52E-22	NA	20	21	21
ENSG0000025141 7.1	RP11-1348G14.4	-4.82	-0.05	1.41E-06	0.11	0.13	2.83E-10	NA	25	39	39
ENSG0000017586 6.11	BAIAP2	4.78	0.22	1.79E-06	0.01	0.01	0.049764	NA	10	14	14
ENSG0000020446 3.8	BAG6	4.72	0.24	2.31E-06	0.00	0.23	2.72E-18	NA	4	27	27
ENSG0000019716 5.6	SULT1A2	4.70	0.10	2.63E-06	0.02	0.26	6.14E-21	NA	24	33	33
ENSG0000020448 2.6	LST1	4.67	0.53	3.08E-06	0.00	0.04	0.000473	NA	2	28	28
ENSG0000012396 5.12	PMS2P5	-4.65	-0.09	3.32E-06	0.03	0.32	1.86E-26	NA	4	8	8
ENSG0000014145 2.5	C18orf8	-4.63	-0.05	3.59E-06	0.08	0.13	5.94E-10	NA	18	23	23
ENSG0000017226 0.9	NEGR1	4.63	0.10	3.65E-06	0.02	0.04	0.000896	NA	21	24	24
ENSG0000010566 2.11	CRTC1	-4.61	-0.18	4.00E-06	0.01	0.04	0.001527	NA	7	12	12
ENSG0000007513 1.5	TIPIN	4.61	0.04	4.09E-06	0.19	0.31	2.50E-25	NA	43	47	47

ENSG0000014309 3.10	STRIP1	4.54	0.10	5.76E-06	0.02	0.05	0.000122	NA	9	12	12
ENSG0000001111 4.10	BTBD7	4.47	0.07	7.74E-06	0.04	0.01	0.042427	NA	79	93	93
ENSG0000015206 1.17	RABGAP1 L	-4.43	-0.03	9.44E-06	0.23	0.41	4.52E-37	NA	29	32	32
ENSG0000011153 0.8	CAND1	-4.42	-0.10	9.73E-06	0.02	0.07	3.16E-06	NA	13	13	13
ENSG0000007848 7.13	ZCWPW1	4.42	0.21	9.90E-06	0.01	0.03	0.005818	NA	16	26	26
ENSG0000017895 2.4	TUFM	4.39	0.07	1.15E-05	0.05	0.16	5.20E-13	NA	28	41	41
ENSG0000023006 9.3	LRRC37A1 5P	4.37	0.07	1.23E-05	0.04	0.16	1.49E-12	NA	7	9	9
ENSG0000018411 0.10	EIF3C	4.36	0.13	1.28E-05	0.01	0.06	3.51E-05	NA	9	14	14
ENSG0000013877 8.7	CENPE	-4.36	-0.05	1.29E-05	0.10	0.10	9.75E-08	NA	43	47	47
ENSG0000005279 5.8	FNIP2	-4.35	-0.08	1.33E-05	0.04	0.03	0.006003	NA	61	71	71
ENSG0000015921 0.5	SNF8	4.34	0.09	1.42E-05	0.02	0.06	2.72E-05	NA	11	12	12
ENSG0000016920 3.12	RP11- 231C14.4	4.33	0.14	1.51E-05	0.01	0.05	0.000163	NA	12	27	27
ENSG0000017818 8.10	SH2B1	-4.33	-0.26	1.52E-05	0.00	0.05	0.000132	NA	21	27	27
ENSG0000016708 1.12	PBX3	-4.32	-0.04	1.53E-05	0.13	0.21	3.40E-17	NA	27	32	32
ENSG0000014929 5.9	DRD2	4.32	0.07	1.58E-05	0.05	0.12	7.75E-10	NA	13	15	15
ENSG0000017693 3.4	TOB2P1	-4.29	-0.14	1.82E-05	0.01	0.02	0.011221	NA	3	3	3
ENSG0000012091 0.10	PPP3CC	4.28	0.08	1.91E-05	0.03	0.05	5.51E-05	NA	24	32	32

ENSG0000018913 4.3	NKAPL	4.25	0.17	2.17E-05	0.01	0.03	0.002042	NA	5	6	6
ENSG0000006470 3.7	DDX20	4.23	0.09	2.29E-05	0.03	0.09	3.55E-07	NA	6	7	7
ENSG0000020425 6.8	BRD2	4.21	0.45	2.53E-05	0.00	0.08	2.15E-06	NA	5	15	15
ENSG0000017020 9.4	ANKK1	-4.21	-0.05	2.60E-05	0.07	0.13	6.35E-10	NA	20	22	22
ENSG0000016537 9.9	LRFN5	4.19	0.06	2.74E-05	0.06	0.11	1.92E-08	NA	28	32	32
ENSG0000025688 5.1	AP001877.1	-4.18	-0.03	2.86E-05	0.18	0.28	4.86E-23	NA	59	61	61
ENSG0000014624 3.9	IRAK1BP1	4.16	0.04	3.15E-05	0.14	0.30	2.56E-24	NA	22	27	27
ENSG0000019699 3.4	NPIP9	-4.16	-0.10	3.20E-05	0.02	0.09	1.21E-07	NA	6	8	8
ENSG0000011941 4.7	PPP6C	4.16	0.10	3.20E-05	0.02	0.02	0.019087	NA	13	18	18
ENSG0000027044 1.1	RP11-694I15.7	-4.15	-0.20	3.37E-05	0.01	0.02	0.023651	NA	21	30	30
ENSG0000010449 7.9	SNX16	4.13	0.02	3.58E-05	0.33	0.51	9.11E-51	NA	52	57	57
ENSG0000019665 3.7	ZNF502	-4.13	-0.06	3.60E-05	0.06	0.13	2.63E-10	NA	3	4	4
ENSG0000018131 5.6	ZNF322	-4.13	-0.07	3.69E-05	0.05	0.08	1.73E-06	NA	34	45	45
ENSG0000010489 9.4	AMH	4.12	0.03	3.72E-05	0.17	0.49	4.26E-48	NA	4	7	7
ENSG0000013693 5.9	GOLGA1	-4.12	-0.06	3.72E-05	0.05	0.06	1.87E-05	NA	13	15	15
ENSG0000011234 3.8	TRIM38	4.12	0.07	3.76E-05	0.04	0.12	1.60E-09	NA	11	12	12
ENSG0000016870 2.12	LRP1B	4.11	0.05	3.94E-05	0.09	0.17	2.31E-13	NA	36	39	39

ENSG0000018904 5.9	ANKDD1B	4.11	0.06	3.94E -05	0.06	0.04	0.000577	NA	36	48	48
ENSG0000005427 7.8	OPN3	4.10	0.13	4.08E -05	0.01	0.10	8.88E-08	NA	5	7	7
ENSG0000014535 4.5	CISD2	4.08	0.06	4.53E -05	0.06	0.10	1.06E-07	NA	19	19	19
ENSG0000020478 9.3	ZNF204P	-4.07	-0.07	4.64E -05	0.04	0.04	0.000776	NA	28	33	33

## ST7. MultiXcan top associated genes with GERD susceptibility

gene	gene_name	pvalue	n	n_ind ep	p_i_b est	t_i_best	p_i_wor st	t_i_worst	eigen_m ax	eigen_min	eigen_mi n_kept	z_min	z_max	z_mean	z_sd	tmi
ENSG00000164068.11	RNF123	7.00E-29	26	9	1.34E-23	Thyroid	0.893822	Uterus	13.62	0.01	0.60	0.13	10.01	7.79	2.68	9
ENSG00000182179.6	UBA7	1.43E-27	13	7	8.26E-23	Whole_Blood	2.81E-05	Artery_Aorta	7.52	0.00	0.28	-9.83	6.97	-7.04	4.54	7
ENSG00000003756.12	RBM5	2.99E-27	2	2	1.42E-18	Nerve_Tibial	9.57E-14	Esophagus_Mucosa	1.09	0.91	0.91	-8.80	-7.45	-8.12	0.95	2
ENSG00000164078.8	MST1R	1.40E-25	20	10	3.86E-24	Cells_Transformed_fibroblasts	0.066639	Brain_Frontal_Cortex_BA9	10.61	0.01	0.37	-1.95	10.14	6.72	3.32	10
ENSG00000185614.4	FAM212A	1.52E-25	9	4	1.34E-24	Muscle_Skeletal	0.161564	Testis	5.82	0.00	0.22	-9.42	10.24	1.83	8.59	4
ENSG00000185909.10	KLHDC8B	3.84E-24	11	6	2.74E-22	Brain_Anterior_cingulate_cortex_BA24	0.926759	Esophagus_Muscularis	6.93	0.01	0.28	-9.71	7.02	2.81	4.72	6
ENSG00000114378.12	HYAL1	2.49E-23	16	9	5.65E-16	Cells_Transformed_fibroblasts	0.533411	Esophagus_Muscularis	7.72	0.02	0.26	-8.10	6.39	-1.72	3.61	9
ENSG00000176095.7	IP6K1	4.49E-23	6	6	2.13E-23	Thyroid	0.45251	Esophagus_Muscularis	2.20	0.23	0.23	-9.95	9.97	1.54	6.48	6
ENSG00000004534.10	RBM6	6.80E-23	39	1	7.15E-25	Adrenal_Gland	5.72E-12	Cells_EBV-transformed_lymphocytes	36.33	0.00	36.33	-10.30	-6.89	-9.49	0.67	1
ENSG00000196126.6	HLA-DRB1	2.88E-22	32	23	8.97E-07	Brain_Hippocampus	0.985056	Testis	5.23	0.00	0.18	-4.91	2.14	-2.22	2.12	23
ENSG00000228008.1	CTD-2330K9.3	3.18E-22	6	4	4.56E-23	Breast_Mammary_Tissue	2.39E-07	Stomach	3.95	0.03	0.43	5.17	9.89	7.93	1.83	4
ENSG00000234667.1	ACTBP13	1.07E-21	2	2	1.59E-22	Colon_Transverse	9.04E-19	Stomach	1.85	0.15	0.15	-9.77	-8.85	-9.31	0.65	2



ENSG0000164076.12	CAMKV	1.21E-21	3	3	2.20E-22	Testis	1.84E-16	Stomach	2.52	0.19	0.19	8.23	9.73	8.89	0.77	3
ENSG0000229391.3	HLA-DRB6	1.47E-21	36	28	9.03E-07	Minor_Salivary_Gland	0.96292	Esophagus_Muscularis	4.41	0.10	0.18	-1.43	4.91	2.38	1.87	28
ENSG0000233276.2	GPX1	1.53E-21	13	7	8.03E-18	Brain_Frontal_Cortex_BA9	0.780015	Esophagus_Mucosa	6.12	0.01	0.30	-7.69	8.60	2.53	5.21	7
ENSG0000173531.11	MST1	2.38E-21	25	11	3.24E-15	Brain_Hypothalamus	0.981955	Muscle_Skeletal	10.39	0.01	0.45	-7.88	2.76	-2.30	3.02	11
ENSG0000173540.8	GMPPB	7.45E-21	16	7	1.46E-21	Stomach	1.04E-05	Heart_Left_Ventricle	9.48	0.00	0.36	4.41	9.54	6.98	1.79	7
ENSG0000164062.8	APEH	1.06E-20	9	6	8.92E-17	Nerve_Tibial	0.60914	Esophagus_Muscularis	5.70	0.04	0.28	-8.32	7.56	-4.13	5.11	6
ENSG0000145029.7	NICN1	6.44E-20	20	5	2.60E-13	Heart_Left_Ventricle	0.501645	Brain_Cerebellum	14.91	0.00	0.63	-7.31	4.54	-5.03	2.87	5
ENSG0000001617.7	SEMA3F	4.05E-19	12	7	1.55E-20	Adipose_Subcutaneous	0.00321	Prostate	7.03	0.04	0.30	-9.29	8.45	-4.94	4.72	7
ENSG0000164077.9	MON1A	2.09E-17	3	3	1.88E-16	Thyroid	0.508416	Nerve_Tibial	1.42	0.70	0.70	-5.01	8.23	0.85	6.75	3
ENSG0000188315.3	C3orf62	3.18E-17	5	5	4.46E-09	Colon_Sigmoid	0.7919	Cells_Transformed_fibroblasts	2.60	0.19	0.19	-5.87	2.17	-1.80	3.50	5
ENSG0000173421.12	CCDC36	1.14E-16	23	5	1.08E-07	Heart_Left_Ventricle	0.94407	Muscle_Skeletal	17.15	0.00	0.62	-5.31	4.31	-1.87	2.26	5
ENSG0000232629.4	HLA-DQB2	2.86E-16	38	25	0.00011	Spleen	0.998246	Brain_Hypothalamus	7.40	0.00	0.28	-3.87	3.83	-0.09	2.05	25
ENSG0000243477.1	NAT6	3.36E-16	16	6	1.18E-13	Spleen	0.062974	Lung	11.11	0.00	0.40	-1.86	7.42	4.32	2.25	6
ENSG0000214706.6	IFRD2	1.26E-15	7	6	1.43E-12	Brain_Cerebellum	0.116671	Adipose_Visceral_Omentum	3.44	0.09	0.21	-7.08	7.02	0.23	5.15	6
ENSG0000182952.4	HMGN4	2.26E-15	18	6	4.64E-11	Heart_Atrial_Appendage	0.690565	Cells_Transformed_fibroblasts	11.87	0.01	0.44	0.40	6.58	4.19	1.93	6

ENSG00000114388.8	NPRL2	3.03E-15	3	3	3.05E-12	Artery_Aorta	0.017983	Testis	1.42	0.67	0.67	-3.46	6.98	1.96	5.23	3
ENSG00000203813.4	HIST1H3H	3.14E-15	2	2	1.58E-15	Esophagus_Muscularis	0.760032	Stomach	1.18	0.82	0.82	-0.31	7.97	3.83	5.85	2
ENSG00000225399.3	RP11-3B7.1	4.00E-15	15	3	2.22E-11	Heart_Left_Ventricle	0.777637	Colon_Sigmoid	12.73	0.00	0.45	-6.69	-0.28	-2.76	1.57	3
ENSG00000173402.7	DAG1	5.72E-15	3	3	1.23E-10	Heart_Left_Ventricle	0.000106	Esophagus_Mucosa	1.48	0.43	0.43	-6.44	-3.88	-5.07	1.29	3
ENSG00000111801.11	BTN3A3	6.40E-15	14	10	1.24E-13	Nerve_Tibial	0.940965	Adipose_Visceral_Omentum	6.49	0.09	0.23	-7.14	7.41	0.12	4.04	10
ENSG00000270441.1	RP11-694I15.7	1.26E-14	6	5	8.79E-14	Brain_Cerebellum	0.531948	Lung	3.74	0.09	0.23	-7.46	-0.63	-4.72	2.33	5
ENSG00000004838.9	ZMYND10	1.62E-14	3	3	1.05E-14	Brain_Hypothalamus	0.288881	Brain_Cerebellum	1.47	0.59	0.59	-7.73	2.25	-1.48	5.45	3
ENSG00000137185.7	ZSCAN9	3.43E-14	16	12	1.57E-12	Thyroid	0.442919	Cells_Transformed_fibroblasts	4.99	0.05	0.18	-7.07	1.22	-2.53	2.56	12
ENSG00000261584.1	RP11-457M11.5	7.56E-14	40	2	0.00015	Adipose_Subcutaneous	0.970844	Brain_Cortex	33.74	0.00	1.18	-1.79	3.79	1.30	1.47	2
ENSG00000197062.7	RP5-874C20.3	9.15E-14	34	8	1.40E-08	Artery_Aorta	0.755602	Uterus	20.84	0.00	0.71	-0.89	5.67	3.38	1.65	8
ENSG00000096654.11	ZNF184	1.74E-13	5	5	6.99E-14	Brain_Hypothalamus	0.265427	Colon_Sigmoid	1.86	0.37	0.37	-7.49	3.80	-0.73	4.52	5
ENSG00000204709.4	C6orf100	3.05E-13	10	9	8.56E-09	Adipose_Visceral_Omentum	0.742705	Adipose_Subcutaneous	2.98	0.10	0.22	-5.76	4.49	-1.34	3.11	9
ENSG00000111540.11	RAB5B	5.13E-13	2	2	5.41E-14	Muscle_Skeletal	0.829043	Artery_Aorta	1.01	0.99	0.99	-0.22	7.52	3.65	5.47	2
ENSG00000068745.10	IP6K2	6.19E-13	24	9	1.51E-09	Cells_Transformed_fibroblasts	0.82008	Brain_Anterior_cingulate_cortex_BA24	13.26	0.00	0.47	-1.62	6.04	2.84	2.09	9
ENSG00000197153.3	HIST1H3J	7.23E-13	1	1	7.23E-13	Testis	7.23E-13	Testis	1.00	1.00	1.00	-7.18	-7.18	N/A	1	

ENSG00000228223.1	HCG11	1.06E-12	6	6	1.67E-11	Cells_Transformed_fibroblasts	0.343292	Whole_Blood	2.28	0.23	0.23	-6.73	3.96	0.18	4.37	6
ENSG00000067560.6	RHOA	1.21E-12	1	1	1.21E-12	Muscle_Skeletal	1.21E-12	Muscle_Skeletal	1.00	1.00	1.00	7.10	7.10	7.10	NA	1
ENSG00000137338.4	PGBD1	1.30E-12	12	9	4.87E-06	Brain_Cerebellar_Hemisphere	0.942405	Brain_Amygdala	3.63	0.04	0.22	-4.57	4.49	0.38	2.81	9
ENSG00000213722.4	DDAH2	1.32E-12	10	9	1.43E-07	Whole_Blood	0.555632	Cells_Transformed_fibroblasts	3.13	0.01	0.11	-5.26	2.02	-0.69	2.09	9
ENSG00000124508.12	BTN2A2	1.71E-12	30	8	2.64E-13	Testis	0.905741	Brain_Anterior_cingulate_cortex_BA24	16.46	0.00	0.66	-7.31	5.95	1.52	2.68	8
ENSG00000130517.9	PGPEP1	2.68E-12	24	6	4.79E-08	Cells_Transformed_fibroblasts	0.585967	Ovary	16.82	0.00	0.69	-4.57	5.46	2.67	2.34	6
ENSG00000197903.6	HIST1H2BK	3.16E-12	7	7	7.25E-14	Adipose_Visceral_Omentum	0.585771	Colon_Transverse	2.99	0.20	0.20	-7.48	3.97	-2.42	4.67	7
ENSG00000158691.10	ZSCAN12	4.71E-12	7	6	3.17E-08	Liver	0.831079	Esophagus_Gastroesophageal_Junction	3.93	0.07	0.16	-0.21	5.53	2.88	2.24	6
ENSG00000178057.10	NDUFAF3	5.13E-12	6	5	2.22E-10	Esophagus_Muscularis	0.016807	Lung	4.08	0.04	0.15	-6.35	3.29	-2.75	3.33	5
ENSG00000129933.16	MAU2	5.33E-12	10	8	5.86E-06	Spleen	0.793771	Colon_Sigmoid	4.41	0.07	0.23	-4.27	4.53	-1.60	2.51	8
ENSG00000124549.10	BTN2A3P	5.35E-12	21	5	1.26E-16	Esophagus_Mucosa	0.021722	Prostate	15.41	0.00	0.64	-2.72	8.28	5.29	2.33	5
ENSG00000216901.1	AL022393.7	5.42E-12	38	7	1.02E-06	Prostate	0.959538	Adipose_Visceral_Omentum	22.12	0.00	0.81	-4.84	4.89	-1.23	2.49	7
ENSG00000272221.1	XXbac-BPG181B23.7	5.67E-12	30	20	2.14E-08	Prostate	0.669322	Stomach	8.04	0.00	0.27	-5.60	2.60	-0.87	2.09	20

ENSG00000197279.3	ZNF165	6.64E-12	15	8	2.37E-09	Heart_Left_Ventricle	0.956743	Esophagus_Muscularis	8.18	0.03	0.36	-5.03	5.97	2.45	2.92	8
ENSG00000197728.5	RPS26	6.99E-12	40	1	3.07E-13	Brain_Anterior_cingulate_cortex_BA24	4.89E-09	Esophagus_Mucosa	38.57	0.00	38.57	-7.29	-5.85	-6.73	0.29	1
ENSG00000178149.12	DALRD3	7.45E-12	15	5	3.61E-09	Muscle_Skeletal	0.925733	Prostate	11.22	0.01	0.44	-5.90	-0.09	-2.67	1.60	5
ENSG00000196735.7	HLA-DQA1	1.03E-11	25	24	3.41E-06	Brain_Frontal_Cortex_BA9	0.991063	Colon_Transverse	2.66	0.12	0.12	-4.64	2.83	-0.66	2.09	24
ENSG00000183763.4	TRAIP	1.35E-11	2	2	3.97E-11	Brain_Amygdala	0.000165	Testis	1.19	0.81	0.81	3.77	6.61	5.19	2.01	2
ENSG00000204789.3	ZNF204P	1.40E-11	21	10	2.44E-11	Esophagus_Mucosa	0.625389	Cells_Transformed_fibroblasts	8.17	0.01	0.31	-6.68	4.44	-2.49	2.94	10
ENSG00000130520.6	LSM4	1.84E-11	5	5	5.78E-10	Nerve_Tibial	0.661873	Adipose_Visceral_Omentum	3.05	0.20	0.20	-1.49	6.20	2.41	3.12	5
ENSG00000139531.8	SUOX	2.42E-11	34	4	1.21E-13	Whole_Blood	0.483526	Artery_Coronary	24.18	0.00	0.91	-0.70	7.42	5.64	1.80	4
ENSG00000135945.5	REV1	4.11E-11	10	6	3.17E-09	Testis	0.21114	Brain_Hypothalamus	5.96	0.03	0.26	-4.90	5.92	-1.01	4.10	6
ENSG00000271755.1	RP1-153G14.4	4.58E-11	11	9	3.47E-12	Muscle_Skeletal	0.906613	Heart_Atrial_Appendage	4.82	0.04	0.24	-1.43	6.96	1.66	2.42	9
ENSG00000219891.2	ZSCAN12P1	6.76E-11	13	8	1.39E-05	Whole_Blood	0.999513	Adipose_Visceral_Omentum	7.37	0.02	0.28	-4.35	4.16	0.48	2.37	8
ENSG00000198502.5	HLA-DRB5	6.93E-11	34	22	1.61E-07	Esophagus_Mucosa	0.993227	Brain_Frontal_Cortex_BA9	6.93	0.00	0.25	-5.24	3.50	-0.92	1.98	22
ENSG00000225595.2	XXbac-BPG308K3.6	7.62E-11	1	1	7.62E-11	Testis	7.62E-11	Testis	1.00	1.00	1.00	-6.51	-6.51	-6.51	NA	1
ENSG00000224843.2	LINC00240	8.65E-11	17	9	1.21E-10	Esophagus_Gastroesophageal	0.424697	Liver	8.53	0.03	0.35	-6.44	-0.80	-4.35	1.53	9

						phageal_Junction										
ENSG00000137404.10	NRM	1.24E-10	9	9	2.94E-06	Prostate	0.972561	Heart_Left_Ventricle	1.99	0.21	0.21	-2.94	4.67	0.46	2.66	9
ENSG00000234745.5	HLA-B	1.27E-10	21	17	1.74E-09	Esophagus_Mucosa	0.97177	Brain_Cerebellum	5.58	0.00	0.22	-2.33	6.02	2.59	2.44	17
ENSG00000137411.12	VAR2	1.32E-10	27	17	6.88E-06	Brain_Cerebellum	0.913511	Artery_Aorta	6.24	0.00	0.23	-4.32	4.50	1.03	2.44	17
ENSG00000204257.10	HLA-DMA	1.44E-10	21	20	8.00E-07	Cells_Transformed_fibroblasts	0.948938	Brain_Amygdala	3.13	0.09	0.24	-4.94	3.60	-0.43	2.14	20
ENSG00000146109.3	ABT1	1.47E-10	14	8	6.99E-10	Testis	0.489976	Whole_Blood	7.05	0.07	0.32	-0.74	6.17	3.01	2.08	8
ENSG00000114316.8	USP4	1.86E-10	4	4	3.90E-11	Brain_Cerebellum	0.192779	Colon_Sigmoid	1.80	0.28	0.28	-3.59	6.61	2.44	4.62	4
ENSG00000225851.1	HLA-S	1.92E-10	21	16	3.10E-08	Breast_Mammary_Tissue	0.853304	Spleen	6.91	0.01	0.27	-2.25	5.54	2.87	1.87	16
ENSG00000026950.12	BTN3A1	3.97E-10	28	3	7.62E-14	Testis	0.671405	Liver	22.32	0.00	0.98	-7.48	1.05	-2.64	1.58	3
ENSG00000228022.1	HCG20	4.45E-10	13	13	2.06E-06	Adrenal_Gland	0.847419	Artery_Coronary	2.91	0.14	0.14	-4.75	4.62	-0.59	2.52	13
ENSG00000088538.12	DOCK3	4.74E-10	13	7	3.42E-07	Artery_Coronary	0.606212	Artery_Aorta	7.76	0.00	0.29	-3.45	5.10	1.02	2.27	7
ENSG00000115539.9	PDCL3	4.81E-10	9	8	4.54E-10	Cells_EBV-transformed_lymphocytes	0.261975	Heart_Atrial_Appendage	2.72	0.06	0.32	-6.23	3.21	-1.27	3.61	8
ENSG00000176933.4	TOB2P1	5.49E-10	14	7	4.43E-07	Esophagus_Mucosa	0.800448	Colon_Sigmoid	8.36	0.01	0.35	-5.05	4.47	-1.46	3.04	7
ENSG00000230598.1	OR2H4P	6.24E-10	1	1	6.24E-10	Testis	6.24E-10	Testis	1.00	1.00	1.00	-6.18	-6.18	N/A	1	
ENSG00000176349.7	AC110781.3	8.05E-10	3	3	1.97E-10	Brain_Nucleus_accumbens_basal_ganglia	0.879466	Testis	1.57	0.36	0.36	0.15	6.36	2.75	3.23	3

ENSG00000204469.8	PRRC2A	8.39E-10	5	5	0.000113	Lung	0.073173	Esophagus_Muscularis	1.30	0.64	0.64	-3.48	3.86	1.18	3.54	5
ENSG00000227403.1	AC009299.3	8.41E-10	20	3	5.82E-09	Adrenal_Gland	0.420087	Lung	16.49	0.00	0.74	-5.82	-0.81	-4.24	1.66	3
ENSG00000115526.6	CHST10	8.43E-10	14	9	1.17E-10	Brain_Anterior_cingulate_cortex_BA24	0.686858	Testis	7.32	0.01	0.26	-6.44	5.75	-1.81	4.45	9
ENSG00000204525.10	HLA-C	9.74E-10	28	20	2.06E-08	Uterus	0.900292	Nerve_Tibial	5.32	0.00	0.20	-5.61	5.53	-0.48	2.57	20
ENSG00000181315.6	ZNF322	1.04E-09	19	7	2.21E-10	Nerve_Tibial	0.379392	Artery_Aorta	12.71	0.00	0.43	-6.35	3.42	-3.65	2.37	7
ENSG00000187837.2	HIST1H1C	1.06E-09	9	8	2.35E-10	Brain_Frontal_Cortex_BA9	0.15278	Whole_Blood	4.45	0.06	0.18	-6.34	1.75	-3.58	2.62	8
ENSG00000204713.6	TRIM27	1.09E-09	13	10	2.18E-10	Spleen	0.841977	Whole_Blood	4.04	0.00	0.21	-1.03	6.35	2.65	2.48	10
ENSG00000197935.6	ZNF311	1.17E-09	7	7	3.18E-07	Pancreas	0.613465	Esophagus_Muscularis	1.54	0.54	0.54	-2.91	5.11	0.83	2.78	7
ENSG00000254901.3	MEF2BNB	1.26E-09	21	6	3.90E-06	Lung	0.984699	Testis	14.01	0.00	0.54	-4.62	3.32	0.09	1.80	6
ENSG00000235109.3	ZSCAN31	1.28E-09	30	7	4.60E-07	Brain_Amygdala	0.95262	Nerve_Tibial	18.37	0.00	0.72	-5.04	2.00	-1.32	1.99	7
ENSG00000088543.10	C3orf18	1.30E-09	10	5	3.94E-06	Thyroid	0.946445	Brain_Cortex	6.52	0.01	0.34	-4.61	4.10	0.42	2.24	5
ENSG00000170500.8	LONRF2	1.47E-09	10	9	8.62E-10	Thyroid	0.904141	Artery_Coronary	3.47	0.06	0.22	-6.13	0.12	-2.39	2.14	9
ENSG00000112763.11	BTN2A1	1.55E-09	15	9	4.62E-06	Testis	0.95587	Stomach	8.11	0.02	0.32	-4.58	1.95	-0.03	1.96	9
ENSG00000158406.2	HIST1H4H	1.72E-09	5	5	2.19E-08	Whole_Blood	0.072494	Brain_Frontal_Cortex_BA9	2.19	0.12	0.12	1.80	5.60	3.79	1.49	5
ENSG00000188641.8	DPYD	1.82E-09	11	10	2.32E-10	Esophagus_Mucosa	0.928352	Artery_Aorta	4.52	0.13	0.23	-1.89	6.34	-0.23	2.33	10
ENSG00000140718.14	FTO	1.99E-09	9	6	1.15E-09	Muscle_Skeletal	0.366709	Whole_Blood	5.53	0.04	0.21	-3.44	6.09	-1.26	3.05	6

ENSG0000226314.3	ZNF192P1	1.99E-09	23	8	2.63E-09	Esophagus_Mucosa	0.716865	Nerve_Tibial	11.39	0.00	0.45	-5.25	5.95	1.06	4.30	8
ENSG0000204314.6	PRRT1	2.29E-09	11	11	3.14E-06	Adipose_Visceral_Omentum	0.781551	Prostate	2.79	0.27	0.27	-4.66	3.43	0.87	2.46	11
ENSG0000105662.11	CRTC1	2.90E-09	6	6	3.57E-06	Brain_Cerebellum	0.348574	Colon_Transverse	1.91	0.41	0.41	-4.61	4.64	-0.38	3.23	6
ENSG0000144214.5	LYG1	3.14E-09	29	5	9.95E-05	Artery_Coronary	0.802478	Stomach	20.37	0.01	0.71	-3.75	3.89	1.07	1.74	5
ENSG0000228666.1	KRT18P1	3.20E-09	1	1	3.20E-09	Testis	3.20E-09	Testis	1.00	1.00	1.00	5.92	5.92	5.92	NA	1
ENSG0000145020.10	AMT	3.48E-09	34	1	8.73E-23	Brain_Hypothalamus	0.004271	Brain_Cerebellar_Hemispheres	30.34	0.00	30.34	-9.83	-2.86	-5.58	1.33	1
ENSG0000227207.2	RPL31P12	3.49E-09	5	2	4.83E-09	Esophagus_Muscularis	1.77E-05	Brain_Cerebellar_Hemispheres	4.72	0.00	0.20	-5.85	-4.29	-4.93	0.78	2
ENSG00000090975.8	PITPNM2	3.66E-09	4	4	2.02E-10	Thyroid	0.163882	Brain_Nucleus_accumbens_basal_ganglia	2.59	0.09	0.09	-6.36	4.43	0.90	5.03	4
ENSG0000123411.10	IKZF4	4.12E-09	6	5	4.44E-11	Adipose_Subcutaneous	0.93144	Pancreas	2.82	0.05	0.27	-6.59	2.58	-2.00	3.58	5
ENSG0000206344.6	HCG27	4.46E-09	30	17	0.000147	Cells_EBV-transformed_lymphocytes	0.959348	Brain_Hypothalamus	8.46	0.00	0.29	-2.22	3.80	1.23	1.77	17
ENSG0000111328.2	CDK2AP1	8.19E-09	23	3	1.28E-10	Lung	0.000259	Nerve_Tibial	18.82	0.00	0.67	3.65	6.43	5.70	0.75	3
ENSG0000198218.6	QRICH1	8.54E-09	20	3	1.94E-11	Whole_Blood	0.718757	Brain_Cerebellar_Hemispheres	16.27	0.00	0.72	0.36	6.71	3.99	1.52	3
ENSG0000237154.1	MCFD2P1	1.07E-08	5	5	2.77E-09	Testis	0.880983	Brain_Cortex	1.86	0.26	0.26	-5.94	3.09	0.32	3.68	5
ENSG0000243904.1	RP11-600F24.1	1.31E-08	2	2	1.74E-09	Stomach	0.969426	Muscle_Skeletal	1.04	0.96	0.96	-6.02	0.04	-2.99	4.28	2

ENSG00000175866.11	BAIAP2	1.37E-08	8	7	1.79E-06	Esophagus_Muscularis	0.975923	Spleen	3.89	0.09	0.13	-1.10	4.78	0.85	1.95	7
ENSG00000204516.5	MICB	1.62E-08	34	4	1.81E-08	Muscle_Skeletal	0.564913	Brain_Frontal_Cortex_BA9	23.63	0.00	1.66	-5.63	2.12	-2.27	1.62	4
ENSG00000144218.14	AFF3	1.62E-08	14	9	6.28E-11	Brain_Cerebellum	0.834543	Lung	6.67	0.01	0.26	-6.54	2.26	-3.50	2.73	9
ENSG00000197914.2	HIST1H4K	1.72E-08	11	7	1.28E-09	Artery_Aorta	0.025149	Brain_Frontal_Cortex_BA9	7.13	0.01	0.24	2.24	6.07	3.93	1.32	7
ENSG00000102572.10	STK24	1.82E-08	7	7	1.79E-11	Adipose_Visceral_Omentum	0.792301	Nerve_Tibial	3.78	0.20	0.20	-6.72	4.89	-1.29	4.77	7
ENSG00000052795.8	FNIP2	1.89E-08	4	4	1.81E-08	Thyroid	0.077944	Adrenal_Gland	2.12	0.20	0.20	-5.63	-1.76	-3.93	1.61	4
ENSG00000114349.5	GNAT1	2.04E-08	2	2	1.05E-08	Adipose_Visceral_Omentum	5.00E-05	Lung	1.45	0.55	0.55	-5.72	-4.06	-4.89	1.18	2
ENSG00000272312.1	RP11-239L20.6	2.11E-08	1	1	2.11E-08	Brain_Hippocampus	2.11E-08	Brain_Hippocampus	1.00	1.00	1.00	5.60	5.60	5.60	NA	1
ENSG00000051825.10	MPHOSP H9	2.38E-08	11	5	3.36E-12	Heart_Left_Ventricle	0.31231	Spleen	7.34	0.05	0.27	-6.96	-1.01	-4.75	2.01	5
ENSG00000204560.5	DHX16	2.48E-08	9	9	4.58E-08	Lung	0.457506	Brain_Hypothalamus	2.67	0.23	0.23	-5.47	2.60	-0.87	2.57	9
ENSG00000248290.1	TNXA	2.68E-08	25	10	2.90E-07	Esophagus_Muscularis	0.929793	Lung	9.07	0.01	0.42	-3.45	5.13	1.04	2.01	10
ENSG00000272065.1	U91328.20	2.85E-08	7	7	4.46E-05	Lung	0.812417	Brain_Cortex	2.89	0.20	0.20	-4.08	0.72	-2.10	1.84	7
ENSG00000065060.12	UHRF1BP1	3.10E-08	39	1	1.62E-09	Spleen	0.007642	Brain_Substantia_nigra	33.71	0.00	33.71	2.67	6.03	5.10	0.81	1
ENSG00000248458.2	AL139147.1	3.27E-08	6	6	1.56E-05	Artery_Coronary	0.882682	Cells_Transformed_fibroblasts	1.72	0.47	0.47	-3.71	4.32	-0.16	2.72	6



ENSG0000178467.13	P4HTM	3.34E-08	18	4	1.45E-10	Whole_Blood	0.415753	Breast_Mammary_Tissue	13.50	0.00	0.68	-6.41	0.81	-3.24	1.72	4
ENSG0000164053.13	ATRIP	3.56E-08	14	8	2.76E-06	Stomach	0.870066	Colon_Transverse	7.41	0.00	0.31	-4.01	4.69	-0.83	2.05	8
ENSG0000204344.10	STK19	3.57E-08	20	18	2.87E-05	Brain_Cortex	0.963306	Adipose_Visceral_Omentum	3.55	0.03	0.12	-4.18	2.78	-0.85	1.94	18
ENSG0000167487.7	KLHL26	3.62E-08	8	7	1.87E-06	Brain_Cerebellar_Hemisphere	0.583692	Spleen	2.79	0.09	0.31	-2.65	4.77	1.39	2.55	7
ENSG00001015701.11	FKBP8	3.71E-08	2	2	2.30E-08	Heart_Left_Ventricle	0.087437	Spleen	1.00	1.00	1.00	-5.59	-1.71	-3.65	2.74	2
ENSG0000204396.6	VWA7	5.00E-08	6	6	0.00012	Heart_Left_Ventricle	0.180606	Thyroid	1.94	0.27	0.27	-2.80	3.85	1.10	2.66	6
ENSG0000187323.7	DCC	6.74E-08	3	3	6.77E-08	Adrenal_Gland	0.023108	Nerve_Tibial	2.03	0.35	0.35	-3.72	5.40	-0.20	4.90	3
ENSG0000205363.4	C15orf59	6.76E-08	10	10	1.37E-05	Lung	0.854706	Thyroid	3.21	0.11	0.11	-1.58	4.35	1.10	2.09	10
ENSG0000204348.5	DXO	6.89E-08	14	7	5.05E-05	Cells_Transformed_fibroblasts	0.870475	Adipose_Subcutaneous	7.63	0.00	0.63	-4.05	3.47	-0.99	2.03	7
ENSG0000150967.13	ABCB9	7.16E-08	16	5	1.43E-09	Colon_Sigmoid	0.938425	Ovary	10.44	0.00	0.51	-6.05	5.65	-3.86	3.05	5
ENSG0000135272.5	MDFIC	7.72E-08	11	10	3.64E-06	Muscle_Skeletal	0.557423	Small_Intestine_Terminal_Ileum	5.24	0.08	0.23	-4.63	1.23	-2.25	1.80	10
ENSG0000178342.4	KCNG2	8.03E-08	7	7	1.99E-08	Spleen	0.762763	Thyroid	2.17	0.25	0.25	-3.18	5.61	0.62	2.94	7
ENSG0000163812.9	ZDHHC3	8.78E-08	5	5	1.41E-08	Esophagus_Gastroesophageal_Junction	0.64262	Prostate	1.59	0.45	0.45	-5.67	2.44	-0.99	3.12	5
ENSG00001013449.7	SALL1	9.23E-08	4	4	3.00E-07	Testis	0.75246	Cells_Transformed_fibroblasts	1.57	0.53	0.53	-2.45	5.12	1.02	3.22	4
ENSG0000234816.2	U91328.2	1.00E-07	1	1	1.00E-07	Testis	1.00E-07	Testis	1.00	1.00	1.00	-5.33	-5.33	-5.33	NA	1

ENSG00000204531.11	POU5F1	1.11E-07	30	14	2.81E-08	Liver	0.980456	Prostate	11.66	0.00	0.39	-1.84	5.55	0.80	1.58	14
ENSG00000112893.5	MAN2A1	1.16E-07	4	4	1.40E-06	Whole_Bl ood	0.928219	Testis	1.44	0.31	0.31	-0.09	4.82	2.89	2.25	4
ENSG00000103245.9	NARFL	1.17E-07	37	17	0.000255	Brain_Ant erior_cing ulate_corte x_BA24	0.967253	Brain_Fro ntal_Corte x_BA9	14.57	0.00	0.49	-3.38	3.66	-0.45	1.68	17
ENSG00000164818.11	HEATR2	1.21E-07	28	14	6.39E-07	Pancreas	0.947663	Brain_Cer ebellar_He misphere	11.81	0.00	0.42	-0.91	4.98	1.78	1.31	14
ENSG00000187626.7	ZKSCAN4	1.26E-07	3	3	2.33E-07	Testis	0.099587	Spleen	1.68	0.44	0.44	-5.17	-1.65	-3.25	1.78	3
ENSG00000118058.16	KMT2A	1.36E-07	4	4	2.19E-05	Adipose_S ubcutaneo us	0.12396	Brain_Cer ebellum	1.46	0.70	0.70	-4.25	2.86	-0.13	3.38	4
ENSG00000204427.7	ABHD16A	1.51E-07	5	5	2.16E-07	Lung	0.230466	Liver	2.14	0.16	0.16	1.20	5.19	3.04	1.53	5
ENSG00000160563.9	MED27	1.54E-07	2	2	6.66E-08	Whole_Bl ood	0.210312	Colon_Tra nsverse	1.04	0.96	0.96	-1.25	5.40	2.07	4.70	2
ENSG00000162706.8	CADM3	1.56E-07	5	5	1.23E-06	Brain_Hip pocampus	0.661445	Cells_Tra nsformed_fi broblasts	1.44	0.52	0.52	0.44	4.85	2.36	1.90	5
ENSG00000225099.1	ATP6V1E1P1	1.60E-07	1	1	1.60E-07	Brain_Cer ebellum	1.60E-07	Brain_Cer ebellum	1.00	1.00	1.00	5.24	5.24	5.24	NA	1
ENSG00000219392.1	RP1-265C24.5	1.62E-07	32	1	6.37E-11	Adipose_S ubcutaneo us	9.17E-05	Esophagus _Gastroeso phageal_Ju nction	28.02	0.00	28.02	3.91	6.53	4.91	0.64	1
ENSG00000124562.5	SNRPC	1.63E-07	26	4	6.69E-10	Esophagus _Musculari s	0.017974	Spleen	20.32	0.00	0.71	-6.17	-2.37	-5.03	0.92	4
ENSG00000164061.4	BSN	1.66E-07	2	2	5.67E-08	Brain_Cort ex	0.032939	Liver	1.15	0.85	0.85	-2.13	5.43	1.65	5.35	2
ENSG00000182477.5	OR2B8P	1.87E-07	12	1	1.03E-10	Adrenal_G land	0.00057	Nerve_Tib ial	10.96	0.01	10.96	-6.46	-3.45	-4.98	0.82	1
ENSG00000262223.2	RP11-1055B8.3	1.90E-07	7	6	5.91E-08	Brain_Hip pocampus	0.774562	Brain_Cer ebellum	2.26	0.00	0.42	-5.42	2.05	-1.75	2.38	6

ENSG00000204410.10	MSH5	1.94E-07	4	4	1.71E-07	Thyroid	0.917968	Liver	1.60	0.48	0.48	-0.10	5.23	2.82	2.61	4
ENSG00000267325.1	RP11-397A16.2	2.21E-07	7	7	0.001258	Cells_Transformed_fibroblasts	0.910962	Esophagus_Gastroesophageal_Junction	3.05	0.27	0.27	-3.23	2.25	-0.60	1.98	7
ENSG00000137312.10	FLOT1	2.33E-07	14	14	0.000324	Stomach	0.911693	Thyroid	2.53	0.15	0.15	-3.60	3.00	-0.82	2.05	14
ENSG00000189134.3	NKAPL	2.40E-07	6	5	2.17E-05	Esophagus_Muscularis	0.321492	Cells_Transformed_fibroblasts	2.91	0.06	0.17	-1.09	4.25	1.58	2.37	5
ENSG00000159202.13	UBE2Z	2.43E-07	8	3	7.57E-08	Cells_EBV-transformed_lymphocytes	6.23E-06	Cells_Transformed_fibroblasts	6.66	0.00	0.38	-5.38	5.31	-2.54	4.63	3
ENSG00000137310.7	TCF19	2.51E-07	27	10	2.44E-06	Cells_EBV-transformed_lymphocytes	0.958171	Lung	12.56	0.00	0.50	-2.22	4.71	0.85	1.82	10
ENSG00000174953.9	DHX36	2.54E-07	22	5	8.72E-08	Muscle_Skeletal	0.885006	Brain_Cortex	16.39	0.00	0.59	-5.35	-0.14	-2.44	1.11	5
ENSG00000183955.8	SETD8	2.58E-07	12	7	6.53E-10	Muscle_Skeletal	0.991608	Thyroid	6.92	0.01	0.29	-6.18	4.81	-1.76	3.93	7
ENSG00000084463.3	WBP11	2.75E-07	12	8	3.66E-09	Brain_Amygdala	0.99826	Adipose_Visceral_Omentum	7.35	0.00	0.25	-1.79	5.90	0.28	1.98	8
ENSG00000232112.3	TMA7	2.88E-07	21	5	5.24E-07	Uterus	0.930443	Thyroid	14.89	0.00	0.77	-1.95	5.02	0.73	1.62	5
ENSG00000158373.7	HIST1H2BD	2.90E-07	5	5	6.67E-07	Whole_Blood	0.477683	Stomach	2.75	0.25	0.25	0.71	4.97	3.56	1.74	5
ENSG00000124635.7	HIST1H2BJ	3.09E-07	2	2	5.16E-08	Adipose_Subcutaneous	0.854031	Cells_Transformed_fibroblasts	1.14	0.86	0.86	-5.45	0.18	-2.63	3.98	2
ENSG00000163257.6	DCAF16	3.18E-07	19	4	2.32E-08	Esophagus_Muscularis	0.240582	Brain_Hippocampus	14.20	0.01	0.60	-5.59	-1.17	-4.06	1.12	4

ENSG00000271581.1	XXbac-BPG248L24.12	3.26E-07	23	18	1.90E-08	Colon_Sigmoid	0.843517	Nerve_Tibial	6.18	0.01	0.22	-3.88	5.62	1.34	2.29	18
ENSG00000149115.9	TNKS1BP1	3.48E-07	10	10	1.02E-07	Adrenal_Gland	0.736473	Cells_Transformed_fibroblasts	3.35	0.19	0.19	-3.86	5.32	1.04	2.63	10
ENSG00000166741.3	NNMT	3.51E-07	4	4	3.54E-07	Adrenal_Gland	0.809311	Stomach	1.31	0.65	0.65	-0.24	5.09	2.07	2.38	4
ENSG00000196090.8	PTPRT	3.60E-07	2	2	5.30E-08	Pancreas	0.975885	Small_Intestine_Terminal_Ileum	1.04	0.96	0.96	-5.44	-0.03	-2.74	3.83	2
ENSG00000130921.3	C12orf65	3.74E-07	11	4	1.01E-09	Adipose_Visceral_Omentum	0.602392	Whole_Blood	8.20	0.01	0.32	0.52	6.11	4.67	1.77	4
ENSG00000075131.5	TIPIN	4.03E-07	36	1	1.80E-08	Stomach	0.011229	Cells_Transformed_fibroblasts	32.43	0.00	32.43	2.54	5.63	4.79	0.62	1
ENSG00000131323.10	TRAF3	4.27E-07	5	5	2.87E-09	Brain_Cortex	0.150955	Esophagus_Gastroesophageal_Junction	2.14	0.26	0.26	1.44	5.94	3.45	1.63	5
ENSG00000112343.8	TRIM38	4.33E-07	11	7	2.56E-09	Esophagus_Gastroesophageal_Junction	0.105844	Brain_Nucleus_accumbens_basal_ganglia	5.88	0.03	0.24	-4.92	5.96	2.83	2.90	7
ENSG00000112812.11	PRSS16	4.42E-07	15	6	1.04E-12	Esophagus_Mucosa	0.868919	Ovary	9.52	0.01	0.48	-7.13	-0.17	-4.44	1.95	6
ENSG00000170703.11	TTLL6	4.49E-07	22	8	1.50E-07	Adipose_Visceral_Omentum	0.836054	Brain_Cerebellar_Hemisphere	12.96	0.01	0.44	-5.25	0.90	-2.84	1.56	8
ENSG00000020256.15	ZFP64	4.51E-07	8	8	1.52E-05	Cells_Transformed_fibroblasts	0.444318	Brain_Nucleus_accumbens_basal_ganglia	3.15	0.15	0.15	-0.84	4.33	2.10	1.70	8
ENSG00000187492.4	CDHR4	4.52E-07	3	3	5.69E-05	Testis	0.000532	Muscle_Skeletal	1.61	0.40	0.40	3.46	4.03	3.84	0.32	3
ENSG00000216915.2	RP1-97D16.1	4.70E-07	2	2	9.97E-08	Testis	0.00044	Brain_Nucleus_accu	1.77	0.23	0.23	3.51	5.33	4.42	1.28	2

								mbens_basal_ganglia								
ENSG00000187763.3	OR2B7P	4.93E-07	3	2	8.81E-08	Nerve_Tibial	4.51E-06	Testis	2.66	0.08	0.26	-5.35	-4.59	-5.06	0.41	2
ENSG00000249476.1	CTD-2587M2.1	4.94E-07	32	2	0.00125	Uterus	0.923005	Stomach	28.35	0.00	1.10	-3.23	2.21	-1.16	1.06	2
ENSG00000197238.3	HIST1H4J	5.06E-07	2	2	6.74E-07	Breast_Mammary_Tissue	1.08E-06	Stomach	1.67	0.33	0.33	4.88	4.97	4.92	0.07	2
ENSG00000197177.11	GPR123	5.19E-07	4	4	1.20E-05	Brain_Cerebellum	0.462411	Nerve_Tibial	1.88	0.45	0.45	0.73	4.38	3.10	1.63	4
ENSG00000169981.6	ZNF35	5.29E-07	4	4	1.05E-08	Breast_Mammary_Tissue	0.414108	Small_Intestine_Terminal_Ileum	1.33	0.64	0.64	-5.72	0.82	-2.16	2.70	4
ENSG00000114302.11	PRKAR2A	5.31E-07	3	3	5.82E-05	Adipose_Subcutaneous	0.830766	Breast_Mammary_Tissue	1.81	0.30	0.30	0.21	4.02	2.73	2.18	3
ENSG00000119682.12	AREL1	5.35E-07	3	3	2.68E-07	Testis	0.535359	Brain_Nucleus_accumbens_basal_ganglia	2.32	0.12	0.12	-3.67	5.14	0.29	4.48	3
ENSG00000220721.1	OR1F12	5.56E-07	5	4	3.12E-07	Nerve_Tibial	6.97E-05	Thyroid	3.64	0.12	0.22	-5.12	-3.98	-4.71	0.45	4
ENSG00000119630.9	PGF	5.75E-07	4	4	2.13E-07	Heart_Left_Ventricle	0.951511	Liver	1.96	0.25	0.25	-5.19	0.83	-0.98	2.83	4
ENSG00000250535.1	STK19P	6.04E-07	32	19	5.32E-08	Brain_Hippocampus	0.665615	Whole_Blood	9.54	0.01	0.37	-1.40	5.44	2.27	1.79	19
ENSG00000161996.13	WDR90	6.07E-07	29	7	8.87E-06	Spleen	0.805058	Ovary	19.03	0.00	0.64	-4.44	3.22	-2.22	1.38	7
ENSG00000204482.6	LST1	6.50E-07	8	8	3.08E-06	Esophagus_Muscularis	0.583233	Muscle_Skeletal	2.13	0.21	0.21	-3.13	4.67	2.09	2.67	8
ENSG00000124557.8	BTN1A1	6.63E-07	2	2	0.000338	Testis	0.000879	Nerve_Tibial	1.16	0.84	0.84	-3.58	3.33	-0.13	4.89	2
ENSG00000119689.10	DLST	6.72E-07	5	5	3.83E-06	Muscle_Skeletal	0.759209	Nerve_Tibial	2.12	0.41	0.41	-4.62	0.61	-1.84	2.09	5
ENSG00000254634.3	RP11-231C14.3	7.79E-07	16	6	2.82E-05	Muscle_Skeletal	0.456796	Lung	10.50	0.01	0.54	-4.19	2.46	-2.42	1.60	6

ENSG0000010704.14	HFE	7.81E-07	12	7	4.37E-06	Lung	0.581673	Small_Intestine_Terminal_Ileum	7.61	0.03	0.27	-0.55	4.59	2.37	1.42	7
ENSG00000065621.10	GSTO2	8.01E-07	26	7	5.91E-06	Minor_Salivary_Gland	0.964452	Colon_Sigmoid	17.82	0.00	0.70	-2.96	4.53	1.48	2.06	7
ENSG00000217539.2	IQCB2P	8.41E-07	1	1	8.41E-07	Testis	8.41E-07	Testis	1.00	1.00	1.00	-4.93	-4.93	-4.93	NA	1
ENSG00000204366.3	ZBTB12	8.49E-07	1	1	8.49E-07	Esophagus_Gastroesophageal_Junction	8.49E-07	Esophagus_Gastroesophageal_Junction	1.00	1.00	1.00	4.92	4.92	4.92	NA	1
ENSG00000177352.9	CCDC71	8.67E-07	11	4	2.43E-07	Brain_Hippocampus	0.991314	Cells_EBV-transformed_lymphocytes	7.86	0.01	0.44	-0.01	5.16	2.80	1.74	4
ENSG00000204421.2	LY6G6C	8.67E-07	3	3	4.72E-07	Brain_Nucleus_accumbens_basal_ganglia	0.690044	Esophagus_Mucosa	1.69	0.50	0.50	-5.04	1.26	-1.39	3.27	3
ENSG00000159199.9	ATP5G1	8.78E-07	13	3	1.03E-08	Stomach	0.00883	Brain_Cerebellum	10.22	0.01	0.51	2.62	5.73	4.43	0.95	3
ENSG00000237541.3	HLA-DQA2	8.99E-07	39	9	2.84E-06	Heart_Left_Ventricle	0.699871	Brain_Cerebellum	20.58	0.00	0.78	-1.61	4.68	2.99	1.41	9
ENSG00000196275.9	GTF2IRD2	9.23E-07	23	7	2.71E-08	Brain_Cortex	0.479192	Brain_Anterior_cingulate_cortex_BA24	14.35	0.00	0.48	0.71	5.56	4.17	1.32	7
ENSG00000158417.6	EIF5B	1.02E-06	3	3	3.94E-05	Adrenal_Gland	0.00125	Brain_Hippocampus	1.39	0.63	0.63	-4.11	3.23	-1.51	4.11	3
ENSG00000164855.11	TMEM184A	1.05E-06	19	7	1.21E-06	Muscle_Skeletal	0.978492	Adipose_Subcutaneous	11.46	0.00	0.44	-3.69	4.85	0.19	1.75	7
ENSG00000176422.10	SPRYD4	1.09E-06	12	7	6.15E-09	Thyroid	0.873777	Adrenal_Gland	6.81	0.00	0.47	-5.81	1.23	-1.59	1.65	7

ENSG00000160828.13	STAG3L2	1.15E-06	40	2	1.56E-08	Breast_Mammary_Tissue	0.129504	Small_Intestine_Terminal_Ileum	31.97	0.00	1.14	-5.65	-1.52	-4.57	0.84	2
ENSG00000141458.8	NPC1	1.17E-06	26	2	1.56E-07	Esophagus_Muscularis	0.006132	Small_Intestine_Terminal_Ileum	20.71	0.00	1.38	-5.25	-2.74	-4.37	0.61	2
ENSG00000204438.6	GPANK1	1.26E-06	9	8	7.91E-07	Esophagus_Gastroesophageal_Junction	0.471296	Adipose_Visceral_Omentum	3.12	0.02	0.19	-0.72	4.94	1.95	1.65	8
ENSG00000254562.1	RP11-64I17.1	1.31E-06	1	1	1.31E-06	Testis	1.31E-06	Testis	1.00	1.00	1.00	-4.84	-4.84	-4.84	NA	1
ENSG00000172409.5	CLP1	1.32E-06	6	6	6.51E-07	Whole_Blood	0.61533	Testis	1.83	0.27	0.27	-3.14	4.98	1.04	2.90	6
ENSG00000182196.9	ARL6IP4	1.35E-06	10	3	9.63E-08	Adipose_Visceral_Omentum	0.000568	Stomach	8.61	0.01	0.31	3.45	5.33	4.63	0.54	3
ENSG00000187664.8	HAPLN4	1.36E-06	16	5	5.71E-07	Lung	0.976319	Nerve_Tibial	11.98	0.01	0.42	-5.00	1.21	-0.61	1.75	5

**ST8(a). MTAG GERD metaXcan analysis using eQTL information from the Gastro-esophageal junction tissue**

gene	Gene name	Z	Effect size	Pval	var_g	pred_perf_r2	pred_perf_pval	pred_perf_qval	n_snps_unsed	n_snps_in_cov	n_snps_in_model
ENSG00000186470.9	BTN3A2	5.55	0.10	2.93E-08	0.29	0.50	1.06E-31	NA	28	31	31
ENSG00000268885.1	AC026740.1	-5.14	-0.41	2.73E-07	0.02	0.03	0.014816	NA	7	7	7
ENSG00000254527.1	ENPP7P12	4.85	0.34	1.21E-06	0.02	0.11	6.73E-06	NA	9	12	12
ENSG00000118961.10	C2orf43	-4.79	-0.13	1.63E-06	0.17	0.35	5.61E-19	NA	9	9	9
ENSG00000224843.2	LINC00240	-4.55	-0.30	5.37E-06	0.03	0.04	0.008003	NA	6	8	8
ENSG00000125965.4	GDF5	-4.54	-0.25	5.50E-06	0.04	0.12	1.95E-06	NA	19	26	26
ENSG00000163320.6	CGGBP1	4.44	0.33	8.98E-06	0.02	0.44	1.18E-26	NA	37	42	42
ENSG00000112877.6	CEP72	-4.36	-0.17	1.33E-05	0.08	0.16	1.77E-08	NA	25	27	27
ENSG00000139531.8	SUOX	4.32	0.34	1.55E-05	0.02	0.16	1.57E-08	NA	9	18	18
ENSG00000084674.9	APOB	4.28	0.31	1.84E-05	0.02	0.03	0.015102	NA	9	10	10
ENSG00000065060.12	UHRF1BP1	4.26	0.08	2.00E-05	0.28	0.48	5.96E-30	NA	65	75	75
ENSG00000004534.10	RBM6	-4.21	-0.11	2.60E-05	0.16	0.33	8.24E-19	NA	43	65	65



**ST8(b). MTAG GERD metaXcan analysis using eQTL information from the Esophageal Muscularis tissue**

gene	Gene name	Z	Effect size	Pval	var_g	pred_perf_r2	pred_perf_pval	pred_perf_qval	n_snps_unsed	n_snps_in_cov	n_snps_in_model
ENSG0000020381 3.4	HIST1H3H	6.49	0.60	8.31E-11	0.010	0.016	0.036367	NA	39	58	58
ENSG0000011896 1.10	C2orf43	-6.03	-0.12	1.62E-09	0.274	0.366	1.98E-31	NA	19	28	28
ENSG0000018647 0.9	BTN3A2	5.68	0.09	1.38E-08	0.359	0.580	2.19E-61	NA	32	36	36
ENSG0000007437 0.13	ATP2A3	5.31	0.50	1.12E-07	0.014	0.054	8.61E-05	NA	7	7	7
ENSG0000011281 2.11	PRSS16	-5.17	-0.15	2.40E-07	0.136	0.093	1.26E-07	NA	58	76	76
ENSG0000026838 8.1	FENDRR	5.15	0.41	2.63E-07	0.017	0.036	0.001188	NA	12	13	13
ENSG0000010566 2.11	CRTC1	-5.10	-0.62	3.38E-07	0.009	0.035	0.001527	NA	7	12	12
ENSG0000027015 4.1	RP11-419I17.1	5.02	0.39	5.27E-07	0.018	0.062	2.38E-05	NA	5	5	5
ENSG0000018913 4.3	NKAPL	4.97	0.62	6.61E-07	0.006	0.034	0.002042	NA	5	6	6
ENSG0000011287 7.6	CEP72	-4.82	-0.19	1.46E-06	0.066	0.108	4.97E-09	NA	13	15	15
ENSG0000012456 2.5	SNRPC	-4.71	-0.17	2.42E-06	0.081	0.145	2.20E-11	NA	14	14	14
ENSG0000017105 5.10	FEZ2	4.64	0.33	3.49E-06	0.024	0.074	2.82E-06	NA	6	6	6
ENSG0000017461 1.7	KY	-4.62	-0.28	3.85E-06	0.031	0.027	0.00537	NA	24	27	27
ENSG0000023973 2.2	TLR9	4.54	0.41	5.54E-06	0.014	0.033	0.002018	NA	12	12	12

**ST8(c). MTAG BE metaXcan analysis using eQTL information from the Esophageal Mucosa tissue**

gene	Gene name	Z	Effect size	Pval	var_g	pred_perf_r2	pred_perf_pval	pred_perf_qval	n_snps_used	n_snps_in_cov	n_snps_in_model
ENSG00000186470.9	BTN3A2	6.16	0.09	7.15E-10	0.39	0.60	1.25E-71	NA	53	61	61
ENSG00000112812.11	PRSS16	-6.00	-0.83	1.93E-09	0.01	0.02	0.019411	NA	9	10	10
ENSG00000204789.3	ZNF204P	-5.90	-0.64	3.53E-09	0.01	0.02	0.0071	NA	10	13	13
ENSG00000197062.7	RP5-874C20.3	5.55	0.57	2.93E-08	0.01	0.13	7.28E-11	NA	12	42	42
ENSG00000226314.3	ZNF192P1	5.33	0.67	9.68E-08	0.01	0.05	0.000105	NA	23	52	52
ENSG00000101019.17	UQCC1	5.03	0.24	4.98E-07	0.05	0.16	7.13E-14	NA	8	11	11
ENSG00000118961.10	C2orf43	-4.82	-0.10	1.44E-06	0.29	0.40	1.47E-38	NA	40	43	43
ENSG00000197279.3	ZNF165	-4.64	-0.30	3.56E-06	0.02	0.07	2.13E-06	NA	11	17	17
ENSG00000154319.10	FAM167A	4.63	0.16	3.63E-06	0.09	0.08	5.91E-07	NA	40	46	46
ENSG00000173295.3	FAM86B3P	4.51	0.11	6.36E-06	0.20	0.46	6.42E-46	NA	28	31	31
ENSG00000188242.4	CTD-2228K2.5	4.48	0.25	7.36E-06	0.04	0.07	4.32E-06	NA	18	29	29
ENSG00000004534.10	RBM6	-4.44	-0.09	9.09E-06	0.29	0.51	1.05E-54	NA	21	34	34
ENSG00000242607.1	RPS3AP34	4.41	0.47	1.04E-05	0.01	0.04	0.000463	NA	4	7	7

**ST9. MultiXcan top associated genes with BE susceptibility**

Gene ID	Gene name	Pval	n	n_i nde p	p_i be st	t_i best	p_i wor st	t_i worst	eigen_ max	eigen_ min	eigen_ min _kept	z_mi n	z_ma x	z_ me an	z_ sd	t m i	stat us
ENSG00000137185.7	ZSCAN9	1.87E-11	19	13	4.02E-11	Thyroid	7.39E-01	Skin_Not_Sun_Exposed_Suprapubic	6.14	0.03	0.21	-6.60	1.58	-2.57	2.44	13	0
ENSG00000197062.7	RP5-874C20.3	2.38E-10	40	7	1.17E-08	Brain_Putamen_basal_ganglia	8.91E-01	Brain_Cortex	25.18	0.00	0.98	0.14	5.70	3.60	1.43	7	0
ENSG00000196735.7	HLA-DQA1	3.38E-10	29	28	0.003269	Liver	8.90E-01	Prostate	2.72	0.12	0.12	-2.89	2.94	-0.26	1.63	28	0
ENSG00000203813.4	HIST1H3H	4.34E-10	2	2	8.31E-11	Esophagus_Muscularis	8.02E-01	Stomach	1.18	0.82	0.82	0.25	6.49	3.37	4.42	2	0
ENSG00000225595.2	XXbac-BPG308K3.6	4.48E-10	1	1	4.48E-10	Testis	4.48E-10	Testis	1.00	1.00	1.00	-6.24	-6.24	-6.24	NA	1	0
ENSG00000260396.1	AC012065.7	4.69E-10	15	11	4.65E-12	Adipose_Subcutaneous	9.04E-01	Spleen	5.65	0.07	0.24	-6.92	0.80	-2.55	2.23	11	0
ENSG00000096654.11	ZNF184	7.95E-10	5	5	2.83E-12	Brain_Hypothalamus	8.52E-01	Small_Intestine_Terminal_Ileum	1.86	0.37	0.37	-6.99	1.36	-1.52	3.23	5	0
ENSG00000129933.16	MAU2	3.01E-09	11	9	1.64E-05	Spleen	9.01E-01	Colon_Sigmoid	4.51	0.07	0.23	-3.63	4.31	-1.08	2.11	9	0
ENSG00000228666.1	KRT18P1	3.80E-09	1	1	3.80E-09	Testis	3.80E-09	Testis	1.00	1.00	1.00	5.89	5.89	5.89	NA	1	0
ENSG00000186470.9	BTN3A2	6.05E-09	48	1	6.75E-10	Brain_Hippocampus	4.19E-05	Brain_Caudate_basal_ganglia	43.45	0.00	43.45	4.10	6.17	5.53	0.41	1	0
ENSG00000271755.1	RP1-153G14.4	6.15E-09	13	9	2.78E-08	Muscle_Skeletal	9.67E-01	Brain_Anterior_cing	6.45	0.03	0.26	-1.02	5.55	0.80	1.99	9	0

								ulate_cortex_BA24									
ENSG00000230598.1	OR2H4P	7.32E-09	1	1	7.32E-09	Testis	7.32E-09	Testis	1.00	1.00	1.00	-5.78	-5.78	-5.78	NA	1	0
ENSG00000229391.3	HLA-DRB6	1.22E-08	43	33	0.000597	Brain_Nucleus_accumbens_basal_ganglia	9.77E-01	Heart_Atrial_Appendage	4.99	0.07	0.17	-3.43	3.21	0.49	1.60	33	0
ENSG00000197903.6	HIST1H2BK	1.35E-08	7	7	1.81E-11	Adipose_Visceral_Omentum	3.20E-01	Pancreas	2.99	0.20	0.20	-6.72	2.45	-2.58	3.51	7	0
ENSG00000105662.11	CRTC1	1.95E-08	7	7	3.38E-07	Esophagus_Muscularis	4.49E-01	Esophagus_Mucosa	2.12	0.37	0.37	-5.10	4.81	0.08	3.72	7	0
ENSG00000105649.5	RAB3A	2.34E-08	7	6	9.34E-08	Colon_Sigmoid	6.57E-01	Artery_Tibial	3.36	0.07	0.16	-5.34	3.53	-0.36	2.91	6	0
ENSG00000124508.12	BTN2A2	2.76E-08	37	8	1.26E-09	Pancreas	8.80E-01	Heart_Left_Ventricle	19.88	0.00	0.73	-3.72	6.07	2.55	1.60	8	0
ENSG00000197153.3	HIST1H3J	3.00E-08	2	2	6.98E-09	Testis	4.24E-01	Skin_Not_Sun_Exposed_Suprapubic	1.04	0.96	0.96	-5.79	-0.80	-3.30	3.53	2	0
ENSG00000158691.10	ZSCAN12	5.09E-08	9	5	5.32E-07	Skin_Sun_Exposed_Lower_Leg	7.78E-01	Nerve_Tibial	5.15	0.02	0.31	-1.35	5.01	1.93	1.93	5	0
ENSG00000219891.2	ZSCAN12P1	5.23E-08	15	8	1.35E-06	Skin_Sun_Exposed_Lower_Leg	9.06E-01	Nerve_Tibial	8.12	0.02	0.29	-4.83	4.05	-0.26	2.43	8	0
ENSG00000204789.3	ZNF204P	5.56E-08	25	11	3.53E-09	Esophagus_Mucosa	9.56E-01	Brain_Caudate_basal_ganglia	9.28	0.01	0.40	-5.90	1.46	-2.18	2.07	11	0
ENSG00000146477.4	SLC22A3	5.89E-08	24	8	6.18E-08	Liver	7.62E-01	Pancreas	13.82	0.00	0.49	-5.41	5.25	1.99	2.64	8	0

ENSG00000167487.7	KLHL26	6.54E-08	9	8	9.76E-09	Brain_Cerebellar_Hemisphere	8.41E-01	Muscle_Skeletal	2.81	0.09	0.31	-0.20	5.73	2.42	2.03	8	0
ENSG00000115380.14	EFEMP1	8.58E-08	11	9	1.33E-07	Skin_Not_Sun_Exposed_Suprapubic	8.07E-01	Artery_Coronary	4.04	0.03	0.28	-5.27	3.65	-1.58	2.36	9	0
ENSG00000204709.4	C6orf100	9.48E-08	12	10	7.90E-10	Adipose_Visceral_Omentum	8.95E-01	Lung	3.03	0.08	0.22	-6.15	2.76	-0.46	2.65	10	0
ENSG00000130517.9	PGPEP1	1.27E-07	32	7	2.84E-07	Cells_Transformed_fibroblasts	8.37E-01	Ovary	21.55	0.00	0.73	-2.29	5.13	2.97	1.79	7	0
ENSG00000271035.1	CTD-2269E23.3	1.62E-07	1	1	1.62E-07	Testis	1.62E-07	Testis	1.00	1.00	1.00	-5.24	-5.24	-5.24	NA	1	0
ENSG00000170983.3	LINC00208	1.83E-07	1	1	1.83E-07	Testis	1.83E-07	Testis	1.00	1.00	1.00	-5.22	-5.22	-5.22	NA	1	0
ENSG00000136944.13	LMX1B	2.16E-07	4	4	3.40E-09	Adipose_Subcutaneous	7.66E-01	Colon_Transverse	1.73	0.26	0.26	-5.91	0.30	-2.47	2.77	4	0
ENSG00000026950.12	BTN3A1	2.27E-07	33	3	0.00061	Cells_EBV-transformed_lymphocytes	9.54E-01	Lung	26.52	0.00	1.06	-3.26	3.43	1.36	1.48	3	0
ENSG00000162685.5	LSP1P3	2.36E-07	8	1	1.16E-07	Testis	1.77E-06	Brain_Anterior_cingulate_cortex_BA24	7.80	0.00	7.80	-5.25	5.30	-3.78	3.67	1	0
ENSG00000224843.2	LINC00240	2.47E-07	20	9	6.32E-09	Heart_Atrial_Appendage	1.82E-01	Liver	9.96	0.02	0.42	-5.81	-1.34	-3.58	1.31	9	0
ENSG00000171368.10	TPPP	2.57E-07	17	10	4.65E-09	Brain_Nucleus_accumbens_basal_ganglia	7.74E-01	Thyroid	8.75	0.02	0.31	-5.24	5.86	2.48	2.92	10	0
ENSG00000105701.11	FKBP8	3.25E-07	2	2	1.24E-06	Heart_Left_Ventricle	1.22E-02	Spleen	1.00	1.00	1.00	-4.85	-2.51	-3.68	1.66	2	0

ENSG00000118961.10	C2orf43	4.52E-07	44	1	3.52E-10	Vagina	2.97E-03	Spleen	39.76	0.00	39.76	-6.27	-2.97	-4.78	0.76	1	0
ENSG00000227799.1	AC012358.4	5.88E-07	4	4	3.32E-08	Spleen	9.08E-01	Esophagus_Muscularis	1.33	0.72	0.72	-0.12	5.52	2.44	2.36	4	0
ENSG00000197279.3	ZNF165	5.90E-07	18	8	6.22E-07	Heart_Left_Ventricle	8.76E-01	Pituitary	8.79	0.03	0.38	-4.64	4.98	1.94	2.34	8	0
ENSG00000204421.2	LY6G6C	5.97E-07	3	3	0.000251	Brain_Nucleus_accumbens_basal_ganglia	4.80E-01	Uterus	1.69	0.50	0.50	-3.66	1.71	-0.88	2.69	3	0
ENSG00000130520.6	LSM4	6.69E-07	7	7	0.000138	Nerve_Tibial	6.50E-01	Esophagus_Muscularis	3.35	0.19	0.19	-2.72	3.81	0.72	2.51	7	0
ENSG00000100417.7	PMM1	6.98E-07	17	6	0.001017	Brain_Cerebellum	9.13E-01	Skin_Not_Sun_Exposed_Suprapubic	11.76	0.00	0.42	-2.12	3.29	0.07	1.65	6	0
ENSG00000136842.9	TMOD1	7.15E-07	5	4	1.53E-08	Ovary	7.74E-01	Uterus	2.10	0.06	0.83	-0.40	5.66	1.52	2.40	4	0
ENSG00000143869.5	GDF7	8.81E-07	8	7	0.00018	Artery_Tibial	6.39E-01	Skin_Sun_Exposed_Lower_leg	3.06	0.09	0.22	-3.75	1.07	-1.10	1.73	7	0
ENSG00000235109.3	ZSCAN31	9.21E-07	37	7	4.48E-06	Brain_Spinal_cord_cervical_c-1	8.48E-01	Brain_Cerebellar_Hemispheres	22.18	0.00	0.86	-4.59	2.29	-1.60	1.55	7	0
ENSG00000213071.6	LPAL2	1.22E-06	2	2	2.56E-06	Testis	2.69E-04	Cells_Transformed_fibroblasts	1.32	0.68	0.68	-3.64	4.70	0.53	5.90	2	0
ENSG00000204713.6	TRIM27	1.26E-06	15	11	1.37E-09	Spleen	8.33E-01	Testis	4.34	0.00	0.25	-0.21	6.06	2.52	2.02	11	0
ENSG00000171056.6	SOX7	1.26E-06	7	7	1.97E-06	Adipose_Subcutaneous	3.54E-01	Adipose_Visceral_Omentum	2.32	0.37	0.37	-1.62	4.76	2.12	2.78	7	0

ENSG00000112812.11	PRSS16	1.32E-06	19	7	4.74E-10	Muscle_Skeletal	7.81E-01	Ovary	12.21	0.00	0.51	-6.23	-0.28	-4.63	1.63	7	0
ENSG00000237154.1	MCFD2P1	1.35E-06	5	5	2.99E-06	Testis	6.42E-01	Muscle_Skeletal	1.86	0.26	0.26	-4.67	3.37	0.66	3.19	5	0
ENSG00000268885.1	AC026740.1	1.37E-06	21	4	1.63E-08	Vagina	7.10E-01	Artery_Aorta	14.66	0.01	0.56	-5.65	0.96	-3.51	1.58	4	0
ENSG00000261584.1	RP11-457M11.5	1.58E-06	48	2	0.008364	Ovary	9.90E-01	Esophagus_Muscularis	40.40	0.00	1.42	-2.64	2.38	0.34	1.07	2	0

**ST10. Selected candidate genome-wide GERD loci stratified into obesity-driven and depression-driven GERD genetic subgroups.**

Subgroup	SNP	CHR	BP	Genes (based on eQTL and proximity)	EA	NEA	MTAG GERD beta	Z	MTAG Pvalue	23andMe Pvalue	PheWAS findings (best 3)
obesity-driven GERD	rs1510719	4	140938116	MAML3	T	C	0.039	7.9	3.84E-15	6.89E-05	Leg fat percentage, Body fat percentage, Maternal smoking around birth, Number of self-reported operations
obesity-driven GERD	rs13107325	4	103188709	SLC39A8	C	T	-0.07	7.6	2.20E-14	6.45E-17	BMI, Haemoglobin concentration, Cognitive performance
obesity-driven GERD	rs9372625	6	98344031		G	A	0.038	7.6	2.62E-14	2.33E-08	University qualifications, intelligence, Leg fat percentage, time spent outdoors in summer
obesity-driven GERD	rs773109	12	56374695	CDK2, SUOX, ERBB3, RAB5B	G	A	0.038	7.5	8.71E-14	1.10E-04	Eosinophil percentage, Allergic disease (asthma, hayfever or eczema)
obesity-driven GERD	rs9940128	16	53800754	FTO	G	A	-0.033	6.8	8.06E-12	2.06E-05	Whole body water mass, Body fat percentage, BMI
obesity-driven GERD	rs3863241	8	73890335	TERF1	C	T	-0.032	6.7	1.49E-11	1.68E-04	Sleep duration, Neuroticism, Frequency of tiredness in last 2 weeks, Fractures
obesity-driven GERD	rs2396766	7	114318071	FOXP2	G	A	-0.032	6.7	2.33E-11	1.70E-04	BMI, High blood pressure, Sleep duration, Hypertension
obesity-driven GERD	rs215614	7	32347335	PDE1C	G	A	0.033	6.6	4.08E-11	2.17E-06	Leg fat percentage, BMI, Intelligence, waist circumference
obesity-driven GERD	rs1937450	1	66478840	PDE4B	T	G	-0.032	6.5	7.07E-11	8.71E-05	Whole body fat mass, Waist circumference, BMI, Body fat percentage
obesity-driven GERD	rs1596747	2	193802478		A	G	-0.031	6.5	1.00E-10	1.71E-08	Leg fat percentage, university qualifications, BMI
obesity-driven GERD	rs2815749	1	72814783	NEGR1	A	G	-0.039	6.5	1.07E-10	7.40E-12	Leg fat percentage, BMI, Whole body fat mass,



obesity-driven GERD	rs2106353	7	126506598	GRM8	G	T	-0.037	6.4	1.37E-10	1.33E-06	Sensitivity/hurt feelings, Neuroticism, University qualifications
obesity-driven GERD	rs205262	6	34563164	UHRF1BP1	A	G	-0.035	6.4	1.38E-10	1.36E-09	BMI, whole body fat mass, basal metabolic rate
obesity-driven GERD	rs9636202	19	18449238	PGPEP1	G	A	0.035	6.4	1.51E-10	1.04E-14	Arm fat percentage, BMI, Coronary artery disease
obesity-driven GERD	rs761777	10	134938075	KNDC1	A	G	-0.035	6.2	4.71E-10	4.01E-09	University qualifications, body fat percentage
depression-driven GERD	rs2145318	6	26496603	HMGN4, BTN2A1, BTN2A2, BTN1A1, BTN3A3	T	A	-0.035	7.3	2.03E-13	3.31E-08	Mean corpuscular hemoglobin concentration, disorders of mineral metabolism
depression-driven GERD	rs12967855	18	35138245	CELF4	A	G	0.037	7.1	1.09E-12	1.36E-13	University qualifications, Neuroticism score, Fed-up feelins, Forced expiratory volume in 1-second
depression-driven GERD	rs1431196	18	50832102	DCC	A	G	-0.032	6.7	2.65E-11	1.18E-06	Sitting height, intelligence, Frequency of unenthusiasm, Mood swings
depression-driven GERD	rs1716171	12	123716376	MPHOSPH9, C12orf65	C	T	-0.038	6.5	7.82E-11	1.78E-05	Height, Lymphocyte percentage, Platelet crit
depression-driven GERD	rs7600261	2	212622818	ERBB4	C	T	-0.034	6.5	9.47E-11	5.64E-07	University qualifications, average total household income before tax, salt added to food, depressed
depression-driven GERD	rs1021363	10	106610839	SORCS3	A	G	0.031	6.2	5.10E-10	3.34E-06	Seen doctor for nerves, anxeity or depression
depression-driven GERD	rs7241572	18	77580712	KCNG2	G	A	-0.037	6.1	9.49E-10	1.72E-04	Age first had sexual intercourse, wheeze or whistling in the chest in last year, Neutrophil count
depression-driven GERD	rs957345	14	75276079	YLPM1, PROX2, EIF2B2	C	G	-0.029	-6	1.72E-09	1.43E-06	Number of treatment/medications taken, Neuroticism score, Leg fat percentage, Nervous feelings

depression-driven GERD	rs9373363	6	143150043	HIVEP2	A	G	0.033	5.9	4.13E-09	5.42E-10	Leg fat percentage, usual walking pace, time spent watching TV
depression-driven GERD	rs2734839	11	113286490	TTC12, ANKK1	C	T	0.028	5.8	8.79E-09	1.68E-05	Neuroticism, Plays computer games, Guilty feelings
depression-driven GERD	rs2043539	7	12253880	TMEM106B	G	A	-0.027	-	2.24E-08	3.87E-05	Seen doctor for anxiety (nerves/anxiety/ depression), depression, Neuroticism score
depression-driven GERD	rs3793577	9	23737627	ELAVL2	A	G	-0.027	-	2.49E-08	1.00E-05	Neuroticism, Frequency of depressed mood in last 2 weeks, Guilty feelings, depression
depression-driven GERD	rs9540720	13	66922705	PCDH9	A	G	-0.027	-	3.01E-08	3.32E-07	Heartburn medication, breastfed as a baby
depression-driven GERD	rs324769	12	83969240		C	T	0.027	5.5	3.05E-08	3.75E-07	University qualifications, Forced vital capacity, age first had sexual intercourse, sleeplessness
depression-driven GERD	rs11953061	5	120144025		C	T	-0.028	-	3.10E-08	3.72E-06	Ibuprofen medication, Long-standing illness/disability

The complete list of genome-wide loci including more detailed SNP-summary information can be found in Supplementary Table ST2. SNPs reported here were selected based on availability of gene eQTL information and evidence of replication at bonferroni correction of  $P=0.05/88$  in the 23andMe cohort. We preferentially report the top PheWAS associations based on p-value of association and only one per trait category (i.e. highly correlated phenotypes are not presented). Only traits with a trait-association P-value  $< 1 \times 10^{-6}$  were reported.

**ST11. Queried obesity-driven GERD gene in FUMA (gene2func)**

ensg	entrezID	symbol	hgnc_symbol	OMIM	uniprotID	DrugBank
ENSG00000084636	1307	COL16A1	COL16A1	120326	Q07092	NA
ENSG00000184588	5142	PDE4B	PDE4B	600127	Q07343	NA
ENSG00000172260	257194	NEGR1	NEGR1	613173	Q7Z3B1	NA
ENSG00000188641	1806	DPYD	DPYD	612779	Q12882	NA
ENSG00000116406	80267	EDEM3	EDEM3	610214	Q9BZQ6	NA
ENSG00000134369	89796	NAV1	NAV1	611628	Q8NEY1	NA
ENSG00000198700	55705	IPO9	IPO9	NA	Q96P70	NA
ENSG00000163431	25802	LMOD1	LMOD1	602715	P29536	NA
ENSG00000078114	10529	NEBL	NEBL	605491	O76041	NA
ENSG00000171798	85442	KNDC1	KNDC1	616237	Q76NI1	NA
ENSG00000182704	25987	TSKU	TSKU	608015	Q8WUA8	NA
ENSG00000134533	85004	RERG	RERG	612664	Q96A58	NA
ENSG00000123374	1017	CDK2	CDK2	116953	P24941	NA
ENSG00000111540	5869	RAB5B	RAB5B	179514	P61020	NA
ENSG00000139531	6821	SUOX	SUOX	606887	P51687	NA
ENSG00000065361	2065	ERBB3	ERBB3	190151	P21860	NA
ENSG00000118946	27253	PCDH17	PCDH17	611760	O14917	NA
ENSG00000152767	10160	FARP1	FARP1	602654	Q9Y4F1	NA
ENSG00000102572	8428	STK24	STK24	604984	Q9Y6E0	NA
ENSG00000133958	57578	UNC79	UNC79	616884	Q9P2D8	NA
ENSG00000187581	341947	COX8C	COX8C	616855	Q7Z4L0	NA
ENSG00000131323	7187	TRAF3	TRAF3	601896	Q13114	NA
ENSG00000166126	81693	AMN	AMN	605799	Q9BXJ7	NA
ENSG00000140718	79068	FTO	FTO	610966	Q9C0B1	NA
ENSG00000140945	1012	CDH13	CDH13	601364	P55290	NA
ENSG00000130517	54858	PGPEP1	PGPEP1	610694	Q9NXJ5	NA

ENSG0000006015	55049	C19orf60	C19orf60	NA	Q96EN9	NA
ENSG00000105662	23373	CRTC1	CRTC1	607536	Q6UUV9	NA
ENSG00000119866	53335	BCL11A	BCL11A	606557	Q9H165	NA
ENSG00000182240	25825	BACE2	BACE2	605668	Q9Y5Z0	NA
ENSG00000197381	104	ADARB1	ADARB1	601218	P78563	NA
ENSG00000219438	25817	FAM19A5	FAM19A5	617499	Q7Z5A7	NA
ENSG00000172995	10777	ARPP21	ARPP21	605488	Q9UBL0	NA
ENSG00000145020	275	AMT	AMT	238310	P48728	NA
ENSG00000004534	10180	RBM6	RBM6	606886	P78332	NA
ENSG00000003756	10181	RBM5	RBM5	606884	P52756	NA
ENSG00000170017	214	ALCAM	ALCAM	601662	Q13740	NA
ENSG00000254531	90024	AP001816.1	FLJ20021	NA	NA	NA
ENSG00000138821	64116	SLC39A8	SLC39A8	608732	Q9C0K1	NA
ENSG00000196782	55534	MAML3	MAML3	608991	Q96JK9	NA
ENSG00000043143	23338	JADE2	JADE2	610515	Q9NQC1	NA
ENSG00000065060	54887	UHRF1BP1	UHRF1BP1	NA	Q6BDS2	NA
ENSG00000002822	8379	MAD1L1	MAD1L1	602686	Q9Y6D9	NA
ENSG00000122687	29960	FTSJ2	FTSJ2	606906	Q9UI43	NA
ENSG00000154678	5137	PDE1C	PDE1C	602987	Q14123	NA
ENSG00000128573	93986	FOXP2	FOXP2	605317	O15409	NA
ENSG00000147601	7013	TERF1	TERF1	600951	P54274	NA
ENSG00000160563	9442	MED27	MED27	605044	Q6P2C8	NA

**ST12. Queried depression-driven GERD gene in FUMA (gene2func)**

ensg	entrezID	symbol	hgnc_symbol	OMIM	uniprotID	DrugBank
ENSG00000130766	83667	SESN2	SESN2	607767	P58004	NA
ENSG00000198492	51441	YTHDF2	YTHDF2	610640	Q9Y5A9	NA
ENSG00000116329	4985	OPRD1	OPRD1	165195	P41143	NA
ENSG00000156395	22986	SORCS3	SORCS3	606285	Q9UPU3	NA
ENSG00000149292	54970	TTC12	TTC12	610732	Q9H892	NA
ENSG00000170209	255239	ANKK1	ANKK1	608774	Q8NFD2	NA
ENSG00000187676	145173	B3GALTL	B3GALTL	610308	Q6Y288	NA
ENSG00000184226	5101	PCDH9	PCDH9	603581	Q9HC56	NA
ENSG00000119596	56252	YLPM1	YLPM1	NA	P49750	NA
ENSG00000119608	283571	PROX2	PROX2	615094	Q3B8N5	NA
ENSG00000119718	8892	EIF2B2	EIF2B2	606454	P49770	NA
ENSG00000103449	6299	SALL1	SALL1	602218	Q9NSC2	NA
ENSG00000101489	56853	CELF4	CELF4	612679	Q9BZC1	NA
ENSG00000187323	1630	DCC	DCC	120470	P43146	NA
ENSG00000196628	6925	TCF4	TCF4	602272	P15884	NA
ENSG00000178342	26251	KCNG2	KCNG2	605696	Q9UJ96	NA
ENSG00000178568	2066	ERBB4	ERBB4	600543	Q15303	NA
ENSG00000151276	9223	MAGI1	MAGI1	602625	Q96QZ7	NA
ENSG00000125388	2868	GRK4	GRK4	137026	P32298	NA
ENSG00000197386	3064	HTT	HTT	613004	P42858	NA
ENSG00000188981	345222	MSANTD1	MSANTD1	NA	Q6ZTZ1	NA
ENSG00000052795	57600	FNIP2	FNIP2	612768	Q9P278	NA
ENSG00000164123	152940	C4orf45	C4orf45	NA	Q96LM5	NA
ENSG00000109756	9693	RAPGEF2	RAPGEF2	609530	Q9Y4G8	NA
ENSG00000124508	10385	BTN2A2	BTN2A2	613591	Q8WVV5	NA
ENSG00000111801	10384	BTN3A3	BTN3A3	613595	O00478	NA

ENSG00000112763	11120	BTN2A1	BTN2A1	613590	Q7KYR7	NA
ENSG00000124557	696	BTN1A1	BTN1A1	601610	Q13410	NA
ENSG00000182952	10473	HMG4	HMG4	NA	O00479	NA
ENSG0000010818	3097	HIVEP2	HIVEP2	143054	P31629	NA
ENSG0000091831	2099	ESR1	ESR1	133430	P03372	NA
ENSG00000106460	54664	TMEM106B	TMEM106B	613413	Q9NUM4	NA
ENSG00000107105	1993	ELAVL2	ELAVL2	601673	Q12926	NA

**ST13. Parameters for the Gene2func FUMA analysis for the subgroup GERD genes**

Settings	Configuration for Obesity-driven GERD genes	Configuration for depression-driven GERD genes
FUMA	v1.3.6	v1.3.6
MsigDB	v7.0	v7.0
WikiPathways	20191010	20191010
GWAScatalog	e96_r2019-09-24	e96_r2019-09-24
[params]		
gtype	text	text
gval	NEBL:KNDC1:TSKU:RERG:CDK2:SUOX:ERBB3:RAB5B:PCDH17:STK24:FARP1:UNC79:COX8C:TRAF3:AMN:FTO:CDH13:PGPEP1:C19orf60:CRTC1:COL16A1:PDE4B:NEGR1:DPYD:EDEM3:NAV1:LMO1:IPO9:BACE2:ADARB1:FAM19A5:BCL11A:ARPP21:RBM5:RBM6:AMT:ALCAM:FLJ20021:SLC39A8:MAML3:JADE2:UHRF1BP1:FTSJ2:MAD1L1:PDE1C:FOXP2:TERF1:MED27	SORCS3:TTC12:ANKK1:B3GALTL:PCDH9:YLPM1:PROX2:EIF2B2:SALL1:CELF4:DCC:TCF4:KCNG2:OPRD1:YTHDF2:SESN2:ERBB4:MAGI1:GRK4:HTT:MSANTD1:RAPGEF2:FNIP2:C4orf45:HMG4:BTN2A1:BTN2A2:BTN1A1:BTN3A3:HIVEP2:ESR1:TMEM106B:ELAVL2
bkgtype	select	select
bkgval	all	all
ensembl	v92	v92
gsFileN	0	0
gsFiles	NA	NA
gene_exp	GTEEx/v8/gtex_v8_ts_avg_log2TPM:GTEEx/v8/gtex_v8_ts_general_avg_log2TPM	GTEEx/v8/gtex_v8_ts_avg_log2TPM:GTEEx/v8/gtex_v8_ts_general_avg_log2TPM
MHC	1	1
adjPmeth	fdr_bh	fdr_bh
adjPcut	0.05	0.05
minOverlap	2	2

**ST14. Additional analysis - subgroup-specific GERD genes enrichment analysis (MAGMA)**

Gene subgroup	Category	GeneSet	N genes	N overlap	p	adjP	genes
Obesity-GERD genes	DEG.up	Adipose_Subcutaneous	2107	8	0.015207452	0.82120239	ENSG00000182704:ENSG00000134533:ENSG00000172260:ENSG0000188641:ENSG00000134369:ENSG00000163431:ENSG00000182240:ENSG00000254531
Obesity-GERD genes	DEG.up	Adipose_Visceral_Omentum	1764	6	0.054713394	1	ENSG00000182704:ENSG00000134533:ENSG00000172260:ENSG0000188641:ENSG00000134369:ENSG00000138821
Obesity-GERD genes	DEG.up	Adrenal_Gland	1540	4	0.217031765	1	ENSG00000171798:ENSG00000134533:ENSG00000139531:ENSG0000130517
Obesity-GERD genes	DEG.up	Artery_Aorta	2756	13	0.000218024	0.011773282	ENSG00000134533:ENSG00000140945:ENSG00000084636:ENSG0000116406:ENSG00000134369:ENSG00000163431:ENSG00000182240:ENSG00000197381:ENSG00000219438:ENSG00000145020:ENSG00000170017:ENSG00000147601:ENSG00000160563
Obesity-GERD genes	DEG.up	Artery_Coronary	2038	12	4.99E-05	0.002694409	ENSG00000182704:ENSG00000134533:ENSG00000140945:ENSG0000188641:ENSG00000116406:ENSG00000134369:ENSG00000163431:ENSG00000182240:ENSG00000197381:ENSG00000170017:ENSG00000147601:ENSG00000160563
Obesity-GERD genes	DEG.up	Artery_Tibial	2711	17	3.16E-07	1.70E-05	ENSG00000182704:ENSG00000134533:ENSG00000102572:ENSG0000152767:ENSG00000140718:ENSG00000140945:ENSG00000184588:ENSG00000172260:ENSG00000188641:ENSG00000163431:ENSG00000182240:ENSG00000197381:ENSG00000170017:ENSG0000043143:ENSG00000154678:ENSG00000147601:ENSG00000160563
Obesity-GERD genes	DEG.up	Bladder	842	3	0.142840548	1	ENSG00000182704:ENSG00000163431:ENSG00000147601
Obesity-GERD genes	DEG.up	Brain_Amygdala	1820	8	0.006593334	0.35604003	ENSG00000078114:ENSG00000171798:ENSG00000118946:ENSG0000105662:ENSG00000184588:ENSG00000219438:ENSG00000172995:ENSG00000154678
Obesity-GERD genes	DEG.up	Brain_Anterior_cingulate_cortex_BA24	2370	9	0.009967435	0.538241516	ENSG00000078114:ENSG00000171798:ENSG00000118946:ENSG0000133958:ENSG00000105662:ENSG00000172260:ENSG00000219438:ENSG00000119866:ENSG00000172995



Obesity-GERD genes	DEG.up	Brain_Caudate_basal_ganglia	2212	11	0.000476471	0.025729439	ENSG00000078114:ENSG00000171798:ENSG00000118946:ENSG0000133958:ENSG00000105662:ENSG00000184588:ENSG00000219438:ENSG00000119866:ENSG00000172995:ENSG00000254531:ENSG00000154678
Obesity-GERD genes	DEG.up	Brain_Cerebellar_Hemisphere	6301	17	0.01143138	0.617294502	ENSG00000078114:ENSG00000171798:ENSG00000133958:ENSG0000131323:ENSG00000140718:ENSG00000105662:ENSG00000172260:ENSG00000198700:ENSG00000197381:ENSG00000219438:ENSG00000172995:ENSG00000145020:ENSG00000254531:ENSG0000196782:ENSG00000043143:ENSG00000065060:ENSG00000147601
Obesity-GERD genes	DEG.up	Brain_Cerebellum	6164	16	0.020760346	1	ENSG00000078114:ENSG00000171798:ENSG00000133958:ENSG0000131323:ENSG00000140718:ENSG00000105662:ENSG00000172260:ENSG00000198700:ENSG00000197381:ENSG00000219438:ENSG00000172995:ENSG00000145020:ENSG00000196782:ENSG000043143:ENSG00000065060:ENSG00000147601
Obesity-GERD genes	DEG.up	Brain_Cortex	2792	11	0.003171325	0.171251531	ENSG00000078114:ENSG00000171798:ENSG00000133958:ENSG0000131323:ENSG00000105662:ENSG00000184588:ENSG00000172260:ENSG00000219438:ENSG00000119866:ENSG00000172995:ENSG00000154678
Obesity-GERD genes	DEG.up	Brain_Frontal_Cortex_BA9	3132	12	0.0025117	0.135631817	ENSG00000078114:ENSG00000171798:ENSG00000118946:ENSG0000133958:ENSG00000131323:ENSG00000105662:ENSG00000184588:ENSG00000172260:ENSG00000219438:ENSG00000119866:ENSG00000172995:ENSG00000254531
Obesity-GERD genes	DEG.up	Brain_Hippocampus	1965	8	0.01027622	0.554915859	ENSG00000078114:ENSG00000171798:ENSG00000133958:ENSG0000105662:ENSG00000184588:ENSG00000219438:ENSG00000119866:ENSG00000154678
Obesity-GERD genes	DEG.up	Brain_Hypothalamus	2531	8	0.040092427	1	ENSG00000078114:ENSG00000171798:ENSG00000118946:ENSG0000133958:ENSG00000184588:ENSG00000219438:ENSG00000170017:ENSG00000154678
Obesity-GERD genes	DEG.up	Brain_Nucleus_accumbens_basal_ganglia	2451	11	0.001120673	0.06051633	ENSG00000078114:ENSG00000171798:ENSG00000118946:ENSG0000133958:ENSG00000105662:ENSG00000184588:ENSG00000219438:ENSG00000119866:ENSG00000172995:ENSG00000254531:ENSG00000154678
Obesity-GERD genes	DEG.up	Brain_Putamen_basal_ganglia	1741	9	0.001291793	0.069756805	ENSG00000078114:ENSG00000171798:ENSG00000118946:ENSG0000133958:ENSG00000105662:ENSG00000219438:ENSG00000119866:ENSG00000172995:ENSG00000154678

Obesity-GERD genes	DEG.up	Brain_Spinal_cord_cervical_c-1	2224	8	0.020429945		1	ENSG00000078114:ENSG00000065361:ENSG00000118946:ENSG0000130517:ENSG00000184588:ENSG00000219438:ENSG00000170017:ENSG00000154678
Obesity-GERD genes	DEG.up	Brain_Substantia_nigra	1645	6	0.041285571		1	ENSG00000078114:ENSG00000171798:ENSG00000118946:ENSG0000184588:ENSG00000219438:ENSG00000154678
Obesity-GERD genes	DEG.up	Breast_Mammary_Tissue	1964	5	0.188601183		1	ENSG00000182704:ENSG00000134533:ENSG00000184588:ENSG0000163431:ENSG00000182240
Obesity-GERD genes	DEG.up	Cells_Cultured_fibroblasts	4335	14	0.005042556	0.272297998		ENSG00000123374:ENSG00000131323:ENSG00000140718:ENSG0000140945:ENSG00000084636:ENSG00000172260:ENSG00000188641:ENSG00000116406:ENSG00000134369:ENSG00000198700:ENSG00000197381:ENSG00000170017:ENSG00000138821:ENSG00000122687
Obesity-GERD genes	DEG.up	Cells_EBV-transformed_lymphocytes	5069	12	0.084373899		1	ENSG00000123374:ENSG00000102572:ENSG00000131323:ENSG0000130517:ENSG00000198700:ENSG00000119866:ENSG00000170017:ENSG00000138821:ENSG00000043143:ENSG00000065060:ENSG00000122687:ENSG00000002822
Obesity-GERD genes	DEG.up	Cervix_Ectocervix	193	1	0.260266594		1	ENSG00000182704
Obesity-GERD genes	DEG.up	Cervix_Endocervix	1829	9	0.001818218	0.098183756		ENSG00000182704:ENSG00000123374:ENSG00000139531:ENSG0000084636:ENSG00000188641:ENSG00000163431:ENSG00000198700:ENSG00000219438:ENSG00000147601
Obesity-GERD genes	DEG.up	Colon_Sigmoid	1637	8	0.003496225	0.188796143		ENSG00000134533:ENSG00000152767:ENSG00000172260:ENSG0000163431:ENSG00000197381:ENSG00000119866:ENSG00000145020:ENSG00000128573
Obesity-GERD genes	DEG.up	Colon_Transverse	1602	4	0.237757293		1	ENSG00000065361:ENSG00000166126:ENSG00000130517:ENSG00000128573
Obesity-GERD genes	DEG.up	Esophagus_Gastroesophageal_Junction	1287	6	0.01432441	0.77351812		ENSG00000123374:ENSG00000172260:ENSG00000163431:ENSG0000197381:ENSG00000154678:ENSG00000128573
Obesity-GERD genes	DEG.up	Esophagus_Mucosa	2231	5	0.265145042		1	ENSG00000182704:ENSG00000065361:ENSG00000102572:ENSG0000166126:ENSG00000119866

Obesity-GERD genes	DEG.up	Esophagus_Muscularis	1311	6	0.015565647	0.840544954	ENSG00000123374:ENSG00000172260:ENSG00000163431:ENSG00000197381:ENSG00000154678:ENSG00000128573
Obesity-GERD genes	DEG.up	Fallopian_Tube	485	4	0.006800861	0.367246501	ENSG00000182704:ENSG00000134533:ENSG00000163431:ENSG00000145020
Obesity-GERD genes	DEG.up	Heart_Atrial_Appendage	743	3	0.108792046	1	ENSG00000078114:ENSG00000138821:ENSG00000154678
Obesity-GERD genes	DEG.up	Heart_Left_Ventricle	536	2	0.202874789	1	ENSG00000078114:ENSG00000154678
Obesity-GERD genes	DEG.up	Kidney_Cortex	1327	3	0.341181258	1	ENSG00000152767:ENSG00000166126:ENSG00000130517
Obesity-GERD genes	DEG.up	Kidney_Medulla	95	0	1	1	
Obesity-GERD genes	DEG.up	Liver	1525	4	0.212099477	1	ENSG00000182704:ENSG00000139531:ENSG00000065361:ENSG00000166126
Obesity-GERD genes	DEG.up	Lung	4195	12	0.024401752	1	ENSG00000078114:ENSG00000123374:ENSG00000118946:ENSG00000152767:ENSG00000166126:ENSG00000140945:ENSG00000184588:ENSG00000188641:ENSG00000116406:ENSG00000197381:ENSG00000170017:ENSG00000138821
Obesity-GERD genes	DEG.up	Minor_Salivary_Gland	1891	7	0.026087513	1	ENSG00000078114:ENSG00000065361:ENSG00000152767:ENSG00000116406:ENSG00000182240:ENSG00000170017:ENSG00000138821
Obesity-GERD genes	DEG.up	Muscle_Skeletal	1143	2	0.535301347	1	ENSG00000172995:ENSG00000065060
Obesity-GERD genes	DEG.up	Nerve_Tibial	5869	12	0.18897049	1	ENSG00000182704:ENSG00000065361:ENSG00000084636:ENSG00000172260:ENSG00000188641:ENSG00000163431:ENSG00000182240:ENSG00000219438:ENSG00000145020:ENSG00000043143:ENSG00000154678:ENSG00000147601
Obesity-GERD genes	DEG.up	Ovary	5674	15	0.022063133	1	ENSG00000171798:ENSG00000182704:ENSG00000134533:ENSG00000123374:ENSG00000139531:ENSG00000130517:ENSG00000084636:ENSG00000188641:ENSG00000145020:ENSG00000170017:E

							NSG00000254531:ENSG00000196782:ENSG00000043143:ENSG0000128573:ENSG00000147601
Obesity-GERD genes	DEG.up	Pancreas	745	1	0.690961308	1	ENSG00000138821
Obesity-GERD genes	DEG.up	Pituitary	5156	10	0.274034996	1	ENSG00000078114:ENSG00000171798:ENSG00000152767:ENSG0000133958:ENSG00000131323:ENSG00000130517:ENSG00000105662:ENSG00000116406:ENSG00000145020:ENSG00000196782
Obesity-GERD genes	DEG.up	Prostate	3306	10	0.028751027	1	ENSG00000182704:ENSG00000139531:ENSG00000065361:ENSG0000152767:ENSG00000130517:ENSG00000084636:ENSG00000163431:ENSG00000182240:ENSG00000145020:ENSG00000254531
Obesity-GERD genes	DEG.up	Skin_Not_Sun_Exposed_Suprapubic	2741	7	0.130185545	1	ENSG00000182704:ENSG00000123374:ENSG00000065361:ENSG0000102572:ENSG00000166126:ENSG00000119866:ENSG00000196782
Obesity-GERD genes	DEG.up	Skin_Sun_Exposed_Lower_Leg	2801	9	0.027039114	1	ENSG00000182704:ENSG00000123374:ENSG00000065361:ENSG0000102572:ENSG00000166126:ENSG00000140945:ENSG00000119866:ENSG00000196782:ENSG00000002822
Obesity-GERD genes	DEG.up	Small_Intestine_Terminal_Ileum	2738	5	0.424131055	1	ENSG00000065361:ENSG00000131323:ENSG00000166126:ENSG00000130517:ENSG00000119866
Obesity-GERD genes	DEG.up	Spleen	4240	7	0.495641449	1	ENSG00000118946:ENSG00000131323:ENSG00000130517:ENSG0000184588:ENSG00000119866:ENSG00000043143:ENSG00000002822
Obesity-GERD genes	DEG.up	Stomach	1102	3	0.245153255	1	ENSG00000065361:ENSG00000166126:ENSG00000182240
Obesity-GERD genes	DEG.up	Testis	12326	7	0.999969339	1	ENSG00000118946:ENSG00000133958:ENSG00000187581:ENSG0000131323:ENSG00000065060:ENSG00000002822:ENSG00000160563
Obesity-GERD genes	DEG.up	Thyroid	5687	11	0.261323348	1	ENSG00000078114:ENSG00000182704:ENSG00000139531:ENSG0000152767:ENSG00000105662:ENSG00000084636:ENSG00000198700:ENSG00000145020:ENSG00000170017:ENSG00000065060:ENSG00000128573
Obesity-GERD genes	DEG.up	Uterus	5544	15	0.018103777	0.977603966	ENSG00000182704:ENSG00000134533:ENSG00000123374:ENSG0000139531:ENSG00000140945:ENSG00000163431:ENSG00000198700:ENSG00000182240:ENSG00000197381:ENSG00000145020:ENSG00000196782:ENSG00000043143:ENSG00000128573:ENSG00000147601:ENSG00000160563

Obesity-GERD genes	DEG.up	Vagina	2840	9	0.02924927	1	ENSG00000182704:ENSG00000134533:ENSG00000065361:ENSG0000102572:ENSG00000166126:ENSG00000140945:ENSG00000188641:ENSG00000119866:ENSG00000196782
Obesity-GERD genes	DEG.up	Whole_Blood	2033	1	0.962175671	1	ENSG00000188641
Obesity-GERD genes	DEG.down	Adipose_Subcutaneous	1527	6	0.030274964	1	ENSG00000078114:ENSG00000065361:ENSG00000118946:ENSG0000219438:ENSG00000170017:ENSG00000154678
Obesity-GERD genes	DEG.down	Adipose_Visceral_Omentum	1650	5	0.1122764	1	ENSG00000078114:ENSG00000065361:ENSG00000105662:ENSG0000219438:ENSG00000170017
Obesity-GERD genes	DEG.down	Adrenal_Gland	3472	16	4.19E-05	0.002264981	ENSG00000078114:ENSG00000182704:ENSG00000123374:ENSG0000118946:ENSG00000102572:ENSG00000131323:ENSG00000105662:ENSG00000084636:ENSG00000184588:ENSG00000134369:ENSG00000182240:ENSG00000197381:ENSG00000219438:ENSG0000170017:ENSG00000138821:ENSG00000002822
Obesity-GERD genes	DEG.down	Artery_Aorta	1460	4	0.191140558	1	ENSG00000118946:ENSG00000152767:ENSG00000138821:ENSG0000154678
Obesity-GERD genes	DEG.down	Artery_Coronary	949	2	0.436926609	1	ENSG00000078114:ENSG00000065361
Obesity-GERD genes	DEG.down	Artery_Tibial	2027	3	0.618902265	1	ENSG00000065361:ENSG00000219438:ENSG00000138821
Obesity-GERD genes	DEG.down	Bladder	104	0	1	1	
Obesity-GERD genes	DEG.down	Brain_Amygdala	7678	22	0.001281046	0.06917649	ENSG00000182704:ENSG00000134533:ENSG00000123374:ENSG0000139531:ENSG00000102572:ENSG00000188641:ENSG00000116406:ENSG00000163431:ENSG00000198700:ENSG00000182240:ENSG00000197381:ENSG0000003756:ENSG00000004534:ENSG0000145020:ENSG00000138821:ENSG00000196782:ENSG000000043143:ENSG00000065060:ENSG00000122687:ENSG00000002822:ENSG00000147601:ENSG00000160563

Obesity-GERD genes	DEG.down	Brain_Anterior_cingulate_cortex_BA24	6651	14	0.135174757	1	ENSG00000182704:ENSG00000123374:ENSG00000065361:ENSG00000102572:ENSG00000188641:ENSG00000116406:ENSG00000163431:ENSG00000182240:ENSG00000197381:ENSG00000145020:ENSG00000138821:ENSG00000043143:ENSG00000065060:ENSG0000002822
Obesity-GERD genes	DEG.down	Brain_Caudate_basal_ganglia	6858	17	0.025632519	1	ENSG00000182704:ENSG00000123374:ENSG00000102572:ENSG00000140945:ENSG00000188641:ENSG00000116406:ENSG00000134369:ENSG00000163431:ENSG00000182240:ENSG00000197381:ENSG00000145020:ENSG00000196782:ENSG00000043143:ENSG00000065060:ENSG00000122687:ENSG00000128573:ENSG00000160563
Obesity-GERD genes	DEG.down	Brain_Cerebellar_Hemisphere	2607	9	0.017801207	0.961265165	ENSG00000134533:ENSG00000123374:ENSG00000065361:ENSG00000102572:ENSG00000152767:ENSG00000084636:ENSG00000134369:ENSG00000163431:ENSG00000170017
Obesity-GERD genes	DEG.down	Brain_Cerebellum	2739	10	0.008517982	0.459971004	ENSG00000182704:ENSG00000134533:ENSG00000123374:ENSG00000065361:ENSG00000102572:ENSG00000152767:ENSG00000134369:ENSG00000163431:ENSG00000170017:ENSG00000138821
Obesity-GERD genes	DEG.down	Brain_Cortex	5556	12	0.142195304	1	ENSG00000182704:ENSG00000123374:ENSG00000102572:ENSG00000188641:ENSG00000116406:ENSG00000163431:ENSG00000182240:ENSG00000197381:ENSG00000145020:ENSG00000138821:ENSG00000196782:ENSG00000065060
Obesity-GERD genes	DEG.down	Brain_Frontal_Cortex_BA9	5015	12	0.079102551	1	ENSG00000182704:ENSG00000123374:ENSG00000102572:ENSG00000188641:ENSG00000116406:ENSG00000163431:ENSG00000182240:ENSG00000145020:ENSG00000138821:ENSG00000196782:ENSG00000065060:ENSG00000128573
Obesity-GERD genes	DEG.down	Brain_Hippocampus	7493	19	0.01349087	0.728506969	ENSG00000182704:ENSG00000134533:ENSG00000123374:ENSG00000139531:ENSG00000102572:ENSG00000140945:ENSG00000188641:ENSG00000116406:ENSG00000163431:ENSG00000198700:ENSG00000182240:ENSG00000197381:ENSG00000145020:ENSG00000138821:ENSG00000196782:ENSG00000043143:ENSG00000065060:ENSG00000122687:ENSG0000002822
Obesity-GERD genes	DEG.down	Brain_Hypothalamus	5904	17	0.005901524	0.318682298	ENSG00000182704:ENSG00000134533:ENSG00000123374:ENSG00000139531:ENSG00000102572:ENSG00000188641:ENSG00000116406:ENSG00000163431:ENSG00000182240:ENSG00000197381:ENSG00000145020:ENSG00000138821:ENSG00000196782:ENSG00000065060:ENSG00000122687:ENSG0000002822:ENSG00000160563

Obesity-GERD genes	DEG.down	Brain_Nucleus_accumbens_basal_ganglia	6409	15	0.058304475	1	ENSG00000182704:ENSG00000123374:ENSG00000102572:ENSG00000140945:ENSG00000188641:ENSG00000116406:ENSG00000134369:ENSG00000163431:ENSG00000197381:ENSG00000145020:ENSG00000138821:ENSG00000196782:ENSG00000065060:ENSG00000122687:ENSG00000160563
Obesity-GERD genes	DEG.down	Brain_Putamen_basal_ganglia	7776	23	0.000558306	0.030148527	ENSG00000182704:ENSG00000123374:ENSG00000139531:ENSG00000102572:ENSG00000131323:ENSG00000140945:ENSG00000172260:ENSG00000188641:ENSG00000116406:ENSG00000134369:ENSG00000163431:ENSG00000198700:ENSG00000182240:ENSG00000197381:ENSG0000003756:ENSG0000004534:ENSG00000145020:ENSG00000138821:ENSG00000043143:ENSG00000065060:ENSG00000122687:ENSG00000147601:ENSG00000160563
Obesity-GERD genes	DEG.down	Brain_Spinal_cord_cervical_c-1	5083	15	0.008346133	0.450691201	ENSG00000182704:ENSG00000134533:ENSG00000123374:ENSG00000139531:ENSG00000102572:ENSG00000152767:ENSG00000140945:ENSG00000188641:ENSG00000116406:ENSG00000163431:ENSG00000197381:ENSG00000172995:ENSG00000145020:ENSG00000254531:ENSG00000196782
Obesity-GERD genes	DEG.down	Brain_Substantia_nigra	7162	23	0.000154191	0.00832631	ENSG00000182704:ENSG00000134533:ENSG00000123374:ENSG00000139531:ENSG00000102572:ENSG00000152767:ENSG00000140945:ENSG00000105662:ENSG00000188641:ENSG00000116406:ENSG00000163431:ENSG00000198700:ENSG00000182240:ENSG00000197381:ENSG00000119866:ENSG00000145020:ENSG00000254531:ENSG00000196782:ENSG00000043143:ENSG00000065060:ENSG00000122687:ENSG00000002822:ENSG00000160563
Obesity-GERD genes	DEG.down	Breast_Mammary_Tissue	1001	4	0.069734737	1	ENSG00000118946:ENSG00000166126:ENSG00000219438:ENSG00000119866
Obesity-GERD genes	DEG.down	Cells_Cultured_fibroblasts	2143	5	0.239012295	1	ENSG00000078114:ENSG00000163431:ENSG00000219438:ENSG00000145020:ENSG00000196782
Obesity-GERD genes	DEG.down	Cells_EBV-transformed_lymphocytes	2383	7	0.07414719	1	ENSG00000152767:ENSG00000105662:ENSG00000084636:ENSG00000188641:ENSG00000182240:ENSG00000145020:ENSG00000254531
Obesity-GERD genes	DEG.down	Cervix_Ectocervix	2	0	1	1	

Obesity-GERD genes	DEG.down	Cervix_Endocervix	5	0	1	1	
Obesity-GERD genes	DEG.down	Colon_Sigmoid	1676	4	0.263115089	1	ENSG00000182704:ENSG00000140945:ENSG00000184588:ENSG0000138821
Obesity-GERD genes	DEG.down	Colon_Transverse	1583	5	0.098424659	1	ENSG00000078114:ENSG00000118946:ENSG00000140945:ENSG0000184588:ENSG00000154678
Obesity-GERD genes	DEG.down	Esophagus_Gastroesophageal Junction	1558	4	0.222994264	1	ENSG00000140945:ENSG00000184588:ENSG00000119866:ENSG0000138821
Obesity-GERD genes	DEG.down	Esophagus_Mucosa	3580	19	6.53E-07	3.53E-05	ENSG00000134533:ENSG00000118946:ENSG00000152767:ENSG0000140718:ENSG00000140945:ENSG00000130517:ENSG00000105662:ENSG00000084636:ENSG00000184588:ENSG00000172260:ENSG00000197381:ENSG00000219438:ENSG00000145020:ENSG0000170017:ENSG00000254531:ENSG00000138821:ENSG00000043143:ENSG00000154678:ENSG00000147601
Obesity-GERD genes	DEG.down	Esophagus_Muscularis	1761	5	0.137215659	1	ENSG00000140945:ENSG00000184588:ENSG00000219438:ENSG0000119866:ENSG00000138821
Obesity-GERD genes	DEG.down	Fallopian_Tube	1	1	0.001555916	0.084019449	ENSG00000078114
Obesity-GERD genes	DEG.down	Heart_Atrial_Appendage	8409	23	0.001784562	0.096366348	ENSG00000134533:ENSG00000123374:ENSG00000065361:ENSG0000118946:ENSG00000102572:ENSG00000152767:ENSG00000131323:ENSG00000140718:ENSG00000130517:ENSG00000105662:ENSG00000188641:ENSG00000116406:ENSG00000198700:ENSG0000197381:ENSG00000219438:ENSG00000170017:ENSG00000254531:ENSG00000196782:ENSG00000043143:ENSG00000122687:ENSG0000002822:ENSG00000147601:ENSG00000160563
Obesity-GERD genes	DEG.down	Heart_Left_Ventricle	9443	30	5.01E-06	0.000270573	ENSG00000182704:ENSG00000134533:ENSG00000123374:ENSG0000118946:ENSG00000102572:ENSG00000152767:ENSG00000131323:ENSG00000140718:ENSG00000130517:ENSG00000105662:ENSG00000084636:ENSG00000184588:ENSG00000172260:ENSG00000188641:ENSG00000116406:ENSG00000163431:ENSG00000198700:ENSG00000182240:ENSG00000197381:ENSG00000119866:ENSG0000003756:ENSG00000145020:ENSG00000170017:ENSG000



							00254531:ENSG00000138821:ENSG00000043143:ENSG00000122687:ENSG00000002822:ENSG00000147601:ENSG00000160563
Obesity-GERD genes	DEG.down	Kidney_Cortex	5544	20	0.00011091	0.005989125	ENSG00000123374:ENSG00000140718:ENSG00000140945:ENSG0000084636:ENSG00000184588:ENSG00000172260:ENSG00000188641:ENSG00000116406:ENSG00000134369:ENSG00000163431:ENSG00000198700:ENSG00000197381:ENSG00000219438:ENSG00000170017:ENSG00000254531:ENSG00000138821:ENSG00000196782:ENSG00000065060:ENSG00000002822:ENSG00000160563
Obesity-GERD genes	DEG.down	Kidney_Medulla	0	0	1	1	
Obesity-GERD genes	DEG.down	Liver	7985	22	0.002210643	0.119374735	ENSG00000123374:ENSG00000111540:ENSG00000102572:ENSG00000131323:ENSG00000140718:ENSG00000105662:ENSG00000084636:ENSG00000184588:ENSG00000163431:ENSG00000198700:ENSG00000182240:ENSG00000197381:ENSG00000219438:ENSG0000003756:ENSG00000254531:ENSG00000196782:ENSG00000043143:ENSG00000065060:ENSG00000122687:ENSG00000002822:ENSG00000147601:ENSG00000160563
Obesity-GERD genes	DEG.down	Lung	905	2	0.413151951	1	ENSG00000219438:ENSG00000128573
Obesity-GERD genes	DEG.down	Minor_Salivary_Gland	1861	7	0.024155991	1	ENSG00000118946:ENSG00000140945:ENSG00000105662:ENSG00000172260:ENSG00000134369:ENSG00000197381:ENSG00000172995
Obesity-GERD genes	DEG.down	Muscle_Skeletal	6836	22	0.000233236	0.012594762	ENSG00000182704:ENSG00000134533:ENSG00000123374:ENSG0000065361:ENSG00000102572:ENSG00000152767:ENSG00000131323:ENSG00000105662:ENSG00000084636:ENSG00000172260:ENSG00000188641:ENSG00000134369:ENSG00000198700:ENSG00000182240:ENSG00000197381:ENSG0000004534:ENSG00000145020:ENSG00000254531:ENSG00000043143:ENSG00000128573:ENSG00000147601:ENSG00000160563
Obesity-GERD genes	DEG.down	Nerve_Tibial	905	1	0.760757275	1	ENSG00000140945
Obesity-GERD genes	DEG.down	Ovary	1521	8	0.002222469	0.120013325	ENSG00000078114:ENSG00000065361:ENSG00000118946:ENSG00000140945:ENSG00000184588:ENSG00000172260:ENSG00000134369:ENSG00000197381

Obesity-GERD genes	DEG.down	Pancreas	9586	27	0.000260415	0.014062399	ENSG00000078114:ENSG00000182704:ENSG00000134533:ENSG00000123374:ENSG00000139531:ENSG00000111540:ENSG00000118946:ENSG00000102572:ENSG00000131323:ENSG00000140718:ENSG00000105662:ENSG00000084636:ENSG00000188641:ENSG00000134369:ENSG00000163431:ENSG00000198700:ENSG00000197381:ENSG00000219438:ENSG00000119866:ENSG00000254531:ENSG00000196782:ENSG00000043143:ENSG00000122687:ENSG0000002822:ENSG00000128573:ENSG00000147601:ENSG00000160563
Obesity-GERD genes	DEG.down	Pituitary	1927	13	5.18E-06	0.000279892	ENSG00000134533:ENSG00000123374:ENSG00000065361:ENSG00000118946:ENSG00000102572:ENSG00000184588:ENSG00000172260:ENSG00000134369:ENSG00000163431:ENSG00000182240:ENSG00000197381:ENSG00000119866:ENSG00000154678
Obesity-GERD genes	DEG.down	Prostate	742	2	0.321575376	1	ENSG00000140945:ENSG00000172260
Obesity-GERD genes	DEG.down	Skin_Not_Sun_Exposed_Suprapubic	2691	10	0.007549056	0.407648999	ENSG00000134533:ENSG00000139531:ENSG00000130517:ENSG00000105662:ENSG00000184588:ENSG00000172260:ENSG00000188641:ENSG00000116406:ENSG00000134369:ENSG00000219438
Obesity-GERD genes	DEG.down	Skin_Sun_Exposed_Lower_Leg	2474	6	0.184201395	1	ENSG00000139531:ENSG00000130517:ENSG00000105662:ENSG00000188641:ENSG00000116406:ENSG00000219438
Obesity-GERD genes	DEG.down	Small_Intestine_Terminal_Ileum	1382	7	0.005258089	0.283936792	ENSG00000078114:ENSG00000118946:ENSG00000140718:ENSG00000140945:ENSG00000172260:ENSG00000134369:ENSG00000219438
Obesity-GERD genes	DEG.down	Spleen	2069	8	0.013745261	0.742244107	ENSG00000182704:ENSG00000152767:ENSG00000166126:ENSG00000140718:ENSG00000140945:ENSG00000084636:ENSG00000134369:ENSG00000170017
Obesity-GERD genes	DEG.down	Stomach	2607	10	0.006063358	0.327421312	ENSG00000078114:ENSG00000118946:ENSG00000131323:ENSG00000140718:ENSG00000140945:ENSG00000184588:ENSG00000134369:ENSG00000219438:ENSG00000138821:ENSG0000002822
Obesity-GERD genes	DEG.down	Testis	2912	15	2.17E-05	0.001170076	ENSG00000078114:ENSG00000065361:ENSG00000140718:ENSG00000140945:ENSG00000130517:ENSG00000184588:ENSG00000172260:ENSG00000188641:ENSG00000182240:ENSG00000197381:ENSG00000219438:ENSG00000119866:ENSG00000170017:ENSG00000138821:ENSG00000043143

Obesity-GERD genes	DEG.down	Thyroid	1038	7	0.001056217	0.057035718	ENSG00000134533:ENSG00000140945:ENSG00000172260:ENSG00000197381:ENSG00000219438:ENSG00000119866:ENSG00000154678
Obesity-GERD genes	DEG.down	Uterus	843	2	0.378890776	1	ENSG00000065361:ENSG00000184588
Obesity-GERD genes	DEG.down	Vagina	647	3	0.079422438	1	ENSG00000184588:ENSG00000170017:ENSG00000154678
Obesity-GERD genes	DEG.down	Whole_Blood	6908	18	0.012752646	0.688642862	ENSG00000123374:ENSG00000139531:ENSG00000102572:ENSG00000131323:ENSG00000105662:ENSG00000116406:ENSG00000198700:ENSG00000197381:ENSG00000119866:ENSG0000004534:ENSG00000145020:ENSG00000170017:ENSG00000254531:ENSG00000138821:ENSG00000065060:ENSG00000122687:ENSG00000147601:ENSG00000160563
Obesity-GERD genes	DEG.twoside	Adipose_Subcutaneous	3634	14	0.000942377	0.050888353	ENSG00000078114:ENSG00000182704:ENSG00000134533:ENSG00000065361:ENSG00000118946:ENSG00000172260:ENSG00000188641:ENSG00000134369:ENSG00000163431:ENSG00000182240:ENSG00000219438:ENSG00000170017:ENSG00000254531:ENSG00000154678
Obesity-GERD genes	DEG.twoside	Adipose_Visceral_Omentum	3414	11	0.014059844	0.759231579	ENSG00000078114:ENSG00000182704:ENSG00000134533:ENSG00000065361:ENSG00000105662:ENSG00000172260:ENSG00000188641:ENSG00000134369:ENSG00000219438:ENSG00000170017:ENSG00000138821
Obesity-GERD genes	DEG.twoside	Adrenal_Gland	5012	20	2.52E-05	0.001361527	ENSG00000078114:ENSG00000171798:ENSG00000182704:ENSG00000134533:ENSG00000123374:ENSG00000139531:ENSG00000118946:ENSG00000102572:ENSG00000131323:ENSG00000130517:ENSG00000105662:ENSG00000084636:ENSG00000184588:ENSG00000134369:ENSG00000182240:ENSG00000197381:ENSG00000219438:ENSG00000170017:ENSG00000138821:ENSG00000002822
Obesity-GERD genes	DEG.twoside	Artery_Aorta	4216	17	0.000121038	0.006536054	ENSG00000134533:ENSG00000118946:ENSG00000152767:ENSG00000140945:ENSG00000084636:ENSG00000116406:ENSG00000134369:ENSG00000163431:ENSG00000182240:ENSG00000197381:ENSG00000219438:ENSG00000145020:ENSG00000170017:ENSG00000138821:ENSG00000154678:ENSG00000147601:ENSG00000160563

Obesity-GERD genes	DEG.twoside	Artery_Coronary	2987	14	0.000124168	0.006705047	ENSG00000078114:ENSG00000182704:ENSG00000134533:ENSG0000065361:ENSG00000140945:ENSG00000188641:ENSG00000116406:ENSG00000134369:ENSG00000163431:ENSG00000182240:ENSG00000197381:ENSG00000170017:ENSG00000147601:ENSG00000160563
Obesity-GERD genes	DEG.twoside	Artery_Tibial	4738	20	1.08E-05	0.000580782	ENSG00000182704:ENSG00000134533:ENSG0000065361:ENSG00000102572:ENSG00000152767:ENSG00000140718:ENSG00000140945:ENSG00000184588:ENSG00000172260:ENSG00000188641:ENSG00000163431:ENSG00000182240:ENSG00000197381:ENSG00000219438:ENSG00000170017:ENSG00000138821:ENSG00000043143:ENSG00000154678:ENSG00000147601:ENSG00000160563
Obesity-GERD genes	DEG.twoside	Bladder	946	3	0.181936686	1	ENSG00000182704:ENSG00000163431:ENSG00000147601
Obesity-GERD genes	DEG.twoside	Brain_Amygdala	9498	30	5.71E-06	0.000308404	ENSG00000078114:ENSG00000171798:ENSG00000182704:ENSG00000134533:ENSG00000123374:ENSG00000139531:ENSG00000118946:ENSG00000102572:ENSG00000105662:ENSG00000184588:ENSG00000188641:ENSG00000116406:ENSG00000163431:ENSG00000198700:ENSG00000182240:ENSG00000197381:ENSG00000219438:ENSG00000172995:ENSG00000003756:ENSG00000004534:ENSG00000145020:ENSG00000138821:ENSG00000196782:ENSG00000043143:ENSG0000065060:ENSG00000122687:ENSG00000002822:ENSG00000154678:ENSG00000147601:ENSG00000160563
Obesity-GERD genes	DEG.twoside	Brain_Anterior_cingulate_cortex_BA24	9021	23	0.004779289	0.258081586	ENSG00000078114:ENSG00000171798:ENSG00000182704:ENSG00000123374:ENSG0000065361:ENSG00000118946:ENSG00000102572:ENSG00000133958:ENSG00000105662:ENSG00000172260:ENSG00000188641:ENSG00000116406:ENSG00000163431:ENSG00000182240:ENSG00000197381:ENSG00000219438:ENSG00000119866:ENSG00000172995:ENSG00000145020:ENSG00000138821:ENSG00000043143:ENSG0000065060:ENSG00000002822
Obesity-GERD genes	DEG.twoside	Brain_Caudate_basal_ganglia	9070	28	2.81E-05	0.001518537	ENSG00000078114:ENSG00000171798:ENSG00000182704:ENSG00000123374:ENSG00000118946:ENSG00000102572:ENSG00000133958:ENSG00000140945:ENSG00000105662:ENSG00000184588:ENSG00000188641:ENSG00000116406:ENSG00000134369:ENSG00000163431:ENSG00000182240:ENSG00000197381:ENSG00000219438:ENSG00000119866:ENSG00000172995:ENSG00000145020:ENSG00000254531:ENSG00000196782:ENSG00000043143:ENSG00000160563

							00065060:ENSG00000122687:ENSG00000154678:ENSG00000128573:ENSG00000160563
Obesity-GERD genes	DEG.twoside	Brain_Cerebellar_Hemisphere	8908	26	0.000207855	0.011224182	ENSG00000078114:ENSG00000171798:ENSG00000134533:ENSG00000123374:ENSG00000065361:ENSG00000102572:ENSG00000152767:ENSG00000133958:ENSG00000131323:ENSG00000140718:ENSG00000105662:ENSG00000084636:ENSG00000172260:ENSG00000134369:ENSG00000163431:ENSG00000198700:ENSG00000197381:ENSG00000219438:ENSG00000172995:ENSG00000145020:ENSG00000170017:ENSG00000254531:ENSG00000196782:ENSG0000043143:ENSG00000065060:ENSG00000147601
Obesity-GERD genes	DEG.twoside	Brain_Cerebellum	8903	26	0.000205796	0.011112989	ENSG00000078114:ENSG00000171798:ENSG00000182704:ENSG00000134533:ENSG00000123374:ENSG00000065361:ENSG00000102572:ENSG00000152767:ENSG00000133958:ENSG00000131323:ENSG00000140718:ENSG00000105662:ENSG00000172260:ENSG00000134369:ENSG00000163431:ENSG00000198700:ENSG00000197381:ENSG00000219438:ENSG00000172995:ENSG00000145020:ENSG00000170017:ENSG00000138821:ENSG00000196782:ENSG0000043143:ENSG00000065060:ENSG00000147601
Obesity-GERD genes	DEG.twoside	Brain_Cortex	8348	23	0.001606136	0.086731322	ENSG00000078114:ENSG00000171798:ENSG00000182704:ENSG00000123374:ENSG00000102572:ENSG00000133958:ENSG00000131323:ENSG00000105662:ENSG00000184588:ENSG00000172260:ENSG00000188641:ENSG00000116406:ENSG00000163431:ENSG00000182240:ENSG00000197381:ENSG00000219438:ENSG00000119866:ENSG00000172995:ENSG00000145020:ENSG00000138821:ENSG00000196782:ENSG00000065060:ENSG00000154678
Obesity-GERD genes	DEG.twoside	Brain_Frontal_Cortex_BA9	8147	24	0.000402655	0.021743396	ENSG00000078114:ENSG00000171798:ENSG00000182704:ENSG00000123374:ENSG00000118946:ENSG00000102572:ENSG00000133958:ENSG00000131323:ENSG00000105662:ENSG00000184588:ENSG00000172260:ENSG00000188641:ENSG00000116406:ENSG00000163431:ENSG00000182240:ENSG00000219438:ENSG00000119866:ENSG00000172995:ENSG00000145020:ENSG00000254531:ENSG00000138821:ENSG00000196782:ENSG00000065060:ENSG00000128573
Obesity-GERD genes	DEG.twoside	Brain_Hippocampus	9458	27	0.000203586	0.010993655	ENSG00000078114:ENSG00000171798:ENSG00000182704:ENSG00000134533:ENSG00000123374:ENSG00000139531:ENSG00000102572:ENSG00000133958:ENSG00000140945:ENSG00000105662:ENSG00000184588:ENSG00000188641:ENSG00000116406:ENSG00000163431:ENSG00000198700:ENSG00000182240:ENSG00000197381

							381:ENSG00000219438:ENSG00000119866:ENSG00000145020:ENSG00000138821:ENSG00000196782:ENSG00000043143:ENSG0000065060:ENSG00000122687:ENSG00000002822:ENSG00000154678
Obesity-GERD genes	DEG.twoside	Brain_Hypothalamus	8435	25	0.00024239	0.013089047	ENSG00000078114:ENSG00000171798:ENSG00000182704:ENSG00000134533:ENSG00000123374:ENSG00000139531:ENSG00000118946:ENSG00000102572:ENSG00000133958:ENSG00000184588:ENSG00000188641:ENSG00000116406:ENSG00000163431:ENSG00000182240:ENSG00000197381:ENSG00000219438:ENSG00000145020:ENSG00000170017:ENSG00000138821:ENSG00000196782:ENSG00000065060:ENSG00000122687:ENSG00000002822:ENSG00000154678:ENSG00000160563
Obesity-GERD genes	DEG.twoside	Brain_Nucleus_accumbens_basal_ganglia	8860	26	0.000188838	0.010197227	ENSG00000078114:ENSG00000171798:ENSG00000182704:ENSG00000123374:ENSG00000118946:ENSG00000102572:ENSG00000133958:ENSG00000140945:ENSG00000105662:ENSG00000184588:ENSG00000188641:ENSG00000116406:ENSG00000134369:ENSG00000163431:ENSG00000197381:ENSG00000219438:ENSG00000119866:ENSG00000172995:ENSG00000145020:ENSG00000254531:ENSG00000138821:ENSG00000196782:ENSG00000065060:ENSG00000122687:ENSG00000154678:ENSG00000160563
Obesity-GERD genes	DEG.twoside	Brain_Putamen_basal_ganglia	9517	32	3.46E-07	1.87E-05	ENSG00000078114:ENSG00000171798:ENSG00000182704:ENSG00000123374:ENSG00000139531:ENSG00000118946:ENSG00000102572:ENSG00000133958:ENSG00000131323:ENSG00000140945:ENSG00000105662:ENSG00000172260:ENSG00000188641:ENSG00000116406:ENSG00000134369:ENSG00000163431:ENSG00000198700:ENSG00000182240:ENSG00000197381:ENSG00000219438:ENSG00000119866:ENSG00000172995:ENSG00000003756:ENSG00000004534:ENSG00000145020:ENSG00000138821:ENSG00000043143:ENSG00000065060:ENSG00000122687:ENSG00000154678:ENSG00000147601:ENSG00000160563
Obesity-GERD genes	DEG.twoside	Brain_Spinal_cord_cervical_c-1	7307	23	0.000212194	0.011458478	ENSG00000078114:ENSG00000182704:ENSG00000134533:ENSG00000123374:ENSG00000139531:ENSG00000065361:ENSG00000118946:ENSG00000102572:ENSG00000152767:ENSG00000140945:ENSG00000130517:ENSG00000184588:ENSG00000188641:ENSG00000116406:ENSG00000163431:ENSG00000197381:ENSG00000219438:ENSG00000172995:ENSG00000145020:ENSG00000170017:ENSG00000254531:ENSG00000196782:ENSG00000154678

Obesity-GERD genes	DEG.twoside	Brain_Substantia_nigra	8807	29	4.12E-06	0.000222646	ENSG00000078114:ENSG00000171798:ENSG00000182704:ENSG00000134533:ENSG00000123374:ENSG00000139531:ENSG00000118946:ENSG00000102572:ENSG00000152767:ENSG00000140945:ENSG00000105662:ENSG00000184588:ENSG00000188641:ENSG00000116406:ENSG00000163431:ENSG00000198700:ENSG00000182240:ENSG00000197381:ENSG00000219438:ENSG00000119866:ENSG00000145020:ENSG00000254531:ENSG00000196782:ENSG0000043143:ENSG00000065060:ENSG00000122687:ENSG00000002822:ENSG00000154678:ENSG00000160563
Obesity-GERD genes	DEG.twoside	Breast_Mammary_Tissue	2965	9	0.037202299	1	ENSG00000182704:ENSG00000134533:ENSG00000118946:ENSG00000166126:ENSG00000184588:ENSG00000163431:ENSG00000182240:ENSG00000219438:ENSG00000119866
Obesity-GERD genes	DEG.twoside	Cells_Cultured_fibroblasts	6478	19	0.002582076	0.139432098	ENSG00000078114:ENSG00000123374:ENSG00000131323:ENSG00000140718:ENSG00000140945:ENSG00000084636:ENSG00000172260:ENSG00000188641:ENSG00000116406:ENSG00000134369:ENSG00000163431:ENSG00000198700:ENSG00000197381:ENSG00000219438:ENSG00000145020:ENSG00000170017:ENSG00000138821:ENSG00000196782:ENSG00000122687
Obesity-GERD genes	DEG.twoside	Cells_EBV-transformed_lymphocytes	7452	19	0.012722137	0.686995411	ENSG00000123374:ENSG00000102572:ENSG00000152767:ENSG00000131323:ENSG00000130517:ENSG00000105662:ENSG00000084636:ENSG00000188641:ENSG00000198700:ENSG00000182240:ENSG00000119866:ENSG00000145020:ENSG00000170017:ENSG00000254531:ENSG00000138821:ENSG00000043143:ENSG00000065060:ENSG00000122687:ENSG00000002822
Obesity-GERD genes	DEG.twoside	Cervix_Ectocervix	195	1	0.262581235	1	ENSG00000182704
Obesity-GERD genes	DEG.twoside	Cervix_Endocervix	1834	9	0.001852669	0.100044139	ENSG00000182704:ENSG00000123374:ENSG00000139531:ENSG00000084636:ENSG00000188641:ENSG00000163431:ENSG00000198700:ENSG00000219438:ENSG00000147601
Obesity-GERD genes	DEG.twoside	Colon_Sigmoid	3313	12	0.004003092	0.216166988	ENSG00000182704:ENSG00000134533:ENSG00000152767:ENSG00000140945:ENSG00000184588:ENSG00000172260:ENSG00000163431:ENSG00000197381:ENSG00000119866:ENSG00000145020:ENSG00000138821:ENSG00000128573
Obesity-GERD genes	DEG.twoside	Colon_Transverse	3185	9	0.054668064	1	ENSG00000078114:ENSG00000065361:ENSG00000118946:ENSG00000166126:ENSG00000140945:ENSG00000130517:ENSG00000184588:ENSG00000154678:ENSG00000128573

Obesity-GERD genes	DEG.twoside	Esophagus_Gastroesophageal Junction	2845	10	0.011000803	0.594043337	ENSG00000123374:ENSG00000140945:ENSG00000184588:ENSG00000172260:ENSG00000163431:ENSG00000197381:ENSG00000119866:ENSG00000138821:ENSG00000154678:ENSG00000128573
Obesity-GERD genes	DEG.twoside	Esophagus_Mucosa	5811	24	1.07E-06	5.79E-05	ENSG00000182704:ENSG00000134533:ENSG00000065361:ENSG00000118946:ENSG00000102572:ENSG00000152767:ENSG00000166126:ENSG00000140718:ENSG00000140945:ENSG00000130517:ENSG00000105662:ENSG00000084636:ENSG00000184588:ENSG00000172260:ENSG00000197381:ENSG00000219438:ENSG00000119866:ENSG00000145020:ENSG00000170017:ENSG00000254531:ENSG00000138821:ENSG00000043143:ENSG00000154678:ENSG00000147601
Obesity-GERD genes	DEG.twoside	Esophagus_Muscularis	3072	11	0.006559352	0.354205018	ENSG00000123374:ENSG00000140945:ENSG00000184588:ENSG00000172260:ENSG00000163431:ENSG00000197381:ENSG00000219438:ENSG00000119866:ENSG00000138821:ENSG00000154678:ENSG00000128573
Obesity-GERD genes	DEG.twoside	Fallopian_Tube	486	5	0.000931683	0.050310883	ENSG000000078114:ENSG00000182704:ENSG00000134533:ENSG00000163431:ENSG00000145020
Obesity-GERD genes	DEG.twoside	Heart_Atrial_Appendage	9152	26	0.00033422	0.018047868	ENSG00000078114:ENSG00000134533:ENSG00000123374:ENSG00000065361:ENSG00000118946:ENSG00000102572:ENSG00000152767:ENSG00000131323:ENSG00000140718:ENSG00000130517:ENSG00000105662:ENSG00000188641:ENSG00000116406:ENSG00000198700:ENSG00000197381:ENSG00000219438:ENSG00000170017:ENSG00000254531:ENSG00000138821:ENSG00000196782:ENSG00000043143:ENSG00000122687:ENSG00000002822:ENSG00000154678:ENSG00000147601:ENSG00000160563
Obesity-GERD genes	DEG.twoside	Heart_Left_Ventricle	9979	32	1.14E-06	6.13E-05	ENSG00000078114:ENSG00000182704:ENSG00000134533:ENSG00000123374:ENSG00000118946:ENSG00000102572:ENSG00000152767:ENSG00000131323:ENSG00000140718:ENSG00000130517:ENSG00000105662:ENSG00000084636:ENSG00000184588:ENSG00000172260:ENSG00000188641:ENSG00000116406:ENSG00000163431:ENSG00000198700:ENSG00000182240:ENSG00000197381:ENSG00000119866:ENSG00000003756:ENSG00000145020:ENSG00000170017:ENSG00000254531:ENSG00000138821:ENSG00000043143:ENSG00000122687:ENSG00000002822:ENSG00000154678:ENSG00000147601:ENSG00000160563



Obesity-GERD genes	DEG.twoside	Kidney_Cortex	6871	23	7.88E-05	0.004252542	ENSG00000123374:ENSG00000152767:ENSG00000166126:ENSG00000140718:ENSG00000140945:ENSG00000130517:ENSG00000084636:ENSG00000184588:ENSG00000172260:ENSG00000188641:ENSG00000116406:ENSG00000134369:ENSG00000163431:ENSG00000198700:ENSG00000197381:ENSG00000219438:ENSG00000170017:ENSG00000254531:ENSG00000138821:ENSG00000196782:ENSG00000065060:ENSG0000002822:ENSG00000160563
Obesity-GERD genes	DEG.twoside	Kidney_Medulla	95	0	1	1	
Obesity-GERD genes	DEG.twoside	Liver	9510	26	0.000646434	0.034907445	ENSG00000182704:ENSG00000123374:ENSG00000139531:ENSG00000065361:ENSG00000111540:ENSG00000102572:ENSG00000131323:ENSG00000166126:ENSG00000140718:ENSG00000105662:ENSG00000084636:ENSG00000184588:ENSG00000163431:ENSG00000198700:ENSG00000182240:ENSG00000197381:ENSG00000219438:ENSG0000003756:ENSG00000254531:ENSG00000196782:ENSG00000043143:ENSG00000065060:ENSG00000122687:ENSG0000002822:ENSG00000147601:ENSG00000160563
Obesity-GERD genes	DEG.twoside	Lung	5100	14	0.020359856	1	ENSG00000078114:ENSG00000123374:ENSG00000118946:ENSG00000152767:ENSG00000166126:ENSG00000140945:ENSG00000184588:ENSG00000188641:ENSG00000116406:ENSG00000197381:ENSG00000219438:ENSG00000170017:ENSG00000138821:ENSG00000128573
Obesity-GERD genes	DEG.twoside	Minor_Salivary_Gland	3752	14	0.001291316	0.069731081	ENSG00000078114:ENSG00000065361:ENSG00000118946:ENSG00000152767:ENSG00000140945:ENSG00000105662:ENSG00000172260:ENSG00000116406:ENSG00000134369:ENSG00000182240:ENSG00000197381:ENSG00000172995:ENSG00000170017:ENSG00000138821
Obesity-GERD genes	DEG.twoside	Muscle_Skeletal	7979	24	0.000287503	0.015525142	ENSG00000182704:ENSG00000134533:ENSG00000123374:ENSG00000065361:ENSG00000102572:ENSG00000152767:ENSG00000131323:ENSG00000105662:ENSG00000084636:ENSG00000172260:ENSG00000188641:ENSG00000134369:ENSG00000198700:ENSG00000182240:ENSG00000197381:ENSG00000172995:ENSG00000004534:ENSG00000145020:ENSG00000254531:ENSG00000043143:ENSG00000065060:ENSG00000128573:ENSG00000147601:ENSG00000160563

Obesity-GERD genes	DEG.twoside	Nerve_Tibial	6774	13	0.241609978	1	ENSG00000182704:ENSG00000065361:ENSG00000140945:ENSG0000084636:ENSG00000172260:ENSG00000188641:ENSG00000163431:ENSG00000182240:ENSG00000219438:ENSG00000145020:ENSG00000043143:ENSG00000154678:ENSG00000147601
Obesity-GERD genes	DEG.twoside	Ovary	7195	23	0.000165959	0.008961801	ENSG00000078114:ENSG00000171798:ENSG00000182704:ENSG00000134533:ENSG00000123374:ENSG00000139531:ENSG00000065361:ENSG00000118946:ENSG00000140945:ENSG00000130517:ENSG00000084636:ENSG00000184588:ENSG00000172260:ENSG00000188641:ENSG00000134369:ENSG00000197381:ENSG00000145020:ENSG00000170017:ENSG00000254531:ENSG00000196782:ENSG00000043143:ENSG00000128573:ENSG00000147601
Obesity-GERD genes	DEG.twoside	Pancreas	10331	28	0.000355354	0.019189133	ENSG00000078114:ENSG00000182704:ENSG00000134533:ENSG00000123374:ENSG00000139531:ENSG00000111540:ENSG00000118946:ENSG00000102572:ENSG00000131323:ENSG00000140718:ENSG00000105662:ENSG00000084636:ENSG00000188641:ENSG00000134369:ENSG00000163431:ENSG00000198700:ENSG00000197381:ENSG00000219438:ENSG00000119866:ENSG00000254531:ENSG00000138821:ENSG00000196782:ENSG00000043143:ENSG00000122687:ENSG0000002822:ENSG00000128573:ENSG00000147601:ENSG00000160563
Obesity-GERD genes	DEG.twoside	Pituitary	7083	23	0.00012902	0.00696708	ENSG00000078114:ENSG00000171798:ENSG00000134533:ENSG00000123374:ENSG00000065361:ENSG00000118946:ENSG00000102572:ENSG00000152767:ENSG00000133958:ENSG00000131323:ENSG00000130517:ENSG00000105662:ENSG00000184588:ENSG00000172260:ENSG00000116406:ENSG00000134369:ENSG00000163431:ENSG00000182240:ENSG00000197381:ENSG00000119866:ENSG00000145020:ENSG00000196782:ENSG00000154678
Obesity-GERD genes	DEG.twoside	Prostate	4048	12	0.018889029	1	ENSG00000182704:ENSG00000139531:ENSG00000065361:ENSG00000152767:ENSG00000140945:ENSG00000130517:ENSG00000084636:ENSG00000172260:ENSG00000163431:ENSG00000182240:ENSG00000145020:ENSG00000254531
Obesity-GERD genes	DEG.twoside	Skin_Not_Sun_Exposed_Suprapubic	5432	17	0.002415032	0.13041173	ENSG00000182704:ENSG00000134533:ENSG00000123374:ENSG00000139531:ENSG00000065361:ENSG00000102572:ENSG0000016126:ENSG00000130517:ENSG00000105662:ENSG00000184588:ENSG00000172260:ENSG00000188641:ENSG00000116406:ENSG00000134369:ENSG00000219438:ENSG00000119866:ENSG00000196782

Obesity-GERD genes	DEG.twoside	Skin_Sun_Exposed_Lower_Lege	5275	15	0.011690636	0.631294334	ENSG00000182704:ENSG00000123374:ENSG00000139531:ENSG0000065361:ENSG00000102572:ENSG00000166126:ENSG00000140945:ENSG00000130517:ENSG00000105662:ENSG00000188641:ENSG00000116406:ENSG00000219438:ENSG00000119866:ENSG00000196782:ENSG00000002822
Obesity-GERD genes	DEG.twoside	Small_Intestine_Terminal_Ileum	4120	12	0.021455192	1	ENSG00000078114:ENSG00000065361:ENSG00000118946:ENSG00000131323:ENSG00000166126:ENSG00000140718:ENSG00000140945:ENSG00000130517:ENSG00000172260:ENSG00000134369:ENSG00000219438:ENSG00000119866
Obesity-GERD genes	DEG.twoside	Spleen	6309	15	0.051775952	1	ENSG00000182704:ENSG00000118946:ENSG00000152767:ENSG00000131323:ENSG00000166126:ENSG00000140718:ENSG00000140945:ENSG00000130517:ENSG00000084636:ENSG00000184588:ENSG00000134369:ENSG00000119866:ENSG00000170017:ENSG0000043143:ENSG00000002822
Obesity-GERD genes	DEG.twoside	Stomach	3709	13	0.003527941	0.190508818	ENSG00000078114:ENSG00000065361:ENSG00000118946:ENSG00000131323:ENSG00000166126:ENSG00000140718:ENSG00000140945:ENSG00000184588:ENSG00000134369:ENSG00000182240:ENSG00000219438:ENSG00000138821:ENSG00000002822
Obesity-GERD genes	DEG.twoside	Testis	15238	22	0.738002892	1	ENSG00000078114:ENSG00000065361:ENSG00000118946:ENSG00000133958:ENSG00000187581:ENSG00000131323:ENSG00000140718:ENSG00000140945:ENSG00000130517:ENSG00000184588:ENSG00000172260:ENSG00000188641:ENSG00000182240:ENSG00000197381:ENSG00000219438:ENSG00000119866:ENSG00000170017:ENSG00000138821:ENSG00000043143:ENSG00000065060:ENSG00000002822:ENSG00000160563
Obesity-GERD genes	DEG.twoside	Thyroid	6725	18	0.00965047	0.521125404	ENSG00000078114:ENSG00000182704:ENSG00000134533:ENSG00000139531:ENSG00000152767:ENSG00000140945:ENSG00000105662:ENSG00000084636:ENSG00000172260:ENSG00000198700:ENSG00000197381:ENSG00000219438:ENSG00000119866:ENSG00000145020:ENSG00000170017:ENSG00000065060:ENSG00000154678:ENSG00000128573
Obesity-GERD genes	DEG.twoside	Uterus	6387	17	0.013062645	0.705382839	ENSG00000182704:ENSG00000134533:ENSG00000123374:ENSG00000139531:ENSG00000065361:ENSG00000140945:ENSG00000184588:ENSG00000163431:ENSG00000198700:ENSG00000182240:ENSG00000197381:ENSG00000145020:ENSG00000196782:ENSG0000043143:ENSG00000128573:ENSG00000147601:ENSG00000160563

Obesity-GERD genes	DEG.twoside	Vagina	3487	12	0.006052797	0.326851044	ENSG00000182704:ENSG00000134533:ENSG00000065361:ENSG00000102572:ENSG00000166126:ENSG00000140945:ENSG00000184588:ENSG00000188641:ENSG00000119866:ENSG00000170017:ENSG00000196782:ENSG00000154678
Obesity-GERD genes	DEG.twoside	Whole_Blood	8941	19	0.074802744	1	ENSG00000123374:ENSG00000139531:ENSG00000102572:ENSG00000131323:ENSG00000105662:ENSG00000188641:ENSG00000116406:ENSG00000198700:ENSG00000197381:ENSG00000119866:ENSG00000004534:ENSG00000145020:ENSG00000170017:ENSG00000254531:ENSG00000138821:ENSG00000065060:ENSG00000122687:ENSG00000147601:ENSG00000160563
Neuropsych-driven GERD	DEG.up	Adipose_Subcutaneous	2107	2	0.668989187	1	ENSG00000196628:ENSG00000052795
Neuropsych-driven GERD	DEG.up	Adipose_Visceral_Omentum	1764	2	0.570127707	1	ENSG00000196628:ENSG00000111801
Neuropsych-driven GERD	DEG.up	Adrenal_Gland	1540	2	0.49558163	1	ENSG00000111801:ENSG00000106460
Neuropsych-driven GERD	DEG.up	Artery_Aorta	2756	5	0.167557212	1	ENSG00000187676:ENSG00000178568:ENSG00000052795:ENSG00000112763:ENSG00000010818
Neuropsych-driven GERD	DEG.up	Artery_Coronary	2038	2	0.65061044	1	ENSG00000052795:ENSG00000112763
Neuropsych-driven GERD	DEG.up	Artery_Tibial	2711	5	0.159613725	1	ENSG00000187676:ENSG00000119718:ENSG00000052795:ENSG00000112763:ENSG00000010818
Neuropsych-driven GERD	DEG.up	Bladder	842	0	1	1	
Neuropsych-driven GERD	DEG.up	Brain_Amygdala	1820	6	0.011718217	0.632783717	ENSG00000156395:ENSG00000184226:ENSG00000103449:ENSG00000101489:ENSG00000178568:ENSG00000107105
Neuropsych-driven GERD	DEG.up	Brain_Anterior_cingulate_cortex_BA24	2370	8	0.002920748	0.157720398	ENSG00000156395:ENSG00000184226:ENSG00000103449:ENSG00000101489:ENSG00000178342:ENSG00000116329:ENSG00000178568:ENSG00000107105

Neuropsych-driven GERD	DEG.up	Brain_Caudate_basal_ganglia	2212	10	7.04E-05	0.003802251	ENSG00000156395:ENSG00000187676:ENSG00000184226:ENSG00000103449:ENSG00000101489:ENSG00000187323:ENSG00000116329:ENSG00000178568:ENSG00000188981:ENSG00000107105
Neuropsych-driven GERD	DEG.up	Brain_Cerebellar_Hemisphere	6301	13	0.009759315	0.527003027	ENSG00000156395:ENSG00000184226:ENSG00000101489:ENSG00000196628:ENSG00000178568:ENSG00000151276:ENSG00000125388:ENSG00000197386:ENSG00000112763:ENSG00000124508:ENSG0000010818:ENSG00000106460:ENSG00000107105
Neuropsych-driven GERD	DEG.up	Brain_Cerebellum	6164	12	0.02137501	1	ENSG00000156395:ENSG00000184226:ENSG00000101489:ENSG00000196628:ENSG00000178568:ENSG00000151276:ENSG00000125388:ENSG00000197386:ENSG00000112763:ENSG00000124508:ENSG0000010818:ENSG00000107105
Neuropsych-driven GERD	DEG.up	Brain_Cortex	2792	9	0.002081329	0.112391749	ENSG00000156395:ENSG00000184226:ENSG00000103449:ENSG00000101489:ENSG00000187323:ENSG00000116329:ENSG00000178568:ENSG00000109756:ENSG00000107105
Neuropsych-driven GERD	DEG.up	Brain_Frontal_Cortex_BA9	3132	10	0.001180893	0.063768231	ENSG00000156395:ENSG00000184226:ENSG00000103449:ENSG00000101489:ENSG00000187323:ENSG00000116329:ENSG00000178568:ENSG00000109756:ENSG0000010818:ENSG00000107105
Neuropsych-driven GERD	DEG.up	Brain_Hippocampus	1965	8	0.000881645	0.047608835	ENSG00000156395:ENSG00000184226:ENSG00000103449:ENSG00000101489:ENSG00000187323:ENSG00000178342:ENSG00000178568:ENSG00000107105
Neuropsych-driven GERD	DEG.up	Brain_Hypothalamus	2531	8	0.004380059	0.236523204	ENSG00000156395:ENSG00000184226:ENSG00000103449:ENSG00000101489:ENSG00000187323:ENSG00000178568:ENSG00000188981:ENSG00000107105
Neuropsych-driven GERD	DEG.up	Brain_Nucleus_accumbens_basal_ganglia	2451	10	0.00016586	0.008956455	ENSG00000156395:ENSG00000187676:ENSG00000184226:ENSG00000103449:ENSG00000101489:ENSG00000187323:ENSG00000178342:ENSG00000116329:ENSG00000178568:ENSG00000188981
Neuropsych-driven GERD	DEG.up	Brain_Putamen_basal_ganglia	1741	8	0.000394984	0.021329154	ENSG00000156395:ENSG00000187676:ENSG00000184226:ENSG00000103449:ENSG00000101489:ENSG00000187323:ENSG00000116329:ENSG00000178568
Neuropsych-driven GERD	DEG.up	Brain_Spinal_cord_cervical_c-1	2224	2	0.698443151	1	ENSG00000184226:ENSG00000103449
Neuropsych-driven GERD	DEG.up	Brain_Substantia_nigra	1645	6	0.007295239	0.393942893	ENSG00000184226:ENSG00000103449:ENSG00000101489:ENSG00000187323:ENSG00000178568:ENSG00000107105
Neuropsych-driven GERD	DEG.up	Breast_Mammary_Tissue	1964	3	0.35142837	1	ENSG00000196628:ENSG00000151276:ENSG00000091831

Neuropsych-driven GERD	DEG.up	Cells_Culture_d_fibroblasts	4335	6	0.31530665	1	ENSG00000187676:ENSG00000119596:ENSG00000119718:ENSG0000198492:ENSG00000130766:ENSG00000106460
Neuropsych-driven GERD	DEG.up	Cells_EBV-transformed_lymphocytes	5069	7	0.292815955	1	ENSG00000119596:ENSG00000198492:ENSG00000130766:ENSG0000197386:ENSG00000109756:ENSG00000124508:ENSG00000111801
Neuropsych-driven GERD	DEG.up	Cervix_Ectocervix	193	1	0.187148532	1	ENSG00000091831
Neuropsych-driven GERD	DEG.up	Cervix_Endocervix	1829	5	0.043346812	1	ENSG00000119596:ENSG00000103449:ENSG00000112763:ENSG0000111801:ENSG00000091831
Neuropsych-driven GERD	DEG.up	Colon_Sigmoid	1637	0	1	1	
Neuropsych-driven GERD	DEG.up	Colon_Transverse	1602	0	1	1	
Neuropsych-driven GERD	DEG.up	Esophagus_Gastroesophageal_Junction	1287	1	0.755118355	1	ENSG00000184226
Neuropsych-driven GERD	DEG.up	Esophagus_Mucosa	2231	1	0.916131942	1	ENSG00000130766
Neuropsych-driven GERD	DEG.up	Esophagus_Muscularis	1311	2	0.412053695	1	ENSG00000184226:ENSG00000052795
Neuropsych-driven GERD	DEG.up	Fallopian_Tube	485	2	0.09468237	1	ENSG00000112763:ENSG00000091831
Neuropsych-driven GERD	DEG.up	Heart_Atrial_Appendage	743	1	0.552881333	1	ENSG00000187676
Neuropsych-driven GERD	DEG.up	Heart_Left_Ventricle	536	0	1	1	

Neuropsych-driven GERD	DEG.up	Kidney_Cortex	1327	1	0.765824659	1	ENSG00000103449
Neuropsych-driven GERD	DEG.up	Kidney_Medulla	95	0	1	1	
Neuropsych-driven GERD	DEG.up	Liver	1525	1	0.812480122	1	ENSG00000103449
Neuropsych-driven GERD	DEG.up	Lung	4195	6	0.287883486	1	ENSG00000196628:ENSG00000109756:ENSG00000052795:ENSG00000112763:ENSG00000124508:ENSG00000111801
Neuropsych-driven GERD	DEG.up	Minor_Salivary_Gland	1891	0	1	1	
Neuropsych-driven GERD	DEG.up	Muscle_Skeletal	1143	0	1	1	
Neuropsych-driven GERD	DEG.up	Nerve_Tibial	5869	10	0.081536687	1	ENSG00000156395:ENSG00000184226:ENSG00000119596:ENSG00000151276:ENSG00000125388:ENSG00000197386:ENSG00000109756:ENSG00000052795:ENSG00000164123:ENSG00000106460
Neuropsych-driven GERD	DEG.up	Ovary	5674	11	0.02931244	1	ENSG00000156395:ENSG00000149292:ENSG00000119596:ENSG00000119608:ENSG00000103449:ENSG00000196628:ENSG00000130766:ENSG00000124508:ENSG00000111801:ENSG0000010818:ENSG00000091831
Neuropsych-driven GERD	DEG.up	Pancreas	745	0	1	1	
Neuropsych-driven GERD	DEG.up	Pituitary	5156	9	0.087131425	1	ENSG00000156395:ENSG00000149292:ENSG00000170209:ENSG00000103449:ENSG00000101489:ENSG00000178568:ENSG00000125388:ENSG00000111801:ENSG00000091831
Neuropsych-driven GERD	DEG.up	Prostate	3306	3	0.701802653	1	ENSG00000149292:ENSG00000170209:ENSG00000091831
Neuropsych-driven GERD	DEG.up	Skin_Not_Sun_Exposed_Suprapubic	2741	2	0.804462648	1	ENSG00000170209:ENSG00000198492

Neuropsych-driven GERD	DEG.up	Skin_Sun_Exposed_Lower_Lege	2801	2	0.814435273	1	ENSG00000170209:ENSG00000198492
Neuropsych-driven GERD	DEG.up	Small_Intestine_Terminal_Ileum	2738	2	0.80395227	1	ENSG00000124508:ENSG00000111801
Neuropsych-driven GERD	DEG.up	Spleen	4240	4	0.682764355	1	ENSG00000151276:ENSG00000112763:ENSG00000124508:ENSG00000111801
Neuropsych-driven GERD	DEG.up	Stomach	1102	0	1	1	
Neuropsych-driven GERD	DEG.up	Testis	12326	13	0.591576673	1	ENSG00000149292:ENSG00000170209:ENSG00000119596:ENSG00000119718:ENSG00000187323:ENSG00000178342:ENSG00000130766:ENSG00000178568:ENSG00000151276:ENSG00000125388:ENSG00000188981:ENSG00000164123:ENSG00000107105
Neuropsych-driven GERD	DEG.up	Thyroid	5687	7	0.407958179	1	ENSG00000149292:ENSG00000119608:ENSG00000119718:ENSG00000103449:ENSG00000151276:ENSG00000109756:ENSG00000111801
Neuropsych-driven GERD	DEG.up	Uterus	5544	9	0.124077702	1	ENSG00000187676:ENSG00000119596:ENSG00000103449:ENSG00000196628:ENSG00000112763:ENSG00000124508:ENSG00000111801:ENSG00000091831:ENSG00000106460
Neuropsych-driven GERD	DEG.up	Vagina	2840	4	0.361505876	1	ENSG00000170209:ENSG00000103449:ENSG00000111801:ENSG00000091831
Neuropsych-driven GERD	DEG.up	Whole_Blood	2033	1	0.894691368	1	ENSG00000178342
Neuropsych-driven GERD	DEG.down	Adipose_Subcutaneous	1527	0	1	1	
Neuropsych-driven GERD	DEG.down	Adipose_Visceral_Omentum	1650	1	0.837147952	1	ENSG00000149292
Neuropsych-driven GERD	DEG.down	Adrenal_Gland	3472	5	0.311786377	1	ENSG00000187676:ENSG00000101489:ENSG00000151276:ENSG00000109756:ENSG00000052795



Neuropsych-driven GERD	DEG.down	Artery_Aorta	1460	0	1	1	
Neuropsych-driven GERD	DEG.down	Artery_Coronary	949	0	1	1	
Neuropsych-driven GERD	DEG.down	Artery_Tibial	2027	0	1	1	
Neuropsych-driven GERD	DEG.down	Bladder	104	0	1	1	
Neuropsych-driven GERD	DEG.down	Brain_Amygdala	7678	11	0.176887179	1	ENSG00000149292:ENSG00000119596:ENSG00000119718:ENSG00000198492:ENSG00000130766:ENSG00000151276:ENSG00000052795:ENSG00000182952:ENSG00000112763:ENSG00000124508:ENSG00000111801
Neuropsych-driven GERD	DEG.down	Brain_Anterior_cingulate_cortex_BA24	6651	9	0.270072226	1	ENSG00000149292:ENSG00000119596:ENSG00000119718:ENSG00000198492:ENSG00000130766:ENSG00000182952:ENSG00000112763:ENSG00000124508:ENSG00000111801
Neuropsych-driven GERD	DEG.down	Brain_Caudate_basal_ganglia	6858	11	0.096151687	1	ENSG00000149292:ENSG00000119596:ENSG00000119718:ENSG00000198492:ENSG00000130766:ENSG00000151276:ENSG00000052795:ENSG00000182952:ENSG00000112763:ENSG00000124508:ENSG00000111801
Neuropsych-driven GERD	DEG.down	Brain_Cerebellar_Hemisphere	2607	3	0.536281929	1	ENSG00000149292:ENSG00000187676:ENSG00000103449
Neuropsych-driven GERD	DEG.down	Brain_Cerebellum	2739	3	0.570963044	1	ENSG00000149292:ENSG00000187676:ENSG00000103449
Neuropsych-driven GERD	DEG.down	Brain_Cortex	5556	7	0.383067996	1	ENSG00000149292:ENSG00000198492:ENSG00000052795:ENSG00000182952:ENSG00000112763:ENSG00000124508:ENSG00000111801
Neuropsych-driven GERD	DEG.down	Brain_Frontal_Cortex_BA9	5015	4	0.807442347	1	ENSG00000149292:ENSG00000112763:ENSG00000124508:ENSG00000111801
Neuropsych-driven GERD	DEG.down	Brain_Hippocampus	7493	11	0.156137224	1	ENSG00000149292:ENSG00000187676:ENSG00000119596:ENSG00000119718:ENSG00000198492:ENSG00000130766:ENSG0000015

							1276:ENSG00000182952:ENSG00000112763:ENSG00000124508:ENSG00000111801
Neuropsych-driven GERD	DEG.down	Brain_Hypothalamus	5904	12	0.015421949	0.83278525	ENSG00000149292:ENSG00000119718:ENSG00000196628:ENSG00000198492:ENSG00000130766:ENSG00000197386:ENSG00000052795:ENSG00000182952:ENSG00000112763:ENSG00000124508:ENSG00000111801:ENSG00000091831
Neuropsych-driven GERD	DEG.down	Brain_Nucleus_accumbens_basal_ganglia	6409	11	0.064308067	1	ENSG00000149292:ENSG00000119718:ENSG00000196628:ENSG00000198492:ENSG00000130766:ENSG00000151276:ENSG00000052795:ENSG00000182952:ENSG00000112763:ENSG00000124508:ENSG00000111801
Neuropsych-driven GERD	DEG.down	Brain_Putamen_basal_ganglia	7776	15	0.009100229	0.49141238	ENSG00000149292:ENSG00000119596:ENSG00000119718:ENSG00000196628:ENSG00000198492:ENSG00000130766:ENSG00000151276:ENSG00000197386:ENSG00000109756:ENSG00000052795:ENSG00000182952:ENSG00000112763:ENSG00000124508:ENSG00000111801:ENSG00000106460
Neuropsych-driven GERD	DEG.down	Brain_Spinal_cord_cervical_c-1	5083	9	0.081066827	1	ENSG00000149292:ENSG00000187676:ENSG00000198492:ENSG00000130766:ENSG00000197386:ENSG00000112763:ENSG00000124508:ENSG00000111801:ENSG00000010818
Neuropsych-driven GERD	DEG.down	Brain_Substantia_nigra	7162	16	0.001303485	0.070388173	ENSG00000149292:ENSG00000187676:ENSG00000119596:ENSG00000119718:ENSG00000196628:ENSG00000198492:ENSG00000130766:ENSG00000151276:ENSG00000197386:ENSG00000109756:ENSG00000052795:ENSG00000182952:ENSG00000112763:ENSG00000124508:ENSG00000111801:ENSG00000010818
Neuropsych-driven GERD	DEG.down	Breast_Mammary_Tissue	1001	0	1	1	
Neuropsych-driven GERD	DEG.down	Cells_Cultured_fibroblasts	2143	2	0.678279592	1	ENSG00000149292:ENSG00000052795
Neuropsych-driven GERD	DEG.down	Cells_EBV-transformed_lymphocytes	2383	2	0.735111133	1	ENSG00000125388:ENSG00000106460
Neuropsych-driven GERD	DEG.down	Cervix_Ectocervix	2	0	1	1	
Neuropsych-driven GERD	DEG.down	Cervix_Endocervix	5	0	1	1	

Neuropsych-driven GERD	DEG.down	Colon_Sigmoid	1676	0	1	1	
Neuropsych-driven GERD	DEG.down	Colon_Transverse	1583	2	0.510476092	1	ENSG00000125388:ENSG00000010818
Neuropsych-driven GERD	DEG.down	Esophagus_Gastroesophageal_Junction	1558	1	0.819323508	1	ENSG00000091831
Neuropsych-driven GERD	DEG.down	Esophagus_Mucosa	3580	5	0.335491905	1	ENSG00000196628:ENSG00000125388:ENSG00000109756:ENSG0000052795:ENSG00000124508
Neuropsych-driven GERD	DEG.down	Esophagus_Muscularis	1761	0	1	1	
Neuropsych-driven GERD	DEG.down	Fallopian_Tube	1	0	1	1	
Neuropsych-driven GERD	DEG.down	Heart_Atrial_Appendage	8409	13	0.088313902	1	ENSG00000149292:ENSG00000119596:ENSG00000119718:ENSG00000196628:ENSG00000198492:ENSG00000130766:ENSG00000151276:ENSG00000197386:ENSG00000109756:ENSG00000112763:ENSG00000124508:ENSG00000111801:ENSG00000010818
Neuropsych-driven GERD	DEG.down	Heart_Left_Ventricle	9443	16	0.023549763	1	ENSG00000149292:ENSG00000119596:ENSG00000119718:ENSG00000196628:ENSG00000198492:ENSG00000130766:ENSG00000151276:ENSG00000125388:ENSG00000197386:ENSG00000109756:ENSG00000182952:ENSG00000112763:ENSG00000124508:ENSG00000111801:ENSG00000010818:ENSG00000106460
Neuropsych-driven GERD	DEG.down	Kidney_Cortex	5544	9	0.124077702	1	ENSG00000187676:ENSG00000119596:ENSG00000196628:ENSG00000198492:ENSG00000125388:ENSG00000197386:ENSG00000109756:ENSG00000112763:ENSG00000010818
Neuropsych-driven GERD	DEG.down	Kidney_Medulla	0	0	1	1	
Neuropsych-driven GERD	DEG.down	Liver	7985	14	0.028437248	1	ENSG00000149292:ENSG00000187676:ENSG00000119596:ENSG00000119718:ENSG00000196628:ENSG00000198492:ENSG00000197386:ENSG00000109756:ENSG00000182952:ENSG00000112763:ENSG00000124508:ENSG00000111801:ENSG00000010818:ENSG00000106460

Neuropsych-driven GERD	DEG.down	Lung	905	0	1	1	
Neuropsych-driven GERD	DEG.down	Minor_Salivary_Gland	1861	2	0.599991361	1	ENSG00000196628:ENSG00000125388
Neuropsych-driven GERD	DEG.down	Muscle_Skeletal	6836	11	0.094390173	1	ENSG00000149292:ENSG00000187676:ENSG00000119596:ENSG00000196628:ENSG00000130766:ENSG00000151276:ENSG00000125388:ENSG00000109756:ENSG00000052795:ENSG00000112763:ENSG00000111801
Neuropsych-driven GERD	DEG.down	Nerve_Tibial	905	0	1	1	
Neuropsych-driven GERD	DEG.down	Ovary	1521	1	0.811633736	1	ENSG00000151276
Neuropsych-driven GERD	DEG.down	Pancreas	9586	17	0.011368401	0.613893641	ENSG00000149292:ENSG00000187676:ENSG00000119596:ENSG00000119718:ENSG00000196628:ENSG00000198492:ENSG00000130766:ENSG00000151276:ENSG00000125388:ENSG00000109756:ENSG00000052795:ENSG00000182952:ENSG00000112763:ENSG00000124508:ENSG00000111801:ENSG0000010818:ENSG00000106460
Neuropsych-driven GERD	DEG.down	Pituitary	1927	1	0.881118575	1	ENSG00000052795
Neuropsych-driven GERD	DEG.down	Prostate	742	0	1	1	
Neuropsych-driven GERD	DEG.down	Skin_Not_Sun_Exposed_Suprapubic	2691	3	0.55852013	1	ENSG00000130766:ENSG00000125388:ENSG00000091831
Neuropsych-driven GERD	DEG.down	Skin_Sun_Exposed_Lower_Leg	2474	1	0.936712243	1	ENSG00000125388
Neuropsych-driven GERD	DEG.down	Small_Intestine_Terminal_Ileum	1382	1	0.779807553	1	ENSG00000125388

Neuropsych-driven GERD	DEG.down	Spleen	2069	1	0.898949437	1	ENSG00000125388
Neuropsych-driven GERD	DEG.down	Stomach	2607	5	0.141915321	1	ENSG00000101489:ENSG00000196628:ENSG00000125388:ENSG00000124508:ENSG00000010818
Neuropsych-driven GERD	DEG.down	Testis	2912	3	0.614116417	1	ENSG00000109756:ENSG00000111801:ENSG00000010818
Neuropsych-driven GERD	DEG.down	Thyroid	1038	0	1	1	
Neuropsych-driven GERD	DEG.down	Uterus	843	0	1	1	
Neuropsych-driven GERD	DEG.down	Vagina	647	0	1	1	
Neuropsych-driven GERD	DEG.down	Whole_Blood	6908	10	0.186379769	1	ENSG00000149292:ENSG00000119596:ENSG00000119718:ENSG00000198492:ENSG00000197386:ENSG00000109756:ENSG00000052795:ENSG00000124508:ENSG00000010818:ENSG00000106460
Neuropsych-driven GERD	DEG.twoside	Adipose_Subcutaneous	3634	2	0.913681275	1	ENSG00000196628:ENSG00000052795
Neuropsych-driven GERD	DEG.twoside	Adipose_Visceral_Omentum	3414	3	0.723181831	1	ENSG00000149292:ENSG00000196628:ENSG00000111801
Neuropsych-driven GERD	DEG.twoside	Adrenal_Gland	5012	7	0.28264223	1	ENSG00000187676:ENSG00000101489:ENSG00000151276:ENSG00000109756:ENSG00000052795:ENSG00000111801:ENSG00000106460
Neuropsych-driven GERD	DEG.twoside	Artery_Aorta	4216	5	0.476843585	1	ENSG00000187676:ENSG00000178568:ENSG00000052795:ENSG00000112763:ENSG00000010818
Neuropsych-driven GERD	DEG.twoside	Artery_Coronary	2987	2	0.84262816	1	ENSG00000052795:ENSG00000112763

Neuropsych-driven GERD	DEG.twoside	Artery_Tibial	4738	5	0.587037084	1	ENSG00000187676:ENSG00000119718:ENSG00000052795:ENSG00000112763:ENSG00000010818
Neuropsych-driven GERD	DEG.twoside	Bladder	946	0	1	1	
Neuropsych-driven GERD	DEG.twoside	Brain_Amygdala	9498	17	0.010305458	0.55649471	ENSG00000156395:ENSG00000149292:ENSG00000184226:ENSG00000119596:ENSG00000119718:ENSG00000103449:ENSG00000101489:ENSG00000198492:ENSG00000130766:ENSG00000178568:ENSG00000151276:ENSG00000052795:ENSG00000182952:ENSG00000112763:ENSG00000124508:ENSG00000111801:ENSG00000107105
Neuropsych-driven GERD	DEG.twoside	Brain_Anterior_cingulate_cortex_BA24	9021	17	0.005878571	0.317442855	ENSG00000156395:ENSG00000149292:ENSG00000184226:ENSG00000119596:ENSG00000119718:ENSG00000103449:ENSG00000101489:ENSG00000178342:ENSG00000116329:ENSG00000198492:ENSG00000130766:ENSG00000178568:ENSG00000182952:ENSG00000112763:ENSG00000124508:ENSG00000111801:ENSG00000107105
Neuropsych-driven GERD	DEG.twoside	Brain_Caudate_basal_ganglia	9070	21	4.73E-05	0.00255277	ENSG00000156395:ENSG00000149292:ENSG00000187676:ENSG00000184226:ENSG00000119596:ENSG00000119718:ENSG00000103449:ENSG00000101489:ENSG00000187323:ENSG00000116329:ENSG00000198492:ENSG00000130766:ENSG00000178568:ENSG00000151276:ENSG00000188981:ENSG00000052795:ENSG00000182952:ENSG00000112763:ENSG00000124508:ENSG00000111801:ENSG00000107105
Neuropsych-driven GERD	DEG.twoside	Brain_Cerebellar_Hemisphere	8908	16	0.013399544	0.723575376	ENSG00000156395:ENSG00000149292:ENSG00000187676:ENSG00000184226:ENSG00000103449:ENSG00000101489:ENSG00000196628:ENSG00000178568:ENSG00000151276:ENSG00000125388:ENSG00000197386:ENSG00000112763:ENSG00000124508:ENSG0000010818:ENSG00000106460:ENSG00000107105
Neuropsych-driven GERD	DEG.twoside	Brain_Cerebellum	8903	15	0.031418001	1	ENSG00000156395:ENSG00000149292:ENSG00000187676:ENSG00000184226:ENSG00000103449:ENSG00000101489:ENSG00000196628:ENSG00000178568:ENSG00000151276:ENSG00000125388:ENSG00000197386:ENSG00000112763:ENSG00000124508:ENSG0000010818:ENSG00000107105
Neuropsych-driven GERD	DEG.twoside	Brain_Cortex	8348	16	0.006930731	0.374259495	ENSG00000156395:ENSG00000149292:ENSG00000184226:ENSG00000103449:ENSG00000101489:ENSG00000187323:ENSG00000116329:ENSG00000198492:ENSG00000178568:ENSG00000109756:E

							NSG00000052795:ENSG00000182952:ENSG00000112763:ENSG00000124508:ENSG00000111801:ENSG00000107105
Neuropsych-driven GERD	DEG.twsidede	Brain_Frontal_Cortex_BA9	8147	14	0.033501892	1	ENSG00000156395:ENSG00000149292:ENSG00000184226:ENSG00000103449:ENSG00000101489:ENSG00000187323:ENSG00000116329:ENSG00000178568:ENSG00000109756:ENSG00000112763:ENSG00000124508:ENSG00000111801:ENSG0000010818:ENSG00000107105
Neuropsych-driven GERD	DEG.twsidede	Brain_Hippocampus	9458	19	0.001205599	0.065102343	ENSG00000156395:ENSG00000149292:ENSG00000187676:ENSG00000184226:ENSG00000119596:ENSG00000119718:ENSG00000103449:ENSG00000101489:ENSG00000187323:ENSG00000178342:ENSG00000198492:ENSG00000130766:ENSG00000178568:ENSG00000151276:ENSG00000182952:ENSG00000112763:ENSG00000124508:ENSG00000111801:ENSG00000107105
Neuropsych-driven GERD	DEG.twsidede	Brain_Hypothalamus	8435	20	6.29E-05	0.003394447	ENSG00000156395:ENSG00000149292:ENSG00000184226:ENSG00000119718:ENSG00000103449:ENSG00000101489:ENSG00000187323:ENSG00000196628:ENSG00000198492:ENSG00000130766:ENSG00000178568:ENSG00000197386:ENSG00000188981:ENSG00000052795:ENSG00000182952:ENSG00000112763:ENSG00000124508:ENSG00000111801:ENSG00000091831:ENSG00000107105
Neuropsych-driven GERD	DEG.twsidede	Brain_Nucleus_accumbens_basal_ganglia	8860	21	3.21E-05	0.001735181	ENSG00000156395:ENSG00000149292:ENSG00000187676:ENSG00000184226:ENSG00000119718:ENSG00000103449:ENSG00000101489:ENSG00000187323:ENSG00000196628:ENSG00000178342:ENSG00000116329:ENSG00000198492:ENSG00000130766:ENSG00000178568:ENSG00000151276:ENSG00000188981:ENSG00000052795:ENSG00000182952:ENSG00000112763:ENSG00000124508:ENSG00000111801
Neuropsych-driven GERD	DEG.twsidede	Brain_Putamen_basal_ganglia	9517	23	4.99E-06	0.000269579	ENSG00000156395:ENSG00000149292:ENSG00000187676:ENSG00000184226:ENSG00000119596:ENSG00000119718:ENSG00000103449:ENSG00000101489:ENSG00000187323:ENSG00000196628:ENSG00000116329:ENSG00000198492:ENSG00000130766:ENSG00000178568:ENSG00000151276:ENSG00000197386:ENSG00000109756:ENSG00000052795:ENSG00000182952:ENSG00000112763:ENSG00000124508:ENSG00000111801:ENSG00000106460
Neuropsych-driven GERD	DEG.twsidede	Brain_Spinal_cord_cervical_c-1	7307	11	0.136742104	1	ENSG00000149292:ENSG00000187676:ENSG00000184226:ENSG00000103449:ENSG00000198492:ENSG00000130766:ENSG00000197386:ENSG00000112763:ENSG00000124508:ENSG00000111801:ENSG0000010818

Neuropsych-driven GERD	DEG.twoside	Brain_Substantia_nigra	8807	22	6.13E-06	0.000331066	ENSG00000149292:ENSG00000187676:ENSG00000184226:ENSG00000119596:ENSG00000119718:ENSG00000103449:ENSG00000101489:ENSG00000187323:ENSG00000196628:ENSG00000198492:ENSG00000130766:ENSG00000178568:ENSG00000151276:ENSG00000197386:ENSG00000109756:ENSG00000052795:ENSG00000182952:ENSG00000112763:ENSG00000124508:ENSG00000111801:ENSG00000010818:ENSG00000107105
Neuropsych-driven GERD	DEG.twoside	Breast_Mammary_Tissue	2965	3	0.62678498	1	ENSG00000196628:ENSG00000151276:ENSG00000091831
Neuropsych-driven GERD	DEG.twoside	Cells_Cultured_fibroblasts	6478	8	0.388739865	1	ENSG00000149292:ENSG00000187676:ENSG00000119596:ENSG00000119718:ENSG00000198492:ENSG00000130766:ENSG000000052795:ENSG00000106460
Neuropsych-driven GERD	DEG.twoside	Cells_EBV-transformed_lymphocytes	7452	9	0.401942495	1	ENSG00000119596:ENSG00000198492:ENSG00000130766:ENSG00000125388:ENSG00000197386:ENSG00000109756:ENSG00000124508:ENSG00000111801:ENSG00000106460
Neuropsych-driven GERD	DEG.twoside	Cervix_Ectocervix	195	1	0.188897568	1	ENSG00000091831
Neuropsych-driven GERD	DEG.twoside	Cervix_Endocervix	1834	5	0.04377702	1	ENSG00000119596:ENSG00000103449:ENSG00000112763:ENSG00000111801:ENSG00000091831
Neuropsych-driven GERD	DEG.twoside	Colon_Sigmoid	3313	0	1	1	
Neuropsych-driven GERD	DEG.twoside	Colon_Transverse	3185	2	0.868476741	1	ENSG00000125388:ENSG0000010818
Neuropsych-driven GERD	DEG.twoside	Esophagus_Gastroesophageal_Junction	2845	2	0.821469337	1	ENSG00000184226:ENSG00000091831
Neuropsych-driven GERD	DEG.twoside	Esophagus_Mucosa	5811	6	0.608326868	1	ENSG00000196628:ENSG00000130766:ENSG00000125388:ENSG00000109756:ENSG00000052795:ENSG00000124508
Neuropsych-driven GERD	DEG.twoside	Esophagus_Muscularis	3072	2	0.854223069	1	ENSG00000184226:ENSG00000052795



Neuropsych-driven GERD	DEG.twoside	Fallopian_Tube	486	2	0.095011901	1	ENSG00000112763:ENSG00000091831
Neuropsych-driven GERD	DEG.twoside	Heart_Atrial_Appendage	9152	14	0.081500414	1	ENSG00000149292:ENSG00000187676:ENSG00000119596:ENSG00000119718:ENSG00000196628:ENSG00000198492:ENSG00000130766:ENSG00000151276:ENSG00000197386:ENSG00000109756:ENSG00000112763:ENSG00000124508:ENSG00000111801:ENSG0000010818
Neuropsych-driven GERD	DEG.twoside	Heart_Left_Ventricle	9979	16	0.039091978	1	ENSG00000149292:ENSG00000119596:ENSG00000119718:ENSG00000196628:ENSG00000198492:ENSG00000130766:ENSG00000151276:ENSG00000125388:ENSG00000197386:ENSG00000109756:ENSG00000182952:ENSG00000112763:ENSG00000124508:ENSG00000111801:ENSG0000010818:ENSG00000106460
Neuropsych-driven GERD	DEG.twoside	Kidney_Cortex	6871	10	0.181794266	1	ENSG00000187676:ENSG00000119596:ENSG00000103449:ENSG00000196628:ENSG00000198492:ENSG00000125388:ENSG00000197386:ENSG00000109756:ENSG00000112763:ENSG0000010818
Neuropsych-driven GERD	DEG.twoside	Kidney_Medulla	95	0	1	1	
Neuropsych-driven GERD	DEG.twoside	Liver	9510	15	0.054553917	1	ENSG00000149292:ENSG00000187676:ENSG00000119596:ENSG00000119718:ENSG00000103449:ENSG00000196628:ENSG00000198492:ENSG00000197386:ENSG00000109756:ENSG00000182952:ENSG00000112763:ENSG00000124508:ENSG00000111801:ENSG0000010818:ENSG00000106460
Neuropsych-driven GERD	DEG.twoside	Lung	5100	6	0.470417657	1	ENSG00000196628:ENSG00000109756:ENSG00000052795:ENSG00000112763:ENSG00000124508:ENSG00000111801
Neuropsych-driven GERD	DEG.twoside	Minor_Salivary_Gland	3752	2	0.922964356	1	ENSG00000196628:ENSG00000125388
Neuropsych-driven GERD	DEG.twoside	Muscle_Skeletal	7979	11	0.213611622	1	ENSG00000149292:ENSG00000187676:ENSG00000119596:ENSG00000196628:ENSG00000130766:ENSG00000151276:ENSG00000125388:ENSG00000109756:ENSG00000052795:ENSG00000112763:ENSG00000111801
Neuropsych-driven GERD	DEG.twoside	Nerve_Tibial	6774	10	0.170055419	1	ENSG00000156395:ENSG00000184226:ENSG00000119596:ENSG00000151276:ENSG00000125388:ENSG00000197386:ENSG00000109756:ENSG00000052795:ENSG00000164123:ENSG00000106460

Neuropsych-driven GERD	DEG.twoside	Ovary	7195	12	0.063435039	1	ENSG00000156395:ENSG00000149292:ENSG00000119596:ENSG00000119608:ENSG00000103449:ENSG00000196628:ENSG00000130766:ENSG00000151276:ENSG00000124508:ENSG00000111801:ENSG00000010818:ENSG00000091831
Neuropsych-driven GERD	DEG.twoside	Pancreas	10331	17	0.0245229	1	ENSG00000149292:ENSG00000187676:ENSG00000119596:ENSG00000119718:ENSG00000196628:ENSG00000198492:ENSG00000130766:ENSG00000151276:ENSG00000125388:ENSG00000109756:ENSG00000052795:ENSG00000182952:ENSG00000112763:ENSG00000124508:ENSG00000111801:ENSG0000010818:ENSG00000106460
Neuropsych-driven GERD	DEG.twoside	Pituitary	7083	10	0.20884797	1	ENSG00000156395:ENSG00000149292:ENSG00000170209:ENSG00000103449:ENSG00000101489:ENSG00000178568:ENSG00000125388:ENSG00000052795:ENSG00000111801:ENSG00000091831
Neuropsych-driven GERD	DEG.twoside	Prostate	4048	3	0.826346113	1	ENSG00000149292:ENSG00000170209:ENSG00000091831
Neuropsych-driven GERD	DEG.twoside	Skin_Not_Sun_Exposed_Suprapubic	5432	5	0.71394429	1	ENSG00000170209:ENSG00000198492:ENSG00000130766:ENSG00000125388:ENSG00000091831
Neuropsych-driven GERD	DEG.twoside	Skin_Sun_Exposed_Lower_Leg	5275	3	0.937940746	1	ENSG00000170209:ENSG00000198492:ENSG00000125388
Neuropsych-driven GERD	DEG.twoside	Small_Intestine_Terminal_Ileum	4120	3	0.835798121	1	ENSG00000125388:ENSG00000124508:ENSG00000111801
Neuropsych-driven GERD	DEG.twoside	Spleen	6309	5	0.834008785	1	ENSG00000151276:ENSG00000125388:ENSG00000112763:ENSG00000124508:ENSG00000111801
Neuropsych-driven GERD	DEG.twoside	Stomach	3709	5	0.364104936	1	ENSG00000101489:ENSG00000196628:ENSG00000125388:ENSG00000124508:ENSG00000010818
Neuropsych-driven GERD	DEG.twoside	Testis	15238	16	0.609243052	1	ENSG00000149292:ENSG00000170209:ENSG00000119596:ENSG00000119718:ENSG00000187323:ENSG00000178342:ENSG00000130766:ENSG00000178568:ENSG00000151276:ENSG00000125388:ENSG00000188981:ENSG00000109756:ENSG00000164123:ENSG00000111801:ENSG0000010818:ENSG00000107105

Neuropsych-driven GERD	DEG.twoside	Thyroid	6725	7	0.600430352	1	ENSG00000149292:ENSG00000119608:ENSG00000119718:ENSG0000103449:ENSG00000151276:ENSG00000109756:ENSG0000011801
Neuropsych-driven GERD	DEG.twoside	Uterus	6387	9	0.23045585	1	ENSG00000187676:ENSG00000119596:ENSG00000103449:ENSG0000196628:ENSG00000112763:ENSG00000124508:ENSG0000011801:ENSG00000091831:ENSG00000106460
Neuropsych-driven GERD	DEG.twoside	Vagina	3487	4	0.521272581	1	ENSG00000170209:ENSG00000103449:ENSG00000111801:ENSG0000091831
Neuropsych-driven GERD	DEG.twoside	Whole_Blood	8941	11	0.351197165	1	ENSG00000149292:ENSG00000119596:ENSG00000119718:ENSG0000178342:ENSG00000198492:ENSG00000197386:ENSG00000109756:ENSG00000052795:ENSG00000124508:ENSG0000010818:ENSG00000106460

**ST15. GWAS Summary statistics for the 88 GERD loci on BE, EA and BEEA combined (BEACON, Cambridge, Bonn data)**

Loci Subgroup	SNP	E A	NEA	An et al. GERD GWAS		MTAG GERD		BMI GWAS (for sensitivity analysis)		Barrett Esophagus GWAS		Eso. Adenocarcinoma GWAS		BEEA Combined		
				Beta GERD	Pval	MTAG beta	Pval	BMI beta	BMI Pval	BE_B ETA	BE_Pv alue	EA_BE TA	EA_Pv alue	BEEA_BETA	BEEA_P value	BEEA_Effe ctive_n
Obesity-driven GERD	rs12357321	g	a	-0.02	0.000326	-0.03	1.33E-09	0.025	1.50E-37	0.009	0.713	-0.003	0.918	-0.0137	4.14E-01	8381
depression-driven GERD	rs1021363	a	g	0.03	1.17E-05	0.03	5.10E-10	-0.003	1.40E-01	-0.024	0.293	-0.0024	0.932	-0.0142	3.79E-01	8262
Obesity-driven GERD	rs761777	a	g	-0.03	1.51E-06	-0.03	4.71E-10	0.016	5.70E-10	-0.050	0.060	0.0366	0.271	-0.039	3.38E-02	7765
Obesity-driven GERD	rs10837002	c	g	-0.03	1.11E-05	-0.03	4.03E-08	0.012	3.70E-09	-0.026	0.255	0.0057	0.842	-0.0236	1.45E-01	8377
Obesity-driven GERD	rs7942368	c	t	0.03	5.29E-05	0.03	9.54E-09	-0.018	6.80E-11	0.015	0.585	0.0049	0.881	0.0124	5.07E-01	8422
UNCLEAR	rs10789931	c	t	-0.04	9.26E-07	-0.04	2.09E-08	-0.007	2.60E-02	-0.028	0.398	0.0429	0.303	-0.0403	8.93E-02	8481
depression-driven GERD	rs2734839	c	t	0.02	0.001155	0.03	8.79E-09	-0.004	4.70E-02	0.043	0.059	0.0308	0.270	0.0364	2.15E-02	8424
Obesity-driven GERD	rs1479405	c	t	-0.03	1.12E-07	-0.03	9.85E-10	-0.047	1.60E-36	-0.003	0.888	-0.0063	0.827	-0.0032	8.45E-01	8486
Obesity-driven GERD	rs773109	g	a	0.03	2.65E-07	0.04	8.71E-14	0.016	1.30E-14	0.045	0.057	0.0607	0.039	0.0376	2.37E-02	8190
depression-driven GERD	rs324769	c	t	0.02	0.00199	0.03	3.05E-08	-0.002	3.70E-01	0.003	0.878	-0.0198	0.468	0.0077	6.22E-01	8309
UNCLEAR	rs1716171	c	t	-0.03	0.000104	-0.04	7.82E-11	-0.003	3.00E-01	0.012	0.667	0.0478	0.151	0.0296	1.19E-01	8389
depression-driven GERD	rs9542729	c	g	0.03	7.76E-05	0.04	1.41E-09	-0.004	5.20E-02	0.043	0.128	0.0452	0.194	0.0474	1.54E-02	7971
Obesity-driven GERD	rs1334297	g	a	0.02	0.001211	0.04	1.14E-12	0.014	2.50E-11	0.017	0.485	-0.0086	0.779	-0.0108	5.36E-01	8334
depression-driven GERD	rs9540720	a	g	-0.03	2.04E-06	-0.03	3.01E-08	0.003	2.10E-01	0.026	0.245	0.0038	0.890	0.0065	6.73E-01	8441
Obesity-driven GERD	rs9517313	g	c	-0.02	2.69E-05	-0.03	2.05E-11	0.011	4.30E-07	-0.001	0.966	-0.0169	0.552	-0.0146	3.67E-01	8081
depression-driven GERD	rs957345	c	g	-0.03	3.35E-06	-0.03	1.72E-09	-0.006	4.80E-03	0.022	0.330	0.0586	0.032	0.0254	1.02E-01	8383
UNCLEAR	rs17701934	t	c	0.03	5.29E-06	0.03	4.60E-08	0.005	6.20E-03	0.031	0.170	0.0215	0.447	0.0228	1.49E-01	8136

Obesity-driven GERD	rs942065	g	a	-0.02	0.000161	-0.03	8.45E-10	-0.074	#####	0.028	0.231	0.0134	0.641	0.029	7.29E-02	8205
Obesity-driven GERD	rs10133111	g	a	-0.04	1.99E-06	-0.04	1.35E-10	-0.009	2.30E-06	-0.016	0.601	-0.02	0.593	-0.0238	2.58E-01	8376
depression-driven GERD	rs11645288	g	a	-0.03	6.29E-05	-0.03	2.78E-08	-0.008	1.10E-04	-0.042	0.168	-0.0331	0.357	-0.0231	2.60E-01	7637
Obesity-driven GERD	rs9940128	g	a	-0.01	0.1777	-0.03	8.06E-12	-0.010	3.50E-07	-0.035	0.120	-0.0836	0.002	-0.0392	1.23E-02	8302
depression-driven GERD	rs12598916	c	g	0.03	2.77E-07	0.03	6.87E-10	0.003	1.90E-01	-0.021	0.405	0.0112	0.712	-0.0071	6.82E-01	8376
Obesity-driven GERD	rs7206608	c	g	-0.03	1.16E-06	-0.03	1.46E-08	-0.013	1.40E-11	-0.020	0.393	0.05	0.091	0.0089	5.93E-01	8271
UNCLEAR	rs12453010	c	t	-0.04	1.84E-11	-0.03	1.75E-09	-0.003	9.20E-02	-0.027	0.228	-0.0165	0.555	-0.0282	7.44E-02	8418
depression-driven GERD	rs12967855	a	g	0.03	2.61E-05	0.04	1.09E-12	-0.005	3.10E-02	0.022	0.359	0.04	0.170	0.0267	1.06E-01	8266
depression-driven GERD	rs1431196	a	g	-0.02	2.84E-05	-0.03	2.65E-11	-0.010	3.10E-07	-0.013	0.557	-0.049	0.074	-0.0308	4.93E-02	8289
depression-driven GERD	rs1942262	g	a	-0.03	9.01E-06	-0.03	2.60E-09	0.002	3.70E-01	-0.008	0.744	-0.0428	0.151	-0.0246	1.48E-01	8368
depression-driven GERD	rs7241572	g	a	-0.02	0.000363	-0.04	9.49E-10	-0.006	2.30E-03	0.039	0.176	0.0224	0.528	0.0094	6.36E-01	7612
Obesity-driven GERD	rs9636202	g	a	0.03	3.11E-07	0.04	1.51E-10	-0.013	1.60E-11	0.079	0.003	-0.0117	0.708	0.0358	4.83E-02	7875
Obesity-driven GERD	rs2023878	c	t	0.04	3.88E-09	0.04	3.04E-09	0.016	1.90E-14	0.066	0.022	0.1206	0.001	0.0786	8.99E-05	8034
depression-driven GERD	rs569356	a	g	0.03	2.59E-05	0.04	4.07E-08	-0.002	4.40E-01	0.014	0.660	-0.017	0.670	0.0145	5.24E-01	8182
Obesity-driven GERD	rs3766823	g	a	-0.03	2.76E-06	-0.04	7.09E-10	-0.013	3.20E-11	-0.083	0.004	0.0135	0.705	-0.0267	1.92E-01	8367
UNCLEAR	rs2782641	g	a	-0.01	0.0115	-0.03	4.33E-08	-0.002	2.40E-01	-0.002	0.929	-0.0023	0.935	-0.0093	5.60E-01	8250
Obesity-driven GERD	rs1937450	t	g	-0.03	1.05E-08	-0.03	7.07E-11	-0.007	1.50E-04	0.006	0.804	-0.0392	0.154	-0.0053	7.32E-01	8359
Obesity-driven GERD	rs2815749	a	g	-0.03	4.80E-05	-0.04	1.07E-10	-0.031	4.00E-37	-0.040	0.162	-0.0178	0.616	-0.0184	3.55E-01	8072
Obesity-driven GERD	rs17379561	a	t	-0.05	1.40E-08	-0.05	1.08E-14	-0.021	3.50E-15	-0.028	0.377	0.019	0.624	-0.0078	7.22E-01	8390
Obesity-driven GERD	rs861575	t	c	-0.02	1.99E-05	-0.03	1.63E-08	-0.027	1.80E-35	0.034	0.136	-0.0264	0.341	0.0017	9.15E-01	8199
UNCLEAR	rs7527682	a	g	0.03	1.73E-06	0.03	3.13E-08	0.004	5.10E-02	0.016	0.473	0.0091	0.741	0.0209	1.78E-01	8363

UNCLEAR	rs7541875	a	g	-0.03	8.63E-08	-0.03	1.61E-08	-0.006	3.20E-03	-0.015	0.508	-0.0053	0.847	-0.0196	2.08E-01	8432
Obesity-driven GERD	rs903678	g	a	-0.01	0.02933	-0.03	4.89E-08	0.018	2.00E-15	-0.016	0.490	-0.0336	0.242	-0.0193	2.38E-01	8410
UNCLEAR	rs1883842	t	g	-0.03	5.85E-06	-0.03	9.27E-09	-0.003	1.50E-01	-0.012	0.626	-0.03	0.333	-0.0283	1.06E-01	8189
UNCLEAR	rs2834005	t	c	-0.03	4.06E-08	-0.03	9.42E-09	-0.006	3.60E-03	-0.036	0.127	-0.0042	0.886	-0.0265	1.10E-01	8403
Obesity-driven GERD	rs2183588	a	g	-0.02	0.000292	-0.03	1.22E-08	-0.009	9.20E-05	-0.053	0.022	-0.0636	0.025	-0.0357	2.72E-02	8314
Obesity-driven GERD	rs2838771	g	c	0.02	8.05E-05	0.03	2.91E-08	-0.013	7.40E-07	0.014	0.559	0.0624	0.029	0.0221	1.74E-01	8320
Obesity-driven GERD	rs9615905	c	t	-0.02	3.61E-05	-0.03	1.21E-08	-0.020	2.80E-23	-0.015	0.505	-0.0095	0.728	-0.0152	3.29E-01	8281
depression-driven GERD	rs4300861	c	t	-0.02	3.77E-05	-0.03	5.43E-10	0.006	5.40E-03	-0.007	0.750	0.0524	0.063	-0.0049	7.59E-01	8278
Obesity-driven GERD	rs12997558	g	a	-0.02	0.000227	-0.03	3.04E-08	-0.008	3.70E-04	-0.033	0.158	-0.0119	0.676	-0.0353	2.83E-02	8376
Obesity-driven GERD	rs1011407	a	g	0.03	0.000128	0.04	1.09E-08	-0.019	3.10E-19	0.011	0.748	-0.0036	0.931	0.0143	5.50E-01	8319
UNCLEAR	rs4851239	c	t	0.03	1.83E-09	0.03	3.24E-11	0.002	2.30E-01	0.000	0.994	0.0502	0.075	0.0159	3.18E-01	8406
Obesity-driven GERD	rs6711584	g	a	-0.02	2.31E-05	-0.03	2.66E-11	-0.012	7.10E-09	-0.007	0.757	-0.016	0.563	-0.0072	6.41E-01	8383
UNCLEAR	rs13409451	a	g	0.01	0.01185	0.03	1.93E-08	0.004	5.10E-02	-0.004	0.875	0.042	0.135	0.0283	7.52E-02	8289
UNCLEAR	rs2358016	c	g	-0.02	6.65E-05	-0.03	4.17E-09	-0.005	1.60E-02	-0.025	0.265	-0.0287	0.290	-0.0416	6.90E-03	8433
Obesity-driven GERD	rs1596747	a	g	-0.03	8.97E-07	-0.03	1.00E-10	0.020	2.50E-15	-0.035	0.114	-0.003	0.911	-0.024	1.22E-01	8326
depression-driven GERD	rs7600261	c	t	-0.02	0.000503	-0.03	9.47E-11	0.001	4.80E-01	0.001	0.969	-0.0384	0.205	-0.0132	4.38E-01	8086
Obesity-driven GERD	rs7612999	g	a	-0.03	5.56E-05	-0.03	4.90E-08	0.014	8.40E-13	0.041	0.112	0.0153	0.627	0.0171	3.39E-01	8361
Obesity-driven GERD	rs6441814	g	a	0.03	7.89E-06	0.03	3.86E-09	0.013	1.90E-10	0.030	0.183	0.0735	0.007	0.044	4.92E-03	8246
Obesity-driven GERD	rs2240326	g	a	0.03	4.10E-08	0.05	1.13E-22	0.010	1.90E-06	0.015	0.507	0.0467	0.087	0.0273	7.68E-02	8464
depression-driven GERD	rs2016933	c	g	0.03	2.72E-05	0.03	1.04E-08	0.008	1.60E-04	-0.003	0.919	-0.0493	0.107	-0.015	3.89E-01	8333
Obesity-driven GERD	rs6780459	a	t	-0.03	2.28E-06	-0.03	3.14E-08	0.015	3.10E-10	-0.004	0.869	0.0328	0.298	-0.0019	9.15E-01	8355

depression-driven GERD	rs7685686	a	g	0.01	0.03756	0.03	1.14E-08	0.006	1.20E-02	0.008	0.732	0.0593	0.031	0.0234	1.33E-01	8449
Obesity-driven GERD	rs2164300	c	t	0.02	0.001402	0.03	4.13E-08	0.017	9.10E-09	0.013	0.581	-0.023	0.411	-0.0151	3.39E-01	8027
Obesity-driven GERD	rs7675588	c	a	0.04	1.24E-07	0.03	1.80E-08	-0.012	4.60E-09	-0.011	0.695	-0.0077	0.818	-9.00E-04	9.62E-01	8479
Obesity-driven GERD	rs920559	c	g	-0.04	5.52E-06	-0.04	2.06E-08	-0.012	1.90E-08	-0.056	0.072	-0.0533	0.172	-0.0441	4.41E-02	8146
Obesity-driven GERD	rs13107325	c	t	-0.05	2.40E-07	-0.07	2.20E-14	-0.013	2.30E-10	-0.069	0.092	-0.028	0.594	-0.0719	1.42E-02	8495
Obesity-driven GERD	rs1510719	t	c	0.03	4.10E-09	0.04	3.84E-15	-0.008	8.60E-05	0.013	0.562	0.0581	0.041	0.0409	1.08E-02	8284
depression-driven GERD	rs10010963	c	t	0.02	0.003845	0.03	4.92E-08	0.007	5.20E-04	0.003	0.884	0.033	0.235	0.0129	4.19E-01	8355
depression-driven GERD	rs1592757	g	c	-0.01	0.01453	-0.03	6.00E-10	-0.008	1.90E-04	0.019	0.422	0.02	0.485	0.0017	9.16E-01	8334
depression-driven GERD	rs11953061	c	t	-0.02	0.000509	-0.03	3.10E-08	-0.009	8.10E-06	0.006	0.795	-0.0459	0.111	-0.009	5.81E-01	8377
Obesity-driven GERD	rs329122	g	a	0.02	0.000517	0.03	3.05E-09	0.014	1.50E-08	0.054	0.016	0.0526	0.058	0.0509	1.16E-03	8335
UNCLEAR	rs6939294	c	t	0.03	0.000138	0.04	2.71E-10	0.008	9.30E-04	-0.017	0.516	-0.0324	0.307	-0.007	7.02E-01	8663
depression-driven GERD	rs2145318	t	a	-0.03	1.26E-07	-0.04	2.03E-13	0.001	8.00E-01	0.021	0.348	-0.0241	0.378	-0.0103	5.04E-01	8329
Obesity-driven GERD	rs4713692	c	t	0.02	0.00062	0.03	3.07E-08	-0.016	6.60E-09	-0.014	0.569	-0.0607	0.035	-0.0075	6.50E-01	7910
Obesity-driven GERD	rs205262	a	g	-0.03	1.13E-06	-0.03	1.38E-10	0.014	3.60E-12	-0.054	0.029	0.0255	0.404	-0.0227	1.90E-01	8427
Obesity-driven GERD	rs9372625	g	a	0.03	1.41E-07	0.04	2.62E-14	-0.012	1.00E-08	0.034	0.143	0.0575	0.042	0.038	1.82E-02	8215
depression-driven GERD	rs9373363	a	g	0.03	5.24E-06	0.03	4.13E-09	-0.002	3.40E-01	-0.038	0.137	-0.0061	0.847	-0.0233	1.92E-01	8298
depression-driven GERD	rs12204714	c	t	0.02	0.000722	0.03	7.92E-09	-0.007	4.80E-04	-0.049	0.035	-0.0343	0.236	-0.0325	4.52E-02	8214
Obesity-driven GERD	rs11762636	c	a	0.04	6.66E-08	0.05	1.88E-16	0.012	7.50E-09	-0.015	0.604	0.0464	0.178	0.031	1.18E-01	8582
UNCLEAR	rs10242223	a	g	0.03	5.28E-09	0.03	3.79E-08	-0.001	7.80E-01	0.055	0.019	0.0378	0.193	0.0478	3.97E-03	8247
depression-driven GERD	rs2043539	g	a	-0.02	0.001688	-0.03	2.24E-08	0.005	6.40E-03	0.048	0.032	0.0464	0.094	0.0466	3.05E-03	8348
Obesity-driven GERD	rs215614	g	a	0.03	5.95E-06	0.03	4.08E-11	-0.014	1.60E-09	0.027	0.240	0.0105	0.749	0.0168	2.97E-01	8307

depression-driven GERD	rs2396133	a	g	-0.03	2.02E-06	-0.03	1.11E-09	-0.005	3.10E-02	-0.038	0.091	-0.0732	0.008	-0.0289	6.31E-02	8244
Obesity-driven GERD	rs2396766	g	a	-0.03	4.17E-08	-0.03	2.33E-11	-0.009	2.00E-05	-0.023	0.303	-0.0268	0.324	-0.0433	5.19E-03	8351
UNCLEAR	rs2106353	g	t	-0.04	1.15E-08	-0.04	1.37E-10	-0.004	6.80E-02	-0.026	0.337	-0.0124	0.710	-0.0077	6.81E-01	8150
Obesity-driven GERD	rs3863241	c	t	-0.03	4.80E-08	-0.03	1.49E-11	0.011	6.80E-08	-0.016	0.480	-0.0084	0.756	-0.0342	2.74E-02	8350
Obesity-driven GERD	rs903959	t	a	-0.02	1.42E-05	-0.03	2.99E-09	-0.024	3.50E-31	-0.008	0.720	-0.0272	0.327	-0.0037	8.16E-01	8373
depression-driven GERD	rs3793577	a	g	-0.02	0.000492	-0.03	2.49E-08	-0.001	6.60E-01	0.001	0.952	-0.0403	0.158	-0.0255	1.08E-01	8057
depression-driven GERD	rs7032155	c	a	-0.02	0.000436	-0.03	1.63E-08	0.008	1.70E-04	0.036	0.107	0.0045	0.873	0.0042	7.89E-01	8286
Obesity-driven GERD	rs4382592	t	g	0.02	0.004558	0.03	8.20E-09	-0.013	2.10E-08	0.018	0.466	0.0014	0.962	0.0066	6.96E-01	8361



**ST16. Estimation of the genetic heterogeneity in GERD effect sizes on BEEA via the Cochran Q statistics**

SNPs	outcome	exposure	model	Q-statistics	Q-df	Q_pvalue
88	BEEA combined	GERD (unstratified)	IVW	139.4	87	0.0003
46	BEEA combined	obesity-driven GERD	IVW	63.4	45	0.037
27	BEEA combined	functional GERD	IVW	48.9	26	0.004

IVW= Inverse variance weighted model.

Evidence for heterogeneity of effect size is quantified by the Cochran Q statistics, where a Q\_pvalue < 0.05/3 are indicative of potential heterogeneity.

**ST17. Estimation of the genetic association between GERD loci and risk of BE/EA combined adjusting for the genetic association with BMI**

Exposure	Outcome	nSNPs	<i>Unadjusted estimate</i>			<i>Adjusted for genetic effect on BMI</i>		
			Beta	SE	pvalue	Beta	SE	Pvalue
all GERD loci	BE/EA combined	88	0.597	0.085	4.19E-10	0.453	0.113	6.46E-05
depression-driven GERD only	BE/EA combined	27	0.212	0.185	0.263	0.421	0.279	0.13
obesity-driven GERD only	BE/EA combined	46	0.726	0.107	2.23E-08	0.513	0.161	0.00146

The conditional analysis was performed by adjusting for the effect of GERD SNPs on BMI in the regression analysis against BE/EA.

**ST18. Lookup on the genetic association of MTAG BE loci on GERD susceptibility**

Locus number	SNP	E A	NE A	EAF	mtag_BE_beta	mtag_BE_se	mtag_BE_z	mtag_BE_pval	An et al. GERD Z	mtag_GERD_beta	mtag_GERD_se	mtag_GERD_z	mtag_GERD_pval
1	rs3072	T	C	0.63	-0.113	0.016	-7.14	9.29E-13	-5.59	-0.021	0.005	-4.20	2.63E-05
1	rs7255	T	C	0.45	0.107	0.015	6.95	3.75E-12	5.03	0.019	0.005	3.88	1.07E-04
1	rs10199768	G	T	0.55	0.085	0.015	5.56	2.62E-08	5.02	0.021	0.005	4.30	1.70E-05
1	rs520354	A	G	0.53	-0.090	0.015	-5.97	2.44E-09	-5.32	-0.021	0.005	-4.35	1.36E-05
2	rs17369434	A	G	0.92	-0.178	0.029	-6.16	7.34E-10	-4.99	-0.033	0.009	-3.60	3.18E-04
2	rs10207635	A	T	0.87	-0.136	0.022	-6.18	6.34E-10	-5.04	-0.027	0.007	-3.86	1.15E-04
3	rs2861695	A	G	0.19	0.110	0.019	5.81	6.23E-09	5.99	0.032	0.006	5.26	1.48E-07
4	rs1868915	C	A	0.41	-0.091	0.015	-5.91	3.51E-09	-2.52	-0.012	0.005	-2.39	1.69E-02
5	rs2597301	C	G	0.31	0.119	0.016	7.32	2.56E-13	5.73	0.023	0.005	4.32	1.53E-05
5	rs2077610	T	A	0.45	0.095	0.015	6.15	7.84E-10	3.87	0.015	0.005	3.05	2.27E-03
6	rs10080150	A	G	0.62	-0.094	0.016	-6.06	1.33E-09	-5.36	-0.015	0.005	-3.00	2.68E-03
7	rs10039754	A	G	0.45	-0.085	0.015	-5.65	1.63E-08	-5.19	-0.017	0.005	-3.43	6.03E-04
8	rs9393735	A	G	0.86	0.135	0.022	6.11	9.70E-10	5.20	0.040	0.007	5.81	6.22E-09
8	rs12215773	T	C	0.77	0.103	0.018	5.67	1.45E-08	6.22	0.039	0.006	6.88	5.88E-12
8	rs13219181	A	G	0.81	0.107	0.020	5.44	5.23E-08	5.66	0.035	0.006	5.68	1.32E-08
8	rs13195040	A	G	0.89	0.159	0.025	6.45	1.14E-10	5.54	0.046	0.008	6.01	1.90E-09
8	rs200968	T	C	0.80	0.111	0.019	5.71	1.14E-08	5.85	0.040	0.006	6.61	3.94E-11
8	rs7752448	A	G	0.87	0.135	0.023	5.82	5.83E-09	5.68	0.043	0.007	5.92	3.19E-09
9	rs622217	T	C	0.52	0.093	0.015	6.17	6.94E-10	4.08	0.008	0.005	1.75	8.08E-02
9	rs2504930	T	C	0.20	-0.107	0.019	-5.75	8.95E-09	-3.47	-0.014	0.006	-2.28	2.25E-02
10	rs4841211	A	G	0.26	0.096	0.017	5.55	2.83E-08	2.35	0.021	0.006	3.83	1.26E-04
10	rs10104032	C	A	0.63	-0.090	0.016	-5.75	8.73E-09	-2.25	-0.022	0.005	-4.32	1.57E-05
11	rs2127128	C	T	0.33	0.088	0.016	5.49	4.07E-08	0.91	0.010	0.005	1.97	4.84E-02
11	rs10108511	T	C	0.47	0.087	0.015	5.77	8.08E-09	0.75	0.008	0.005	1.76	7.87E-02

12	rs10982622	A	G	0.54	0.088	0.015	5.76	8.59E-09	2.20	0.005	0.005	0.95	3.43E-01
13	rs11792928	C	T	0.71	-0.098	0.017	-5.89	3.85E-09	-3.67	-0.021	0.005	-4.02	5.93E-05
14	rs1247942	G	C	0.59	0.099	0.015	6.41	1.45E-10	2.89	0.007	0.005	1.53	1.26E-01
15	rs4448948	A	T	0.92	0.157	0.029	5.49	4.02E-08	3.02	0.038	0.009	4.22	2.47E-05
15	rs739414	C	T	0.26	0.103	0.018	5.82	5.77E-09	3.85	0.017	0.006	3.13	1.73E-03
16	rs7187365	T	C	0.18	0.113	0.020	5.78	7.52E-09	3.99	0.019	0.006	2.92	3.52E-03
17	rs12985909	C	T	0.45	0.086	0.015	5.61	2.03E-08	4.98	0.031	0.005	6.31	2.81E-10
17	rs8102046	T	G	0.44	0.096	0.015	6.30	2.97E-10	4.97	0.020	0.005	4.04	5.44E-05
17	rs7258722	T	A	0.60	0.096	0.015	6.17	6.69E-10	5.40	0.028	0.005	5.63	1.81E-08

Pvalues for SNPs that show suggestive evidence for an association with GERD are highlighted in pink.