SUPPLEMENTARY METHODS

DATA SOURCES

GWAS Summary Statistics of Inflammatory Dermatoses, Mental Disorders, and Mediating Factors

Genetic instrumental variants for all six psychiatric disorders and seven inflammatory dermatoses were obtained from the FinnGen Biobank [1]. Diagnostic classifications utilize International Classification of Diseases codes derived from Finnish health registries encompassing inpatient, outpatient, and mortality data. The disorders studied include anxiety disorder (24,662 cases, 337,577 controls), bipolar disorder (BD) (7,006 cases, 329,192 controls), major depressive disorder (MDD) (43,280 cases, 329,192 controls), obsessive-compulsive disorder (OCD) (1,962 cases, 337,577 controls), post-traumatic stress disorder (PTSD) (2,282 cases, 337,577 controls), schizophrenia (6,515 cases, 364,160 controls), acne vulgaris (2,787 cases, 361,140 controls), rosacea (135 cases, 361,140 controls), hidradenitis suppurativa (HS) (931 cases, 361,140 controls), psoriasis (9,267 cases, 364,071 controls), atopic dermatitis (13,473 cases, 33,658 controls), eczema (40,688 cases, 336,589 controls), and contact dermatitis (CD) (4,336 cases, 336,589 controls).

The largest GWAS summary statistics for Anxiety Disorder, MDD, BD, SCZ, PTSD, and OCD were sourced from the Psychiatric Genomics Consortium (PGC). Notable datasets

included are from the Anxiety Genetics Study (ANGST) with Anxiety Disorder data (5,580 cases, 11,730 controls) [2], PGC's BD (20,352 cases, 31,358 controls) [3], MDD (59,851 cases, 113,154 controls) [4], studies on OCD by the International OCD Foundation Genetics Collaboration (IOCDF-GC) and the OCD Collaborative Genetics Association Studies (OCGAS) (2,688 cases, 7,037 controls) [5], PTSD (23,212 cases, 151,447 controls) [6], and SCZ (53,386 cases, 77,258 controls) [7].

For inflammatory dermatoses, GWAS summary statistics were derived from a comprehensive European genealogical dataset. These include acne vulgaris (34,422 cases and 364,991 controls) [8], rosacea (144 cases and 456,204 controls) [9], HS (1,640 cases and 756,393 controls) [10], psoriasis (338 cases and 456,010 controls) [9], atopic dermatitis (60,653 cases, 804,329 controls) [11], eczema (20,016 cases, 380,443 controls) [12], and CD (3,938 cases, 636,852 controls) [13].

The mediating factors are insomnia and the omega-6 to omega-3 fatty acids ratio. The GWAS for insomnia includes 408,138 individuals of European ancestry (78,566 cases and 329,572 controls) [14]. The omega-6 to omega-3 fatty acids ratio GWAS includes 88,268 individuals of European ancestry [15].

Tissue-Specific Expression Quantitative Trait Loci (eQTL) Data as Genetic Instruments for Gene Expression Analysis

We utilized publicly available cis-eQTL data from various tissues, where cis-eQTLs

regulate gene expression near the target gene, typically within 1 Mb of the transcription start site. These data were derived from blood, tissues, and cells. The eQTLGen Consortium (https://eqtlgen.org/index.html), the largest meta-analysis of blood eQTLs, comprises 31,684 samples for the initial analysis of blood [16]. Additionally, eQTLs from whole blood, sun-exposed lower leg skin, non-sun-exposed skin above the pubic region, and cultured dermal fibroblasts were obtained from the Genotype-Tissue Expression (GTEx) consortium project [17]. Furthermore, the eQTL map from 2,865 cortical samples of 2,443 unrelated individuals of European ancestry is sourced from the BrainMeta v2 database [18].

Methylation quantitative trait loci (mQTL) Data as Genetic Instruments for Three-Step SMR

Blood mQTL summary data were derived from a meta-analysis of the BSGS and LBC cohorts [19]. Original data were obtained from blood samples of European ancestry in BSGS (n = 614) and LBC (n = 1366), with DNA methylation assessed using the Illumina HumanMethylation 450 array [20]. Only methylation probes with at least one cis-mQTL at P < 5e-8, and SNPs located within 2 Mb of each probe, were included. For brain mQTLs, summary data were obtained from meta-analyses of the ROSMAP, Hannon et al., and Jaffe et al. datasets [21–24]. In ROSMAP, only SNPs within 5 Kb of each DNA methylation probe were considered. Hannon et al.'s dataset included SNPs within 500 Kb and with a PmQTL < 1.0e-10, while Jaffe et al.'s data included SNPs within 20 Kb of each probe with an FDR < 0.1.

GEO Transcriptomic Data for Depression, Psoriasis, and Atopic Dermatitis

The GSE121212 dataset comprises RNA-seq data from 27 patients with atopic dermatitis (AD), 28 with psoriasis (PSO), non-lesional skin samples, and 38 healthy controls [25–27]. The GSE101521 dataset provides RNA-seq data from 21 individuals with major depressive disorder and suicidal ideation (MDD-S), 9 individuals with MDD without suicidal ideation, and 29 healthy controls, all derived from the dorsolateral prefrontal cortex [28].

Immune Cell Type-Specific eQTL Data

To examine cell type specificity, we conducted additional analyses utilizing immune cell type-specific eQTL data to investigate the relationship between the selected genes and immune cell types. This dataset, obtained from the Immune Cell Expression Database (DICE, https://dicedatabase.org/), encompasses data from 15 distinct immune cell types [29]. Specifically, we selected cis-eQTLs associated with the candidate genes under investigation.

METHODS

Two-sample Mendelian Randomization

In adherence to the established protocols of Mendelian randomization (MR) analysis, our

study uses single nucleotide polymorphisms (SNPs) as instrumental variables (IVs) to delineate causal interactions between exposures and outcomes [30]. Our selection criteria targeted SNPs demonstrating genome-wide suggestive significance, specifically those with a P-value below 5×10^{-6} [31]. To preclude any misleading outcomes stemming from linkage disequilibrium (LD), we implemented a stringent clustering algorithm, grouping SNPs based on LD patterns within defined genomic regions, employing an r^2 threshold below 0.001 across a 10,000 kb window. The robustness of these IVs was assessed by calculating the proportion of phenotypic variance they explain, alongside their strength as measured by an F-statistic ($F = \frac{\beta^2}{se^2}$), with values exceeding 10 signifying potent instrumentality [32]. Furthermore, we harmonized effect size estimates for exposure and outcome by calibrating for the effect allele increment and diligently excluded palindromic SNPs with indeterminate strands, using allele frequency information to enhance the precision of our findings [33].

We conducted a systematic MR analysis and meta-analysis of seven inflammatory dermatoses and six mental disorders. Upon detection of potential horizontal pleiotropy via the MR-Egger intercept test, our approach employs bootstrap standard errors to facilitate robust causal inference through MR-Egger regression [34]. The inverse-variance weighted (IVW) meta-analysis assumes that all IVs are valid or that any pleiotropy is symmetrically balanced. Employing Cochran's Q statistic alongside the I^2 statistic, we quantify heterogeneity among the database estimates, evaluating significance through the corresponding p-values. In the absence of significant heterogeneity, we use a fixed effects model to combine findings across diverse sources. Conversely, if significant heterogeneity persists after excluding clinical disparities, we

adopt a random-effects model [35]. Each specific exposure and corresponding outcome is meticulously analyzed within each sourced database, followed by a meta-analysis designed to synthesize comprehensive risk estimates associated with each exposure. To mitigate the impact of multiple comparisons, we apply the Benjamini-Hochberg False Discovery Rate (FDR). Conclusions of a strong causal relationship are drawn when adjusted p-values with FDR fall below 0.05, whereas p-values below 0.05 yet above an FDR of 0.05 are interpreted as indicative of a tentative causal linkage. Our analysis utilizes Cochran's Q statistic with a stringent significance threshold of 0.05 to assess heterogeneity across diverse genetic studies [36]. This statistical assessment is pivotal in determining the reliability of IVs within these models. Concurrently, we examine the MR-Egger intercept to probe for horizontal pleiotropy, adhering to the established significance threshold [37]. Additionally, TSMR was used to identify the mediating factors in the causal relationship between depression and psoriasis, as well as between atopic dermatitis and depression. Analyses are performed using the "TwoSampleMR" and "MRPRESSO" packages in R software version 4.3.1.

Additionally, we performed MR analysis using the TwoSampleMR package on GWAS summary statistics for depression, psoriasis, and atopic dermatitis. IVs were selected from cis-eQTLs associated with 14 SMR-significant genes, with highly correlated SNPs derived from the European (EUR) reference panel. SNPs within a 10,000-kb window ($r^2 < 0.001$) were excluded through LD clustering. The IVW method was applied to account for confounding factors and to infer the causal relationship between gene expression and disease.

Assessment of Cross-Trait Genetic Correlation Using Linkage Disequilibrium Score Regression

To examine the shared genetic architecture between inflammatory dermatoses and mental disorders, we conducted genetic correlation analysis via linkage disequilibrium score regression (LDSC) [38]. The genetic correlation was quantified as the ratio of the shared genetic variance to the square root of the product of the heritability estimates for each trait. LDSC was applied using the linkage disequilibrium (LD) structure from the European reference panel of the 1000 Genomes Project.

Summary-data-based Mendelian Randomization (SMR) Analysis and Heterogeneity in Dependent Instruments (HEIDI) Test

SMR analysis is the primary method employed to establish the causal relationship between gene expression and disease phenotypes [39]. SMR conducts similar Mendelian randomization analyses to evaluate the association between exposures and outcomes [40]. The HEIDI test is implemented to ensure that the observed relationship is not confounded by genetic linkage [19]. To correct for multiple testing of p_SMR values, we employed the False Discovery Rate (FDR) method. Exposures with an FDR < 0.1 and p_HEIDI > 0.05 are considered significant and pass the HEIDI test. SMR software (version 1.3.1, http://cnsgenomics.com/software/smr/) was used with default parameters in our study. SNPs with p-values < 5e-8 were selected to ensure robust genetic associations. For multiple SNP SMR analyses, SNP linkage disequilibrium (LD) was

trimmed using the weighted vertex covering algorithm, with an LD r^2 threshold set at 0.9 (default value).

Three-Step SMR Analysis of Gene Methylation Regulation

We selected genes from SMR results that demonstrate causal relationships with both inflammatory dermatoses and mental disorders, aiming to identify genes implicated in the comorbidity mechanisms of these conditions. To further investigate the role of gene-environment interactions in these mechanisms, we extended our analysis to gene methylation, utilizing a three-step SMR approach to evaluate the associations between GWAS, eQTL, and mQTL datasets. The steps were as follows: 1) Tissue-specific eQTLs were used as exposures, with GWAS data for inflammatory dermatoses and mental disorders as outcomes; 2) Blood and brain mQTLs served as exposures, with the same GWAS data as outcomes; 3) Blood and brain mQTLs were exposures, and blood and brain eQTLs were the outcomes. Genes with significant results in Step 1, methylation sites with significant effects in Step 2, and genes and methylation sites with significant results in Step 3 were selected. This methodology identified key genes and methylation sites potentially contributing to the comorbidity mechanisms of inflammatory dermatoses and mental disorders.

Bayesian Colocalization

To enhance the causal inferences in our study, Bayesian colocalization was performed as a

sensitivity analysis using the 'coloc' package and the coloc.abf algorithm [41]. We focused on the posterior probability of hypothesis 4 (PP.H4), which indicates shared genetic variation. Based on PP.H4 values, the hypothesis of a causal relationship between genes and the corresponding trait through a shared genetic variant was classified into three categories: low (PP.H4 < 0.5), possible ($0.5 \leq$ PP.H4 < 0.75), and strong (PP.H4 $\geq$ 0.75) colocalization [42]. Cis-eQTLs were incorporated into the analysis. Furthermore, Bayesian colocalization was utilized to explore the specific roles of genes in immune cells. The default prior probabilities for coloc analysis were set as follows: $p1 = 1 \times 10^{-4}$, $p2 = 1 \times 10^{-4}$, $p12 = 1 \times 10^{-5}$.

Pathway Over-Representation Analysis (ORA)

Overrepresentation analyses of Gene Ontology (GO) and Kyoto Encyclopedia of Genes and Genomes (KEGG) pathways were performed using the clusterProfiler package to investigate the functional roles of 14 candidate genes [43]. We utilized Entrez Gene IDs as input, identifying GO terms and KEGG pathways with a stringent p.adjust threshold of < 0.05.

Differential Gene Expression Analysis of GEO Data

Differential gene expression analysis of RNA-seq data from psoriasis and atopic dermatitis was conducted using the DESeq2 package, with pairwise comparisons across three groups: healthy controls, unaffected skin from patients, and lesional skin [44]. For depression RNA-seq data, differential expression was assessed using the limma package [45]. A p.adjust < 0.05 was

considered statistically significant for transcriptional differences between groups.

Drug Target Prioritization

The druggable genome defined by Finan et al. consists of 4,479 genes, categorized into three tiers based on druggability potential [46]. Genes meeting the criteria outlined in the Drug-Gene Interaction Database (DGIdb) (https://www.dgidb.org/) and listed in Finan et al.'s druggable genome list were considered druggable [47]. Additionally, we leveraged the DrugBank to identify known drugs that could potentially be repurposed for the identified target genes [48]. By integrating these findings, we employed a multifaceted scoring system to prioritize drugs with the greatest potential for repurposing.

REFERENCES

1. Kurki MI, Karjalainen J, Palta P, et al. FinnGen provides genetic insights from a well-phenotyped isolated population. *Nature*. 2023;613(7944):508-518. doi:10.1038/s41586-022-05473-8

2. Otowa T, Hek K, Lee M, et al. Meta-analysis of genome-wide association studies of anxiety disorders. *Mol Psychiatry*. 2016;21(10):1391-1399. doi:10.1038/mp.2015.197

3. Stahl EA, Breen G, Forstner AJ, et al. Genome-wide association study identifies 30 loci associated with bipolar disorder. *Nat Genet*. 2019;51(5):793-803. doi:10.1038/s41588-019-0397-8

4. Wray NR, Ripke S, Mattheisen M, et al. Genome-wide association analyses identify 44 risk variants and refine the genetic architecture of major depression. *Nat Genet*. 2018;50(5):668-681. doi:10.1038/s41588-018-0090-3

5. International Obsessive Compulsive Disorder Foundation Genetics Collaborative (IOCDF-GC) and OCD Collaborative Genetics Association Studies (OCGAS). Revealing the complex genetic architecture of obsessive-compulsive disorder using meta-analysis. *Mol Psychiatry*. 2018;23(5):1181-1188. doi:10.1038/mp.2017.154

6. Nievergelt CM, Maihofer AX, Klengel T, et al. International meta-analysis of PTSD genome-wide association studies identifies sex- and ancestry-specific genetic risk loci. *Nat*

Commun. 2019;10(1):4558. doi:10.1038/s41467-019-12576-w

7. Trubetskoy V, Pardiñas AF, Qi T, et al. Mapping genomic loci implicates genes and synaptic biology in schizophrenia. *Nature*. 2022;604(7906):502-508. doi:10.1038/s41586-022-04434-5

8. Teder-Laving M, Kals M, Reigo A, et al. Genome-wide meta-analysis identifies novel loci conferring risk of acne vulgaris. *Eur J Hum Genet*. Published online March 16, 2023. doi:10.1038/s41431-023-01326-8

9. Jiang L, Zheng Z, Fang H, Yang J. A generalized linear mixed model association tool for biobank-scale data. *Nat Genet*. 2021;53(11):1616-1621. doi:10.1038/s41588-021-00954-4

10. Genetic Variants Associated With Hidradenitis Suppurativa - PubMed. Accessed June 26, 2024. https://pubmed.ncbi.nlm.nih.gov/37494057/

11. A BA, A K, Mk S, et al. European and multi-ancestry genome-wide association meta-analysis of atopic dermatitis highlights importance of systemic immune regulation. *Nature communications*. 2023;14(1). doi:10.1038/s41467-023-41180-2

12. Grosche S, Marenholz I, Esparza-Gordillo J, et al. Rare variant analysis in eczema identifies exonic variants in DUSP1, NOTCH4 and SLC9A4. *Nat Commun*. 2021;12(1):6618. doi:10.1038/s41467-021-26783-x

13. Sakaue S, Kanai M, Tanigawa Y, et al. A cross-population atlas of genetic associations for

220 human phenotypes. *Nat Genet*. 2021;53(10):1415-1424. doi:10.1038/s41588-021-00931-x

14. Verma A, Huffman JE, Rodriguez A, et al. Diversity and scale: Genetic architecture of 2068 traits in the VA Million Veteran Program. *Science*. 2024;385(6706):eadj1182. doi:10.1126/science.adj1182

15. Davyson E, Shen X, Gadd DA, et al. Metabolomic Investigation of Major Depressive Disorder Identifies a Potentially Causal Association With Polyunsaturated Fatty Acids. *Biol Psychiatry*. 2023;94(8):630-639. doi:10.1016/j.biopsych.2023.01.027

16. Võsa U, Claringbould A, Westra HJ, et al. Large-scale cis- and trans-eQTL analyses identify thousands of genetic loci and polygenic scores that regulate blood gene expression. *Nat Genet*. 2021;53(9):1300-1310. doi:10.1038/s41588-021-00913-z

17. The GTEx Consortium. The GTEx Consortium atlas of genetic regulatory effects across human tissues. *Science*. 2020;369(6509):1318-1330. doi:10.1126/science.aaz1776

18. Qi T, Wu Y, Fang H, et al. Genetic control of RNA splicing and its distinct role in complex trait variation. *Nat Genet*. 2022;54(9):9. doi:10.1038/s41588-022-01154-4

19. Wu Y, Zeng J, Zhang F, et al. Integrative analysis of omics summary data reveals putative mechanisms underlying complex traits. *Nat Commun*. 2018;9(1):918. doi:10.1038/s41467-018-03371-0

20. McRae AF, Marioni RE, Shah S, et al. Identification of 55,000 Replicated DNA Methylation QTL. *Sci Rep*. 2018;8(1):17605. doi:10.1038/s41598-018-35871-w

21. Qi T, Wu Y, Zeng J, et al. Identifying gene targets for brain-related traits using transcriptomic and methylomic data from blood. *Nat Commun*. 2018;9(1):2282. doi:10.1038/s41467-018-04558-1

22. Ng B, White CC, Klein HU, et al. An xQTL map integrates the genetic architecture of the human brain's transcriptome and epigenome. *Nat Neurosci*. 2017;20(10):1418-1426. doi:10.1038/nn.4632

23. Hannon E, Spiers H, Viana J, et al. Methylation QTLs in the developing brain and their enrichment in schizophrenia risk loci. *Nat Neurosci*. 2016;19(1):48-54. doi:10.1038/nn.4182

24. Jaffe AE, Gao Y, Deep-Soboslay A, et al. Mapping DNA methylation across development, genotype and schizophrenia in the human frontal cortex. *Nat Neurosci*. 2016;19(1):40-47. doi:10.1038/nn.4181

25. Tsoi LC, Rodriguez E, Degenhardt F, et al. Atopic Dermatitis Is an IL-13-Dominant Disease with Greater Molecular Heterogeneity Compared to Psoriasis. *J Invest Dermatol*. 2019;139(7):1480-1489. doi:10.1016/j.jid.2018.12.018

26. Merleev A, Ji-Xu A, Toussi A, et al. Proprotein convertase subtilisin/kexin type 9 is a psoriasis-susceptibility locus that is negatively related to IL36G. *JCI Insight*.

2022;7(16):e141193. doi:10.1172/jci.insight.141193

27. Tsoi LC, Rodriguez E, Stölzl D, et al. Progression of acute-to-chronic atopic dermatitis is associated with quantitative rather than qualitative changes in cytokine responses. *J Allergy Clin Immunol*. 2020;145(5):1406-1415. doi:10.1016/j.jaci.2019.11.047

28. Pantazatos SP, Huang YY, Rosoklija GB, Dwork AJ, Arango V, Mann JJ. Whole-transcriptome brain expression and exon-usage profiling in major depression and suicide: evidence for altered glial, endothelial and ATPase activity. *Mol Psychiatry*. 2017;22(5):760-773. doi:10.1038/mp.2016.130

29. Schmiedel BJ, Gonzalez-Colin C, Fajardo V, et al. Single-cell eQTL analysis of activated T cell subsets reveals activation and cell type-dependent effects of disease-risk variants. *Sci Immunol*. 2022;7(68):eabm2508. doi:10.1126/sciimmunol.abm2508

30. Emdin CA, Khera AV, Kathiresan S. Mendelian Randomization. *JAMA*. 2017;318(19):1925-1926. doi:10.1001/jama.2017.17219

31. Bao B, Zhu C, Shi J, Lu C. Causal association between inflammatory bowel disease and hidradenitis suppurativa: A two-sample bidirectional Mendelian randomization study. *Front Immunol*. 2023;14:1071616. doi:10.3389/fimmu.2023.1071616

32. Bowden J, Holmes MV. Meta-analysis and Mendelian randomization: A review. *Res Synth Methods*. 2019;10(4):486-496. doi:10.1002/jrsm.1346

285 33. Hartwig FP, Davies NM, Hemani G, Davey Smith G. Two-sample Mendelian
286 randomization: avoiding the downsides of a powerful, widely applicable but potentially
287 fallible technique. *Int J Epidemiol*. 2016;45(6):1717-1726. doi:10.1093/ije/dyx028

288 34. Schmidt AF, Dudbridge F. Mendelian randomization with Egger pleiotropy correction and
289 weakly informative Bayesian priors. *Int J Epidemiol*. 2018;47(4):1217-1228.
290 doi:10.1093/ije/dyx254

291 35. Burgess S, Bowden J, Fall T, Ingelsson E, Thompson SG. Sensitivity Analyses for Robust
292 Causal Inference from Mendelian Randomization Analyses with Multiple Genetic Variants.
293 *Epidemiology*. 2017;28(1):30. doi:10.1097/EDE.0000000000000559

294 36. Hemani G, Zheng J, Elsworth B, et al. The MR-Base platform supports systematic causal
295 inference across the human phenome. *Elife*. 2018;7:e34408. doi:10.7554/eLife.34408

296 37. Bowden J, Davey Smith G, Burgess S. Mendelian randomization with invalid instruments:
297 effect estimation and bias detection through Egger regression. *Int J Epidemiol*.
298 2015;44(2):512-525. doi:10.1093/ije/dyv080

299 38. Bulik-Sullivan BK, Loh PR, Finucane HK, et al. LD Score regression distinguishes
300 confounding from polygenicity in genome-wide association studies. *Nat Genet*.
301 2015;47(3):291-295. doi:10.1038/ng.3211

302 39. Zhu Z, Zhang F, Hu H, et al. Integration of summary data from GWAS and eQTL studies
303 predicts complex trait gene targets. *Nat Genet*. 2016;48(5):481-487. doi:10.1038/ng.3538

304 40. Guo Y, Xu T, Luo J, et al. SMR-Portal: an online platform for integrative analysis of GWAS
305 and xQTL data to identify complex trait genes. *Nat Methods*. 2025;22(2):220-222.
306 doi:10.1038/s41592-024-02561-7

307 41. Giambartolomei C, Vukcevic D, Schadt EE, et al. Bayesian test for colocalisation between
308 pairs of genetic association studies using summary statistics. *PLoS Genet*.
309 2014;10(5):e1004383. doi:10.1371/journal.pgen.1004383

310 42. Gay NR, Gloudemans M, Antonio ML, et al. Impact of admixture and ancestry on eQTL
311 analysis and GWAS colocalization in GTEx. *Genome Biol*. 2020;21(1):233.
312 doi:10.1186/s13059-020-02113-0

313 43. Yu G, Wang LG, Han Y, He QY. clusterProfiler: an R package for comparing biological
314 themes among gene clusters. *OMICS*. 2012;16(5):284-287. doi:10.1089/omi.2011.0118

315 44. Love MI, Huber W, Anders S. Moderated estimation of fold change and dispersion for
316 RNA-seq data with DESeq2. *Genome Biol*. 2014;15(12):550. doi:10.1186/s13059-014-
317 0550-8

318 45. Ritchie ME, Phipson B, Wu D, et al. limma powers differential expression analyses for
319 RNA-sequencing and microarray studies. *Nucleic Acids Res*. 2015;43(7):e47.
320 doi:10.1093/nar/gkv007

321 46. Finan C, Gaulton A, Kruger FA, et al. The druggable genome and support for target
322 identification and validation in drug development. *Sci Transl Med*. 2017;9(383):eaag1166.

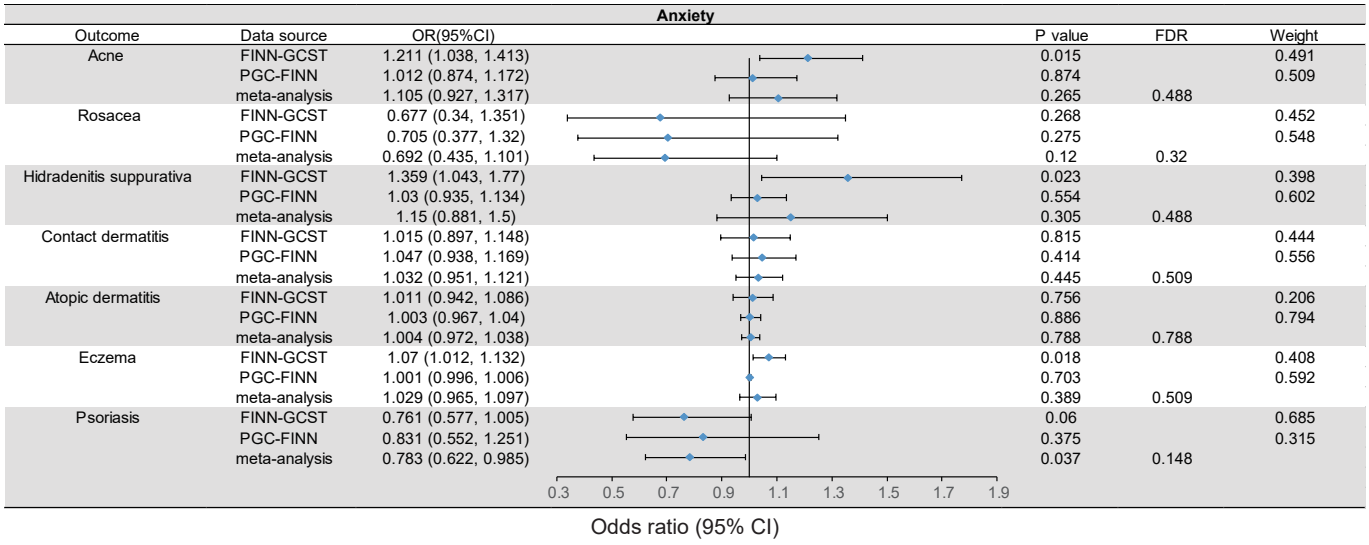
doi:10.1126/scitranslmed.aag1166

47. Cannon M, Stevenson J, Stahl K, et al. DGIdb 5.0: rebuilding the drug-gene interaction database for precision medicine and drug discovery platforms. *Nucleic Acids Res*. 2024;52(D1):D1227-D1235. doi:10.1093/nar/gkad1040

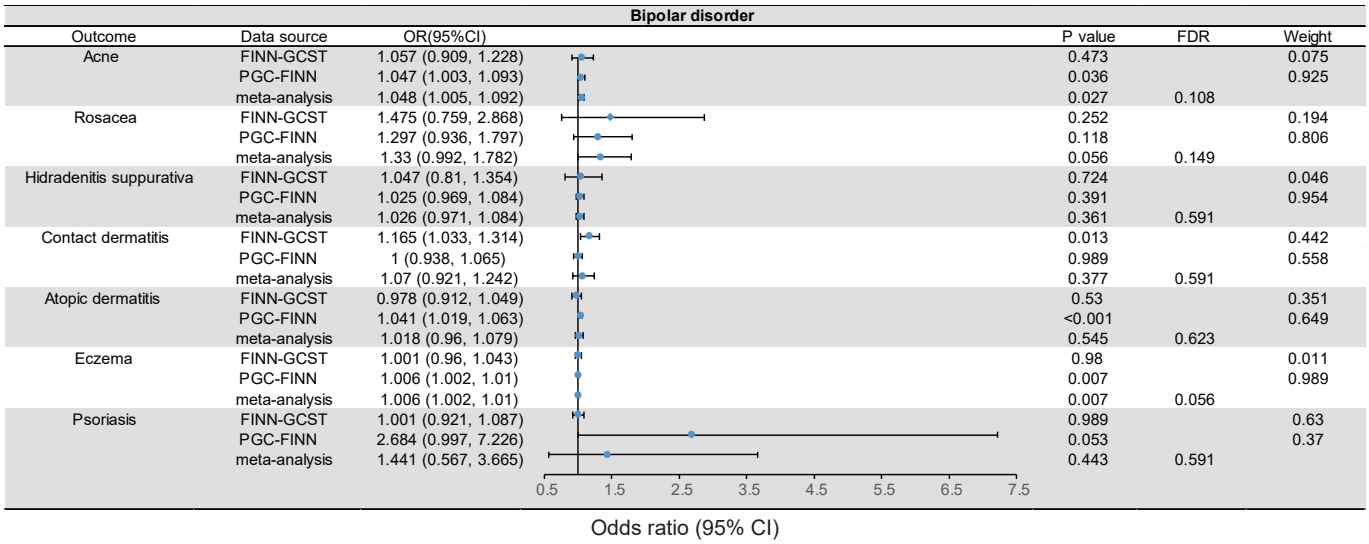
48. Knox C, Wilson M, Klinger CM, et al. DrugBank 6.0: the DrugBank Knowledgebase for 2024. *Nucleic Acids Res*. 2024;52(D1):D1265-D1275. doi:10.1093/nar/gkad976

Figure S1

a.



b.



c.

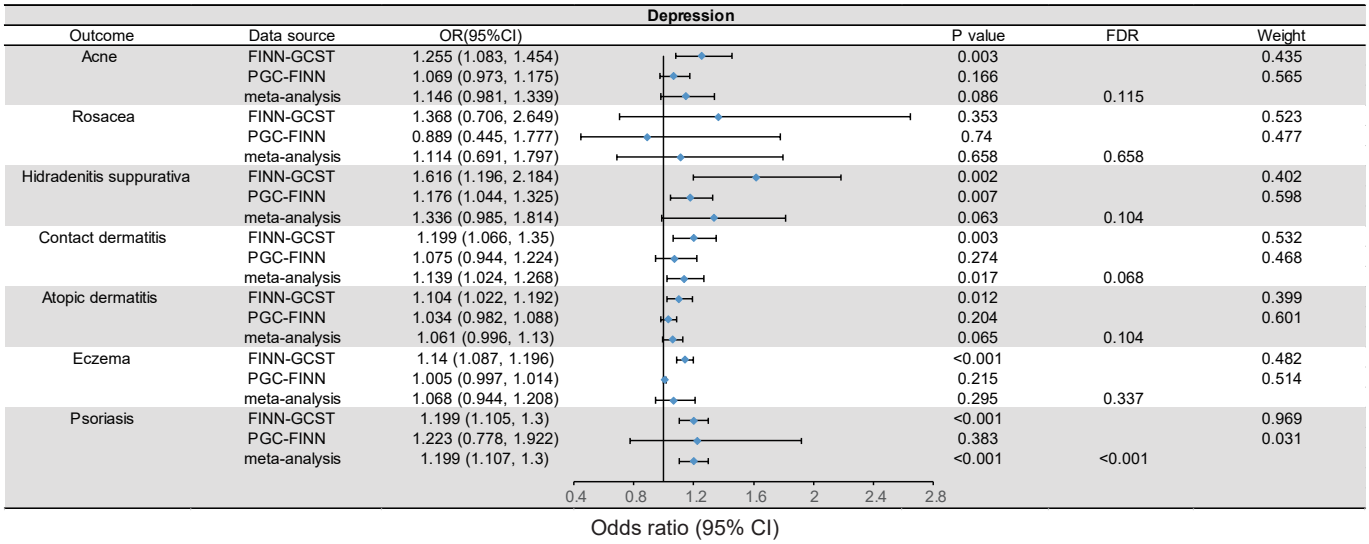
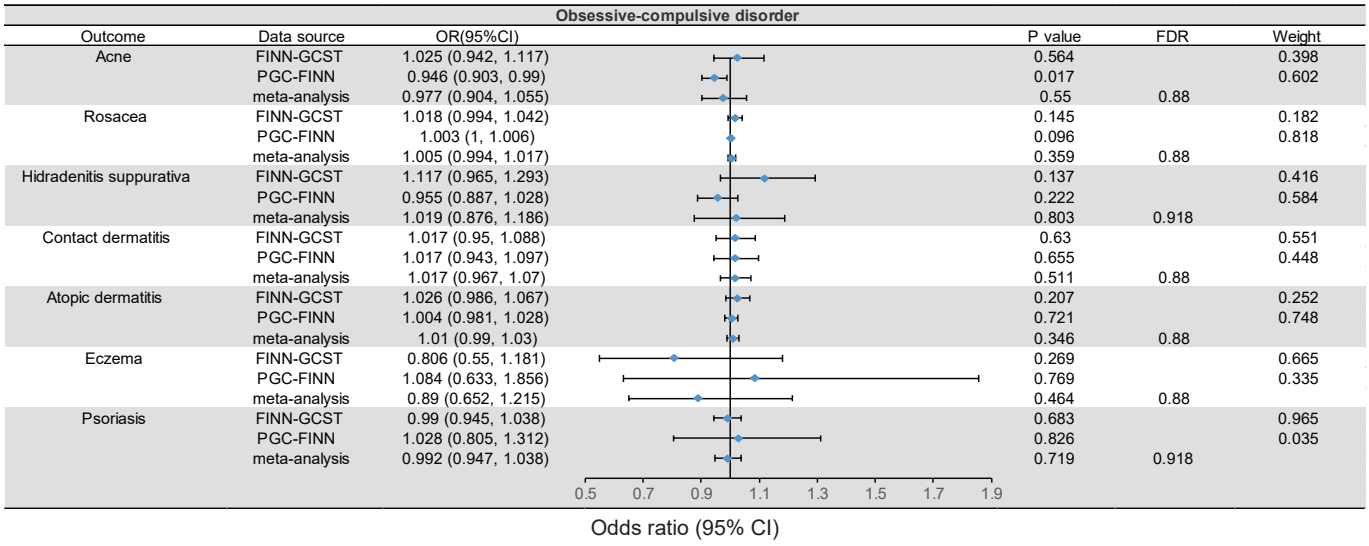
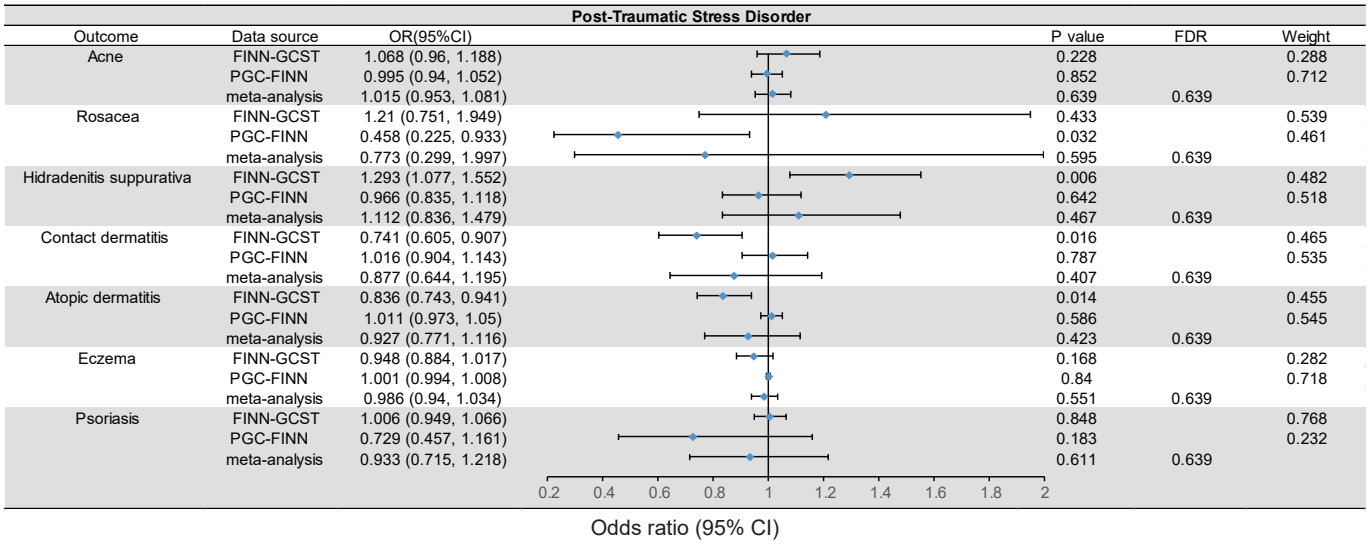


Figure S2

a.



b.



c.

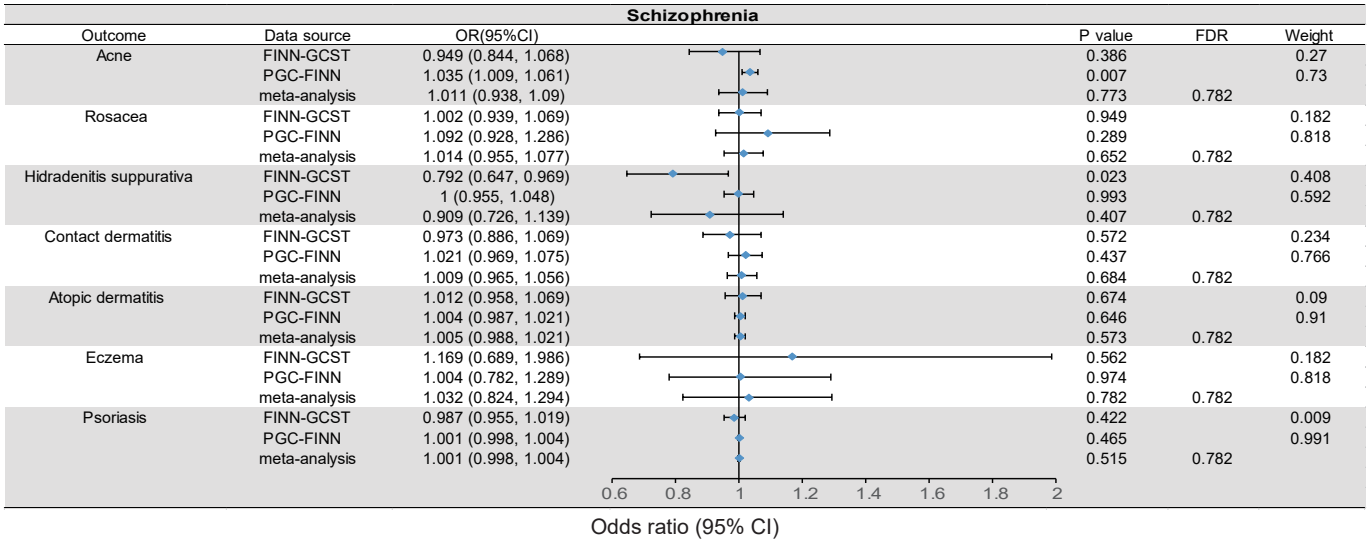
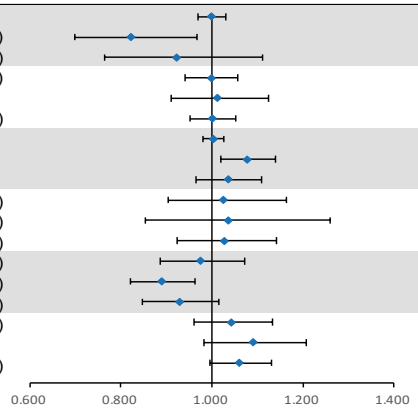


Figure S3

a.

Acne

Outcome	Data source	OR(95%CI)	P value	FDR	Weight
Anxiety	FINN-PGC	0.999 (0.969, 1.03)	0.937		0.589
	GCST-FINN	0.822 (0.698, 0.968)	0.019		0.411
	meta-analysis	0.922 (0.764, 1.112)	0.396	0.594	
Bipolar disorder	FINN-PGC	0.998 (0.942, 1.057)	0.945		0.77
	GCST-FINN	1.012 (0.91, 1.125)	0.828		0.23
	meta-analysis	1.001 (0.952, 1.053)	0.965	0.965	
Depression	FINN-PGC	1.004 (0.98, 1.027)	0.762		0.565
	GCST-FINN	1.078 (1.02, 1.14)	0.008		0.435
	meta-analysis	1.035 (0.966, 1.11)	0.328	0.594	
OCD	FINN-PGC	1.025 (0.903, 1.163)	0.705		0.703
	GCST-FINN	1.036 (0.853, 1.259)	0.723		0.297
	meta-analysis	1.028 (0.924, 1.143)	0.61	0.732	
PTSD	FINN-PGC	0.975 (0.887, 1.071)	0.595		0.461
	GCST-FINN	0.889 (0.821, 0.963)	0.004		0.539
	meta-analysis	0.928 (0.848, 1.015)	0.101	0.303	
Schizophrenia	FINN-PGC	1.043 (0.961, 1.133)	0.313		0.609
	GCST-FINN	1.09 (0.983, 1.208)	0.102		0.391
	meta-analysis	1.061 (0.995, 1.132)	0.07	0.303	

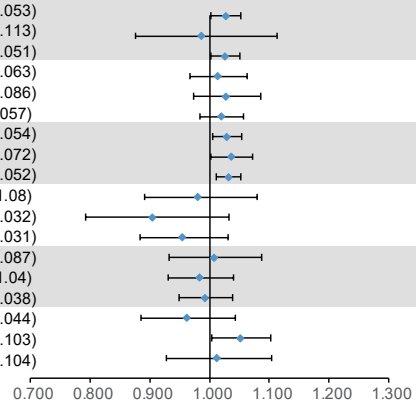


Odds ratio (95% CI)

b.

Atopic dermatitis

Outcome	Data source	OR(95%CI)	P value	FDR	Weight
Anxiety	FINN-PGC	1.028 (1.003, 1.053)	0.029		0.959
	GCST-FINN	0.987 (0.876, 1.113)	0.831		0.041
	meta-analysis	1.026 (1.002, 1.051)	0.036	0.108	
Bipolar disorder	FINN-PGC	1.014 (0.968, 1.063)	0.547		0.579
	GCST-FINN	1.028 (0.973, 1.086)	0.331		0.421
	meta-analysis	1.02 (0.984, 1.057)	0.276	0.414	
Depression	FINN-PGC	1.029 (1.005, 1.054)	0.017		0.665
	GCST-FINN	1.037 (1.003, 1.072)	0.033		0.335
	meta-analysis	1.032 (1.012, 1.052)	0.001	0.006	
OCD	FINN-PGC	0.981 (0.892, 1.08)	0.702		0.655
	GCST-FINN	0.905 (0.793, 1.032)	0.137		0.345
	meta-analysis	0.954 (0.883, 1.031)	0.236	0.414	
PTSD	FINN-PGC	1.007 (0.933, 1.087)	0.85		0.344
	GCST-FINN	0.984 (0.931, 1.04)	0.575		0.656
	meta-analysis	0.992 (0.949, 1.038)	0.731	0.779	
Schizophrenia	FINN-PGC	0.962 (0.886, 1.044)	0.352		0.427
	GCST-FINN	1.052 (1.004, 1.103)	0.034		0.573
	meta-analysis	1.012 (0.928, 1.104)	0.779	0.779	

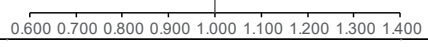


Odds ratio (95% CI)

c.

Contact dermatitis

Outcome	Data source	OR(95%CI)	P value	FDR	Weight
Anxiety	FINN-PGC	0.999 (0.959, 1.042)	0.979		0.955
	GCST-FINN	1.046 (0.865, 1.264)	0.644		0.045
	meta-analysis	1.002 (0.962, 1.043)	0.942	0.942	
Bipolar disorder	FINN-PGC	1.073 (0.992, 1.16)	0.081		0.463
	GCST-FINN	0.963 (0.913, 1.016)	0.17		0.537
	meta-analysis	1.012 (0.912, 1.124)	0.818	0.942	
Depression	FINN-PGC	1.003 (0.957, 1.051)	0.898		0.311
	GCST-FINN	1.015 (0.983, 1.048)	0.359		0.689
	meta-analysis	1.011 (0.985, 1.038)	0.404	0.942	
OCD	FINN-PGC	0.884 (0.77, 1.016)	0.083		0.515
	GCST-FINN	1.115 (0.95, 1.308)	0.184		0.485
	meta-analysis	0.989 (0.789, 1.241)	0.926	0.942	
PTSD	FINN-PGC	0.96 (0.844, 1.091)	0.53		0.487
	GCST-FINN	1.15 (1.025, 1.289)	0.027		0.513
	meta-analysis	1.053 (0.882, 1.257)	0.568	0.942	
Schizophrenia	FINN-PGC	0.995 (0.865, 1.144)	0.939		0.099
	GCST-FINN	0.972 (0.928, 1.018)	0.231		0.901
	meta-analysis	0.974 (0.933, 1.018)	0.245	0.942	

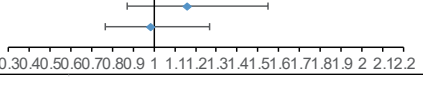


Odds ratio (95% CI)

d.

Eczema

Outcome	Data source	OR(95%CI)	P value	FDR	Weight
Anxiety	FINN-PGC	0.84 (0.703, 1.004)	0.058		0.925
	GCST-FINN	1.113 (0.596, 2.08)	0.736		0.075
	meta-analysis	0.858 (0.723, 1.018)	0.08	0.226	
Bipolar disorder	FINN-PGC	1.124 (1.029, 1.227)	0.009		0.721
	GCST-FINN	1.472 (1.024, 2.116)	0.037		0.279
	meta-analysis	1.212 (0.956, 1.536)	0.113	0.226	
Depression	FINN-PGC	1.112 (1.065, 1.161)	<0.001		0.964
	GCST-FINN	1.15 (0.92, 1.437)	0.22		0.036
	meta-analysis	1.113 (1.067, 1.161)	<0.001	<0.001	
OCD	FINN-PGC	1.011 (0.846, 1.209)	0.9		0.95
	GCST-FINN	0.862 (0.395, 1.883)	0.709		0.05
	meta-analysis	1.003 (0.843, 1.194)	0.969	0.969	
PTSD	FINN-PGC	0.978 (0.848, 1.129)	0.763		0.816
	GCST-FINN	1.077 (0.797, 1.455)	0.631		0.184
	meta-analysis	0.996 (0.875, 1.133)	0.947	0.969	
Schizophrenia	FINN-PGC	0.891 (0.774, 1.026)	0.108		0.618
	GCST-FINN	1.16 (0.87, 1.547)	0.312		0.382
	meta-analysis	0.986 (0.767, 1.267)	0.909	0.969	



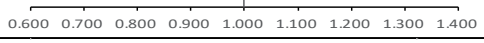
Odds ratio (95% CI)

Figure S4

a.

Hidradenitis suppurativa

Outcome	Data source	OR(95%CI)	P value	FDR	Weight
Anxiety	FINN-PGC	1.023 (1, 1.046)	0.054		0.982
	GCST-FINN	1.081 (0.913, 1.28)	0.367		0.018
	meta-analysis	1.024 (1.001, 1.047)	0.042	0.252	
Bipolar disorder	FINN-PGC	1.04 (0.996, 1.086)	0.077		0.762
	GCST-FINN	0.994 (0.92, 1.074)	0.876		0.238
	meta-analysis	1.029 (0.991, 1.068)	0.142	0.426	
Depression	FINN-PGC	1.024 (0.999, 1.049)	0.06		0.588
	GCST-FINN	0.978 (0.935, 1.023)	0.333		0.412
	meta-analysis	1.005 (0.961, 1.05)	0.834	0.901	
OCD	FINN-PGC	0.991 (0.918, 1.07)	0.824		0.872
	GCST-FINN	1.024 (0.838, 1.252)	0.816		0.128
	meta-analysis	0.995 (0.926, 1.07)	0.901	0.901	
PTSD	FINN-PGC	0.963 (0.897, 1.033)	0.291		0.571
	GCST-FINN	1.001 (0.923, 1.087)	0.974		0.429
	meta-analysis	0.979 (0.928, 1.033)	0.437	0.656	
Schizophrenia	FINN-PGC	0.962 (0.904, 1.023)	0.215		0.377
	GCST-FINN	0.988 (0.941, 1.036)	0.613		0.623
	meta-analysis	0.978 (0.941, 1.016)	0.246	0.492	



Odds ratio (95% CI)

b.

Psoriasis

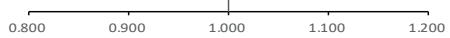
Outcome	Data source	OR(95%CI)	P value	FDR	Weight
Anxiety	FINN-PGC	0.997 (0.971, 1.023)	0.825		0.822
	GCST-FINN	1.005 (0.95, 1.063)	0.86		0.178
	meta-analysis	0.998 (0.975, 1.022)	0.899	0.899	
Bipolar disorder	FINN-PGC	1.014 (0.972, 1.057)	0.525		0.221
	GCST-FINN	1.026 (1.004, 1.049)	0.022		0.779
	meta-analysis	1.023 (1.004, 1.044)	0.02	0.093	
Depression	FINN-PGC	1.024 (1, 1.049)	0.05		0.396
	GCST-FINN	1.012 (0.992, 1.032)	0.231		0.604
	meta-analysis	1.017 (1.002, 1.032)	0.031	0.093	
OCD	FINN-PGC	0.999 (0.928, 1.076)	0.984		0.371
	GCST-FINN	0.978 (0.924, 1.035)	0.44		0.629
	meta-analysis	0.986 (0.942, 1.031)	0.532	0.638	
PTSD	FINN-PGC	1.068 (0.983, 1.159)	0.118		0.108
	GCST-FINN	1.019 (1.001, 1.038)	0.035		0.892
	meta-analysis	1.025 (0.996, 1.054)	0.091	0.182	
Schizophrenia	FINN-PGC	1.065 (1.003, 1.13)	0.038		0.362
	GCST-FINN	1.006 (0.995, 1.017)	0.279		0.638
	meta-analysis	1.027 (0.973, 1.084)	0.33	0.495	

Odds ratio (95% CI)

c.

Rosacea

Outcome	Data source	OR(95%CI)	P value	FDR	Weight
Anxiety	FINN-PGC	0.987 (0.96, 1.014)	0.337		0.716
	GCST-FINN	0.993 (0.951, 1.037)	0.747		0.284
	meta-analysis	0.989 (0.966, 1.011)	0.325	0.644	
Bipolar disorder	FINN-PGC	1.045 (0.993, 1.101)	0.092		0.291
	GCST-FINN	1.004 (0.994, 1.015)	0.398		0.709
	meta-analysis	1.016 (0.981, 1.053)	0.375	0.644	
Depression	FINN-PGC	1.003 (0.982, 1.024)	0.764		0.115
	GCST-FINN	1.004 (0.996, 1.012)	0.297		0.885
	meta-analysis	1.004 (0.997, 1.011)	0.279	0.644	
OCD	FINN-PGC	1.017 (0.928, 1.114)	0.72		0.169
	GCST-FINN	0.998 (0.957, 1.04)	0.908		0.831
	meta-analysis	1.001 (0.964, 1.039)	0.966	0.966	
PTSD	FINN-PGC	1.024 (0.941, 1.114)	0.586		0.027
	GCST-FINN	1.005 (0.991, 1.019)	0.476		0.973
	meta-analysis	1.006 (0.992, 1.02)	0.429	0.644	
Schizophrenia	FINN-PGC	1.043 (0.968, 1.123)	0.269		0.095
	GCST-FINN	1 (0.992, 1.008)	0.99		0.905
	meta-analysis	1.004 (0.98, 1.028)	0.743	0.892	

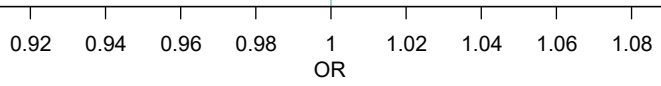


Odds ratio (95% CI)

Figure S5

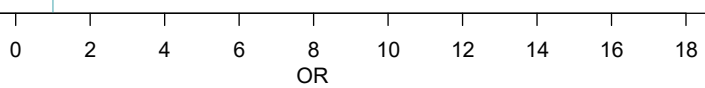
a.

Gene	Tissue	OR (95% CI)	P−value
C11orf49	Blood	0.948 (0.909, 0.988)	0.011
CPEB2	Blood	0.951 (0.926, 0.978)	<0.001
DBF4B	Blood	0.999 (0.983, 1.015)	0.876
	Whole Blood	1.000 (0.987, 1.014)	0.946
	Brain	0.992 (0.987, 0.998)	0.005
	Crural Skin	0.996 (0.983, 1.008)	0.503
	Suprapubic Skin	0.996 (0.985, 1.007)	0.452
INO80E	Blood	1.062 (1.038, 1.086)	<0.001
	Brain	1.036 (1.023, 1.048)	<0.001
	Crural Skin	1.052 (1.021, 1.083)	<0.001
KAT8	Blood	1.006 (0.987, 1.026)	0.541
	Whole Blood	1.012 (0.962, 1.065)	0.639
	Cultured Fibroblasts	0.997 (0.985, 1.009)	0.638
MLH3	Blood	1.002 (0.990, 1.013)	0.785
TDRKH	Blood	0.942 (0.922, 0.962)	<0.001
TRIM56	Blood	1.027 (1.008, 1.046)	0.005
ZNF408	Brain	0.995 (0.966, 1.026)	0.752



b.

Gene	Tissue	OR (95% CI)	P−value
DBF4B	Blood	0.980 (0.967, 0.992)	0.002
	Whole Blood	0.988 (0.982, 0.994)	<0.001
	Brain	0.989 (0.985, 0.993)	<0.001
	Crural Skin	0.989 (0.982, 0.997)	0.005
	Suprapubic Skin	0.990 (0.984, 0.996)	0.002
FADS1	Blood	2.177 (1.819, 2.605)	<0.001
	Brain	0.552 (0.530, 0.575)	<0.001
NPLOC4	Suprapubic Skin	0.999 (0.974, 1.024)	0.908
SLFN12L	Brain	1.016 (1.010, 1.021)	<0.001
TMEM258	Whole Blood	14.528 (12.610, 16.738)	<0.001
	Brain	2.258 (1.681, 3.031)	<0.001
YPEL3	Blood	1.019 (1.003, 1.036)	0.024



SUPPLEMENTARY FIGURE LEGENDS

Figure S1.: The TSMR results of inflammatory dermatoses and mental disorders. (a) The main TSMR analysis results of the causal effects of anxiety on seven inflammatory dermatoses. (b) The main TSMR analysis results of the causal effects of bipolar disorder on seven inflammatory dermatoses. (c) The main TSMR analysis results of the causal effects of depression on seven inflammatory dermatoses. CI: Confidence Interval; FDR: False Discovery Rate; FINN: Finnish Database; GCST: GWAS Catalog Study; OR: Odds Ratio; PGC: Psychiatric Genomics Consortium; TSMR, two-sample Mendelian randomization.

Figure S2.: The TSMR results of inflammatory dermatoses and mental disorders. (a) The main TSMR analysis results of the causal effects of obsessive-compulsive disorder on seven inflammatory dermatoses. (b) The main TSMR analysis results of the causal effects of post-traumatic stress disorder on seven inflammatory dermatoses. (c) The main TSMR analysis results of the causal effects of schizophrenia on seven inflammatory dermatoses. CI: Confidence Interval; FDR: False Discovery Rate; FINN: Finnish Database; GCST: GWAS Catalog Study; OR: Odds Ratio; PGC: Psychiatric Genomics Consortium; TSMR, two-sample Mendelian randomization.

Figure S3.: The TSMR results of inflammatory dermatoses and mental disorders. (a) The

main TSMR analysis results of the causal effects of atopic dermatitis on six major mental disorders. (b) The main TSMR analysis results of the causal effects of contact dermatitis on six major mental disorders. (c) The main TSMR analysis results of the causal effects of eczema on six major mental disorders. (d) The main TSMR analysis results of the causal effects of psoriasis on six major mental disorders. CI: Confidence Interval; FDR: False Discovery Rate; FINN: Finnish Database; GCST: GWAS Catalog Study; OR: Odds Ratio; PGC: Psychiatric Genomics Consortium; TSMR, two-sample Mendelian randomization.

Figure S4.: The TSMR results of inflammatory dermatoses and mental disorders. (a) The main TSMR analysis results of the causal effects of acne on six major mental disorders. (b) The main TSMR analysis results of the causal effects of hidradenitis suppurativa on six major mental disorders. (c) The main TSMR analysis results of the causal effects of rosacea on six major mental disorders. CI: Confidence Interval; FDR: False Discovery Rate; FINN: Finnish Database; GCST: GWAS Catalog Study; OR: Odds Ratio; PGC: Psychiatric Genomics Consortium; TSMR, two-sample Mendelian randomization.

Figure S5.: The TSMR analysis results of selected genes and mediators for inflammatory dermatoses and mental disorders. (a) TSMR results for genes associated with the depression–psoriasis comorbidity and insomnia. (b) TSMR results for genes associated with the atopic dermatitis–depression comorbidity and the omega-6 to omega-3 fatty acid ratio. CI: Confidence

41 Interval; OR: Odds Ratio; TSMR, two-sample Mendelian randomization.

Table S1. The TSMR (Two-sample Mendelian Randomization) results of mental disorders on inflammatory dermatoses.

Exposure	Outcome	Data source	P value	OR(95%CI)	FDR	Weight	Method	I^2	Q_pval
Anxiety	Acne	FINN-GCST	0.015	1.211 (1.038, 1.413)		0.491	Inverse variance weighted (fixed effects)		
		PGC-FINN	0.874	1.012 (0.874, 1.172)		0.509	Inverse variance weighted (multiplicative random effects)		
		meta-analysis	0.265	1.105 (0.927, 1.317)	0.488		fixed effects model	0.633048241	0.098778603
	Rosacea	FINN-GCST	0.268	0.677 (0.34, 1.351)		0.452	Inverse variance weighted (fixed effects)		
		PGC-FINN	0.275	0.705 (0.377, 1.32)		0.548	Inverse variance weighted (fixed effects)		
		meta-analysis	0.12	0.692 (0.435, 1.101)	0.32		fixed effects model	<0.001	0.932664403
	Hidradenitis suppurativa	FINN-GCST	0.023	1.359 (1.043, 1.77)		0.398	Inverse variance weighted (fixed effects)		
		PGC-FINN	0.554	1.03 (0.935, 1.134)		0.602	Inverse variance weighted (fixed effects)		
		meta-analysis	0.305	1.15 (0.881, 1.5)	0.488		fixed effects model	0.732705523	0.053086556
	Contact dermatitis	FINN-GCST	0.815	1.015 (0.897, 1.148)		0.444	Inverse variance weighted (fixed effects)		
		PGC-FINN	0.414	1.047 (0.938, 1.169)		0.556	Inverse variance weighted (fixed effects)		
		meta-analysis	0.445	1.032 (0.951, 1.121)	0.509		fixed effects model	<0.001	0.71157733
	Atopic dermatitis	FINN-GCST	0.756	1.011 (0.942, 1.086)		0.206	Inverse variance weighted (fixed effects)		
		PGC-FINN	0.886	1.003 (0.967, 1.04)		0.794	Inverse variance weighted (fixed effects)		
		meta-analysis	0.788	1.004 (0.972, 1.038)	0.788		fixed effects model	<0.001	0.832372265
	Eczema	FINN-GCST	0.018	1.07 (1.012, 1.132)		0.408	Inverse variance weighted (multiplicative random effects)		
		PGC-FINN	0.703	1.001 (0.996, 1.006)		0.592	Inverse variance weighted (fixed effects)		
		meta-analysis	0.389	1.029 (0.965, 1.097)	0.509		random effects model	0.81291575	0.020779574
	Psoriasis	FINN-GCST	0.06	0.761 (0.577, 1.005)		0.685	MR Egger		
		PGC-FINN	0.375	0.831 (0.552, 1.251)		0.315	Inverse variance weighted (fixed effects)		
		meta-analysis	0.037	0.783 (0.622, 0.985)	0.148		fixed effects model	<0.001	0.729706325
Bipolar disorder	Acne	FINN-GCST	0.473	1.057 (0.909, 1.228)		0.075	Inverse variance weighted (fixed effects)		
		PGC-FINN	0.036	1.047 (1.003, 1.093)		0.925	Inverse variance weighted (multiplicative random effects)		
		meta-analysis	0.027	1.048 (1.005, 1.092)	0.108		fixed effects model	<0.001	0.910450474
	Rosacea	FINN-GCST	0.252	1.475 (0.759, 2.868)		0.194	Inverse variance weighted (fixed effects)		
		PGC-FINN	0.118	1.297 (0.936, 1.797)		0.806	Inverse variance weighted (fixed effects)		
		meta-analysis	0.056	1.33 (0.992, 1.782)	0.149		fixed effects model	<0.001	0.733284677
	Hidradenitis suppurativa	FINN-GCST	0.724	1.047 (0.81, 1.354)		0.046	Inverse variance weighted (fixed effects)		
		PGC-FINN	0.391	1.025 (0.969, 1.084)		0.954	Inverse variance weighted (fixed effects)		
		meta-analysis	0.361	1.026 (0.971, 1.084)	0.591		fixed effects model	<0.001	0.871941675
	Contact dermatitis	FINN-GCST	0.013	1.165 (1.033, 1.314)		0.442	Inverse variance weighted (fixed effects)		
		PGC-FINN	0.989	1 (0.938, 1.065)		0.558	Inverse variance weighted (fixed effects)		
		meta-analysis	0.377	1.07 (0.921, 1.242)	0.591		random effects model	0.794865597	0.027250767
	Atopic dermatitis	FINN-GCST	0.53	0.978 (0.912, 1.049)		0.351	Inverse variance weighted (fixed effects)		
		PGC-FINN	<0.001	1.041 (1.019, 1.063)		0.649	Inverse variance weighted (multiplicative random effects)		
		meta-analysis	0.545	1.018 (0.96, 1.079)	0.623		fixed effects model	0.642471958	0.094441841
	Eczema	FINN-GCST	0.98	1.001 (0.96, 1.043)		0.011	Inverse variance weighted (fixed effects)		
		PGC-FINN	0.007	1.006 (1.002, 1.01)		0.989	Inverse variance weighted (multiplicative random effects)		
		meta-analysis	0.007	1.006 (1.002, 1.01)	0.056		fixed effects model	<0.001	0.800564045
	Psoriasis	FINN-GCST	0.989	1.001 (0.921, 1.087)		0.63	Inverse variance weighted (fixed effects)		
		PGC-FINN	0.053	2.684 (0.997, 7.226)		0.37	MR Egger		
		meta-analysis	0.443	1.441 (0.567, 3.665)	0.591		fixed effects model	0.735781052	0.051721948
Depression	Acne	FINN-GCST	0.003	1.255 (1.083, 1.454)		0.435	Inverse variance weighted (fixed effects)		
		PGC-FINN	0.166	1.069 (0.973, 1.175)		0.565	Inverse variance weighted (multiplicative random effects)		
		meta-analysis	0.086	1.146 (0.981, 1.339)	0.115		fixed effects model	0.688448748	0.073200901
	Rosacea	FINN-GCST	0.353	1.368 (0.706, 2.649)		0.523	Inverse variance weighted (fixed effects)		
		PGC-FINN	0.74	0.889 (0.445, 1.777)		0.477	Inverse variance weighted (fixed effects)		
		meta-analysis	0.658	1.114 (0.691, 1.797)	0.658		fixed effects model	<0.001	0.377662961
	Hidradenitis suppurativa	FINN-GCST	0.002	1.616 (1.196, 2.184)		0.402	Inverse variance weighted (multiplicative random effects)		
		PGC-FINN	0.007	1.176 (1.044, 1.325)		0.598	Inverse variance weighted (fixed effects)		
		meta-analysis	0.063	1.336 (0.985, 1.814)	0.104		fixed effects model	0.730262492	0.054174702
	Contact dermatitis	FINN-GCST	0.003	1.199 (1.066, 1.35)		0.532	Inverse variance weighted (fixed effects)		
		PGC-FINN	0.274	1.075 (0.944, 1.224)		0.468	Inverse variance weighted (fixed effects)		
		meta-analysis	0.017	1.139 (1.024, 1.268)	0.068		fixed effects model	0.326917299	0.222884591
	Atopic dermatitis	FINN-GCST	0.012	1.104 (1.022, 1.192)		0.399	Inverse variance weighted (multiplicative random effects)		
		PGC-FINN	0.204	1.034 (0.982, 1.088)		0.601	Inverse variance weighted (multiplicative random effects)		
		meta-analysis	0.065	1.061 (0.996, 1.13)	0.104		fixed effects model	0.483548578	0.164071869
	Eczema	FINN-GCST	<0.001	1.14 (1.087, 1.196)		0.482	Inverse variance weighted (multiplicative random effects)		
		PGC-FINN	0.215	1.005 (0.997, 1.014)		0.514	Inverse variance weighted (multiplicative random effects)		
		meta-analysis	0.295	1.068 (0.944, 1.208)	0.337		random effects model	0.960968754	<0.001
	Psoriasis	FINN-GCST	<0.001	1.199 (1.105, 1.3)		0.969	Inverse variance weighted (fixed effects)		
		PGC-FINN	0.383	1.223 (0.778, 1.922)		0.031	Inverse variance weighted (fixed effects)		
		meta-analysis	<0.001	1.199 (1.107, 1.3)	<0.001		fixed effects model	<0.001	0.932150061
OCD	Acne	FINN-GCST	0.564	1.025 (0.942, 1.117)		0.398	Inverse variance weighted (fixed effects)		
		PGC-FINN	0.017	0.946 (0.903, 0.99)		0.602	Inverse variance weighted (fixed effects)		
		meta-analysis	0.55	0.977 (0.904, 1.055)	0.88		fixed effects model	0.62665379	0.101712831
	Rosacea	FINN-GCST	0.145	1.018 (0.994, 1.042)		0.182	Inverse variance weighted (fixed effects)		
		PGC-FINN	0.096	1.003 (1, 1.006)		0.818	Inverse variance weighted (multiplicative random effects)		
		meta-analysis	0.359	1.005 (0.994, 1.017)	0.88		fixed effects model	<0.001	0.379105326
	Hidradenitis suppurativa	FINN-GCST	0.137	1.117 (0.965, 1.293)		0.416	Inverse variance weighted (fixed effects)		
		PGC-FINN	0.222	0.955 (0.887, 1.028)		0.584	Inverse variance weighted (fixed effects)		
		meta-analysis	0.803	1.019 (0.876, 1.186)	0.918		fixed effects model	0.716750016	0.060251421
	Contact dermatitis	FINN-GCST	0.63	1.017 (0.95, 1.088)		0.551	Inverse variance weighted (fixed effects)		
		PGC-FINN	0.655	1.017 (0.943, 1.097)		0.448	Inverse variance weighted (fixed effects)		
		meta-analysis	0.511	1.017 (0.967, 1.07)	0.88		fixed effects model	<0.001	0.992728841
	Atopic dermatitis	FINN-GCST	0.207	1.026 (0.986, 1.067)		0.252	Inverse variance weighted (fixed effects)		
		PGC-FINN	0.721	1.004 (0.981, 1.028)		0.748	Inverse variance weighted (fixed effects)		
		meta-analysis	0.346	1.01 (0.99, 1.03)	0.88		fixed effects model	<0.001	0.361752699
	Eczema	FINN-GCST	0.269	0.806 (0.55, 1.181)		0.665	Inverse variance weighted (fixed effects)		
		PGC-FINN	0.769	1.084 (0.633, 1.856)		0.335	Inverse variance weighted (fixed effects)		
		meta-analysis	0.464	0.89 (0.652, 1.215)	0.88		fixed effects model	0.342659352	0.217425705
	Psoriasis	FINN-GCST	0.683	0.99 (0.945, 1.038)		0.965	Inverse variance weighted (fixed effects)		
		PGC-FINN	0.826	1.028 (0.805, 1.312)		0.035	Inverse variance weighted (fixed effects)		
		meta-analysis	0.719	0.992 (0.947, 1.038)	0.918		fixed effects model	<0.001	0.769755934
PTSD	Acne	FINN-GCST	0.228	1.068 (0.96, 1.188)		0.288	Inverse variance weighted (fixed effects)		
		PGC-FINN	0.852	0.995 (0.94, 1.052)		0.712	Inverse variance weighted (fixed effects)		
		meta-analysis	0.639	1.015 (0.953, 1.081)	0.639		fixed effects model	0.249163486	0.248476748
	Rosacea	FINN-GCST	0.433	1.21 (0.751, 1.949)		0.539	Inverse variance weighted (fixed effects)		
		PGC-FINN	0.032	0.458 (0.225, 0.933)		0.461	Inverse variance weighted (fixed effects)		
		meta-analysis	0.595	0.773 (0.299, 1.997)	0.639		random effects model	0.797602226	0.026230413
	Hidradenitis suppurativa	FINN-GCST	0.006	1.293 (1.077, 1.552)		0.482	Inverse variance weighted (fixed effects)		
		PGC-FINN	0.642	0.966 (0.835, 1.118)		0.518	Inverse variance weighted (multiplicative random effects)		
		meta-analysis	0.467	1.112 (0.836, 1.479)	0.639		random effects model	0.833065512	0.014384153
	Contact dermatitis	FINN-GCST	0.016	0.741 (0.605, 0.907)		0.465	MR Egger		
		PGC-FINN	0.787	1.016 (0.904, 1.143)		0.535	Inverse variance weighted (fixed effects)		
		meta-analysis	0.407	0.877 (0.644, 1.195)	0.639		random effects model	0.857506827	0.008069972
	Atopic dermatitis	FINN-GCST	0.014	0.836 (0.743, 0.941)		0.455	MR Egger		
		PGC-FINN	0.586	1.011 (0.973, 1.05)		0.545	Inverse variance weighted (fixed effects)		
		meta-analysis	0.423	0.927 (0.771, 1.116)	0.639		random effects model	0.888414311	0.002756948
	Eczema	FINN-GCST	0.168	0.948 (0.884, 1.017)		0.282	MR Egger		
		PGC-FINN	0.84	1.001 (0.994, 1.008)		0.718	Inverse variance weighted (multiplicative random effects)		
		meta-analysis	0.551	0.986 (0.94, 1.034)	0.639		fixed effects model	0.554854617	0.133920707
	Psoriasis	FINN-GCST	0.848	1.006 (0.949, 1.066)		0.768	Inverse variance weighted (fixed effects)		
		PGC-FINN	0.183	0.729 (0.457, 1.161)		0.232	Inverse variance weighted (fixed effects)		
		meta-analysis	0.611	0.933 (0.715, 1.218)	0.639		fixed effects model	0.447291271	0.178595678
Schizophrenia	Acne	FINN-GCST	0.386	0.949 (0.844, 1.068)		0.27	Inverse variance weighted (fixed effects)		
		PGC-FINN	0.007	1.035 (1.009, 1.061)		0.73	Inverse variance weighted (multiplicative random effects)		
		meta-analysis	0.773	1.011 (0.938, 1.09)	0.782		fixed effects model	0.495600768	0.159121339
	Rosacea	FINN-GCST	0.949	1.002 (0.939, 1.069)		0.182	Inverse variance weighted (fixed effects)		
		PGC-FINN	0.289	1.092 (0.928, 1.286)		0.818	Inverse variance weighted (fixed effects)		
		meta-analysis	0.652	1.014 (0.955, 1.077)	0.782		fixed effects model	<0.001	0.609902619
	Hidradenitis suppurativa	FINN-GCST	0.023	0.792 (0.647, 0.969)		0.408	Inverse variance weighted (fixed effects)		
		PGC-FINN	0.993	1 (0.955, 1.048)		0.592	Inverse variance weighted (multiplicative random effects)		
		meta-analysis	0.407	0.909 (0.726, 1.139)	0.782		random effects model	0.796084415	0.026794716
	Contact dermatitis	FINN-GCST	0.572	0.973 (0.886, 1.069)		0.234	Inverse variance weighted (fixed effects)		

	PGC-FINN	0.437	1.021 (0.969, 1.075)		0.766	Inverse variance weighted (multiplicative random effects)		
	meta-analysis	0.684	1.009 (0.965, 1.056)	0.782		fixed effects model	<0.001	0.384192056
Atopic dermatitis	FINN-GCST	0.674	1.012 (0.958, 1.069)		0.09	Inverse variance weighted (fixed effects)		
	PGC-FINN	0.646	1.004 (0.987, 1.021)		0.91	Inverse variance weighted (multiplicative random effects)		
	meta-analysis	0.573	1.005 (0.988, 1.021)	0.782		fixed effects model	<0.001	0.792389043
Eczema	FINN-GCST	0.562	1.169 (0.689, 1.986)		0.182	Inverse variance weighted (fixed effects)		
	PGC-FINN	0.974	1.004 (0.782, 1.289)		0.818	Inverse variance weighted (multiplicative random effects)		
	meta-analysis	0.782	1.032 (0.824, 1.294)	0.782		fixed effects model	<0.001	0.385368197
Psoriasis	FINN-GCST	0.422	0.987 (0.955, 1.019)		0.009	Inverse variance weighted (fixed effects)		
	PGC-FINN	0.465	1.001 (0.998, 1.004)		0.991	Inverse variance weighted (fixed effects)		
	meta-analysis	0.515	1.001 (0.998, 1.004)	0.782		fixed effects model	<0.001	0.335945689

Table S2. The TSMR (Two-sample Mendelian Randomization) results of inflammatory dermatoses on mental disorders.

Exposure	Outcome	Data source	P value	OR(95%CI)	FDR	Weight	Method	I^2	Q_pval
Acne	Anxiety	FINN-PGC	0.937	0.999 (0.969, 1.03)		0.589	Inverse variance weighted (fixed effects)		
		GCST-FINN	0.019	0.822 (0.698, 0.968)		0.411	Inverse variance weighted (fixed effects)		
		meta-analysis	0.396	0.922 (0.764, 1.112)	0.594		random effects model	0.809329777	0.022014262
	Bipolar disorder	FINN-PGC	0.945	0.998 (0.942, 1.057)		0.77	Inverse variance weighted (fixed effects)		
		GCST-FINN	0.828	1.012 (0.91, 1.125)		0.23	Inverse variance weighted (multiplicative random effects)		
		meta-analysis	0.965	1.001 (0.952, 1.053)	0.965		fixed effects model	<0.001	0.822426219
	Depression	FINN-PGC	0.762	1.004 (0.98, 1.027)		0.565	Inverse variance weighted (fixed effects)		
		GCST-FINN	0.008	1.078 (1.02, 1.14)		0.435	Inverse variance weighted (multiplicative random effects)		
		meta-analysis	0.328	1.035 (0.966, 1.11)	0.594		random effects model	0.813841891	0.020465109
	OCD	FINN-PGC	0.705	1.025 (0.903, 1.163)		0.703	Inverse variance weighted (multiplicative random effects)		
		GCST-FINN	0.723	1.036 (0.853, 1.259)		0.297	Inverse variance weighted (fixed effects)		
		meta-analysis	0.61	1.028 (0.924, 1.143)	0.732		fixed effects model	<0.001	0.927379527
	PTSD	FINN-PGC	0.595	0.975 (0.887, 1.071)		0.461	Inverse variance weighted (fixed effects)		
		GCST-FINN	0.004	0.889 (0.821, 0.963)		0.539	Inverse variance weighted (fixed effects)		
		meta-analysis	0.101	0.928 (0.848, 1.015)	0.303		fixed effects model	0.533061759	0.143351298
	Schizophrenia	FINN-PGC	0.313	1.043 (0.961, 1.133)		0.609	Inverse variance weighted (fixed effects)		
		GCST-FINN	0.102	1.09 (0.983, 1.208)		0.391	Inverse variance weighted (multiplicative random effects)		
		meta-analysis	0.07	1.061 (0.995, 1.132)	0.303		fixed effects model	<0.001	0.518492143
Atopic dermatitis	Anxiety	FINN-PGC	0.029	1.028 (1.003, 1.053)		0.959	Inverse variance weighted (fixed effects)		
		GCST-FINN	0.831	0.987 (0.876, 1.113)		0.041	Inverse variance weighted (fixed effects)		
		meta-analysis	0.036	1.026 (1.002, 1.051)	0.108		fixed effects model	<0.001	0.515621969
	Bipolar disorder	FINN-PGC	0.547	1.014 (0.968, 1.063)		0.579	Inverse variance weighted (fixed effects)		
		GCST-FINN	0.331	1.028 (0.973, 1.086)		0.421	Inverse variance weighted (multiplicative random effects)		
		meta-analysis	0.276	1.02 (0.984, 1.057)	0.414		fixed effects model	<0.001	0.72771449
	Depression	FINN-PGC	0.017	1.029 (1.005, 1.054)		0.665	Inverse variance weighted (multiplicative random effects)		
		GCST-FINN	0.033	1.037 (1.003, 1.072)		0.335	Inverse variance weighted (multiplicative random effects)		
		meta-analysis	0.001	1.032 (1.012, 1.052)	0.006		fixed effects model	<0.001	0.71204784
	OCD	FINN-PGC	0.702	0.981 (0.892, 1.08)		0.655	Inverse variance weighted (multiplicative random effects)		
		GCST-FINN	0.137	0.905 (0.793, 1.032)		0.345	Inverse variance weighted (fixed effects)		
		meta-analysis	0.236	0.954 (0.883, 1.031)	0.414		fixed effects model	<0.001	0.327311494
	PTSD	FINN-PGC	0.85	1.007 (0.933, 1.087)		0.344	Inverse variance weighted (fixed effects)		
		GCST-FINN	0.575	0.984 (0.931, 1.04)		0.656	Inverse variance weighted (fixed effects)		
		meta-analysis	0.731	0.992 (0.949, 1.038)	0.779		fixed effects model	<0.001	0.629618316
	Schizophrenia	FINN-PGC	0.352	0.962 (0.886, 1.044)		0.427	Inverse variance weighted (multiplicative random effects)		
		GCST-FINN	0.034	1.052 (1.004, 1.103)		0.573	Inverse variance weighted (multiplicative random effects)		
		meta-analysis	0.779	1.012 (0.928, 1.104)	0.779		fixed effects model	0.711279067	0.062735408
Contact dermatitis	Anxiety	FINN-PGC	0.979	0.999 (0.959, 1.042)		0.955	Inverse variance weighted (fixed effects)		
		GCST-FINN	0.644	1.046 (0.865, 1.264)		0.045	Inverse variance weighted (fixed effects)		
		meta-analysis	0.942	1.002 (0.962, 1.043)	0.942		fixed effects model	<0.001	0.647627863
	Bipolar disorder	FINN-PGC	0.081	1.073 (0.992, 1.16)		0.463	Inverse variance weighted (fixed effects)		
		GCST-FINN	0.17	0.963 (0.913, 1.016)		0.537	Inverse variance weighted (fixed effects)		
		meta-analysis	0.818	1.012 (0.912, 1.124)	0.942		random effects model	0.796579856	0.026610072
	Depression	FINN-PGC	0.898	1.003 (0.957, 1.051)		0.311	Inverse variance weighted (multiplicative random effects)		
		GCST-FINN	0.359	1.015 (0.983, 1.048)		0.689	Inverse variance weighted (fixed effects)		
		meta-analysis	0.404	1.011 (0.985, 1.038)	0.942		fixed effects model	<0.001	0.685600009
	OCD	FINN-PGC	0.083	0.884 (0.77, 1.016)		0.515	Inverse variance weighted (fixed effects)		
		GCST-FINN	0.184	1.115 (0.95, 1.308)		0.485	Inverse variance weighted (fixed effects)		
		meta-analysis	0.926	0.989 (0.789, 1.241)	0.942		random effects model	0.781511181	0.032405918
	PTSD	FINN-PGC	0.53	0.96 (0.844, 1.091)		0.487	Inverse variance weighted (fixed effects)		
		GCST-FINN	0.027	1.15 (1.025, 1.289)		0.513	MR Egger		
		meta-analysis	0.568	1.053 (0.882, 1.257)	0.942		random effects model	0.763943561	0.039568892
	Schizophrenia	FINN-PGC	0.939	0.995 (0.865, 1.144)		0.099	Inverse variance weighted (multiplicative random effects)		
		GCST-FINN	0.231	0.972 (0.928, 1.018)		0.901	Inverse variance weighted (multiplicative random effects)		
		meta-analysis	0.245	0.974 (0.933, 1.018)	0.942		fixed effects model	<0.001	0.761423207
Eczema	Anxiety	FINN-PGC	0.058	0.84 (0.703, 1.004)		0.925	MR Egger		
		GCST-FINN	0.736	1.113 (0.596, 2.08)		0.075	Inverse variance weighted (fixed effects)		
		meta-analysis	0.08	0.858 (0.723, 1.018)	0.226		fixed effects model	<0.001	0.395040562
	Bipolar disorder	FINN-PGC	0.009	1.124 (1.029, 1.227)		0.721	Inverse variance weighted (fixed effects)		
		GCST-FINN	0.037	1.472 (1.024, 2.116)		0.279	Inverse variance weighted (multiplicative random effects)		
		meta-analysis	0.113	1.212 (0.956, 1.536)	0.226		fixed effects model	0.502585551	0.156224539
	Depression	FINN-PGC	<0.001	1.112 (1.065, 1.161)		0.964	Inverse variance weighted (multiplicative random effects)		
		GCST-FINN	0.22	1.15 (0.92, 1.437)		0.036	Inverse variance weighted (multiplicative random effects)		
		meta-analysis	<0.001	1.113 (1.067, 1.161)	<0.001		fixed effects model	<0.001	0.771586664
	OCD	FINN-PGC	0.9	1.011 (0.846, 1.209)		0.95	Inverse variance weighted (multiplicative random effects)		
		GCST-FINN	0.709	0.862 (0.395, 1.883)		0.05	Inverse variance weighted (fixed effects)		
		meta-analysis	0.969	1.003 (0.843, 1.194)	0.969		fixed effects model	<0.001	0.695666737
	PTSD	FINN-PGC	0.763	0.978 (0.848, 1.129)		0.816	Inverse variance weighted (fixed effects)		
		GCST-FINN	0.631	1.077 (0.797, 1.455)		0.184	Inverse variance weighted (fixed effects)		
		meta-analysis	0.947	0.996 (0.875, 1.133)	0.969		fixed effects model	<0.001	0.573128543
	Schizophrenia	FINN-PGC	0.108	0.891 (0.774, 1.026)		0.618	Inverse variance weighted (multiplicative random effects)		
		GCST-FINN	0.312	1.16 (0.87, 1.547)		0.382	Inverse variance weighted (multiplicative random effects)		
		meta-analysis	0.909	0.986 (0.767, 1.267)	0.969		fixed effects model	0.615998124	0.106584025
Hidradenitis suppurativa	Anxiety	FINN-PGC	0.054	1.023 (1, 1.046)		0.982	Inverse variance weighted (fixed effects)		
		GCST-FINN	0.367	1.081 (0.913, 1.28)		0.018	Inverse variance weighted (fixed effects)		
		meta-analysis	0.042	1.024 (1.001, 1.047)	0.252		fixed effects model	<0.001	0.524428305
	Bipolar disorder	FINN-PGC	0.077	1.04 (0.996, 1.086)		0.762	Inverse variance weighted (fixed effects)		
		GCST-FINN	0.876	0.994 (0.92, 1.074)		0.238	Inverse variance weighted (fixed effects)		
		meta-analysis	0.142	1.029 (0.991, 1.068)	0.426		fixed effects model	<0.001	0.317543835
	Depression	FINN-PGC	0.06	1.024 (0.999, 1.049)		0.588	Inverse variance weighted (multiplicative random effects)		
		GCST-FINN	0.333	0.978 (0.935, 1.023)		0.412	Inverse variance weighted (fixed effects)		
		meta-analysis	0.834	1.005 (0.961, 1.05)	0.901		fixed effects model	0.674511872	0.079636302
	OCD	FINN-PGC	0.824	0.991 (0.918, 1.07)		0.872	Inverse variance weighted (fixed effects)		
		GCST-FINN	0.816	1.024 (0.838, 1.252)		0.128	Inverse variance weighted (fixed effects)		
		meta-analysis	0.901	0.995 (0.926, 1.07)	0.901		fixed effects model	<0.001	0.766660953
	PTSD	FINN-PGC	0.291	0.963 (0.897, 1.033)		0.571	Inverse variance weighted (fixed effects)		
		GCST-FINN	0.974	1.001 (0.923, 1.087)		0.429	Inverse variance weighted (fixed effects)		
		meta-analysis	0.437	0.979 (0.928, 1.033)	0.656		fixed effects model	<0.001	0.473508513
	Schizophrenia	FINN-PGC	0.215	0.962 (0.904, 1.023)		0.377	Inverse variance weighted (fixed effects)		
		GCST-FINN	0.613	0.988 (0.941, 1.036)		0.623	Inverse variance weighted (fixed effects)		
		meta-analysis	0.246	0.978 (0.941, 1.016)	0.492		fixed effects model	<0.001	0.504496543
Psoriasis	Anxiety	FINN-PGC	0.825	0.997 (0.971, 1.023)		0.822	Inverse variance weighted (multiplicative random effects)		
		GCST-FINN	0.86	1.005 (0.95, 1.063)		0.178	Inverse variance weighted (fixed effects)		
		meta-analysis	0.899	0.998 (0.975, 1.022)	0.899		fixed effects model	<0.001	0.799824777
	Bipolar disorder	FINN-PGC	0.525	1.014 (0.972, 1.057)		0.221	Inverse variance weighted (fixed effects)		
		GCST-FINN	0.022	1.026 (1.004, 1.049)		0.779	Inverse variance weighted (fixed effects)		
		meta-analysis	0.02	1.023 (1.004, 1.044)	0.093		fixed effects model	<0.001	0.605664195
	Depression	FINN-PGC	0.05	1.024 (1, 1.049)		0.396	Inverse variance weighted (multiplicative random effects)		
		GCST-FINN	0.231	1.012 (0.992, 1.032)		0.604	Inverse variance weighted (multiplicative random effects)		
		meta-analysis	0.031	1.017 (1.002, 1.032)	0.093		fixed effects model	<0.001	0.442849047
	OCD	FINN-PGC	0.984	0.999 (0.928, 1.076)		0.371	Inverse variance weighted (fixed effects)		
		GCST-FINN	0.44	0.978 (0.924, 1.035)		0.629	Inverse variance weighted (fixed effects)		
		meta-analysis	0.532	0.986 (0.942, 1.031)	0.638		fixed effects model	<0.001	0.649357808
	PTSD	FINN-PGC	0.118	1.068 (0.983, 1.159)		0.108	Inverse variance weighted (multiplicative random effects)		
		GCST-FINN	0.035	1.019 (1.001, 1.038)		0.892	Inverse variance weighted (fixed effects)		
		meta-analysis	0.091	1.025 (0.996, 1.054)	0.182		fixed effects model	0.138340224	0.281351325
	Schizophrenia	FINN-PGC	0.038	1.065 (1.003, 1.13)		0.362	Inverse variance weighted (multiplicative random effects)		
		GCST-FINN	0.279	1.006 (0.995, 1.017)		0.638	Inverse variance weighted (fixed effects)		
		meta-analysis	0.33	1.027 (0.973, 1.084)	0.495		fixed effects model	0.705150941	0.065530689
Rosacea	Anxiety	FINN-PGC	0.337	0.987 (0.96, 1.014)		0.716	Inverse variance weighted (fixed effects)		
		GCST-FINN	0.747	0.993 (0.951, 1.037)		0.284	Inverse variance weighted (fixed effects)		
		meta-analysis	0.325	0.989 (0.966, 1.011)	0.644		fixed effects model	<0.001	0.811679403
	Bipolar disorder	FINN-PGC	0.092	1.045 (0.993, 1.101)		0.291	Inverse variance weighted (fixed effects)		
		GCST-FINN	0.398	1.004 (0.994, 1.015)		0.709	Inverse variance weighted (fixed effects)		
		meta-analysis	0.375	1.016 (0.981, 1.053)	0.644		fixed effects model	0.548475557	0.136699904
	Depression	FINN-PGC	0.764	1.003 (0.982, 1.024)		0.115	Inverse variance weighted (fixed effects)		
		GCST-FINN	0.297	1.004 (0.996, 1.012)		0.885	Inverse variance weighted (fixed effects)		
		meta-analysis	0.279	1.004 (0.997, 1.011)	0.644		fixed effects model	<0.001	0.943202764
	OCD	FINN-PGC	0.72	1.017 (0.928, 1.114)		0.169	Inverse variance weighted (fixed effects)		
		GCST-FINN	0.908	0.998 (0.957, 1.04)		0.831	Inverse variance weighted (fixed effects)		
		meta-analysis	0.966	1.001 (0.964, 1.039)	0.966		fixed effects model	<0.001	0.707760127
	PTSD	FINN-PGC	0.586	1.024 (0.941, 1.114)		0.027	Inverse variance weighted (fixed effects)		
		GCST-FINN	0.476	1.005 (0.991, 1.019)		0.973	Inverse variance weighted (fixed effects)		
		meta-analysis	0.429	1.006 (0.992, 1.02)	0.644		fixed effects model	<0.001	0.674244694
	Schizophrenia	FINN-PGC	0.269	1.043 (0.968, 1.123)		0.095	Inverse variance weighted (fixed effects)		
		GCST-FINN	0.99	1 (0.992, 1.008)		0.905	Inverse variance weighted (fixed effects)		
		meta-analysis	0.743	1.004 (0.98, 1.028)	0.892		fixed effects model	0.171486042	0.271930998

Table S3. LDSC (Linkage Disequilibrium Score Regression) results of the causal relationship between inflammatory dermatoses and mental disorders.

Trait1	Trait2	h2_exp	h2_exp_se	int_exp	h2_out	h2_out_se	int_out	gcov	gcov_se	rg	int_crosstrait	int_crosstrait_se	rg_se	rg_pval	polygenicity	perSNP_heritability
Depression	Psoriasis	0.039488	0.0025161	1.0874089	0.0194964	0.0020321	1.0663186	0.005604	0.0012325	0.2019718	0.033109181	0.0056	0.0444197	5.44417E-06	0.005799289	5.92097E-06
Atopic dermatitis	Depression	0.0207928	0.0021673	1.0663186	0.039488	0.0025161	1.0874089	0.0057874	0.0012728	0.2019718	0.033109181	0.0056	0.0444197	5.44417E-06	0.000700989	2.57931E-05

Table S4. The SMR (Summary-based Mendelian Randomization) analysis of psoriasis identified genes with significant associations that passed the HEIDI (Heterogeneity in Dependent Instruments) test.

Gene	qtl_name	probeID	ProbeChr	Probe_bp	topSNP	topSNP_ch	topSNP_bp	A1	A2	Freq	b_GWAS	se_GWAS	p_GWAS	b_eQTL	se_eQTL	p_eQTL	b_SMR	se_SMR	p_SMR	pSMR_multi	HEIDI_nsnp	HEIDI_pSMR	gene_id	chr	start	end	strand	GWAS_LOCI	Lead_SNP	Lead_SNP_Fdr
RGS14	eQTL_Brain	ENSG00000	5	177365260	rs10051765	5	177372991	C	T	0.325065	0.090792	0.0151317	1.97173e-09	-0.751575	0.0260678	8.63598e-1	-0.120802	0.0205647	4.247331e-0	2.945465e-0	0.0522882	20		ENSG00000	5	177357924	177372596	+	chr5:176835	rs13153019	177355217	2.22984877
PRSS36	eQTL_Brain	ENSG00000	16	31144505	rs1549299	16	31142825	G	A	0.292766	0.0777052	0.0158062	8.827561e-0	6.684175	0.0347364	2.325436e-0	0.113575	0.0238113	1.844185e-0	0.0004085	0.1922323	20		ENSG00000	16	31138926	31150083	-	chr16:30642	rs60996860	31122892	0.0032273
AGAP5	eQTL_Brain	ENSG00000	10	75686088	rs7076525	10	75753039	C	T	0.421866	-0.074905	0.0149468	5.401843e-0	-0.402891	0.0332305	7.869978e-0	0.18592	0.0401433	3.631931e-0	3.631931e-0	0.1397043	20		ENSG00000	10	73674287	73698109	-	chr10:73211	rs2664280	73857586	0.0052503
FUT11	eQTL_Brain	ENSG00000	10	73776264	rs10824031	10	73749515	C	T	0.42175	-0.074905	0.0149471	5.405232e-0	-0.416898	0.0353922	4.986546e-0	0.179672	0.0389628	4.00022e-0	1.078107e-0	0.0605582	20		ENSG00000	10	73772276	73780251	+	chr10:73211	rs2664280	73857586	0.0052503
PUS10	eQTL_Brain	ENSG00000	2	60979241	rs13005116	2	61014432	C	G	0.177712	-0.085328	0.0178892	1.844144e-0	0.704993	0.0434288	2.932716e-0	-0.121034	0.0264477	4.731931e-0	9.102866e-0	0.080312	20		ENSG00000	2	60940222	61018259	-	chr2:603089	rs10193310	60911776	0.0055206
MTHFR	eQTL_Brain	ENSG00000	1	11796089	rs1476413	1	11792243	T	C	0.26971	0.0720972	0.0163764	1.070076e-0	0.595011	0.0308415	6.207248e-0	0.12117	0.0282304	1.769364e-0	2.483727e-0	0.77181	20		ENSG00000	1	11785723	11806455	-			NA	0.0129239
TUBG2	eQTL_Brain	ENSG00000	17	42663145	rs2089118	17	42643372	A	G	0.564802	0.0648184	0.0149726	1.496965e-0	-0.838996	0.031845	5.665573e-0	-0.077257	0.0130852	1.938592e-0	0.0004154	0.3054825	20		ENSG00000	17	42659284	42667006	+			NA	0.0129239
PDE4A	eQTL_Brain	ENSG00000	19	10443202	rs2304256	19	10364976	A	C	0.28555	-0.097036	0.0173706	2.320801e-0	0.19989	0.0334224	2.221353e-0	-0.485446	0.1138912	4.457297e-0	4.457297e-0	0.2898067	20		ENSG00000	19	10416773	10469630	+			NA	0.0234008
CLEC1A	eQTL_Brain	ENSG00000	12	10090591	rs4764247	12	10094759	G	A	0.1251	0.0980145	0.0216655	6.963466e-0	-0.434741	0.0483445	2.415558e-0	-0.225455	0.0557865	5.313621e-0	0.0004679	0.7938157	5		ENSG00000	12	10069554	10111627	-			NA	0.0253605
DNMT3B	eQTL_Brain	ENSG00000	20	32785870	rs6053869	20	32760944	T	C	0.405032	0.0612908	0.0151377	5.146232e-0	0.14469	0.0325369	6.250611e-0	0.137147	0.0353138	0.0001029	5.036458e-0	0.2230307	20		ENSG00000	20	32762385	32809359	+			NA	0.0415539
TUBG1	eQTL_Brain	ENSG00000	17	42612440	rs2292750	17	42659763	T	C	0.5655	0.0643538	0.0149807	1.740797e-0	0.262673	0.0301815	3.229801e-0	0.244996	0.0636009	0.0001171	0.0001171	0.4961952	20		ENSG00000	17	42609641	42615238	+			NA	0.044372
ZSCAN9	eQTL_Brain	ENSG00000	6	28229186	rs1220126	6	28229715	G	A	0.035185	-0.081424	0.0205155	7.220027e-0	1.50429	0.099416	1.007691e-0	-0.054128	0.0140994	0.0001235	0.0001259	0.8708262	20		ENSG00000	6	28224886	28233487	+			NA	0.044372
RETREG3	eQTL_Brain	ENSG00000	17	42595068	rs1024091	17	42619976	T	C	0.560902	0.0659346	0.0149725	1.064135e-0	-0.204258	0.0263233	8.519417e-0	-0.33228	0.0842835	0.0001282	0.0001282	0.1900731	20		ENSG00000	17	42579513	42610623	+			NA	0.044372
EFCAB5	eQTL_Brain	ENSG00000	17	30011826	rs3936006	17	29930642	A	G	0.508322	0.0585584	0.0149142	8.624389e-0	-0.632483	0.036578	5.466989e-0	-0.092585	0.0241807	0.0001287	0.001342	0.9130876	20		ENSG00000	17	29929200	30108452	+			NA	0.044372
UBE2L3	eQTL_Brain	ENSG00000	22	21586741	rs7444	22	21622645	C	T	0.193135	0.061746	0.0160193	0.000116	0.482027	0.0163121	3.252228e-0	0.128096	0.0346058	0.0002143	0.0002143	0.8730513	17		ENSG00000	22	21549447	21624034	+			NA	0.0562417
ZGLP1	eQTL_Brain	ENSG00000	19	10307342	rs75231016	19	10318306	C	G	0.087633	-0.106914	0.0276148	0.0001081	-0.704857	0.0573535	1.028882e-0	-0.151682	0.041076	0.0002219	0.0001466	0.0786418	20		ENSG00000	19	10304803	10309880	-			NA	0.0568212
CCDC116	eQTL_Brain	ENSG00000	22	21635023	rs12169001	22	21612544	T	C	0.192338	0.0612719	0.0160299	0.0001322	-0.610703	0.0469145	9.749064e-0	-0.10033	0.0273565	0.0002449	0.0002449	0.4217902	16		ENSG00000	22	21632716	21637329	+			NA	0.059807
CCDC88B	eQTL_Brain	ENSG00000	11	64348869	rs479552	11	64343211	C	G	0.376766	-0.056247	0.0152458	0.0002249	-0.869277	0.0326608	4.513556e-0	0.064705	0.0177062	0.0002578	0.0017193	0.774156	20		ENSG00000	11	64340204	64357534	+			NA	0.0615224
BEND3	eQTL_Brain	ENSG00000	6	107090348	rs12208103	6	107121227	T	C	0.377352	0.0677603	0.0152702	9.104329e-0	-0.17324	0.0279562	5.760661e-0	-0.391135	0.106813	0.0003088	0.0003088	0.2932929	10		ENSG00000	6	107065182	107115515	-			NA	0.0689835
BBS12	eQTL_Brain	ENSG00000	4	122738822	rs309364	4	122737704	A	G	0.2401	-0.070588	0.0185826	0.0001455	0.444909	0.0396142	2.870535e-0	-0.158656	0.0440914	0.0003202	1.939653e-0	0.1879666	20		ENSG00000	4	122732702	122744942	+			NA	0.0700537
YDJC	eQTL_Brain	ENSG00000	22	21629077	rs2876971	22	21618112	G	T	0.192458	0.0615616	0.0160297	0.0001228	0.340041	0.035807	2.170513e-0	0.181042	0.0508494	0.0003704	0.0003704	0.8138216	10		ENSG00000	22	21628089	21630064	-			NA	0.0786602
NWD1	eQTL_Brain	ENSG00000	19	16768905	rs12983375	19	16720249	T	C	0.38165	0.05556	0.015564	0.0003486	-0.934075	0.0269038	4.053645e-0	-0.059588	0.0167596	0.0003746	0.0004405	0.0822504	17		ENSG00000	19	16719847	16817963	+			NA	0.0786602
NDUFV1	eQTL_Brain	ENSG00000	11	67609103	rs60774377	11	67614755	T	C	0.433704	-0.056932	0.0151546	0.0001721	0.401146	0.0411013	1.672395e-0	-0.141923	0.0404802	0.0004549	0.0004549	0.2110798	20		ENSG00000	11	67605653	67612554	+			NA	0.0920289
NUDT8	eQTL_Brain	ENSG00000	11	67628937	rs78371233	11	67630197	G	A	0.434732	-0.05574	0.0151526	0.0002345	0.423336	0.0371821	4.939792e-0	-0.131669	0.0376152	0.0004645	0.0005549	0.3329827	20		ENSG00000	11	67627938	67629937	-			NA	0.0920289
SBF54	eQTL_Brain	ENSG00000	14	35005822	rs752211	14	34933173	G	A	0.402779	-0.089868	0.0150572	2.395419e-0	-0.248896	0.0279374	1.114853e-0	0.375657	0.0630805	4.743885e-0	1.696783e-0	0.0702495	20		ENSG00000	14	34981957	35029686	+	chr14:34431	rs8904	35482011	3.81317195725e-05
RGS14	eQTL_Brain	ENSG00000	5	177365260	rs4075958	5	177357511	A	G	0.25955	0.0967846	0.0163941	3.556024e-0	0.151364	0.0089977	1.666827e-0	0.639416	0.114785	2.539214e-0	1.256083e-0	0.0761808	20		ENSG00000	5	177357924	177372596	+	chr5:176835	rs13153019	177355217	8.69603965
PRR5L	eQTL_Brain	ENSG00000	11	36380746	rs564035031	11	36410419	A	G	0.029612	0.173458	0.0304957	1.285739e-0	-0.626625	0.0238121	1.278065e-0	-0.276813	0.0497904	2.704497e-0	5.043532e-0	0.3475769	12		ENSG00000	11	36296288	36465204	+	chr11:3591	rs76741620	36399020	8.69603965
REL	eQTL_Brain	ENSG00000	2	60906566	rs34023434	2	60895182	T	C	0.148098	-0.102738	0.0185403	3.001756e-0	0.17151	0.0106654	1.46737e-0	0.595902	0.114338	1.614377e-0	1.905227e-0	0.9891729	20		ENSG00000	2	60881521	60931612	+	chr2:604134	rs10193310	60911776	0.0003444
ZMIZ1	eQTL_Brain	ENSG00000	10	79192747	rs1250565	10	79287258	A	G	0.375204	-0.08391	0.0150556	2.499086e-0	0.144465	0.0095762	2.008293e-0	-0.580832	0.111101	1.71385e-0	6.167541e-0	0.0743653	20		ENSG00000	10	79068966	79316519	+	chr10:7878	rs1250566	79286696	0.0003444
KAT8	eQTL_Brain	ENSG00000	16	31122941	rs1060506	16	31122128	T	C	0.283995	0.0782693	0.0157693	6.92707e-0	0.245484	0.0093355	2.14148e-1	0.318837	0.0653719	1.07564e-0	8.704883e-0	0.2803911	20		ENSG00000	16	31114489	31131393	+	chr16:30622	rs60996860	31122892	0.0012352
TYK2	eQTL_Brain	ENSG00000	19	10350529	rs11085725	19	10351837	T	C	0.289604	-0.099893	0.0172034	6.377107e-0	0.116921	0.0144551	6.03666e-1	-0.854359	0.181124	2.393755e-0	2.393755e-0	0.3844473	20		ENSG00000	19	10350529	10380572	-	chr19:9866	rs34536443	10352442	0.0021227
PUS10	eQTL_Brain	ENSG00000	2	60979239	rs13005116	2	61014432	C	G	0.177712	-0.085328	0.0178892	1.844144e-0	0.428838	0.0146832	1.625663e-0	-0.198974	0.0422682	2.508605e-0	1.775747e-0	0.0801397	20		ENSG00000	2	60940222	61018259	-	chr2:604134	rs10193310	60911776	0.0021227
PRSS36	eQTL_Brain	ENSG00000	16	31144496	rs78924645	16	31143037	A	G	0.2854	0.0768389	0.015821	1.193183e-0	0.13901	0.0094744	9.714357e-0	0.552758	0.119885	4.012665e-0	0.0003095	0.1354261	20		ENSG00000	16	31138926	31150083	-	chr16:30622	rs60996860	31122892	0.002789
TRIM56	eQTL_Brain	ENSG00000	7	101091724	rs1155781	7	101105554	C	T	0.083157	0.175834	0.0355658	7.657233e-0	-0.204908	0.0162118	1.28029e-3(	-0.858112	0.186375	4.140188e-0	2.308851e-0	0.4554756	20		ENSG00000	7	101085481	101097967	+	chr7:100602	rs79529160	101111535	0.002789
MTHFR	eQTL_Brain	ENSG00000	1	11796089	rs1476413	1	11792243	T	C	0.26971	0.0720972	0.0163764	1.070076e-0	0.730139	0.0077829	0	0.098758	0.0224569	1.094217e-0	1.530989e-0	0.2952122	20		ENSG00000	1	11785723	11806455	-			NA	0.0065155
ZC3H12C	eQTL_GTE	ENSG00000	11	110093361	rs6589111	11	110097915	G	A	0.70034	-0.078475	0.0152319	2.577455e-0	-0.299946	0.0388464	1.151188e-0	0.261629	0.0610487	1.822672e-0	1.822672e-0	0.0930775	17		ENSG00000	11	110093392	110171841	+	chr11:10951	rs653169	110130255	0.0097677
HSD17B1	eQTL_Brain	ENSG00000	17	42554968	rs2292751	17	42573781	C	T	0.435844	-0.065017	0.0149763	1.41634e-0	0.162604	0.0088954	1.203073e-0	-0.399847	0.0946647	2.40189e-0	0.0017086	0.1059213	20		ENSG00000	17	42552922	42555214	+			NA	0.0124565
MARK4	eQTL_Brain	ENSG00000	19	45192286	rs344806	19	45296446	G	C	0.307218	-0.067402	0.0161772	3.093457e-0	0.389537	0.0087167	0	-0.173111	0.0417289	3.347088e-0	0.0136766	0.6699671	20		ENSG00000	19	45079288	45305284	+			NA	0.0158268
DENND1B	eQTL_eQTI	ENSG00000	1	197640222	rs16841912	1	197733346	C	G	0.212091	0.0892207	0.0207264	1.672207e-0	0.148702	0.010015	7.167528e-0	0.599997	0.145122	3.558209e-0	0.0005369	0.8076914	20		ENSG00000	1	197504748	197773696	-			NA	0.0163444
MARK4	eQTL_GTE	ENSG00000	19	45251258	rs344806	19	45296446	C	G	0.692782	0.0674019	0.0161772	3.093457e-0	-0.596789	0.026515	3.496338e-0	-0.112941	0.0275676	4.187702e-0	0.0009896	0.9749836	20		ENSG00000	19	45079288	45305284	+			NA	0.0187016
IL23A	eQTL_Brain	ENSG00000	12	56337292	rs2095782	12	56329046	C	T	0.0675135	-0.161345	0.034393	2.715857e-0	0.134781	0.0163031	1.371406e-1	-0.198974	0.293398	4.501787e-0	4.501787e-0	0.2209965	4		ENSG00000	12	56334174	56340410	+			NA	0.0190461
IFNGR2	eQTL_eQTI	ENSG00000	21	33441380	rs17879003	21	33406221	T	C	0.139519	-0.079192	0.0194725	4.764803e-0	0.644771	0.0107396	0	-0.122822	0.0302699	4.958489e-0	0.0008226	0.3438695	20		ENSG00000	21	33403413	33479348	+			NA	0.0194433
BEND3	eQTL_Brain	ENSG00000	6	107090348	rs12208103	6	107121227	T	C	0.377352	0.0677603	0.0152702	9.104329e-0	-0.084742	0.0090567	8.218833e-0	-0.799608	0.199434	6.087483e-0	6.087483e-0	0.1277176	20		ENSG00000	6	107065182	107115515	-			NA	0.023302
C6orf120	eQTL_GTE	ENSG00000	6	169705523	rs6912767	6	169665799	A	G	0.127975	0.102699	0.0254392	5.413046e-0	0.311295	0.0111388	4.651335e-0	0.327803	0.082031	6.439667e-0	0.0022637	0.0776243	20		ENSG00000	6	169702190	169704856	+			NA	0.0240776
LEAP2	eQTL_Brain	ENSG00000	5	132874356	rs2023895	5	132895836	G	A	0.367947	0.0699306	0.0170332	4.033596e-0	0.10294	0.0082907	2.129315e-0	0.679334	0.174278	9.699766e-0	0.0002755	0.2231802	20		ENSG00000	5	132873444	132875046	+			NA	0.0331791
HSD17B1	eQTL_Brain	ENSG00000	17	42549214	rs597255	17	42553082	T	C	0.565139	0.0644209	0.0149782	1.700464e-0	-0.226705	0.0252431	2.686161e-0	-0.284162	0.0732548	0.0001048	0.000429	0.1751075	20		ENSG00000	17	42552922	42555214	+			NA	0.0351179
MLH3	eQTL_eQTI	ENSG00000	14	75032650	rs175065	14	75028280	C	T	0.463632	0.0578497	0.0149475	0.0001087	-0.490795	0.0074798	0	-0.117869	0.0305086	0.0001118	0.0167798	0.0695016	20		ENSG00000	14	75013769	75051532	-			NA	0.0364187
UBE2L3	eQTL_Brain	ENSG00000	22	21586740	rs2870512	22	21595122	C	A	0.19305	0.0619132	0.0160208	0.0001113	0.731873	0.0089253	0	0.0845956	0.0219144	0.0001113	0.0258339	0.8723779	20		ENSG00000	22	21549447	21624034	+			NA	0.0364187
SETD1A	eQTL_GTE	ENSG00000	16	30971209	rs7206511	16	30939031	G	A	0.364219	0.0624272	0.0155837	6.177413e-0	0.124189	0.0088811	1.96299e-4(	0.502679	0.130531	0.0001176	0.0006297	0.1001792	20		ENSG00000	16	30957754	30984664	+			NA	0.0370796
EFCAB5	eQTL_Brain	ENSG00000	17	30011826	rs3936006	17	29930642	A	G	0.508322	0.0585584	0.0149142	8.624389e-0	-0.143943	0.0079086	5.085871e-1	-0.406817	0.105995	0.000124	0.000187	0.8283125	20		ENSG00000	17	29929200	30108452	+			NA	0.0372182
KAT8	eQTL_GTE	ENSG00000	16	31115754	rs1060506	16	31122128	T	C	0.283995	0.0782693	0.0157693	6.92707e-0	0.0856544	0.0144385	2.9962e-09	0.93178	0.240043	0.0001408	0.0001408	0.4663219	11		ENSG00000	16	31114489	31131393	+	chr16:30622	rs60996860	31122892	0.044116
TDRKH	eQTL_eQTI	ENSG00000	1	151780762	rs2495396	1	151772452	T	C	0.481137	0.0568565	0.0149865	0.0001483	0.424067	0.0075797	0	0.134074	0.0354211	0.0001536	0.0008804	0.3633247	20		ENSG00000	1	151770107	151791416	-			NA	0.0441006
CKM	eQTL_Brain	ENSG00000	19	45314644	rs386569	19	45283788	G	A	0.297783	-0.061673	0.016204	0.0001412	0.277959	0.0083852	5.902595e-0	-0.221879	0.0586978	0.0001568	0.0136825	0.2847976	20		ENSG00000	19	45306413	45322875	-			NA	0.0444167
BBS12	eQTL_GTE	ENSG00000	4	122738822	rs309364	4	122723657	A	G	0.229239	-0.070629	0.0185807	0.000144	0.211327	0.0094596	1.510364e-0	-0.334218	0.0891876	0.0001787	8.126485e-0	0.2804687	20		ENSG00000	4	122732702	122744942	+			NA	0.0478844
MEIKIN	eQTL_GTE	ENSG00000	5	131806993	rs250888	5	131679653	G	A	0.773365	0.063532	0.0163782	0.0001049	-0.705706	0.0502379	8.005764e-0	-0.090026	0.0240769	0.0001847	0.0010964	0.2690523	20		ENSG00000	5	131806990	131945698	-			NA	0.0486711
ZSCAN9	eQTL_Brain	ENSG00000	6	28224886	rs12201260	6	28229715	G	A	0.035185	-0.081424	0.0205155	7.220027e-0	1.12221	0.101746	2.753285e-0	-0.072557	0.0194289	0.0001881	0.000635	0.5992719	20		ENSG00000	6	28224886	28233487	+			NA	0.0487749
PUS10	eQTL_Brain	ENSG00000	2	60941969	rs12464096	2	61012197	C	G	0.178739	-0.085313	0.0178894	1.852274e-0	0.222329	0.0376986	3.572974e-0	-0.383379	0.103349	0.0002076	0.0002076	0.0745728	18		ENSG00000	2	60940222	61018259	-	chr2:604334	rs10193310	60911776	0.0521564
EIF2B2	eQTL_GTE	ENSG00000	14	75002911	rs175047	14	75012236	G	C	0.474635	0.0571822	0.0149441	0.00013	-0.256398	0.0217787	5.386869e-0	-0.223021	0.061286	0.0002737	0.0002737	0.0680441	20		ENSG00000	14	75002921	75012366	+			NA	0.0656174
IFNGR2	eQTL_GTE	ENSG00000	21	33402896	rs8133431	21	33424249	T	C	0.141592	-0.079741	0.0195038	4.34199e-0	0.162079	0.0203992	1.936533e-0	-0.491988	0.135332	0.0002775	0.0002775	0.2407762	20		ENSG00000	21	33403413	33479348	+			NA	0.0656174
UBE2L3	eQTL_Brain	ENSG00000	22	21567547	rs5754422	22	21625968	G	A	0.192211	0.0615131	0.0160297	0.0001243	0.190529	0.0176473	3.574753e-0	0.322854	0.0892889	0.0002994	0.0002994	0.9454986	10		ENSG00000	22	21549447	21624034	+			NA	0.0697553
SMOX	eQTL_Brain	ENSG00000	20	4154364	rs6084653	20	4176425	G	C	0.389473	-0.055102	0.0152227	0.0002949	-0.427078	0.0079725	0	0.129022	0.0357251	0.0003044	0.0675145	0.0834842	20		ENSG00000	20	4120980	4187747	+			NA	0.0699147
UBE2Z	eQTL_eQTI	ENSG00000	17	48918732	rs8082345	17	48949756	C	A	0.175108	-0.066737	0.0184614	0.0003004	0.408187	0.0098849	0	-0.163497	0.0454008	0.0003168	0.0001127	0.7336986	20		ENSG00000	17	48908407	48929056	+			NA	0.0710032
ACYP1	eQTL_eQTI	ENSG00000	14	75061360	rs175469	14	75104323	G	A	0.486895	-0.055811	0.0149413	0.0001875	0.091778	0.0079481	7.626398e-0	-0.608107	0.171104	0.0003794	0.0027706	0.136683	20		ENSG00000	14	75053237	75069483	-			NA	0.0813281
DUSP22	eQTL_Brain	ENSG00000	6	321492	rs9503071	6	257796	C	T	0.12635	0.0836947	0.0212109	7.95225e-0	0.0971007	0.0119866	5.459891e-0	0.861937	0.242978	0.0003891	0.0038353	0.1955346	12		ENSG00000	6	291630	351355	+			NA	0.0823041
CCL20	eQTL_Brain	ENSG00000	2	227813842	rs10187276	2	227805721	C	T	0.746022	0.0648992	0.0170966	0.000147	0.339538	0.034572	9.126473e-0	0.19114	0.0539828	0.000399	0.000399	0.7503549	13		ENSG00000	2	227805739	227817564	+			NA	0.0833064
MNDA	eQTL_eQTI	ENSG00000	1	158840428	rs703151	1	158844592	G	A	0.435058	-0.055133	0.0155958	0.0004076	-0.341109	0.0078492	0	0.161627	0.0458719	0.000426	0.0002831	0.4613443	20		ENSG00000	1	158831351	158849506	+			NA	0.087799
SPATA2	eQTL_GTE	ENSG00000	20	49903391	rs4710854	20	49896699	T	C	0.467301	-0.09299	0.0151149	7.640457e-0	0.499875	0.0298099	8.781002e-0	-0.186027	0.0322185	7.74461e-0	7.74461e-0	0.1524749	20		ENSG00000	20	49903391	49915529	-	chr20:49328	rs2769979	49909274	6.30237349394e-05
RGS14	eQTL_GTE	ENSG00000	5	177357837	rs10051765	5	177372991	C	T	0.325065	0.090792	0.0151317	1.97173e-0	-0.872632	0.0416236	1.374258e-0	-0.104044	0.0180365	7.997149e-0	6.380333e-0	0.062707	20		ENSG00000	5	177357924	177372596	+	chr5:176872	rs13153019	177355217	6.80237349394e-05
SPATA2	eQTL_GTE	ENSG00000	20	49903391	rs4810994	20	49955136	T	C	0.466868	-0.092824	0.015109	5.066015e-0	-0.383055	0.0304974	3.492873e-0	-0.242326	0.0439091	3.413152e-0	3.413152e-0	0.4403611	20		ENSG00000	20	49903391	49915529	-	chr20:49328	rs2769979	49909274	0.0001935
RGS14	eQTL_GTE	ENSG00000	5	177357837	rs12654812	5	177367190	A	G	0.33575	0.0881893	0.0153604	9.39295e-0	-0.331896	0.0222448	1.828215e-0	-0.265714	0.0496477	8.699498e-0	8.699498e-0	0.0826249	20		ENSG00000	5	177357924	177372596	+	chr5:176872	rs13153019	177355217	0.00037
SLC9A8	eQTL_Brain	ENSG00000	20	49812713	rs6020072	20	49828917	G	A	0.621071	0.0865548	0.0149118	6.457756e-0	-0.199023	0.0239541	9.689598e-0	-0.434898	0.0913981	1.952415e-0	6.745393e-0	0.1124454	20		ENSG00000	20	49812713	49892242	+	chr20:49328	rs2769979	49909274	0.0027679
KAT8	eQTL_GTE	ENSG00000	16	31115754	rs11865499	16	31120929	G	A	0.283988	0.0784627	0.0157681	6.489816e-0	0.431852	0.0302957	4.198019e-0	0.181689	0.0386735	2.626982e-0	2.234684e-0	0.2740033	20		ENSG00000	16	31114489	31131393	+	chr16:30621	rs60996860	31122892	0.0034377
FUT11	eQTL_GTE	ENSG00000	10	73772663	rs10824031	10	73749515	C	T	0.57825	0.074905	0.0149471	5.405232e-0	0.318011	0.0270778	7.551145e-0	0.235542	0.0511019	4.041022e-0	4.041022e-0	0.1320805	20		ENSG00000	10	73772276	73780251	+	chr10:73241	rs2664280	73857586	0.0049104
TYK2	eQTL_GTE	ENSG00000	19	10350529	rs35251378	19	10349293	A	G	0.290184	-0.100249	0.0172066	5.670549e-0	0.139428	0.02116	4.421719e-0	-0.719002	0.164731	1.273005e-0	1.273005e-0	0.4915778	20		ENSG00000	19	10350529	10380572	-			NA	0.0113981
PUS10	eQTL_Brain	ENSG00000	2	60941969	rs62150977	2	61023821	T	C	0.178267	-0.085096	0.01789	1.96835e-0	0.176196	0.040118	6.772767e-0	-0.226202	0.0533233	2.214457e-0	2.214457e-0	0.1935548	20		ENSG00000	2	60940222	61018259	-			NA	0.0171238
MTHFR	eQTL_GTE	ENSG00000	1	11785723	rs3818762	1	11790946	C	G	0.278387	0.0751625	0.016316	4.09159e-0	0.281099	0.0266693	9.086215e-0	0.266535	0.0631865	2.462389e-0	2.462389e-0	0.2144694	20		ENSG00000	1	11785723	11806455	-			NA	0.0182131
MTHFR	eQTL_Brain	ENSG00000	1	11785723	rs1476413	1	11792243	T	C	0.26971	0.0720972	0.0163764	1.070076e-0	0.208459	0.0175711	1.826547e-0	0.345858	0.083794	3.667652e-0	3.667652e-0	0.76835	20		ENSG00000	1	11785723	11806455	-			NA	0.0257676
MTHFR	eQTL_GTE	ENSG00000	1	11785723	rs1476413	1	11792243	T	C	0.26971	0.0720972	0.0163764	1.070076e-0	0.

Table S5. The SMR (Summary-based Mendelian Randomization) analysis of atopic dermatitis identified genes with significant associations that passed the HEIDI (Heterogeneity in Dependent Instruments) test.

Gene	qtl_name	probeID	ProbeChr	Probe_bp	topSNP	topSNP_ch	topSNP_bp	A1	A2	Freq	b_GWAS	se_GWAS	p_GWAS	b_eQTL	se_eQTL	p_eQTL	b_SMR	se_SMR	p_SMR	nsp	HEIDI_p	gene_id	chr	start	end	strand	GWAS_LO	Lead_SNP	Fdr
RAPGEF6	eQTL_Brain	ENSG00000	5	131529576	rs11750704	5	131575885	C	A	0.225175	0.0932928	0.0130909	1.02924e-12	0.627712	0.0438401	1.68329e-01	0.148623	0.0232953	1.77127e-11	2	0.0644652	0.0577747	18	ENSG00000	5	131423921	131635231	-	chr5:131076;	rs847	132660977	4.64958375e-07
ZGPAT	eQTL_Brain	ENSG00000	20	63721804	rs1291213	20	63721274	T	C	0.245496	-0.149462	0.0163139	5.11168e-20	-0.291052	0.0382453	2.73826e-01	0.513523	0.0877222	4.79969e-0	4	0.799609	0.0655941	20	ENSG00000	20	63707465	63736142	+	chr20:63071	rs6062490	63687503	1.00791789e-05
GNGT2	eQTL_Brain	ENSG00000	17	49206601	rs4794019	17	49202939	A	G	0.312092	0.0952195	0.0129179	1.69189e-13	0.192602	0.0292609	4.63424e-1	0.494385	0.100097	9.12340e-0	5	0.124043	0.0851148	20	ENSG00000	17	49202791	49210574	-	chr17:48285	rs112502896	49361948	0.00008709
EHBP1L1	eQTL_Brain	ENSG00000	11	65584348	rs10791824	11	65791795	A	G	0.424134	-0.101271	0.0132374	2.00402e-	-0.201081	0.0325598	6.58507e-	0.503652	0.104805	1.54435e-0	1	0.093853	e-0	0.5718127	20	ENSG00000	11	65576046	65592650	+	chr11:65107	rs479844	65784486	0.0011791
TNFRSF6B	eQTL_Brain	ENSG00000	20	63697668	rs2738783	20	63677259	T	G	0.209888	-0.166345	0.017883	3.06339e-	0.219297	0.0385899	1.32533e-0	0.731156	0.151231	1.58728e-0	1	0.187287	0.0717741	20	ENSG00000	20	63696652	63698684	+	chr20:6307	rs6062490	63687503	0.0011791
TNFSF18	eQTL_Brain	ENSG00000	1	173045462	rs7553711	1	173162769	T	C	0.284602	0.0869564	0.0136942	1.01238e-0	0.615569	0.0332256	1.70784e-	0.108772	0.0230101	2.27713e-0	6	0.563105	e-0.4062492	20	ENSG00000	1	173039202	173059941	-	chr1:172662	rs17371133	172859340	0.0014944
AP5B1	eQTL_Brain	ENSG00000	11	65777437	rs3897552	11	65793409	T	C	0.101679	-0.12377	0.0204638	1.46435e-0	-0.330135	0.0463191	1.02273e-	0.374907	0.0812965	3.99576e-0	5	0.995756	e-0.3469537	20	ENSG00000	11	65773898	65780976	-	chr11:65107	rs479844	65784486	0.0021496
ZSCAN9	eQTL_Brain	ENSG00000	6	28229186	rs1201260	6	28229715	G	A	0.035185	-0.080463	0.0171858	2.84187e-	1.50429	0.099416	1.00769e-	-0.053489	0.0119589	7.72343e-0	5	0.930639	0.2045587	20	ENSG00000	6	28224886	28233487	+	NA	NA	0.0035259
MRPS21	eQTL_Brain	ENSG00000	11	150301421	rs1122967	11	150254226	G	A	0.491741	-0.0627515	0.0128779	7.36436e-	0.0529228	0.0292328	5.39558e-	0.0225625	0.0478089	6.37411e-0	6	0.243975	0.1224473	20	ENSG00000	11	150293861	150308979	+	NA	NA	0.0037492
KDELR2	eQTL_Brain	ENSG00000	7	6465071	ns6796	7	6462736	C	T	0.273	-0.066531	0.0136515	1.09629e-	0.352756	0.0331924	4.37875e-	-0.188603	0.0426193	9.63095e-0	6	0.108017	0.113194	20	ENSG00000	7	6445953	6484190	-	NA	NA	0.0174992
COMMD9	eQTL_Brain	ENSG00000	11	36279366	rs9888261	11	36292585	A	T	0.448153	0.0551966	0.0125974	1.77818e-	-0.300231	0.0302821	3.60179e-	-0.183847	0.0458739	6.13226e-	6	0.132264	e-0.0556614	20	ENSG00000	11	36269284	36289449	-	NA	NA	0.0178858
DARS2	eQTL_Brain	ENSG00000	1	173841730	rs60264384	1	173779498	A	G	0.28855	0.059023	0.0146412	5.54703e-	-0.638688	0.0381988	9.35482e-	-0.092413	0.0235807	8.89186e-0	6	0.0005432	0.5316383	20	ENSG00000	1	173824653	173858808	+	NA	NA	0.0229307
PEX13	eQTL_Brain	ENSG00000	2	63846607	rs7539286	2	64020373	T	C	0.229353	0.0661507	0.0134977	9.00e-07	-0.0960567	0.0313151	2.13066e-	-0.0737986	0.0196172	1.40144e-0	5	0.0496154	0.1844227	20	ENSG00000	2	63845774	63877885	+	NA	NA	0.0377885
SPPL3	eQTL_Brain	ENSG00000	12	120833434	rs12580949	12	120860361	A	G	0.527986	0.0494611	0.0126789	9.57739e-	0.0702984	0.0323863	1.60882e-	0.0703588	0.0183333	0.0001242	0.002925	0.4450672	20	ENSG00000	12	120762510	120904358	-	NA	NA	0.0296294
PTPA	eQTL_Brain	ENSG00000	9	129129948	rs2480452	9	129147457	T	C	0.0766	-0.091511	0.023466	9.63061e-	-0.907999	0.0552375	1.02083e-	0.100783	0.0265609	0.000148	7.35167e-	0.0715659	20	ENSG00000	9	129110950	129148946	+	NA	NA	0.0337829
SERPINC1	eQTL_Brain	ENSG00000	1	173910654	rs2227543	1	173916343	T	C	0.11719	0.0782212	0.0190251	4.00e-05	0.0588323	0.0143542	4.22e-05	0.0588323	0.0144655	4.22e-05	1	0.822753	0.0010045	0.3442853	20	ENSG00000	1	173903800	173917327	+	NA	NA	0.0339607
RIN1	eQTL_Brain	ENSG00000	11	66333541	rs10444359	11	66335336	A	G	0.213673	0.0632995	0.0146154	1.48424e-	0.312946	0.0413492	3.77894e-	0.202269	0.0538088	0.0001706	0.000170	0.1755393	20	ENSG00000	11	66330241	66336840	-	NA	NA	0.0363356
SLC9B1	eQTL_Brain	ENSG00000	4	10295233	rs223456	4	10278948	G	A	0.486762	-0.049279	0.0126789	0.0001016	-0.464236	0.0318473	3.93707e-	-0.10615	0.0282655	0.000173	0.0001172	0.0914115	20	ENSG00000	4	10288504	10301979	+	NA	NA	0.0363356
TRAF3	eQTL_Brain	ENSG00000	14	102844145	rs1453582	14	102789124	C	T	0.344886	-0.052751	0.0125905	2.70e-05	0.0852283	0.0211321	5.25223e-	0.106945	0.0259034	0.000184	0.000507	0.5532455	17	ENSG00000	14	102777449	102911500	+	NA	NA	0.0368947
SNX15	eQTL_Brain	ENSG00000	11	65034006	ns678614	11	65032422	A	C	0.280353	0.0513333	0.0134643	0.0001375	-0.572753	0.0356664	4.97472e-	-0.089626	0.0241615	0.000207	0.000577	0.3091587	20	ENSG00000	11	65027473	65040572	+	NA	NA	0.0395305
ZSCAN23	eQTL_Brain	ENSG00000	6	28437716	rs1361387	6	28445152	G	T	0.491597	0.048985	0.0129541	0.0001559	0.742562	0.0407026	2.32494e-	0.0659675	0.0178159	0.000213	2.933392e-0	0.06245	20	ENSG00000	6	28431930	28443502	-	NA	NA	0.0393505
BAGAT1	eQTL_Brain	ENSG00000	6	66346501	rs1089614	6	66376326	G	A	0.200681	0.0636657	0.0168961	0.0001599	0.0331155	0.0088153	1.13066e-	0.0073722	0.0510953	0.000213	0.000236	0.1854157	20	ENSG00000	6	66345374	66347629	+	NA	NA	0.0393505
DDIT3	eQTL_Brain	ENSG00000	12	57519163	rs7752414	12	57542544	G	A	0.134494	-0.06309	0.0151078	2.96675e-	0.317411	0.040841	7.73311e-	-0.198765	0.0540328	0.000234	0.000245	0.5278618	20	ENSG00000	12	57516588	57521737	-	NA	NA	0.0403683
SLFN12L	eQTL_Brain	ENSG00000	17	35476053	rs8065635	17	35537688	C	A	0.26585	0.0602889	0.0148717	5.03632e-	0.342221	0.0429892	1.71155e-	0.176169	0.0487668	0.0003033	0.0003033	0.7149226	20	ENSG00000	17	35446249	35537678	-	NA	NA	0.0505455
HEXD	eQTL_Brain	ENSG00000	12	52450482	rs1141463	12	52419814	T	C	0.299229	0.0527783	0.0114499	3.67079e-	0.0776666	0.0317257	1.60126e-	0.0715903	0.0206555	0.000541	0.011149	0.2221662	20	ENSG00000	12	52413318	52422645	+	NA	NA	0.0510807
PRSS50	eQTL_Brain	ENSG00000	3	46714995	rs2899433	3	46747779	C	G	0.029653	0.173811	0.0456187	0.0001389	0.693836	0.0770747	2.21406e-	-0.250507	0.071395	0.0004502	0.0011608	0.2550993	20	ENSG00000	3	46712117	46717869	-	NA	NA	0.0656563
KPNB1	eQTL_Brain	ENSG00000	17	47667490	rs19171743	17	47390237	C	T	0.071325	0.0946145	0.0248342	0.0001391	0.630353	0.0739227	1.49958e-	0.150098	0.0431508	0.0005043	0.0023275	0.1428055	20	ENSG00000	17	47649476	47685505	+	NA	NA	0.0712005
UBE2L3	eQTL_Brain	ENSG00000	22	21586741	rs5844	22	21622645	T	C	0.191135	0.0485653	0.0125283	0.0001152	0.798615	0.0863121	2.52223e-	0.106945	0.0290348	0.000507	0.0006576	0.5532455	17	ENSG00000	22	21549447	21624014	+	NA	NA	0.0712005
ANXA6	eQTL_Brain	ENSG00000	5	151129245	rs6859236	5	151156083	A	G	0.505856	0.0457422	0.0128087	0.0003554	0.478104	0.0315096	5.31479e-	0.0956742	0.0275226	0.000508	0.0002856	0.6856676	20	ENSG00000	5	151100706	151157785	-	NA	NA	0.0712005
SENP7	eQTL_Brain	ENSG00000	3	101418723	rs9825208	3	101555963	T	G	0.445457	0.0455718	0.0125699	0.0002884	-0.374419	0.0339476	2.793e-28	-0.121713	0.0353389	0.0005728	0.0061563	0.1833723	15	ENSG00000	3	101324205	101513241	-	NA	NA	0.0782778
DLG4	eQTL_Brain	ENSG00000	17	7203514	rs9292229	17	7202080	A	G	0.358073	-0.051368	0.0135534	0.0001506	-0.256567	0.0311188	1.65528e-	0.200211	0.0581402	0.000574	0.000574	0.3408883	20	ENSG00000	17	7187187	7219841	-	NA	NA	0.0782778
SLC25A46	eQTL_Brain	ENSG00000	5	110751649	rs1076974	5	110765974	A	G	0.183615	0.0658202	0.0154409	2.0154e-	0.335552	0.0525294	2.38016e-	0.112578	0.0340053	0.000807	0.000807	0.1271481	20	ENSG00000	5	110738136	110765161	+	NA	NA	0.080425
RPAP1	eQTL_Brain	ENSG00000	15	41530722	rs1200346	15	41527698	G	T	0.49134	-0.043834	0.0126258	0.000517	0.647512	0.0294464	3.63051e-	-0.067696	0.0197405	0.0006051	3.925203e-0	0.7858291	20	ENSG00000	15	41517176	41544269	-	NA	NA	0.080425
CCDC116	eQTL_Brain	ENSG00000	22	21635023	rs12169001	22	21612544	T	C	0.192338	0.0478953	0.0135148	0.0003942	-0.610703	0.0469145	9.74906e-	-0.078427	0.0229354	0.000627	0.000625	0.1496807	16	ENSG00000	22	21632716	21637329	+	NA	NA	0.0821034
UPK3B	eQTL_Brain	ENSG00000	7	5631525	rs4605137	7	5649187	A	G	0.38114	-0.043356	0.0121001	0.0003599	0.626089	0.0330328	3.76935e-	0.0699582	0.0204741	0.000633	0.000633	0.1869391	20	ENSG00000	7	5619525	5651622	+	NA	NA	0.0821034
ZNF506	eQTL_Brain	ENSG00000	19	19803795	rs11085278	19	19834971	T	C	0.45001	0.0446341	0.0126783	0.0004307	0.482708	0.0356171	7.63706e-	-0.0924661	0.0271366	0.0006558	5.709959e-0	0.6056619	20	ENSG00000	19	19785839	19821751	-	NA	NA	0.0829959
NIT2	eQTL_Brain	ENSG00000	3	100348187	rs13082297	3	100352226	G	A	0.335776	-0.046272	0.0134791	0.0005972	-0.944129	0.0337591	4.13708e-	0.0490105	0.0143839	0.000656	0.0010936	0.1718276	20	ENSG00000	3	100334739	100361635	+	NA	NA	0.0829959
DTX2	eQTL_Brain	ENSG00000	7	5683835	rs7802495	7	5650249	G	C	0.399609	-0.044332	0.0129404	0.0005911	0.0111228	0.0032455	0.00054	0.0049058	0.0014254	0.000534	0.0011228	0.1123619	20	ENSG00000	7	5646176	5650995	+	NA	NA	0.0852729
KRT222	eQTL_Brain	ENSG00000	17	40659923	rs2462962	17	40705022	C	A	0.291863	-0.049523	0.0131824	0.0001721	0.249199	0.0322187	1.03722e-	-0.198729	0.0588087	0.0007269	0.0007269	0.2623615	17	ENSG00000	17	40654665	40665181	-	NA	NA	0.0897897
PHF11	eQTL_Brain	ENSG00000	13	49512296	rs7327389	13	49493306	T	C	0.293375	0.0541459	0.0150127	0.0003101	0.1318104	0.0333976	1.65401e-	0.170214	0.0504645	0.000743	0.000743	0.5637094	14	ENSG00000	13	49495610	49528981	+	NA	NA	0.0902656
CDCA5	eQTL_Brain	ENSG00000	11	65075229	rs1122033	11	65026266	G	A	0.276078	0.0517365	0.0134269	0.0001254	0.0316174	0.0161816	0.2033471	0.0603194	0.0307485	0.0025	0.0027273	19	ENSG00000	11	65066300	65084164	-	NA	NA	0.0923351
PSMD5	eQTL_Brain	ENSG00000	9	120829224	rs13299616	9	120832525	T	C	0.418753	0.0438036	0.0127534	0.0005933	0.558864	0.0332501	2.13718e-	0.0783798	0.0232918	0.0007651	0.0096984	0.5124409	20	ENSG00000	9	120815496	120842951	-	NA	NA	0.0902656
TLR2	eQTL_Brain	ENSG00000	4	153695165	rs6830287	4	153659734	C	T	0.220442	0.0546533	0.0152739	0.0003459	0.370651	0.0378652	1.29249e-	0.147492	0.0438885	0.0007777	0.0005256	0.8843027	20	ENSG00000	4	153684070	153706260	+	NA	NA	0.0907322
ZNF664	eQTL_Brain	ENSG00000	12	123993642	rs1807381	12	123959104	A	G	0.011336	0.119179	0.0357712	0.0008999	0.124089	0.0076546	1.22e-04	0.124089	0.0376525	0.0009003	0.0009003	0.2482056	20	ENSG00000	12	123973845	124015439	+	NA	NA	0.0916641
SLFN13	eQTL_Brain	ENSG00000	17	35441967	rs8070030	17	35537811	A	G	0.264832	0.0542258	0.0153867	0.0004248	0.361402	0.033407	3.30224e-	0.150043	0.0449075	0.0008343	0.0008343	0.7440643	20	ENSG00000	17	35435096	35448837	-	NA	NA	0.0923387
CHCHD6	eQTL_Brain	ENSG00000	3	12683230	rs14683987	3	12679130	T	A	0.082754	0.0827829	0.0240194	0.0005679	0.650955	0.0401345	2.88634e-	0.127171	0.03809	0.0008417	0.0029951	0.104669	16	ENSG00000	3	12670440	12696040	+	NA	NA	0.0923387
TARS2	eQTL_Brain	ENSG00000	1	150497486	rs696618	1	150403663	G	T	0.395885	-0.049739	0.0128636	0.0001103	-0.271279	0.0410259	3.78145e-	0.118335	0.0549304	0.0008442	0.0002691	0.1819729	20	ENSG00000	1	150407414	150507602	+	NA	NA	0.0923387
R3TN	eQTL_Brain	ENSG00000	19	7010478	rs1345012	19	7007109	C	A	0.028131	0.159375	0.0396754	0.0001499	0.707597	0.0866607	0.0173672	0.2464245	0.0613203	0.0008626	0.0014993	0.0574083	18	ENSG00000	19	7003031	7020726	+	NA	NA	0.0933787
YDJC	eQTL_Brain	ENSG00000	22	21629077	rs2876971	22	21618112	G	T	0.192458	0.0477911	0.0135153	0.0004061	0.340041	0.035807	2.17053e-	0.140545	0.042412	0.0009004	0.0009004	0.8205755	10	ENSG00000	22	21628089	21630064	+	NA	NA	0.0986108
BACH2	eQTL_Brain	ENSG00000	6	90111718	rs72928038	6	90267049	A	G	0.179	-0.127249	0.0203127	3.74012e-	-0.236207	0.0113153	9.03712e-	0.538718	0.0897841	1.97137e-0	6	0.816713c	0.0589488	20	ENSG00000	6	89926528	90296843	-	chr6:89720	rs2021716	90231570	1.98085922775e-06
IL28A	eQTL_Brain	ENSG00000	19	49366580	rs8113660	19	49327814	T	C	0.31025	0.0517393	0.0132504	0.0001009	0.0316372	0.0148232	0.0331284	0.0816356	0.0405579	0.148524	0.5585536	0.3866465	20	ENSG00000	19	49316869	49326723	+	chr19:5572	rs4943457	67798111	0.0027576-06
PPP2R3C	eQTL_Brain	ENSG00000	14	35103992	rs28399702	14	35156011	T	G	0.165615	0.0787475	0.0161219	1.03689e-0	-0.90185	0.0092417	0	-0.087318	0.0178989	1.06951e-2	6	2.380705e-0	0.5722357	20	ENSG00000	14	35085467	35122517	-	chr14:3465	rs3138056	35399308	0.0006141
KDELR2	eQTL_Brain	ENSG00000	7	6465072	ns6796	7	6462736	C	T	0.273	-0.066531	0.0136515	1.09629e-	0.376393	0.0080919	0	0.0866633	0.0178059	1.13248e-0	6	0.0037582	0.4281054	20	ENSG00000	7	6445953	6484190	-	chr7:596271	rs6796	6462736	0.0006278
PPP6R1	eQTL_Brain	ENSG00000	19	55244394	rs73606868	19	55251894	G	T	0.071588	0.1197125	0.0317025	0.0001607	0.435694	0.0164292	9.96345e-	0.489023	0.102699	1.91585e-0	6	2.823225e-0	0.2813602	20	ENSG00000	19	55229779	55259017	+	chr19:54751	rs73606868	55251894	0.0009955
KMT5A	eQTL_Brain	ENSG00000	12	123383773	rs28825193	12	123393715	C	T	0.693738	0.0767779	0.0153879	1.60018e-0	-0.220109	0.027809	2.47217e-	-0.348818	0.0758493	4.24875e-0	6	0.2264475	e-0.2062181	20	ENSG00000	12	123384132	123409353	+	chr12:12262	rs11057275	123334578	0.0020699
ZBTB10	eQTL_Brain	ENSG00000	8	80505942	rs6985449	8	80338764	A	G	0.351661	0.073111	0.0131671	2.81529e-	0.100107	0.0122575	3.16149e-	0.730329	0.15905	4.39401e-2	5	2.250032e-0	0.0561229	20	ENSG00000	8	80485619	80526265	+	NA	NA	0.0020777
ZSCAN9	eQTL_Brain	ENSG00000	6	28229186	rs1201260	6	28229715	G	A	0.03607	-0.07888	0.0171847	4.4305e-0	1.50429	0.099416	1.00769e-	-0.069256	0.0151358	4.73237e-	6	0.7503976	e-0.1017267	20	ENSG00000	6	28224886	28233487	+	NA	NA	0.0035259
KDELR2	eQTL_Brain	ENSG00000	7	6461081	ns6796	7	6462736	C	T	0.273	-0.066531	0.0136515	1.09629e-	-0.414472	0.0312019	2.88366e-	-0.160519	0.0350838	4.75119e-	5	2.214828e-	0.4126168	20	ENSG00000	7	6445953	6484190	-	chr7:596271	rs6796	6462736	0.0021194
PPP2R3C	eQTL_Brain	ENSG00000	14	35085467	rs2415260	14	35101037	A	G	0.166784	0.0758933	0.0160982	2.42428e-0	-0.403995	0.0217855	9.08555e-	-0.187857	0.0411115	4.89920e-	6	4.606627e-0	0.9632803	20	ENSG00000	14	35085467	35122517	-	chr14:3465	rs3138056	35399308	0.0021194
UBE2Z	eQTL_Brain	ENSG00000	17	40903649	rs62078850	17	40935142	C	A	0.531037	-0.060356	0.0133549	0.0006511	-0.135549	0.023785	1.34989e-	0.179873	0.0396065	5.53302e-	6	0.8398201	0.1161402	20	ENSG00000	17	40908407	40929056	+	chr17:4840	rs112502896	49361948	0.0027145
PPP5C	eQTL_Brain	ENSG00000	19	46370034	rs12459222	19	46356644	C	A	0.312763	-0.06785	0.0149839	5.94938e-	-0.446637	0.008514	0	0.152003	0.0336933	6.44058e-	6	0.0001643	0.5088611	20	ENSG00000	19	46347087	46392981	+	NA	NA	0.0025155
ITPKA	eQTL_Brain	ENSG00000	15	41498472	rs11635906	15	41487062	G	A	0.267541	0.0666196	0.0136567	1.07078e-	0.102004	0.0091505	7.37282e-	0.653108	0.146142	7.85893e-	6	1.299732e-	0.1284609	20	ENSG00000	15	41493393	41503551	+	chr15:40895	rs11631770	41444861	0.0029935
UQCC2	eQTL_Brain	ENSG00000	6	33703538	rs2296330	6	33682844	A	G	0.24615	-0.064233	0.0137977	3.25301e-	-0.260512	0.0172062	8.74141e-	0.246563	0.0554108	8.59289e-	6	0.0011025	0.0984848	20	ENSG00000	6	33694293	33711727	-	NA	NA	0.0031417
PPP5C	eQTL_Brain	ENSG00000	19	46346994	rs62116159	19	46365128	G	A	0.312581	-0.060202	0.0149839	5.94938e-	-0.443886	0.0312019	2.88366e-	-0.160519	0.0322061	6.00695e-	7	0.0001724	0.7060722	20	ENSG00000	19	46347087	46392981	+	NA	NA	0.0031681
TARS2	eQTL_Brain	ENSG00000	1	150497486	rs7512552	1	150293284	C	T	0.511079	0.0612069	0.0126774	1.37886e-	0.0868583	0.0097934	6.76312e-	0.704675	0.159516	9.98156e-	6	1.162137e-	0.6948014	20	ENSG00000	1	150487414	150507602	+	NA	NA	0.0034143
NFXL1	eQTL_Brain	ENSG00000	4	47880950	rs6858440	4	47914547	G	A	0.314893	0.0558355	0.0127333	1.15986e-	0.31082	0.006134	0	0.0541661	0.0123568	1.16782e-	6	0.0088399	0.3235522	20	ENSG00000	4	47847233	47914667	-	NA	NA	0.0038317
CORIN	eQTL_Brain	ENSG00000	4	47716052	rs2651301	4	47909459	A	G	0.3153	0.0557852	0.0127333	1.15986e-	0.310125	0.006134	0	0.053937	0.0123161	1.29296e-	6	0.0088399	0.3863111	20	ENSG00000	4	47593999	47838106	+	NA	NA	0.0038344
SRP54	eQTL_Brain	ENSG00000	14	35005822	rs712311	14	34933173	A	G	0.402779	-0.055876	0.0127022	1.08793e-	-0.240509	0.0079374	1.11485e-	0.232324	0.0533675	1.34115e-	6	1.029822e-	0.9024359	20	ENSG00000	14	34981957	35029686	+	NA	NA	0.0040683
RMI2	eQTL_Brain	ENSG00000	16	11315644	rs13334203	16	11334681	A	G	0.335709	-0.062969	0.0149988	1.40501e-	0.573061	0.0088963	0	-0.109883	0.0253581	1.46951e-	5	3.352817e-	0.0957621	20	ENSG00000	16	11294619	11381662	+	NA	NA	0.0043285
NIPAL1	eQTL_Brain	ENSG00000	14	49715158	rs6858449	14	49741547	G	A	0.314893	0.0558355	0.0127333	1.15986e-	0.310125	0.006134	0	0.053937	0.0123733	1.30802e-	6	0.0088399	0.3611402	20	ENSG00000	14	49741412	48040173	+	NA	NA	0.0043285
SYK	eQTL_Brain	ENSG00000	9	90850168	rs772407	9	90798568	A	G	0.470813	0.0552398	0.0127308	1.43086e-	-0.451402	0.0075918	0	-0.122374	0.0282778	1.50770e-	5	0.0994458	0.5278451	20	ENSG00000	9	90801787	90898549	+	NA	NA	0.0043285
ZSCAN9	eQTL_Brain	ENSG00000	6	28224886	rs12201260	6	28229715	G	A	0.035185	-0.080463	0.0171858	2.84187e-	1.12221	0.101746	2.75328e-	-0.0717	0.0166369	1.63465e-	4	1.17743e-	0.0752712	20	ENSG00000	6	28224886	28233487	+	NA	NA	0.0046106
CNGA1	eQTL_Brain	ENSG00000	4	47976239	rs2651301	4	47909459	A	G	0.3153	0.0557852	0.0127333	1.15986e-	0.310125	0.006134	0.0000912	0.3909954	0.0936706	0.0716012	3.03463e-	0.0144761	0.6778729	20	ENSG00000	4	47935977	48016681	+	NA	NA	0.0046106
NFXL1	eQTL_Brain	ENSG00000	4	47847233	rs1371729	4	47948370	A	G	0.313434	0.0554316	0.0127385	1.35205e-	0.88316	0.0376351	8.9869e-	0.0627651	0.0146697	1.81052e-	6	0.0000412	0.4114872	20	ENSG00000	4	47847233	47914667	-	NA	NA	0.0049577
AIH1	eQTL_Brain	ENSG00000	8	135390648	rs6908428	6	135472568	G	A	0.367973	0.0569769	0.0133708	2.03247e-	-0.792337	0.0069374	0	-0.071828	0.0168672	2.05953e-	6	0.0225026	0.8070439	20	ENSG00000	6	135283407	135498434	+	NA	NA	0.0053405
ARHGEF3	eQTL_Brain	ENSG00000	3	56903174	rs846821	3	56764993	A	G	0.261813	-0.062098	0.0148841	2.67e-05	-0.264475	0.0090782	1.37791e-	0.234179	0.0553553	2.21675e-	5	0.0021166	0.0827858	20	ENSG00000	3	56723418	57079329	+	NA	NA	0.0056623
EFEMP2	eQTL_Brain	ENSG00000	11	65870016	rs35461885	11	65883044	T	G	0.12923	-0.078334	0.0184574	2.19533e-	0.505819	0.0111857	0	-0.154865	0.0366505	2.38439e-	5	2.917001e-	0.1309098	20	ENSG00000	11	65866441	65873592	+	NA	NA	0.005851
CORIN	eQTL_Brain	ENSG00000	4	47593998	rs12651301	4	47899459	A	G	0.3153	0.0557852	0.0127331	1.18072e-	0.708319	0.0445322	5.77887e-	0.0787572	0.018646	2.40197e-	5	0.0000101	0.365435	20	ENSG00000	4	47593999	47838106	+	NA	NA	0.005851
ERC1	eQTL_Brain	ENSG00000	12	1243221	rs7974686	12

ZSCAN9	eQTL	GTE	ENSG00000	6	28224886	rs12195700	6	27980983	C	T	0.035567	-0.079859	0.0171794	3.343426e-0	0.82241	0.101354	4.889254e-1	-0.097103	0.0240741	5.49512e-0	1.196761e-0	0.1807542	20	ENSG00000	6	28224886	28233487	+			NA	0.0176823
PPP2R3C	eQTL	GTE	ENSG00000	14	35085467	rs941653	14	35123332	G	C	0.167451	0.071645	0.0158888	6.508754e-0	0.307379	0.0347484	9.083517e-1	0.233084	0.0580196	5.586331e-0	5.586331e-0	0.2388776	20	ENSG00000	14	35085467	35122517	-			NA	0.0185452
PACS1	eQTL	GTE	ENSG00000	11	66070454	rs476551	11	66238852	C	G	0.157705	0.0764158	0.0161926	2.367968e-0	-0.207895	0.0283183	2.114142e-1	-0.367569	0.0925928	7.195103e-0	7.195103e-0	0.0552124	13	ENSG00000	11	66070272	66244744	+			NA	0.021859
COMMD9	eQTL	GTE	ENSG00000	11	36269284	rs1562327	11	36299442	C	T	0.447532	0.0573848	0.0126193	5.43169e-0	-0.145674	0.0189048	1.301554e-1	-0.393926	0.100587	8.992161e-0	8.992161e-0	0.0802676	20	ENSG00000	11	36269284	36289449	-			NA	0.0256989
ZSCAN9	eQTL	GTE	ENSG00000	6	28224886	rs10456357	6	27935689	A	G	0.035462	-0.079834	0.0171779	3.360286e-0	0.69525	0.0957459	3.830737e-1	-0.114827	0.0293347	9.063265e-0	9.063265e-0	0.1243884	20	ENSG00000	6	28224886	28233487	+			NA	0.0256989
AIH1	eQTL	GTE	ENSG00000	6	135283532	rs13197384	6	135497759	A	C	0.356779	0.0544562	0.0134236	4.976013e-0	-0.645489	0.0467259	2.087557e-0	-0.084364	0.0216742	9.926273e-0	0.0013984	0.1432126	20	ENSG00000	6	135283407	135498434	-			NA	0.0268057
ELP5	eQTL	GTE	ENSG00000	17	7252082	rs402514	17	7254884	G	T	0.616501	0.0545886	0.0133466	4.31233e-0	-0.376783	0.0329599	2.908348e-1	-0.144881	0.0376215	0.0001176	0.0031566	0.0536041	20	ENSG00000	17	7251416	7259940	+			NA	0.0299429
SMARCE1	eQTL	GTE	ENSG00000	17	40624962	rs1013971	17	40624926	C	A	0.664523	0.0524129	0.0129779	5.376493e-0	-0.311352	0.0245221	6.159393e-1	-0.16834	0.0437402	0.0001188	0.0007443	0.4530212	20	ENSG00000	17	40624962	40648654	-			NA	0.0299429
ELP5	eQTL	GTE	ENSG00000	17	7252082	rs402514	17	7254884	G	T	0.616501	0.0545886	0.0133466	4.31233e-0	-0.323082	0.0302521	1.267212e-1	-0.168962	0.0442362	0.0001337	0.0012771	0.0800581	20	ENSG00000	17	7251416	7259940	+			NA	0.0324942
SNX15	eQTL	GTE	ENSG00000	11	65027408	rs533018	11	65051746	G	A	0.283633	0.0544367	0.0134425	5.110603e-0	-0.257495	0.0227904	1.337771e-1	-0.22141	0.0554574	0.0001378	0.0001378	0.3256854	20	ENSG00000	11	65027439	65040572	+			NA	0.0330143
SNX15	eQTL	GTE	ENSG00000	11	65027408	rs566221	11	65052811	T	C	0.283611	0.0545406	0.0134435	4.970201e-0	-0.254515	0.0233297	1.03846e-1	-0.214292	0.0563542	0.0001432	0.0001432	0.16619	20	ENSG00000	11	65027439	65040572	+			NA	0.0333707
NEU4	eQTL	GTE	ENSG00000	2	241809807	rs3749155	2	241814768	T	C	0.122641	-0.0795	0.0173941	4.865531e-0	0.436019	0.0638249	8.403908e-1	-0.182331	0.0479979	0.0001454	6.455864e-0	0.0949307	14	ENSG00000	2	241809065	241817413	+			NA	0.0334371
NEU4	eQTL	GTE	ENSG00000	2	241809807	rs3749155	2	241814768	T	C	0.122641	-0.0795	0.0173941	4.865531e-0	-0.45707	0.0684079	2.36445e-1	-0.173934	0.0461074	0.0001617	7.623436e-0	0.0549064	18	ENSG00000	2	241809065	241817413	+			NA	0.0362008
RGS14	eQTL	GTE	ENSG00000	5	177357837	rs12654812	5	177367190	A	G	0.33575	0.0507126	0.0130349	0.0001	-0.331896	0.022448	1.828215e-0	-0.152797	0.040611	0.0001683	0.0001683	0.0623344	20	ENSG00000	5	177357924	177372596	+			NA	0.0371767
UBE2Z	eQTL	GTE	ENSG00000	17	48908369	rs595767	17	48880625	G	A	0.521294	-0.055045	0.0125935	1.237458e-0	0.146328	0.0204294	7.915987e-1	-0.376173	0.100823	0.0001907	0.0001907	0.1459768	20	ENSG00000	17	48908407	48929056	+			NA	0.0410829
MANBA	eQTL	GTE	ENSG00000	4	102631893	rs1705631	4	102685515	T	C	0.65813	0.0514671	0.0134319	0.0001273	-0.419652	0.0256251	2.809756e-0	-0.122642	0.0328717	0.0001908	2.392467e-0	0.3904618	20	ENSG00000	4	102630770	102760994	-			NA	0.0410829
LYRM2	eQTL	GTE	ENSG00000	6	89568144	rs2073272	6	89612236	A	G	0.315364	-0.064082	0.0132332	1.282289e-0	-0.152172	0.0261388	5.825232e-0	0.421112	0.113114	0.0001969	0.0001969	0.1245513	20	ENSG00000	6	89568144	89638749	-			NA	0.0418089
RGS14	eQTL	GTE	ENSG00000	5	177357837	rs12654812	5	177367190	A	G	0.33575	0.0507126	0.0130349	0.0001	-0.353168	0.0280499	2.375871e-1	-0.143593	0.0386304	0.0002015	0.0002015	0.141192	20	ENSG00000	5	177357924	177372596	+			NA	0.0418089
ELP5	eQTL	GTE	ENSG00000	17	7252082	rs2654186	17	7247792	C	A	0.616182	0.0543493	0.0133477	4.66492e-0	-0.250831	0.0277459	1.562384e-1	-0.216677	0.0583625	0.0002051	0.0002051	0.1349115	20	ENSG00000	17	7251416	7259940	+			NA	0.0420479
CISD2	eQTL	GTE	ENSG00000	4	102868978	rs223337	4	102865214	T	C	0.487699	-0.0488845	0.0126739	0.0001162	-0.327443	0.0256538	2.60804e-3	0.149172	0.0480416	0.0002247	0.0002247	0.4091941	20	ENSG00000	4	102868974	102892807	+			NA	0.0449756
SERPINC1	eQTL	GTE	ENSG00000	1	173903804	rs12060331	1	174013468	A	G	0.116593	0.0831252	0.0208311	6.595156e-0	0.69654	0.0723678	6.270836e-1	0.11934	0.0323749	0.0002276	0.0016242	0.8083855	20	ENSG00000	1	173903800	173917327	-			NA	0.0450321
VCP	eQTL	GTE	ENSG00000	9	35056064	rs10814193	9	35013689	C	A	0.716139	-0.050423	0.0128759	8.999038e-0	0.154376	0.0142968	3.520172e-2	-0.326627	0.0887219	0.0002319	0.0002319	0.0701381	20	ENSG00000	9	35053928	35072668	-			NA	0.0453454
RAVER2	eQTL	GTE	ENSG00000	1	64745095	rs11426969	1	64848529	A	C	0.010864	-0.256782	0.0666361	0.0001164	2.16894	0.180205	2.299262e-2	-0.118391	0.0322591	0.0002426	0.0002426	0.2377484	6	ENSG00000	1	64745975	64833232	+			NA	0.0458759
CISD2	eQTL	GTE	ENSG00000	4	102868978	rs223342	4	102860002	T	C	0.47783	-0.048846	0.0126738	0.0001161	-0.323032	0.0287822	3.132603e-0	0.151212	0.0414828	0.0002672	0.0007994	0.3119755	20	ENSG00000	4	102868974	102892807	+			NA	0.0488882
TDRD10	eQTL	GTE	ENSG00000	1	154502219	rs41269915	1	154549108	A	T	0.190865	-0.059654	0.0136786	1.293947e-0	-0.213761	0.0328144	7.305912e-1	0.279069	0.0770065	0.0002901	0.0002901	0.5415031	10	ENSG00000	1	154502219	154548147	+			NA	0.0523112
CISD2	eQTL	GTE	ENSG00000	4	102868978	rs223313	4	102886563	C	T	0.488124	-0.0488803	0.0126724	0.0001176	-0.150141	0.0140773	1.476207e-2	0.325046	0.089737	0.0002921	0.0002921	0.4111806	20	ENSG00000	4	102868974	102892807	+			NA	0.0523112
IL1RL2	eQTL	GTE	ENSG00000	2	102186973	rs2310241	2	102225489	C	A	0.477859	0.0482245	0.0126328	0.0001349	0.216203	0.0211945	1.96438e-2	0.223052	0.0623876	0.0003499	0.0025418	0.0580216	20	ENSG00000	2	102187006	102240002	+			NA	0.0607399
DARS2	eQTL	GTE	ENSG00000	1	173824503	rs2144708	1	173810981	G	A	0.290912	0.0589177	0.0146414	5.720619e-0	-0.226962	0.0301215	4.887768e-1	-0.259593	0.0731337	0.0003859	0.0003859	0.353297	20	ENSG00000	1	173824653	173858808	+			NA	0.0656178
RAVER2	eQTL	GTE	ENSG00000	1	64745095	rs11426969	1	64848529	A	C	0.010864	-0.256782	0.0666361	0.0001164	1.06124	0.117421	1.596599e-1	-0.241964	0.06826	0.000393	0.000393	0.0574166	6	ENSG00000	1	64745975	64833232	+			NA	0.0656178
BTN2A1	eQTL	GTE	ENSG00000	6	26457904	rs2273193	6	26458297	G	C	0.777065	0.0658475	0.0152819	1.644105e-0	-0.150725	0.02418	4.562315e-1	-0.436872	0.123255	0.0003934	0.0003934	0.0961791	14	ENSG00000	6	26457904	26476621	+			NA	0.0656178
CHP1	eQTL	GTE	ENSG00000	15	41230839	rs7162443	15	41237834	C	T	0.440125	0.0509285	0.01319	0.0001129	-0.139227	0.0157577	9.963727e-1	-0.365795	0.103388	0.0004031	0.0004031	0.7076718	20	ENSG00000	15	41230839	41281887	+			NA	0.0661637
MPN2	eQTL	GTE	ENSG00000	1	11980181	rs2103876	1	11993043	T	C	0.651122	0.0566205	0.0143909	8.243741e-0	-0.190531	0.0236572	8.024885e-1	-0.297172	0.0840144	0.0004045	0.0004045	0.0447747	20	ENSG00000	1	11980181	12015211	+			NA	0.0661637
CHP1	eQTL	GTE	ENSG00000	15	41230839	rs12324159	15	41170270	A	G	0.435106	0.0544384	0.0131874	3.658341e-0	-0.139965	0.0204682	8.02068e-1	-0.388943	0.110056	0.0004093	0.0025817	0.0818462	20	ENSG00000	15	41230839	41281887	+			NA	0.0663129
IL1RL2	eQTL	GTE	ENSG00000	2	102186973	rs12472862	2	102224534	G	A	0.478427	0.0472695	0.0126245	0.0001809	0.24587	0.0248349	4.155013e-2	0.192254	0.0548957	0.0004615	0.0004615	0.0500328	20	ENSG00000	2	102187006	102240002	+			NA	0.0739952
UBE2D3	eQTL	GTE	ENSG00000	4	102794383	rs223426	4	102801330	A	G	0.487883	-0.049123	0.0126778	0.0001067	-0.150966	0.0185623	4.18984e-1	0.32539	0.0930215	0.0004687	0.0004687	0.6359029	20	ENSG00000	4	102794383	102863896	-			NA	0.0739952
RAVER2	eQTL	GTE	ENSG00000	1	64745095	rs11426969	1	64848529	A	C	0.010864	-0.256782	0.0666361	0.0001164	1.17112	0.1405955	8.103413e-1	-0.219262	0.0626932	0.0004699	0.0004699	0.1753574	4	ENSG00000	1	64745975	64833232	+			NA	0.0739952
RPAP1	eQTL	GTE	ENSG00000	15	41517176	rs7178957	15	41525464	G	A	0.517385	0.0455026	0.0126302	0.000315	-0.347083	0.0240996	5.023094e-0	-0.1311	0.0375108	0.0004741	0.0018344	0.3463609	20	ENSG00000	15	41517176	41544269	-			NA	0.0739952
SERPINC1	eQTL	GTE	ENSG00000	1	173903804	rs6425266	1	173989977	T	C	0.11659	0.0827001	0.0208292	7.175432e-0	0.573636	0.0781617	2.150462e-1	0.144168	0.0412839	0.0004792	0.0004792	0.7783734	20	ENSG00000	1	173903800	173917327	-			NA	0.0741152
SAC3D1	eQTL	GTE	ENSG00000	11	65040901	rs562590	11	65035879	G	A	0.715689	-0.053076	0.0134653	8.090546e-0	0.159536	0.0212625	6.229763e-1	-0.332691	0.0953409	0.0004839	0.0004839	0.1662024	19	ENSG00000	11	65040901	65044828	+			NA	0.0741747
B4GAT1	eQTL	GTE	ENSG00000	11	66345372	rs10896113	11	66349640	T	C	0.222483	0.0635375	0.014657	1.45787e-0	-0.160908	0.0276807	6.13635e-0	-0.394868	0.113629	0.0005107	0.0005107	0.1830924	8	ENSG00000	11	66345374	66347629	-			NA	0.0770419
RFTN1	eQTL	GTE	ENSG00000	3	16313574	rs6442605	3	16449797	C	T	0.132596	-0.069154	0.0162108	1.990678e-0	-0.17938	0.0299529	2.114792e-1	0.385518	0.110955	0.0005117	0.0005117	0.6252084	20	ENSG00000	3	16313574	16514026	-			NA	0.0770419
CTDNEP1	eQTL	GTE	ENSG00000	17	7243815	rs2074218	17	7253867	G	A	0.609475	0.0481274	0.0131042	0.00024	0.23819	0.0234135	2.612398e-2	0.202055	0.0584911	0.0005514	0.0005514	0.4020427	20	ENSG00000	17	7243591	7252491	-			NA	0.0808728
SPDYE16	eQTL	GTE	ENSG00000	7	76531319	rs2949288	7	76545947	A	G	0.592116	0.0454675	0.0126224	0.0003156	-0.629831	0.0551383	3.21897e-3	-0.07219	0.0210138	0.0005918	0.0012628	0.3684922	20	ENSG00000	7	76531313	76543297	-			NA	0.0853188
CLDN7	eQTL	GTE	ENSG00000	17	7259941	rs12601936	17	7269290	G	A	0.609329	0.047099	0.0131133	0.0003285	0.468683	0.04043	4.500418e-2	0.100492	0.0292912	0.0006018	0.0006018	0.1354634	20	ENSG00000	17	7259903	7263983	-			NA	0.0859967
ITPRIPL1	eQTL	GTE	ENSG00000	2	96325531	rs772174	2	96325754	G	A	0.6866	-0.053038	0.0142676	0.0002013	0.334616	0.0381304	1.700434e-1	-0.158503	0.0463065	0.0006195	0.001475	0.6327838	20	ENSG00000	2	96325317	96330517	+			NA	0.0866912
RPAP1	eQTL	GTE	ENSG00000	15	41517176	rs1200349	15	41529554	C	T	0.508363	0.0438837	0.0126255	0.0005093	-0.430786	0.0225785	3.739477e-3	-0.101869	0.0297904	0.0006273	0.0023675	0.7741737	20	ENSG00000	15	41517176	41544269	-			NA	0.0866912
ZNF506	eQTL	GTE	ENSG00000	19	19785839	rs7255725	19	19826104	G	C	0.442585	0.0448397	0.0126813	0.0004064	0.486046	0.0364849	1.727973e-1	0.092254	0.0266941	0.0006319	0.0007563	0.9199676	20	ENSG00000	19	19785839	19821751	-			NA	0.0866912
FADS2	eQTL	GTE	ENSG00000	11	61816256	rs968567	11	61828092	T	C	0.190686	0.0696134	0.0200491	0.0005163	0.609932	0.0338837	3.274658e-2	0.114432	0.0335339	0.0006518	0.0046711	0.5899069	20	ENSG00000	11	61792980	61867354	+			NA	0.0880997
CCDC116	eQTL	GTE	ENSG00000	22	21632716	rs7444	22	21622645	C	T	0.193135	0.0486583	0.0135069	0.0003152	-0.63225	0.060342	1.092807e-	-0.076961	0.0225907	0.0006574	0.0006574	0.5139712	13	ENSG00000	22	21632716	21637329	+			NA	0.0880997
ITPRIPL1	eQTL	GTE	ENSG00000	2	96325531	rs772174	2	96325754	G	A	0.6866	-0.053038	0.0142676	0.0002013	0.329193	0.0386742	1.710288e-1	-0.161115	0.047294	0.0006576	0.0006576	0.3048851	20	ENSG00000	2	96325317	96330517	+			NA	0.088097
DARS2	eQTL	GTE	ENSG00000	1	173824503	rs2144708	1	173810981	G	A	0.290912	0.0589177	0.0146414	5.720619e-0	-0.206732	0.0324633	1.912861e-1	-0.284996	0.083778	0.0006694	0.0006694	0.5218873	20	ENSG00000	1	173824653	173858808	+			NA	0.0882891
UPK3B	eQTL	GTE	ENSG00000	7	76510428	rs2528284	7	76514839	G	A	0.403146	-0.045383	0.0126171	0.000322	0.341899	0.0330643	4.624039e-1	-0.132738	0.0390719	0.0006806	0.0006806	0.146674	20	ENSG00000	7	76510525	76516522	+			NA	0.0889953
UBE2L3	eQTL	GTE	ENSG00000	22	21567547	rs2298429	22	21628971	G	A	0.185691	0.0525679	0.0135258	0.0001017	0.153251	0.0219611	2.987615e-1	0.343018	0.101024	0.0006853	0.0006853	0.5551313	4	ENSG00000	22	21549447	21624034	+			NA	0.0889953
RPAP1	eQTL	GTE	ENSG00000	15	41517176	rs1200349	15	41529554	C	T	0.508363	0.0438837	0.0126255	0.0005093	-0.391393	0.026385	8.844169e-2	-0.112122	0.0331316	0.000714	0.000714	0.6836644	20	ENSG00000	15	41517176	41544269	-			NA	0.0908198
SH3BP2	eQTL	GTE	ENSG00000	4	2793023	rs450800	4	2813089	C	A	0.724992	-0.047575	0.0135978	0.0004675	0.495417	0.0376606	1.597418e-	-0.09603	0.0284014	0.0007218	0.002073	0.428374	20	ENSG00000	4	2793071	2841098	+			NA	0.0908198
ZMIZ2	eQTL	GTE	ENSG00000	7	44748581	rs799442	7	44728822	A	G	0.667523	0.0454695	0.0126707	0.0003325	-0.210701	0.0209585	8.888011e-2	-0.215801	0.0638522	0.0007257	0.0007257	0.3248823	20	ENSG00000	7	44748581	44769881	+			NA	0.0908198
LEMD2	eQTL	GTE	ENSG00000	6	33771202	rs4711348	6	33768518	A	G	0.553046	-0.046168	0.0126028	0.000249	-0.192331	0.0219603	1.985431e-1	0.240043	0.0710277	0.000726	0.000726	0.0694799	20	ENSG00000	6	33771202	33789130	-			NA	0.0908198
NADK	eQTL	GTE	ENSG00000	1	1751232	rs61777507	1	1731456	G	A	0.940617	0.0777571	0.0207199	0.0007349	-0.240096	0.0318953	5.166823e-1	-0.323858	0.096428	0.0007835	0.0007835	0.9020619	15	ENSG00000	1	1751232	1780457	-			NA	0.0972986

Table S6. The SMR (Summary-based Mendelian Randomization) analysis of depression identified genes with significant associations that passed the HEIDI (Heterogeneity in Dependent Instruments) test.

Gene	qtl_name	probeID	ProbeChr	Probe_bp	topSNP	topSNP_ch	topSNP_bp	A1	A2	Freq	b_GWAS	se_GWAS	p_GWAS	b_eQTL	se_eQTL	p_eQTL	b_SMR	se_SMR	p_SMR	m.p.HEIDI	nsnp	HEIDI_gene_id	chr	start	end	strand	GWAS_LO	Lead_SNP	Lead_SNP_Fdr
DCC	eQTL_Brain	ENSG00000	18	52938050	rs62097994	18	53314592	A	T	0.424352	0.0476155	0.0075884	3.50103E-10	-0.339906	0.0358653	2.60950	0.0267746	1.67709	4.95340	1.61E-06	11.0236119	20	ENSG00000	18	52340197	53535903	+	chr18:5281	rs62099231	53198529	0.0017609
GPX1	eQTL_Brain	ENSG00000	3	49357765	rs4855853	3	49541898	T	G	0.261004	0.0442841	0.0092647	1.75418E-	0.618899	0.0402409	2.23394	-0.0715	0.015676	5.00685	-0.1	0.8328	0.0790374	20	ENSG00000	3	49357176	49358353	-			NA	0.0112646
P4HTM	eQTL_Brain	ENSG00000	3	48998521	rs3087866	3	49017259	T	C	0.23425	0.0438021	0.0090536	1.31091E-	0.524063	0.0442559	2.37737	-0.083582	0.018662	7.50972	-0.7	0.9572	0.1937412	20	ENSG00000	3	48998939	49007153	+			NA	0.0112646
ZNF197	eQTL_Brain	ENSG00000	3	44616680	rs6769283	3	44629725	T	G	0.31255	0.0382815	0.0078919	1.23006-	0.357602	0.0341626	1.23169	-0.107051	0.0243234	1.07683	-0.4	0.2404	0.1781057	20	ENSG00000	3	44584888	44648471	+			NA	0.0125631
NICN1	eQTL_Brain	ENSG00000	3	49425829	rs11130181	3	49072486	G	A	0.239048	0.0433417	0.0090495	1.67291E-	0.42985	0.0402365	1.22144	-0.10083	0.0230716	1.24078	-0.8	0.0002	0.1518	0.1519199	20	ENSG00000	3	49422233	49429326	-			NA	0.0130282
KCTD16	eQTL_Brain	ENSG00000	18	44432820	rs11749671	5	44488686	G	A	0.408977	0.0417907	0.007662	5.21782E-	0.219147	0.0323366	1.22643	-0.195307	0.0448454	1.19489	-6.2	0.1948	0.2116538	20	ENSG00000	5	44470873	44485656	+	chr5:143961	rs9324959	144457762	0.017728
LRP4	eQTL_Brain	ENSG00000	11	46887679	rs12417519	11	47107846	T	C	0.232953	-0.034994	0.0081532	1.77008E-	0.523138	0.0400787	6.12889	-0.066893	0.0164062	4.55610	-5.0	0.0007	0.2596	0.5908024	20	ENSG00000	11	46856717	46918642	-			NA	0.0298994
OTOA	eQTL_Brain	ENSG00000	16	21712951	rs4783413	16	21724258	C	G	0.42315	-0.032887	0.0074848	1.11381E-	-0.334814	0.032596	9.45853	-0.0982	0.2338	0.02434	-1.4	0.5312	0.0004451	0.0859183	20	ENSG00000	16	21663968	21761935	+			NA	0.0309074
CYP7B1	eQTL_Brain	ENSG00000	19	54093230	rs4461935	8	54075710	G	C	0.503329	0.0325164	0.0074083	1.36369E-	-0.416227	0.0306569	1.74148	-0.106207	0.0170392	6.13460	-7.6	0.0002	0.8559	0.8559903	20	ENSG00000	8	54587763	54798737	-			NA	0.0309074
ZNF500	eQTL_Brain	ENSG00000	16	4757931	rs12599765	16	4762208	G	A	0.377537	-0.031795	0.0077584	4.16509E-	0.500536	0.0311765	5.27958	-0.063522	0.0159972	7.16361	-6.7	0.0002277	0.436907	20	ENSG00000	16	4748239	4767624	+			NA	0.0309074
SCAMP1	eQTL_Brain	ENSG00000	5	78420674	rs3088102	5	78358855	A	G	0.226765	-0.039491	0.0087371	6.18776E-	0.302204	0.0366605	1.67520	-0.130675	0.0329721	7.39486	-9.2	0.3948	0.6714463	20	ENSG00000	5	78360611	78480739	+			NA	0.0309074
BPTF	eQTL_Brain	ENSG00000	17	67904940	rs62086042	17	67971327	C	T	0.266375	0.0388348	0.0082745	2.68781E-	-0.276753	0.0377202	2.18447	-0.140323	0.0354921	7.69722	-4.7	0.6972	0.4322608	20	ENSG00000	17	67825503	67984378	+			NA	0.0309074
SLC25A12	eQTL_Brain	ENSG00000	7	17205044	rs2282687	11	17205044	T	G	0.383656	0.0318305	0.0071346	8.27314E-	-0.287579	0.0425655	1.91373	-0.148396	0.0431964	1.48337	-3.4	0.0657	0.7290717	0.8480346	20	ENSG00000	11	17183405	17199959	+			NA	0.0309074
C17orf58	eQTL_Brain	ENSG00000	17	67993784	rs7209427	17	68001548	A	T	0.307925	0.0356995	0.0078901	6.05148e-0	-0.259125	0.0321411	7.49813	-0.137669	0.0349165	7.95737	-6.0	7.95737e-0	0.118865	20	ENSG00000	17	67991099	67996469	-			NA	0.0309074
ATL2	eQTL_Brain	ENSG00000	2	38335620	rs3755025	2	38293916	C	T	0.389745	-0.033864	0.0076097	8.58153e-0	0.251511	0.0306455	2.26559	-0.134641	0.0344175	9.35397	-6.0	0.0004925	0.7380735	20	ENSG00000	2	38293954	38377285	-			NA	0.0309074
FADS1	eQTL_Brain	ENSG00000	11	61814472	rs174537	11	61785208	G	G	0.347848	0.0302604	0.0070599	1.86E-05	0.638007	0.0338047	3.41731	-0.048028	0.0312063	5.51059	-9.0	0.0001537	0.7305099	20	ENSG00000	11	61799627	61829318	+			NA	0.0309074
FRAT1	eQTL_Brain	ENSG00000	10	97320593	rs11891222	10	97312838	G	A	0.399439	0.0316953	0.0075868	2.94455e-0	-0.340065	0.0324215	4.95657	-0.0980081	0.0233134	9.82894	-2.6	0.0006291	0.5247729	20	ENSG00000	10	97319271	97321915	+			NA	0.0309074
TMEM258	eQTL_Brain	ENSG00000	11	61780652	rs174538	11	61792609	A	G	0.31895	0.0315733	0.0078574	5.86173E-	0.385496	0.0296202	1.01036	-0.0819031	0.0213319	0.000123	0.000897	0.6786326	20	ENSG00000	11	61768501	61792802	-			NA	0.0369903
MIER1	eQTL_Brain	ENSG00000	1	66956757	rs6707923	1	66922133	T	C	0.264771	-0.032264	0.0078451	3.98E-05	0.234182	0.0421305	1.23456	-0.08572	0.0228226	5.00001333	0.0001333	0.2398135	20	ENSG00000	1	66924895	66988619	+			NA	0.0338893
DYNC1I2	eQTL_Brain	ENSG00000	2	171718784	rs10184866	2	171752446	G	T	0.276827	0.0366942	0.009205	6.70960E-	0.410995	0.0324078	7.44223	-1.~089281	0.0234771	0.001443	0.000634	0.3800689	20	ENSG00000	2	171687409	171750158	+			NA	0.0405833
MARCHF1	eQTL_Brain	ENSG00000	17	62754829	rs8071332	17	63064592	G	A	0.236217	-0.038842	0.0087529	9.09708e-0	0.262199	0.0365852	7.67695	-0.148139	0.0392639	0.0001614	0.0001614	0.3099545	20	ENSG00000	17	62701314	62808344	-			NA	0.0445876
ZNF408	eQTL_Brain	ENSG00000	11	46703471	rs2826587	11	46729855	C	T	0.139762	-0.041135	0.0093015	9.57314E-	-0.287579	0.0425655	1.91373	-0.148396	0.0431964	0.0003437	0.0003437	0.7790514	20	ENSG00000	11	46703030	46705912	+			NA	0.0455861
INO80E	eQTL_Brain	ENSG00000	16	30000754	rs4787489	16	29984559	A	G	0.455146	-0.028472	0.007633	0.0001914	-0.527269	0.0334563	5.86763e-	0.0539995	0.0148765	0.0028836	0.0017989	0.8265633	20	ENSG00000	16	29995715	30005793	+			NA	0.0971116
RAB27B	eQTL_Brain	ENSG00000	18	54806688	rs58243949	18	54842602	T	C	0.228497	-0.032949	0.0082427	6.40554E-	-0.356016	0.0414208	8.31792	-0.0925491	0.025534	0.0002895	0.0002895	0.3430345	20	ENSG00000	18	54717860	54895516	+			NA	0.0690787
EPHA10	eQTL_Brain	ENSG00000	4	37759506	rs7311751	1	37731107	A	T	0.31715	0.0314313	0.0078504	5.57154E-	0.555568	0.0333246	2.16002	-0.0565751	0.0156884	0.0000316	0.0000316	0.2741037	20	ENSG00000	4	37713880	37765133	-			NA	0.0725108
KIAA1109	eQTL_Brain	ENSG00000	4	122257545	rs56313700	4	122366418	A	C	0.219039	0.0283955	0.0078551	0.0003005	-0.628279	0.0371861	4.85264	-0.045196	0.0127856	0.0004079	0.0001528	0.0638997	20	ENSG00000	4	122152331	122364167	+			NA	0.0856681
AGBL2	eQTL_Brain	ENSG00000	11	47687490	rs11824971	11	47502620	A	G	0.14095	-0.037271	0.0088628	2.60736e-0	0.371114	0.0581746	1.77873	-0.100429	0.0286036	0.0004463	0.0004463	0.065132	20	ENSG00000	11	47659591	47715389	-			NA	0.0892103
DHF4B	eQTL_Brain	ENSG00000	17	44730436	rs7907730	17	44756757	A	G	0.146309	0.0379331	0.0091733	3.68E-05	0.3904	0.0421305	5.52389	-0.103037	0.0086556	0.0004503	0.0002851	0.0528005	20	ENSG00000	17	44700698	44752264	+			NA	0.0892103
RBM28	eQTL_Brain	ENSG00000	8	102221732	rs28999669	8	102238763	T	C	0.150576	-0.047573	0.0113597	2.81568e-0	0.277256	0.0433971	1.67165e-	-0.171585	0.0489897	0.000461	0.000461	0.1518919	20	ENSG00000	8	102204502	102238961	-			NA	0.0896311
LYG1	eQTL_Brain	ENSG00000	2	99294490	rs28382977	2	99401841	A	G	0.275235	0.0331439	0.0085934	0.0001148	0.247242	0.0303192	3.50229e-	0.134054	0.0384486	0.0004892	0.0018549	0.4541049	20	ENSG00000	2	99284238	99304742	-			NA	0.0917299
MAPRE1	eQTL_Brain	ENSG00000	2	26999928	rs4665366	2	26989728	A	G	0.389945	-0.030191	0.0078547	0.0001212	0.236023	0.0295937	1.51806e-	-0.127913	0.0369425	0.0003552	0.0003552	0.4758043	20	ENSG00000	2	26970637	27027219	+			NA	0.0971116
INPP4A	eQTL_Brain	ENSG00000	2	98519623	rs4822139	2	98598679	A	G	0.249499	0.0381730	0.0090112	2.57413E-	0.3	0.0355398	5.67630e-	-0.175995	0.0505781	0.0003364	0.0003364	0.1507383	20	ENSG00000	2	98440854	98594392	+			NA	0.0971116
PRR16	eQTL_Brain	ENSG00000	5	120575816	rs4895275	5	120700940	A	G	0.139653	0.0420581	0.0095528	1.06912e-0	0.239648	0.0430423	2.55046e-	0.1754995	0.0508184	0.0005535	0.0005535	0.153738	20	ENSG00000	5	120464300	120687332	+	chr5:120283	rs6876567	120759427	0.0980913
GNL2	eQTL_Brain	ENSG00000	1	37581377	rs10908359	1	37591215	G	T	0.450838	-0.027041	0.0075245	0.0003261	-0.382114	0.0319343	5.37909e-	0.0707655	0.0205606	0.0005779	0.0023386	0.0706562	20	ENSG00000	1	37566816	37595937	-			NA	0.0980913
MYCBPAP	eQTL_Brain	ENSG00000	13	50519943	rs11869714	13	50509946	G	A	0.2257	0.0317043	0.0089458	0.0004249	0.3	0.0336761	5.02691e-0	-0.068121	0.0198132	0.0005735	0.0021485	0.3642219	20	ENSG00000	13	50568384	50515101	+			NA	0.0980913
RERE	eQTL_Brain	ENSG00000	1	8600659	rs894875	1	8372076	A	T	0.33755	-0.02746	0.0077721	0.0004106	0.47568	0.0321044	1.143193e-	-0.057729	0.016797	0.0005885	0.0006658	0.3310538	20	ENSG00000	1	8352397	8848921	-			NA	0.0980913
AMT	eQTL_GTE	ENSG00000	3	49416775	rs2512462	3	49563822	C	T	0.738924	-0.044268	0.0092665	1.77784E-	0.356088	0.0241469	3.22989e-	-0.124316	0.0273544	5.50265e-	1.8412	0.1816278	20	ENSG00000	3	49416778	49422685	-	chr3:481902	rs10154992	49238644	0.0098163
ZNF460	eQTL_GTE	ENSG00000	3	45588959	rs9824917	3	44556649	A	G	0.316458	0.0393808	0.0075024	1.70E-07	0.384956	0.0240378	2.81783e-	-0.416731	0.0292023	1.30096e-	4.0610	0.0455804	20	ENSG00000	3	45587223	44599694	+	chr3:44047	rs6798590	44515369	0.0098163
C11orf49	eQTL_GTE	ENSG00000	11	47050537	rs11218100	11	46988940	A	G	0.145378	-0.043902	0.009141	1.56496e-0	0.132895	0.0120851	3.96814e-	-0.33035	0.0750574	1.07607e-	7.4577	0.1169382	20	ENSG00000	11	46936689	47164385	+			NA	0.0101765
SCAMP1	eQTL_GTE	ENSG00000	5	78420675	rs10942856	5	78450376	C	T	0.245873	-0.038997	0.0086415	6.40086e-0	0.172744	0.0091746	4.40242e-	-0.225748	0.0514418	1.1418e-05	0.0011495	0.5833137	20	ENSG00000	5	78360611	78480739	+			NA	0.0101982
TCTA	eQTL_GTE	ENSG00000	17	49414340	rs2117208	3	49402292	T	A	0.26085	0.0442120	0.0092675	1.83593E-	0.309238	0.0090536	6.01601e-	-0.44561	0.101872	1.21864e-	2.1239	0.0991133	20	ENSG00000	3	49412212	49416476	+			NA	0.0103117
DDB2	eQTL_GTE	ENSG00000	11	47226841	rs2242261	11	47245257	G	T	0.156701	-0.037795	0.0086408	1.21967E-	-0.293081	0.0102167	5.62876e-	0.128955	0.0298232	1.53180E-	2.9033	7e-07	0.1152984	20	ENSG00000	11	47214465	47239217	+			NA	0.0107725
RPL13A	eQTL_GTE	ENSG00000	19	49490284	rs76687611	19	49487208	A	G	0.956025	0.0643538	0.014922	1.52432e-0	0.57673	0.019978	2.98990e-	0.1111906	0.0261622	1.89086e-	0.0007401	0.0589789	20	ENSG00000	19	49487510	49493057	+			NA	0.0121598
FAM118B	eQTL_GTE	ENSG00000	11	126237354	rs6707112	11	126190771	A	G	0.403567	0.0343649	0.0081463	2.45963e-0	0.419217	0.0278784	0	0.0819974	0.0194925	2.60612e-	0.0117153	0.1088813	20	ENSG00000	11	126211724	126262994	+			NA	0.0144479
MIER1	eQTL_GTE	ENSG00000	1	66956757	rs2985825	1	66947139	T	G	0.263876	-0.033028	0.007842	2.53519e-0	0.320421	0.0089298	5.81998E-	-0.103075	0.0246419	2.87777e-	0.0017088	0.4163559	20	ENSG00000	1	66924895	66988619	+			NA	0.015422
QRICH1	eQTL_GTE	ENSG00000	3	49029707	rs7100	3	49017586	G	A	0.765636	-0.04379	0.0090553	1.32575e-0	-0.175177	0.0216072	5.17398e-	0.249977	0.0601897	3.27916e-	3.2791	6e-07	0.0705662	20	ENSG00000	3	49029707	49094363	-	chr3:481902	rs10154992	49238644	0.0164447
UNC50	eQTL_GTE	ENSG00000	2	98613547	rs17034241	2	98608535	C	C	0.249423	0.0382264	0.0091027	2.67569e-0	-0.255505	0.0092114	2.44403e-	-0.149611	0.0360323	3.29386e-	5.5549	6e-08	0.4859204	20	ENSG00000	2	98608579	98618515	+			NA	0.0164447
ITIH3	eQTL_GTE	ENSG00000	3	52801888	rs2710313	3	52935513	T	A	0.333651	-0.035062	0.0089842	1.30524e-0	0.115935	0.0036268	1.57227e-	-0.302466	0.0729443	3.37546e-	0.0026	0.9577312	20	ENSG00000	3	52794768	52809099	+			NA	0.0164447
COA5	eQTL_GTE	ENSG00000	2	98603914	rs3769698	2	98617431	C	T	0.249248	0.0381905	0.0091033	2.72569e-0	0.191846	0.010327	4.91493e-	0.1990609	0.0486458	4.27298e-	5.2728	6e-07	0.2823994	20	ENSG00000	2	98599314	98608515	-			NA	0.0202049
BPTF	eQTL_GTE	ENSG00000	17	67904940	rs7503056	17	68052533	G	C	0.254554	0.0386042	0.008166	2.27365e-0	0.0764449	0.0096908	3.06089e-	0.504994	0.124536	5.01306e-	5.0130	6e-07	0.0778758	20	ENSG00000	17	67825503	67984378	+			NA	0.021372
SCAMP1	eQTL_GTE	ENSG00000	5	78360583	rs6896027	5	78413656	C	T	0.47533	0.0394886	0.0080697	5.22576e-0	-0.172502	0.0194271	6.71856e-	-0.226453	0.0563632	5.05154e-	5.0515	4e-07	0.4596402	20	ENSG00000	5	78360611	78480739	+			NA	0.021372
ZNF852	eQTL_GTE	ENSG00000	3	44502742	rs13319803	3	44593969	A	G	0.3878	-0.042824	0.0075499	1.41107e-0	0.0584978	0.0101092	9.43418e-4	-0.732053	0.181437	5.46584e-	0.2283	0.0023	0.0000	20	ENSG00000	3	44494847	44510636	-			NA	0.0225319
CRISP3	eQTL_GTE	ENSG00000	6	49753906	rs78730163	6	49815226	A	A	0.2358	-0.034699	0.0084139	3.72295E-	-0.168268	0.0092413	4.44329e-	0.206214	0.0512695	5.76677e-	0.0014632	0.0912646	20	ENSG00000	6	49727376	49744437	-			NA	0.0231781
TMEM258	eQTL_GTE	ENSG00000	11	61780652	rs174538	11	61792609	A	G	0.31895	0.0315733	0.0078574	5.86173E-	0.328118	0.0093948	3.06699e-	0.0962254	0.0241047	6.55255e-	0.0012939	0.0877532	20	ENSG00000	11	61768501	61792802	+			NA	0.025694
KHK	eQTL_GTE	ENSG00000	2	27093754	rs2119026	2	27087525	G	A	0.377197	-0.031269	0.0078999	7.55385E-	0.462817	0.0084249	0	-0.067562	0.0171134	7.85408e-	0.0001949	0.5082052	20	ENSG00000	2	27086747	27100762	+			NA	0.0293433
ATXN1L	eQTL_GTE	ENSG00000	16	71865622	rs10852506	16	71936042	C	T	0.377615	0.0389596	0.0075489	2.45634e-0	0.0538324	0.0088636	1.25229e-	0.72372	0.184021	8.39578e-	8.3957	84e-8	0.1784133	20	ENSG00000	16	71808439	71885268	+			NA	0.0293433
SLIT1	eQTL_GTE	ENSG00000	10	96998018	rs10746931	10	97324198	G	T	0.603192	-0.03038	0.0077284	8.28032e-0	0.519603	0.0232449	1.71229e-	0.0587693	0.0151391	0.0001207	0.0004418	0.7220956	20	ENSG00000	10	96998038	97185959	+			NA	0.0340179
CPEB2	eQTL_GTE	ENSG00000	4	15036317	rs62409270	4	15026419	C	G	0.352663	0.0324337	0.0083477	0.0001022	-0.286065	0.0082483	3.36989e-	-0.113023	0.0292704	0.0001128	0.0001909	0.5259101	20	ENSG00000	4	15002481	15070153	+			NA	0.0362582
ZDBHC5	eQTL_GTE	ENSG00000	11	57684464	rs7116341	11	57713683	A	G	0.3319	0.0300173	0.0077488	0.0001071	0.251855	0.0084735	3.92133e-	0.119185	0.031027	0.0001224	0.0003987	0.0594857	20	ENSG00000	11	57667747	57701182	+			NA	0.0385757
SLC35C1	eQTL_GTE	ENSG00000	11	45808544	rs3809976	11	45807599	A	G	0.204594	0.0319381	0.0085177	0.0001626	-0.318418	0.0095963	4.26015e-0	0.1003702	0.0263135	0.0001396	7.2272e-4	0.1941184	20	ENSG00000	11	45804072	45813016	+			NA	0.040797
ALPK1	eQTL_GTE	ENSG00000	4	112364065	rs11939362	4	112279594	A	G	0.505854	0.0286882	0.0075054	0.0001322	0.278192	0.0078163	1.91858e-	0.103124	0.0271342	0.0001444	0.004252	0.0913504	20	ENSG00000	4	112285509	112442621	+			NA	0.0414566
KHK	eQTL_GTE	ENSG00000	2	27086747	rs6742004	2	27086791	A	A	0.622965	0.0312011	0.0079008	7.84434e-0	-0.401789	0.0332729	1.42182e-	-0.077655	0.0206889	0.0001744	0.0001744	0.1716016	20	ENSG00000	2	27086747	27100762	+			NA	0.0474488
MAPRE1	eQTL_GTE	ENSG00000	2	26989928	rs13032059	2	27010621	T	C	0.389578	-0.030082	0.0078551	0.0001284	0.149155	0.0080641	2.19333e-	-0.202043	0.0541591	0.0001775	0.0035017	0.5483139	20	ENSG00000	2	26970637	27027219	+			NA	0.0474488
ALG10B	eQTL_GTE	ENSG00000	12	38316578	rs6801615	12	38252710	T	G	0.475471	-0.03558	0.0077525	4.31E-06	0.3	0.0253535	1.21316e-4	-0.230872	0.0616747	0.0001848	0.0004048	0.4650403	20	ENSG00000	12	38316762	38329721	+			NA	0.0474488
EP300	eQTL_GTE	ENSG00000	22	41136334	rs13058113	22	41112410	T	G	0.289902	0.0303344	0.0080416	0.0001618	0.245407	0.0088632	9.63108e-	0.123609	0.0330713	0.0001858	0.0309514	0.14127	20	ENSG00000	22	41092592	41180077	+			NA	0.0474488
ZNF532	eQTL_GTE	ENSG00000	18	58924540	rs34538306	18	58989592	G	A	0.3329	-0.030795	0.0080326	0.0001262	0.234927	0.0140038	3.65646e-4	-0.131082	0.0350732	0.0001859	0.0005163	0.3569459	20	ENSG00000	18	58862600	58986480	+			NA	0.0474488
INO80E	eQTL_GTE	ENSG00000	16	30000754	rs9925915	16	29982365	C	G	0.455346	-0.028569	0.0076317	0.0001902	0.276234	0.0095041	3.85033	-0.107264	0.0277163	0.0001963	0.0007141	0.4778548	20	ENSG00000	16	29995715	30005793	+			NA	0.0493234
CLP1	eQTL_GTE	ENSG00000	11	57655428	rs11605731	11	57756617	G	T	0.332382	0.0300446	0.007749	0.0001057	0.107987	0.0084716	3.23971e-	0.278224	0.0750047	0.0002077	0.0010074	0.1322766	20	ENSG00000	11	57648188	57661865	+			NA	0.0513799
ANP32E	eQTL_GTE	ENSG00000	1	150227286	rs76676616	1	150171103	G	A	0.171551	-0.039981	0.0106311	0.0001694	0.217902	0.0109748	1.00159e-	0.183483	0.0496559	0.0002198	0.0006139	0.4532251	20	ENSG00000	1	150218417	150236156	-			NA	0.0535445
RTN4RL1	eQTL_GTE	ENSG00000	17	1980006	rs12749014	17	2071090	A	G	0.134604	0.0422093	0.0098469	1.99229e-0	0.125814	0.0174674	2.99907e-	0.331273	0.0899643	0.0002311	0.0857451	20	ENSG00000	17	1934677	2025334	+			NA	0.0536478
RAD54L2	eQTL_GTE	ENSG00000	3	51605124	rs9824926	3	51729277	G	T	0.397047	0.035083	0.0077391	5.80992e-0	0.0569285	0.0090308	2.9044e-10	0.6162264	0.167446	0.0002329	0.0002329	0.1055042	20	ENSG00000	3	51538719	51668667	+			NA	0.0550618
G6PC3	eQTL_GTE	ENSG00000	17	44073540	rs1684660	17	44030983	T	A	0.451778	-0.028053	0.0075792	0.0002145	0.17944	0.0079452	6.11348e-	-0.156348	0.0428015	0.0002596	0.000624	0.7305762	20	ENSG00000	17	44070620	44082151	+			NA	0.0577542
P4HTM	eQTL_GTE	ENSG00000	3	48998992	rs6796790	3	48742884	A	G	0.76235	-0.042703	0.0094221	2.32768e-0	0.105491	0.0136934	1.66833e-	-0.404001	0.111177	0.0001962	0.0007241	0.4778548	20	ENSG00000	3	48998939	49007153	+			NA	0.0637269
AGBL2	eQTL_GTE	ENSG00000	11	47687490	rs59205786	11	47736600	C	T	0.140512	-0.034672	0.0088017	8.17349e-0	0.100455	0.0110833	1.26209e-	-0.345153	0.0955365	0.0003029	0.0003029	0.075344	20	ENSG00000	11	47659591	47715389	-			NA	0.0635893
MIER1	eQTL_GTE	ENSG00000	1	66924895	rs2755248	1	67026941	G	A	0.735997	0.0327662	0.0078418	2.93563e-0	-0.093113	0.0129683	6.96954e-	-0.351898	0.097441	0.0003046	0.0006193	0.3112813	11	ENSG00000	1	66924895	66988619	+			NA	0.0653893
USP44	eQTL_GTE	ENSG00000	12	95534018	rs11108116	12	95564905	A	G	0.412174	-0.027726	0.0076594	0.0002739	0.204908	0.0087341	1.02562e-	-0.115307	0.0376291	0.0002342	0.0025536	0.3914803	20	ENSG00000	12	95516560	95551476	-			NA	0.0658096
PTGES3	eQTL_GTE	ENSG00000	12	56675874	rs11835120	12	56655990	A	G	0.340857	0.0312824	0.0081667	0.0001279	0.0963568	0.0093689	8.25126e-0	0.3324652	0.0904421	0.0003312	0.0005056	0.3390394	20	ENSG00000	12	56663341	56688408	+			NA	0.0665541
ARHGAP15	eQTL_GTE	ENSG00000	10	97257423	rs56189004	10	97326875	G	A	0.29995	0.0283502	0.0079422	0.0003576	-0.431324	0.0089079	0	-0.065728	0.0184635	0.000371	0.0288514	0.5596675	20	ENSG00000	10	97222173	97292673	-			NA	0.0727341
GNL2	eQTL_GTE	ENSG00000	1	37581376	rs2076519	1	37567446	G	T	0.450455	-0.027252	0.0075229	0.0003017	0.384623	0.0317728	8.5433916-4	-0.135052	0.0375165	0.0003994	0.0014658	0.2572266	20	ENSG00000	1	37566816	37595937	+			NA	0.0747175
DHF4B	eQTL_GTE	ENSG00000	17	44730436	rs16970944	17	44722397	T	C	0.145913	0.0330539	0.010734	0.0003924	-0.462676	0.0105801	0	-0.082247	0.0232759	0.0001501	7.2046e-4	0.3967681	20	ENSG00000	17	44700698	44752264	+			NA	0.0748986
ITM2C	eQTL_GTE	ENSG00000	2	230871944	rs9808500	2	230880616	T	C	0.128

Table S7. The SMR (Summary-based Mendelian Randomization) analysis of psoriasis identified CpG sites with significant associations that passed the HEIDI (Heterogeneity in Dependent Instruments) test.

qtl_name	probeID	ProbeChr	Probe_bp	topSNP	topSNP_ch	topSNP_bp	A1	A2	Freq	b_GWAS	se_GWAS	p_GWAS	b_eQTL	se_eQTL	p_eQTL	b_SMR	se_SMR	p_SMR	p_SMR_on_p_HEIDI	nsnp	HEI_gene_id	chr	start	end	strand	GWAS_LO	Lead_SNP	Fdr
mQTL	Mcl	cg10321404	1	24970297	rs10903119	1	A	G	0.494737	-0.093823	0.0150259	4.26251e-	1.14443	0.0210282	0	-0.081983	0.0132157	5.52549e-	5.94922e-0	0.2867586	16	ENSG00000	1	24899511	24965121	-	chr1:24468	rs7542079	24968116	1.8154023679e-06
mQTL	Mcl	cg16006841	5	177370998	rs10051765	5	T	G	0.325065	0.090792	0.0151317	1.97173e-9	1.2097	0.0244045	0	0.0750533	0.0125999	2.57478e-	2.14989e-9	0.6109394	20	ENSG00000	5	177357924	177372596	+	chr5:17685	rs11315019	177355217	4.83398055657143e-06
mQTL	Mcl	cg04342862	2	62333000	rs4675205	2	G	A	0.36323	0.0906278	0.0156497	6.99532e-9	0.725004	0.0315873	9.00773e-	0.1249	0.0222426	1.96179e-8	3.56611e-8	0.1840524	20	ENSG00000	2	62196115	62224731	+	chr2:61831	rs56368315	62331377	2.86465227177778e-05
mQTL	Mcl	cg07136313	11	36400827	rs77229041	11	36401868	T	G	0.029468	0.172553	0.030491	1.51816de-1	1.21891	0.0882279	2.05614e-	0.141563	0.0270308	1.63114e-1	1.63114e-0	0.0771509	12	ENSG00000	11	36296288	36465204	+	chr11:3591	rs76741620	36399020	0.0001786
mQTL	Mcl	cg17204562	20	4995239	rs571694	20	49907218	A	G	0.417067	-0.09292	0.0149694	5.38856e-2	-0.291177	0.032331	2.13443e-	0.31912	0.0624382	3.20506e-0	3.20506e-0	0.2717701	20	ENSG00000	20	49936336	49953885	+	chr20:4940	rs2769979	49909274	0.000324
mQTL	Mcl	cg16230307	14	35045910	rs10148691	14	35087607	C	G	0.197248	-0.098736	0.0171992	9.42681e-9	0.332451	0.0370707	1.65547e-	-0.296994	0.0618146	1.55048e-6	1.55048e-6	0.073209	20	ENSG00000	14	35044907	35113130	+	chr14:3443	rs8904	35402011	0.000886
mQTL	Mcl	cg02795981	10	7928532	rs1250565	10	7928728	A	G	0.375204	-0.08391	0.0150556	2.49908e-0	-0.291775	0.033152	1.35439e-	0.287584	0.061076	2.49383e-6	2.49383e-6	0.6706905	16	ENSG00000	10	7934769	7955334	+	chr10:7878	rs1250566	79286696	0.001311
mQTL	Mcl	cg26568304	16	11345928	rs4451969	16	11289662	T	C	0.331653	-0.075283	0.0161157	2.99143e-0	-0.92953	0.0281498	1.36218e-	0.0815993	0.0170274	1.65007e-6	1.75199e-6	0.0020706	20	ENSG00000	16	11249619	11381662	+	chr16:10751	rs2021511	11251046	0.0018262
mQTL	Mcl	cg15722751	12	10099042	rs11053581	12	10099342	C	T	0.124987	0.0979347	0.0216753	6.23499e-6	1.22926	0.0141298	4.66222e-	0.0795347	0.0178397	8.00623e-6	0.0001485	0.2978859	16	ENSG00000	12	10069554	10111627	+	NA	NA	NA	0.0035073
mQTL	Mcl	cg10421029	16	3092472	rs7202367	16	3093625	G	A	0.2409	0.0807606	0.0165716	1.09491e-6	-0.75222	0.0368607	1.24883e-	-0.215234	0.0450852	1.10440e-5	1.10440e-5	0.2657887	20	ENSG00000	16	3092355	3094783	+	NA	NA	NA	0.004682
mQTL	Mcl	cg03582285	17	44375714	rs4795711	17	42590665	C	T	0.436662	-0.064974	0.014978	1.43814e-6	0.745501	0.0297543	1.53068e-	-0.087155	0.0203901	1.91683e-6	9.24836e-6	0.7385945	20	ENSG00000	17	42552922	42555214	+	NA	NA	NA	0.0071974
mQTL	Mcl	cg09327582	14	34767706	rs1200412	14	34857286	G	T	0.349298	0.0722995	0.0161912	7.99350e-6	-0.443067	0.0337501	2.27929e-	-0.16318	0.0385996	2.36307e-6	0.0030575	0.0859917	20	ENSG00000	14	34709113	34714823	-	NA	NA	NA	0.0086265
mQTL	Mcl	cg16129889	17	42680300	rs1554227	17	40666431	C	A	0.435438	-0.0864401	0.0155228	2.49e-8	0.707926	0.0312469	1.13e-12	-0.122153	0.0182727	2.53737e-1	2.53737e-1	0.0009887	20	ENSG00000	17	42682531	42699993	+	NA	NA	NA	0.0099159
mQTL	Mcl	cg20126647	17	42561985	rs598126	17	42564502	A	G	0.4352	-0.06394	0.0149736	1.95133e-6	0.667931	0.0298355	5.25554e-	-0.095728	0.0228221	2.73403e-6	2.33346e-0	0.5523709	20	ENSG00000	17	42561467	42566277	+	NA	NA	NA	0.0094554
mQTL	Mcl	cg20975835	11	64339902	rs663743	11	64340263	A	G	0.341999	-0.068646	0.01552	9.73216e-6	-0.429625	0.0339341	9.77786e-	0.15978	0.0382656	2.97250e-6	9.31264e-6	0.7887755	20	ENSG00000	11	64340204	64357534	+	NA	NA	NA	0.0097662
mQTL	Mcl	cg24153525	1	152652780	rs4077395	1	152652780	A	G	0.342263	-0.066212	0.0149661	9.19e-6	0.0001311	-0.999736	0.0313669	1.22677e-	-0.06218	0.0141569	1.48435e-6	0.5005787	20	ENSG00000	1	152622834	152623103	+	NA	NA	NA	0.0106971
mQTL	Mcl	cg02481789	17	42653488	rs632758	17	42569342	C	A	0.435568	-0.064108	0.0149748	1.85995e-0	-0.420974	0.0320736	2.36022e-	0.152285	0.0374162	4.70045e-6	4.70045e-6	0.5262199	20	ENSG00000	17	42659284	42667006	+	NA	NA	NA	0.013429
mQTL	Mcl	cg14599956	5	177352172	rs4131290	5	177353681	C	A	0.281234	0.0813403	0.0161656	4.86173e-0	0.246881	0.0362829	1.01519e-	0.329472	0.0814378	5.21705e-5	5.21705e-5	0.1077947	20	ENSG00000	5	177315805	177351840	-	chr5:17685	rs11315019	177355217	0.0145878
mQTL	Mcl	cg04231092	17	42455688	rs2305274	17	42435588	C	T	0.348635	0.0650688	0.0148307	1.10491e-5	0.704916	0.0307146	2.22e-13	-0.205424	0.0453525	5.69991e-5	5.69991e-5	0.0551331	20	ENSG00000	17	42458844	42522582	+	NA	NA	NA	0.0149817
mQTL	Mcl	cg23724738	1	152565904	rs4112787	1	152578849	C	T	0.341526	-0.066254	0.0157961	2.736912e-0	0.435095	0.0340947	2.69469e-	-0.152275	0.0382156	6.75891e-6	0.0004613	0.7728622	20	ENSG00000	1	152565654	152566780	-	NA	NA	NA	0.0170819
mQTL	Mcl	cg09509673	17	42681679	rs7221994	17	42651127	C	T	0.436348	-0.064726	0.0149764	1.54733e-6	0.525462	0.0326608	2.17055e-	-0.198873	0.0501572	7.33991e-6	7.33991e-6	0.322698	20	ENSG00000	17	42678889	42683917	+	NA	NA	NA	0.0182002
mQTL	Mcl	cg20570464	1	156027748	rs6666748	1	156027748	A	C	0.01374	0.114939	0.0287099	6.11e-5	1.30436	0.0338526	1.33e-13	0.880226	0.2134183	6.95905e-5	0.0019887	0.1100622	20	ENSG00000	1	41478775	41484683	+	NA	NA	NA	0.0182065
mQTL	Mcl	cg26146569	15	31345389	rs28624578	15	31345463	C	T	0.166784	-0.087969	0.0201809	1.30635e-5	-0.386694	0.0419255	2.87936e-2	0.227491	0.057231	8.11203e-6	8.11203e-6	0.9959336	14	ENSG00000	15	31326835	31435665	+	NA	NA	NA	0.0190193
mQTL	Mcl	cg15091747	21	34890599	rs8128234	21	35098568	T	C	0.206974	0.0762746	0.0185633	3.97561e-4	-0.483714	0.0379751	3.65099e-	-0.157685	0.0403239	9.21166e-6	0.0009427	0.0564822	20	ENSG00000	21	34787801	36004667	+	NA	NA	NA	0.0201765
mQTL	Mcl	cg26525008	17	29930642	rs3916006	17	29930642	A	G	0.491678	-0.058558	0.0149142	8.25e-5	0.0001	0.0267905	1.52127e-	-0.059693	0.0152993	9.46265e-6	0.0002222	0.9634173	20	ENSG00000	17	29920200	30108452	+	NA	NA	NA	0.0202319
mQTL	Mcl	cg26068595	14	74919948	rs759058	14	74916268	A	G	0.390052	0.0628715	0.0149596	2.63688e-0	-0.319556	0.0310856	9.45633e-	-0.196746	0.0507444	9.00010e-7	0.0001057	0.1717209	20	ENSG00000	14	74903951	74923302	-	NA	NA	NA	0.0216971
mQTL	Mcl	cg11800794	20	32819532	rs853860	20	32814667	A	T	0.301702	0.0744939	0.0169167	1.06483le-6	0.275431	0.0341851	7.81604le-	0.2704663	0.0699939	0.0001115	0.0001115	0.8442771	20	ENSG00000	20	32819954	32850405	+	NA	NA	NA	0.0225438
mQTL	Mcl	cg10694914	11	111379036	rs3922443	11	111379489	A	G	0.247913	0.0621669	0.0159955	0.0001011	-0.999736	0.0313669	1.22677e-	-0.06218	0.0141569	1.48435e-6	0.5005787	20	ENSG00000	11	111352555	111455630	-	NA	NA	NA	0.0229464
mQTL	Mcl	cg02354125	3	156826797	rs344074	3	156830868	A	G	0.169138	0.0682988	0.0175775	0.0001021	1.07787	0.0396233	5.99621e-	0.0663646	0.0164731	0.0001198	0.0831607	0.1784484	20	ENSG00000	3	156826481	157046129	+	NA	NA	NA	0.0234982
mQTL	Mcl	cg21150839	20	63578281	rs8122987	20	63581430	T	C	0.049433	0.113759	0.0298505	0.0001384	-2.51145	0.0612381	0	-0.045296	0.01937	0.0001479	0.0064442	0.0849202	20	ENSG00000	20	63550806	63574239	-	NA	NA	NA	0.0266217
mQTL	Mcl	cg04858906	6	169658343	rs56317447	6	169642443	G	A	0.12957	0.104014	0.0273982	0.0001468	-1.86364	0.0272669	0	-0.055812	0.0147241	0.0001503	0.0007254	0.3398681	20	ENSG00000	6	169457212	169702067	-	NA	NA	NA	0.0266963
mQTL	Mcl	cg23336905	5	95013555	rs9514344	5	35803475	C	T	0.338	-0.065472	0.0150113	1.43e-5	0.0001	0.0267905	1.52127e-	-0.059693	0.0152993	9.46265e-6	0.0002222	0.9634173	20	ENSG00000	5	35852695	35879603	+	NA	NA	NA	0.0325735
mQTL	Mcl	cg08384502	4	122732767	rs4441454	4	122741428	A	G	0.239008	-0.070537	0.0185836	0.0001473	-0.668069	0.0369752	1.14232e-	0.105583	0.0284182	0.0002029	0.0002029	0.1307475	20	ENSG00000	4	122732702	122744942	+	NA	NA	NA	0.032826
mQTL	Mcl	cg26844104	22	21567442	rs5754166	22	21576488	T	C	0.189826	0.0643979	0.0163351	8.07032e-5	0.452032	0.0413912	9.15267e-	0.142463	0.0384195	0.0002088	0.0002088	0.3644216	11	ENSG00000	22	21549447	21624034	+	NA	NA	NA	0.032826
mQTL	Mcl	cg05669853	6	107118242	rs1153045	6	107118242	A	G	0.465913	0.0595751	0.0150981	7.68e-5	0.0001	0.0267905	1.52127e-	-0.059693	0.0152993	9.46265e-6	0.0002222	0.9634173	20	ENSG00000	6	107052182	107115515	-	NA	NA	NA	0.032826
mQTL	Mcl	cg09162137	16	30984306	rs7200879	16	30936251	G	A	0.2409	0.0807606	0.0165716	1.09649e-6	-0.208859	0.0365751	1.33018e-6	-0.386675	0.104529	0.0002163	0.0002163	0.4231738	18	ENSG00000	16	30985207	30989147	+	NA	NA	NA	0.032826
mQTL	Mcl	cg03723481	7	2032088	rs4470910	7	2032088	T	C	0.179133	-0.06242	0.0168656	0.0002147	-1.64569	0.0181759	0	-0.037929	0.0102574	0.0002175	0.0169033	0.4126986	20	ENSG00000	7	1815793	2233243	-	NA	NA	NA	0.0328626
mQTL	Mcl	cg01069141	11	67631355	rs3782088	11	67632499	T	C	0.448819	-0.056691	0.0150459	0.0002259	0.0001	0.0267905	1.52127e-	0.0980718	0.0258357	0.0002193	0.0002193	0.2582587	0.1882636	20	ENSG00000	11	67627938	67629917	+	NA	NA	NA	0.032826
mQTL	Mcl	cg14850771	21	33403153	rs9974603	21	33403994	A	G	0.139681	-0.080017	0.0194735	3.97368le-0	0.387192	0.0459756	3.71099e-	-0.206659	0.0559612	0.0002217	0.0002217	0.6770293	20	ENSG00000	21	33403413	33479348	+	NA	NA	NA	0.032826
mQTL	Mcl	cg21727178	6	31783882	rs10574400	6	31783882	A	G	0.060255	-0.133103	0.0353253	0.0001646	0.990136	0.0586056	4.904525e-	-0.134429	0.0365537	0.0002355	0.0007983	0.0795428	4	ENSG00000	6	105993463	106109339	+	NA	NA	NA	0.0332684
mQTL	Mcl	cg06647332	5	139485214	rs9514434	5	139507619	C	T	0.119597	-0.062164	0.0166004	0.0002127	0.0001	0.0267905	1.52127e-	0.0950264	0.0253124	0.0002359	0.0002359	0.2140124	13	ENSG00000	5	139486999	139496508	+	NA	NA	NA	0.0332684
mQTL	Mcl	cg18745507	10	10304881	rs75231016	19	10310306	C	A	0.087633	-0.106914	0.0276148	0.0001081	-0.65504	0.0562461	2.405927e-	0.163218	0.044426	0.0002389	4.57699e-6	2.0565203	20	ENSG00000	19	10304803	10309880	+	NA	NA	NA	0.0332684
mQTL	Mcl	cg10603592	17	42744079	rs2089116	17	42706812	T	C	0.456502	-0.058429	0.0149915	9.71954e1-	-0.352585	0.032189	6.38670e-	0.165717	0.0451302	0.0002407	0.0013832	0.1120382	20	ENSG00000	17	42700275	42745049	+	NA	NA	NA	0.0332684
mQTL	Mcl	cg26465155	11	35593083	rs657607	11	35590883	C	T	0.115459	0.0710142	0.0193392	0.0002227	0.0001	0.0267905	1.52127e-	0.0151144	0.0155144	0.0002577	0.0002577	0.9551381	0.1015743	20	ENSG00000	11	35618460	35620865	+	NA	NA	NA	0.0332684
mQTL	Mcl	cg00977161	7	100607615	rs15077418	7	100939049	A	G	0.131687	-0.077937	0.0198215	9.42639e-6	0.485527	0.0502699	4.52874e-	-0.16052	0.044078	0.0002708	0.0002708	0.6240313	17	ENSG00000	7	100969565	101018939	+	NA	NA	NA	0.0359499
mQTL	Mcl	cg19574514	11	64180745	rs60717867	11	61454490	G	C	0.013053	0.3716	0.101679	0.0002575	-2.26575	0.118899	6.956136e-	-0.087113	0.0239595	0.0002771	0.0173491	0.1379711	11	ENSG00000	11	61481120	61490931	+	NA	NA	NA	0.0364157
mQTL	Mcl	cg01884052	2	24927182	rs6752378	2	24927247	A	C	0.484502	0.0549877	0.0150794	0.0002658	1.00174	0.025667	0	0.0548922	0.0151188	0.0002826	0.0000784	0.2786024	20	ENSG00000	2	24819169	24920237	+	NA	NA	NA	0.0366988
mQTL	Mcl	cg11710535	19	10709318	rs11085744	19	10709297	T	C	0.447376	-0.057977	0.0151753	0.0002703	0.0001	0.0267905	1.52127e-	0.1748299	0.0452226	0.0002965	0.0002965	0.07083	20	ENSG00000	19	10701430	10713437	+	NA	NA	NA	0.0371395
mQTL	Mcl	cg19654510	11	120123206	rs562015	11	120121441	T	C	0.106045	0.0891093	0.0226139	8.13235de-0	0.45929	0.0505006	9.48056e-6	0.194015	0.0536594	0.0002996	0.0003553	0.4723151	20	ENSG00000	11	120111286	120185529	+	NA	NA	NA	0.0371395
mQTL	Mcl	cg23796481	11	64285662	rs479552	11	64343211	C	G	0.376766	-0.056247	0.0152458	0.0002249	0.533788	0.0313902	2.54020e-	-0.104979	0.029112	0.0003109	0.0029349	0.6773033	20	ENSG00000	11	64270062	64289500	+	NA	NA	NA	0.0381603
mQTL	Mcl	cg15872079	3	32307291	rs5859943	3	32307291	T	C	0.223456	-0.064842	0.0173255	0.0002163	0.0001	0.0267801	1.52666e-	0.130272	0.0361883	0.0003183	0.0001092	0.2232529	20	ENSG00000	3	32291698	32483067	+	NA	NA	NA	0.0381603
mQTL	Mcl	cg22900681	2	25078544	rs11684464	2	25117741	G	A	0.399665	-0.060878	0.0150969	5.51873de-4	0.262515	0.0328987	1.46920e-	-0.231904	0.0644331	0.0003194	0.0003194	0.4954362	20	ENSG00000	2	25042076	25159135	+	NA	NA	NA	0.0381603
mQTL	Mcl	cg23299133	7	137846951	rs6974718	7	137831964	T	C	0.050897	-0.144344	0.0396575	0.0002729	1.5573	0.0679816	1.07761e-	-0.092689	0.0257834	0.0003245	0.0010242	0.7420325	16	ENSG00000	7	137381037	137847092	+	NA	NA	NA	0.0384232
mQTL	Mcl	cg21868191	19	10405312	rs1128224	19	10428128	A	G	0.419075	-0.055591	0.0150827	0.0003228	-0.482663	0.0317776	1.33040e-	0.114319	0.0310932	0.0003393	0.0003393	0.0650656	20	ENSG00000	19	10391133	10420121	+	NA	NA	NA	0.0391134
mQTL	Mcl	cg18708986	12	52558806	rs1551580	12	52558824	C	A	0.217315	-0.077872	0.0193492	5.70846e-6	0.299552	0.0383193	5.39868e-	-0.259961	0.0726515	0.000346	0.0013582	0.3034729	20	ENSG00000	12	52249300	52309163	+	NA	NA	NA	0.039538
mQTL	Mcl	cg17482935	1	12056146	rs4314891	1	12055413	C	G	0.311153	-0.065392	0.015286	1.88652e-5	0.223895	0.0349148	1.43043e-	-0.292066	0.0820708	0.0003727	0.0003727	0.386676	7	ENSG00000	1	12063303	12144207	+	NA	NA	NA	0.041506
mQTL	Mcl	cg26910868	1	30106580	rs4129535	1	30106257	A	G	0.472731	-0.057144	0.0149738	0.0001155	0.426997	0.0303332	1.57e-13	0.73817	1.7317796	0.18263	0.0515576	0.0003967	0.0006822	0.7542433	20	ENSG00000	1	30115521	30186475	+	NA	NA	NA	0.0434032
mQTL	Mcl	cg13512951	9	124266901	rs10760345	9	124275517	G	A	0.365179	0.0545999	0.0153596	0.0003783	-0.984771	0.0270489	3.29128e-	-0.055444	0.0156713	0.0004032	0.0002097	0.3874406	20	ENSG00000	9	124257606	124353307	+	NA	NA	NA	0.0430075
mQTL	Mcl	cg13130965	17	61429440	rs1807359	17	61435974	T	C	0.013054	0.371687	0.101676	0.0002566	1.89776	0.142324	1.46638e-	0.195856	0.0555538	0.0004227	0.0004227	0.6694005	9	ENSG00000	17	61402641	61430031	+	NA	NA	NA	0.0440846
mQTL	Mcl	cg26094004	17	43997748	rs7620283	17	44033724	G	A	0.092195	-0.078037	0.0217678	0.0003371	-0.564677	0.0452295	1.71715e-7	0.0828702	0.0235697	0.0004382	0.0004259	0.2725257	20	ENSG00000	17	43952713	44004469	+	NA	NA	NA	0.0445015
mQTL	Mcl	cg11717407	8	11948538	rs6469788	8	11894051	A	C	0.45197	0.0530395	0.0149567	0.0003908	-0.791222	0.030769	8.65836e7-	-0.066993	0.0190619	0.0004406	0.0023614	0.099786	20	ENSG00000	8	11892355	11895885	+	NA	NA	NA	0.0445015
mQTL	Mcl	cg06398236	4	99816982	rs4699764	4	99819552	C	A	0.47767	0.0537449	0.0149593	0.0003272	0.534363	0.031904	5.750126e-	0.100578	0.0286314	0.0004434	0.0004577	0.1367731	20	ENSG00000	4	99816827	99870190	+	NA	NA	NA	0.045015
mQTL	Mcl	cg05708098	1	11673821	rs798000	1	11673870	C	T	0.318072	-0.058274	0.0159078	0.000249	-0.42063	0.0350697	1.64624e-	0.137743	0.0392969	0.0004563	0.0003314	0.1958774	18	ENSG00000	1	11675440	11676929	+	NA	NA	NA	0.0455041
mQTL	Mcl	cg00549601	12	51815208	rs3802177	12	51815129	C	A	0.24469	-0.060617	0.0172466	0.0004004	0.0001	0.0267905	1.52127e-	0.073074	0.0136127	0.0004577	0.0004577	0.5748939	20	ENSG00000	12	51817899	51848718	+	NA	NA	NA	0.0455041
mQTL	Mcl	cg23104592	17	49365793	rs7209400	17	49372695	T	C	0.454043	0.0608614	0.0149354	4.60190Se-0	0.217395	0.0317484	7.51905e-	0.279958	0.0799469	0.0004621	0.0032816	0.1972309	20	ENSG00000	17	49289206	49362473	+	NA	NA	NA	0.0456646
mQTL	Mcl	cg13550148	1	24629012	rs2629916	1	24629012	C	T	0.16245	0.0694402	0.0191971	0.0002978	0.570068	0.0419917	5.57855e-	0.12181	0.03485	0.0004736	0.0006954	0.4479802	20	ENSG00000	1	24683909	24693948	+	NA	NA	NA	0.046445
mQTL	Mcl	cg15492064	10	42801187	rs1614418	10	42800710	A	G	0.11385	-0.072236	0.019652	0.0002403	0.0001	0.0267905	1.52127e-	0.1317756	0.0404925	0.0004739	0.0004739	0.1311926	10	ENSG00000	10	42804720	42808479	+	NA	NA	NA	0.0479826
mQTL	Mcl	cg05428298	14	75069657	rs149219	14	75044077	G	A	0.487698	-0.055479	0.0149405	0.0002045	-0.321385	0.0321046	1.36985le-0	0.172625	0.0495831	0.0004986	0.0004986	0.0631532	20	ENSG00000	14	75064109	75119502	+	NA	NA	NA	0.0481763
mQTL	Mcl	cg01572421	20	4297609	rs234766	21	43002163	G	A	0.0864086	0.0953875	0.0275122	0.0005261	-1.99716	0.0384793	0	-0.047762	0.0183064	0.0005414	0.0006607	0.7647204	20	ENSG00000	21	42974510	43033911	+	NA	NA	NA	0.051188
mQTL	Mcl	cg19576738	4	123230404	rs13122094	4	122786782	A	G	0.256469	-0.066311	0.0183939	0.0003616	-0.449093	0.0316666	7.60439e-	0.150681	0.0436622	0.0005583	0.0005583	0.1773724	4	ENSG00000	4	122826708	122898236	+	NA	NA	NA	0.0514257
mQTL	Mcl	cg21664721	11	76588775	rs2155219	11	76588150	T	C	0.50675	0.051912	0.0150601	0.0005414	0.999647	0.0234552	0	0.0519303	0.0150608	0.0005646	0.0016631	0.2875139	20	ENSG00000	11	76657524	76670747	-	NA	NA	NA	0.0525536
mQTL	Mcl	cg13215995	17	45144891	rs1542688	17	45138265	T	C	0.066677	-0.094253	0.0267416	0.0004242	-1.05005	0.0607045	7.815711e-	0.0897602	0.0260975	0.000583	0.0017356	0.1564744	20	ENSG00000	17	45148475	45152099	+	NA	NA	NA	0.0527117
mQTL	Mcl	cg25710008	19	55030752	rs10401802	19	55030752	C	T	0.040006	0.1071671	0.0311448	0.0005599	0.0001	0.0267905	1.52127e-	0.1998154	0.0650959	0.0005983	0.0005983	0.0422095	20	ENSG00000	19	55013705	55038264	+	NA	NA	NA	0.0527117
mQTL	Mcl	cg07293947	5	173478241	rs763369	5	175482485	A	C	0.484496	0.0574458	0.0150586	0.0001294	-0.254676	0.0327691	7.73601e-	-0.225564	0.0656913	0.0005954	0.0005954	0.0576334	20	ENSG00000	5	175477062	175529742	+	NA	NA	NA	0.0527117
mQTL	Mcl	cg26571928	20	63401069	rs35471257	20	63399517	A	G	0.180792	-0.066489	0.017449	0.001387	0.261557	0.0333399	4.32420e-	-0.254203	0.0741648	0.0006091	0.0006091	0.5575293	14	ENSG00000	20	63343223	63378401	-	NA	NA	NA	0.0531995
mQTL	Mcl	cg09916692	8	102537394	rs13274948	8	102541629	G	A	0.122342	0.0847057	0.0238656	0.0003751	-0.449093	0.0316666	7.60439e-	0.150681	0.0436622	0.0005583	0.0005583	0.1773724	4	ENSG00000	8	102551589	102561018	+	NA	NA	NA	0.0539661
mQTL	Mcl	cg01979934	8	119958522	rs10505348	8	119960457	T	C	0.451477	0.0533209	0.0149533	0.0003627	0.382067	0.0321226	1.27144e-	0.139559	0.0408589	0.0006363	0.0006363	0.0721027	20	ENSG00000	8	118995452	119108455	+	NA	NA	NA	0.0539661
mQTL	Mcl	cg25404410	5	136723224	rs66459561	5	136723224	A	C	0.086639	-0.075126	0.0187694	6.26614e-5	0.385004	0.0358761	5.69738e-	-0.195129	0.0571294	0.0006365	0.0006365	0.1381061	11	ENSG00000	5	136692628	136737638	+	NA	NA	NA	0.0539661
mQTL	Mcl	cg26469011	10	74127192	rs4746172	10	74096084	T	C	0.263091	-0.055996	0.0160539	0.0001661	0.685161	0.0285369	1.67098e-5	0.0982839	0.0250792	0.0006408	0.0002205	0.2251343	20	ENSG00000	10	74120255	74150842	+	NA	NA	NA	0.056655
mQTL	Mcl	cg07158495	3	131159323	rs11746464	3	131522034	T	G	0.395505	-0.063081	0.0149449	2.43359e-0	-0.190037	0.0329926	8.44210e-7	0.0913737	0.0975104	0.0006629	0.0006629	0.5228586	20	ENSG00000	3	131155383	131224468	+	NA	NA	NA	0.0554882
mQTL	Mcl	cg08307580	6	28225114	rs14434405	6	28179950	T	G	0.03607	-0.084011	0.0205085	4.19676e-0	-0.50936	0.0853408	0.0789946	0.164933	0.0485066	0.0006733	0.0006733	0.4828432	20	ENSG00000	6	28224886	28233487	+	NA	NA	NA	0.0560025
mQTL	Mcl	cg10650729	22	21624508	rs738129	22	21616752	T	C	0.190167	0.0625101	0.0160254	9.59193Se-0	-0.296742	0.0430024	5

mQTL	Brai	cg08909806	22	43152690	rs138911	22	43157411	G	T	0.71915	0.054515	0.0174177	0.0017489	0.568024	0.0501393	9.436666e-	0.095973	0.0318124	0.0025542	0.0025542	0.1261666	20	ENSG0000(	22	43151547	43163242	+		NA	0.099002
mQTL	Brai	cg16486109	11	613632	rs61877857	11	617420	A	G	0.718625	0.0563609	0.0186284	0.0024819	-1.14658	0.0290217	0	-0.049156	0.0162945	0.0025554	0.0451299	0.1079209	20	ENSG0000(	11	612553	615983	-		NA	0.099002
mQTL	Brai	cg23580038	11	45180190	rs2863160	11	45188168	G	C	0.885347	-0.074606	0.0226427	0.0009845	-0.419047	0.0559178	6.681048e-	0.178036	0.0590258	0.0025593	0.0025593	0.1470629	10	ENSG0000(	11	45095806	45235110	+		NA	0.099002
mQTL	Brai	cg09122588	13	96769775	rs55963137	13	96772748	G	A	0.875227	0.0802051	0.0265208	0.0024926	1.85972	0.0460684	0	0.0431274	0.0143006	0.0025632	0.0132669	0.4998819	20	ENSG0000(	13	96085713	96994730	-		NA	0.099002
mQTL	Brai	cg07472708	20	4176526	rs1124983	20	4181764	C	T	0.41544	-0.049531	0.0150335	0.0009853	0.455551	0.0612453	1.021149e-	-0.108727	0.0360932	0.002592	0.002592	0.4346285	20	ENSG0000(	20	4120980	4187747	+		NA	0.099002
mQTL	Brai	cg11778001	2	190648125	rs1023568	2	190650716	A	T	0.4936	0.0451288	0.0149279	0.0025018	-1.02113	0.0287148	5.591331e-	-0.044195	0.0146717	0.0025932	0.0108576	0.8474424	20	ENSG0000(	2	190646746	190692766	+		NA	0.099002
mQTL	Brai	cg21792432	7	124898606	rs4311608	7	124879653	T	C	0.3927	-0.047734	0.0149569	0.0014157	0.396137	0.0436649	1.166325e-	-0.120499	0.040025	0.0026074	0.0026074	0.2059755	4	ENSG0000(	7	124822386	124929903	-		NA	0.09923664

Table S8. The SMR (Summary-based Mendelian Randomization) analysis of atopic dermatitis identified CpG sites with significant associations that passed the HEIDI (Heterogeneity in Dependent Instruments) test.

qtl_name	probeID	ProbeChr	Probe_bp	topSNP	topSNP_ch	topSNP_bp	A1	A2	Freq	b_GWAS	se_GWAS	p_GWAS	b_eQTL	se_eQTL	p_eQTL	b_SMR	se_SMR	p_SMR	m_SMR	nsnp_HEIDI	gene_id	chr	start	end	strand	GWAS_LO	Lead_SNP	Lead_SNP_Fdr
mQTL	cg18477569	6	90241415	rs72925996	6	90220794	C	T	0.350657	-0.10642	0.0147312	5.04346E-13	0.989886	0.0272114	9.616922E-01	-0.107507	0.0151723	1.3828E-13	3.336972E-01	20	ENSG00000 6	89926528	90296843	-	chr6:89720? rs2021716	90231570	2.01932670888889e-09
mQTL	cg09084244	12	123273313	rs4553407	12	123266201	G	C	0.301723	-0.076466	0.0135592	1.7061E-08	1.4227	0.0146652	0	-0.053747	0.0095467	1.802843e-5	5.269443e-0	0.2070162	20	ENSG00000 12	123250112	123272334	-	chr12:1226c rs1057275	123334578	1.39370368858424e-05
mQTL	cg05080940	16	11162704	rs80633218	16	11162735	C	G	0.364487	0.0634584	0.0126993	5.82291e-7	-1.07997	0.02513	0	-0.058792	0.0118448	6.92626e-5	5.465722e-0	0.1267113	20	ENSG00000 16	11254417	11256204	-	chr16:10662 rs2041733	11135732	0.00003639
mQTL	cg14894216	11	64026881	rs1125078	11	64042404	C	A	0.146882	0.0902351	0.0168134	8.012089e-0	0.54561	0.0451121	1.128615e-	0.165384	0.0337135	9.315468e-1	1.480095e-0	0.111184	20	ENSG00000 11	64016752	66026479	-	chr11:6161 rs479844	65784486	0.00042222
mQTL	cg03177551	15	41302549	rs12440045	15	41490486	A	C	0.467627	-0.064422	0.0127117	4.02232E-07	0.4005568	0.031372	3.141166e-	-0.158843	0.0336653	2.379253e-6	4.341479e-0	0.3205941	20	ENSG00000 15	41493393	41503551	+	chr15:40895 rs11631770	41444861	0.00088682
mQTL	cg12978040	19	54257159	rs77362668	19	55253194	A	G	0.071588	-0.119172	0.0237025	4.96767e-0	0.764324	0.0598153	1.272272e-	-0.155398	0.0332463	2.74294e-0	0.0001212	0.6691725	20	ENSG00000 19	55229779	55229017	-	chr19:54751 rs73068668	55251894	0.00097343
mQTL	cg13163521	15	41511230	rs1757463	15	41491616	A	G	0.288395	0.0724463	0.0135369	8.710074e-0	0.318443	0.0346712	4.128937e-	0.227502	0.0491997	3.763315e-5	3.763315e-0	0.6932969	20	ENSG00000 15	41503637	41513887	-	chr15:40895 rs11631770	41444861	0.0011502
mQTL	cg09977703	19	46351306	rs62136103	19	46357305	A	C	0.312763	-0.067849	0.0149838	5.95041e-0	0.17491	0.0240032	0	-0.057748	0.0128076	6.516725e-5	0.0003746	0.4996427	20	ENSG00000 19	46347087	46392981	+			NA	0.0019032
mQTL	cg12912275	4	121801306	rs62322625	4	121847850	C	A	0.061997	0.1805555	0.0391809	3.69015e-6	1.0599183	0.2090103	7.440818e-	0.195667	0.0443781	1.019527e-5	1.241969e-0	0.3087135	20	ENSG00000 4	121801318	121817021	+			NA	0.0029061
mQTL	cg01158495	5	131159323	rs11746464	5	131522034	T	G	0.395505	0.0860912	0.0126626	1.05452e-	-0.190017	0.0329198	9.442107e-4	-0.453071	0.103098	1.109969e-5	1.109969e-0	0.1958071	20	ENSG00000 5	131155383	131224468	+			NA	0.0030039
mQTL	cg06678084	11	107918525	rs6809114	11	65809114	A	G	0.15153	-0.095466	0.0186697	1.5225e-0	0.274459	0.0443719	6.19346e-1	-0.347832	0.0833082	2.976655e-2	0.2976655e-2	0.164139	11	ENSG00000 11	65833834	65856896	+			NA	0.0067447
mQTL	cg18685456	6	135475552	rs7750586	6	135506535	G	A	0.3678	0.0562877	0.0133931	2.637049e-0	-0.698163	0.0311987	6.456737e-	-0.080623	0.0195187	3.619358e-0	0.00010879	0.7636466	20	ENSG00000 6	135283407	135498434	-			NA	0.0077976
mQTL	cg25256661	17	72346281	rs9895162	17	72346631	C	T	0.379324	-0.055699	0.0126722	1.0001e-5	0.2709	0.0670758	0.0001147	0.2238466	0.0564149	6.722035e-4	8.722035e-4	0.1012118	20	ENSG00000 17	72253342	72345157	-			NA	0.0079684
mQTL	cg24585346	11	65027269	rs663767	11	65021605	A	C	0.316872	0.057392	0.0130252	1.051863e-0	-0.366056	0.0347941	3.471991e-	-0.07882	0.020239	9.841171e-0	0.00027216	0.1159652	20	ENSG00000 11	65027439	65040572	+			NA	0.0095143
mQTL	cg24892817	13	66346726	rs10896113	11	66349640	T	C	0.222483	0.0635375	0.014657	1.45787e-0	0.455108	0.0391512	3.099266e-	0.13961	0.0343721	4.871265e-5	4.871265e-5	0.0500474	20	ENSG00000 11	66345374	66347629	-			NA	0.0095143
mQTL	cg07843065	1	150293189	rs4652419	1	150292294	A	G	0.492067	-0.062819	0.0127744	1.0995e-6	0.3501	0.0745393	2.6e-6	0.270736	0.0602794	7.31996e-6	4.922961e-6	0.5985068	20	ENSG00000 1	150293861	150308979	+			NA	0.0095143
mQTL	cg18394648	5	142158768	rs62384603	5	142100644	A	C	0.367604	0.0533807	0.0128154	3.108674e-0	0.54729	0.0326353	0.0873882	0.0993745	0.0243994	5.332195e-0	0.00003991	0.1052908	20	ENSG00000 5	142108779	142154440	+			NA	0.0101559
mQTL	cg24733384	14	35047077	rs796987261	14	35053144	C	A	0.280858	0.0606713	0.0146607	3.497925e-0	0.627096	0.0348529	2.224559e-	0.0967496	0.0239891	5.505507e-5	7.187305e-5	0.0897994	20	ENSG00000 14	35044907	35113130	+			NA	0.0103362
mQTL	cg01086999	17	72601870	rs2292343	17	72425262	T	G	0.38348	-0.054361	0.0133464	4.69931e-0	0.441744	0.0313388	1.561e-46	0.1731982	0.0419155	6.645964e-0	0.00031152	0.1010872	20	ENSG00000 17	72259903	72263983	+			NA	0.0119646
mQTL	cg11713064	6	33762312	rs2966	6	33721743	T	C	0.436158	-0.05049	0.0127516	5.710833e-0	0.961783	0.0257492	2.356539e-	-0.052496	0.0133326	8.235741e-0	0.00014617	0.1394501	20	ENSG00000 6	33721662	33746905	-			NA	0.0136565
mQTL	cg27509823	1	173961045	rs10912702	1	173949021	T	C	0.116612	0.0827171	0.0208338	7.177259e-1	-1.24772	0.0455607	4.039332e-	-0.066295	0.0168721	8.521007e-0	0.00012586	0.3386592	20	ENSG00000 1	173931084	174022357	+			NA	0.0136565
mQTL	cg04312209	5	35557020	rs4865294	5	35877403	C	G	0.464232	0.0617832	0.0129585	1.8e-6	0.4011	0.0847169	2.6e-6	0.270992	0.0567238	1.72035e-6	8.722035e-6	0.1012118	20	ENSG00000 5	35852695	35879603	+			NA	0.0013103
mQTL	cg04961911	9	35079144	rs637885	9	35064791	A	G	0.283826	0.0512623	0.0128748	6.845299e-0	-0.650371	0.0347441	3.471991e-	-0.07882	0.020239	9.841171e-0	0.00027216	0.1159652	20	ENSG00000 9	35073835	35080004	+			NA	0.0150818
mQTL	cg09682330	6	28443510	rs2531804	6	28443526	G	A	0.42015	0.0571762	0.0138319	3.809183e-0	-0.385743	0.0326917	3.929483e-	-0.148224	0.0381169	0.00010088	1.932826e-0	0.1242026	20	ENSG00000 6	28431930	28443502	+			NA	0.0150818
mQTL	cg01255894	10	80572551	rs38246671	10	80581622	G	A	0.173979	0.0778005	0.0167395	3.35e-6	0.4011	0.0847169	2.6e-6	0.270992	0.0567238	1.72035e-6	8.722035e-6	0.1012118	20	ENSG00000 10	80581622	80605818	+			NA	0.0150818
mQTL	cg26018901	4	47837994	rs1440228	4	47888521	C	T	0.31525	0.0559077	0.0127331	1.129668e-0	-0.289828	0.035131	1.534924e-	-0.1929	0.049768	0.00001062	0.00001062	0.4598816	20	ENSG00000 4	47893999	47838106	-			NA	0.0156814
mQTL	cg13097102	1	172917404	rs7539951	1	172957159	T	C	0.370847	-0.065132	0.012724	3.075001e-0	-0.198521	0.0336679	3.713976e-	0.328084	0.084876	0.00001109	0.00001109	0.06155	19	ENSG00000 1	173039202	173059941	+			NA	0.0161209
mQTL	cg09729012	3	72346671	rs6912126	3	72345701	C	T	0.29737	-0.059748	0.0143641	3.39025e-0	0.187141	0.0353388	1.7e-6	0.162003	0.0419355	0.00001703	0.00001702	0.314932	20	ENSG00000 3	72371825	72446621	-			NA	0.0161209
mQTL	cg04092800	5	40681342	rs10043340	5	40494865	C	A	0.309392	-0.055264	0.0128902	1.808425e-0	-0.308042	0.034718	7.139421e-	0.179405	0.0464747	0.00001133	0.00001133	0.3629525	20	ENSG00000 5	40679915	40693735	+			NA	0.0161786
mQTL	cg22692545	10	6143970	rs10905862	10	6127344	T	C	0.384545	-0.054406	0.0127132	1.872964e-0	-0.296369	0.0333662	6.549085e-	0.183577	0.0476158	0.00001156	2.702024e-0	0.1812942	20	ENSG00000 10	6144934	6254644	+			NA	0.0163292
mQTL	cg05222222	11	62291593	rs2276036	11	66265959	T	C	0.16045	0.076403	0.0161775	2.32676e-0	0.283234	0.0428211	3.731894e-	0.26975	0.0701824	0.00001213	0.00001213	0.0783805	14	ENSG00000 11	66291894	66296664	+			NA	0.0167757
mQTL	cg11783901	17	49024638	rs8079167	17	49031593	A	G	0.507559	-0.049406	0.0126441	9.8018e-5	0.043075	0.0334477	0.197201	0.0318721	0.0247623	0.00010724	0.00029906	0.0852697	20	ENSG00000 17	48997385	49056145	+			NA	0.0168716
mQTL	cg21844956	6	25963214	rs2051538	6	25991392	A	G	0.11465	0.0912395	0.0200039	5.286202e-0	0.323084	0.0453663	1.066279e-	0.282402	0.0736167	0.00012505	0.00012505	0.8450896	20	ENSG00000 6	25962802	25991231	+			NA	0.0169354
mQTL	cg01233330	2	28382312	rs9068052	2	28382012	A	G	0.465255	-0.048927	0.0127972	0.0001317	0.15483	0.0207426	0	-0.042367	0.0111076	0.00001366	0.0016406	0.0591999	20	ENSG00000 2	28392448	28417317	+			NA	0.0180852
mQTL	cg12329272	5	180658924	rs6989771	5	180654708	C	T	0.466556	-0.048431	0.0126665	0.0001303	0.1514	0.0207426	0	-0.049934	0.0130983	0.00013377	0.00013377	0.6662584	20	ENSG00000 5	180601506	180649624	-			NA	0.0180852
mQTL	cg25082710	1	152907632	rs11586313	1	152917994	G	A	0.465842	0.0514919	0.0127764	5.572101e-0	-0.380789	0.0324194	7.430463e-3	-0.135224	0.0354726	0.00001378	0.0018548	0.080884	20	ENSG00000 1	152908546	152911886	+			NA	0.018052
mQTL	cg16850150	3	16448734	rs6790093	3	16453476	G	A	0.132653	-0.069219	0.0162102	1.95384e-0	-0.410938	0.0486763	3.112562e-	0.168442	0.0442057	0.00001385	0.00007741	0.1316175	20	ENSG00000 3	16313574	16514026	-			NA	0.018052
mQTL	cg17806162	1	25406944	rs10907432	1	25969899	T	C	0.482154	-0.048582	0.012625	0.0001116	0.15483	0.0207426	0	-0.042367	0.0111076	0.00001366	0.0016406	0.0591999	20	ENSG00000 1	25928745	25930263	+			NA	0.0183332
mQTL	cg13967908	9	114397177	rs4979377	9	114397090	G	A	0.487128	0.048198	0.0126287	0.0001353	0.962833	0.0265743	1.92738e-	0.0500585	0.0131888	0.00014473	0.0032619	0.2313512	20	ENSG00000 9	114334156	114394405	+			NA	0.0187968
mQTL	cg23100626	2	96138508	rs3931733	2	96120408	C	T	0.367112	-0.048068	0.012604	0.0001369	0.893296	0.0282061	3.983776e-	-0.05381	0.0142115	0.00001529	0.0022636	0.1738122	20	ENSG00000 2	96122818	96138502	-			NA	0.0190011
mQTL	cg12358024	6	87322584	rs9450620	6	87118419	G	A	0.472105	-0.047989	0.0126159	0.0001417	0.924251	0.0284705	1.1e-6	0.1644251	0.0401532	0.00001532	0.0014112	0.5545942	14	ENSG00000 6	87322583	87399749	+			NA	0.0190011
mQTL	cg05299278	17	35558723	rs167691	17	35558807	G	A	0.485694	0.0486138	0.0126168	0.0001166	-0.639736	0.0314621	6.495382e-	-0.07599	0.0200729	0.00001533	0.0105571	0.2574127	20	ENSG00000 17	35543985	35560819	+			NA	0.0190011
mQTL	cg12076145	12	93058149	rs7305849	12	92077962	G	C	0.471519	-0.049304	0.0126697	9.964706e-0	0.501976	0.0318592	6.240838e-	-0.098219	0.0259981	0.00001581	0.00047764	0.1752715	20	ENSG00000 12	92075774	92074008	+			NA	0.0194053
mQTL	cg07433660	17	46645790	rs6505549	17	40664892	C	A	0.303487	-0.051159	0.0132205	0.0001209	0.921486	0.0284801	1.02795e-6	-0.094901	0.0245475	0.00001614	0.00027548	0.1614612	20	ENSG00000 17	40624962	40648654	+			NA	0.0194053
mQTL	cg13164537	18	69958835	rs12955117	18	69961194	T	C	0.0365011	0.133064	0.0343167	0.0001055	-1.23981	0.0764156	3.380416e-	-0.107326	0.0284585	0.00016624	0.0005685	0.1634948	20	ENSG00000 18	69831158	69961803	+			NA	0.0195657
mQTL	cg04132146	6	84154546	rs6454596	6	87271017	C	G	0.492799	0.0480236	0.0125958	0.0001375	0.749067	0.0299213	2.527227e-	0.0641112	0.0170092	0.00016638	0.0023044	0.7049655	17	ENSG00000 6	87152833	87265943	+			NA	0.0195657
mQTL	cg09729274	8	101538492	rs17476242	8	101538614	G	A	0.447118	0.0521036	0.0129827	5.987319e-0	0.345487	0.0323373	1.211374e-	0.150812	0.0401418	0.00001772	0.0001172	0.4231145	19	ENSG00000 8	101492439	101669726	+			NA	0.0201057
mQTL	cg19804488	17	75764250	rs6729956	17	75779504	A	G	0.135009	0.0864257	0.0202015	8.710375e-0	0.501976	0.0318592	6.240838e-	-0.098219	0.0247024	9.78417e-	-0.140337	0.0373704	0.0001729	0.9346071	20	ENSG00000 17	75751594	75763236	-			NA	0.0201057
mQTL	cg08130307	1	150538149	rs11589361	1	150538157	A	C	0.39409	-0.049619	0.0130062	0.0001362	-0.641777	0.0311556	2.797436e-	0.0773155	0.0206106	0.00001776	6.932175e-0	0.2554376	20	ENSG00000 1	150549369	150560937	+			NA	0.0202653
mQTL	cg12758867	11	65566760	rs7941126	11	65597158	G	A	0.507545	0.0625613	0.0129522	1.36418e-0	-0.187215	0.0314822	2.736001e-	-0.334168	0.0891298	0.00001774	0.00001774	0.1591223	20	ENSG00000 11	65592836	65595996	+			NA	0.0202653
mQTL	cg24127061	11	66071917	rs1029391	11	66129391	T	C	0.181142	0.0817239	0.0191532	2.1e-5	0.7107	0.0274624	9.97841e-	-0.140337	0.0337704	0.00001729	0.0001729	0.9346071	20	ENSG00000 11	66070172	66244744	-	chr11:65161 rs479844	65784486	0.0202653
mQTL	cg17661798	20	54205060	rs9642903	20	54200178	A	C	0.364591	-0.054443	0.0135624	5.963445e-0	-0.336602	0.032787	9.995467e-	0.161743	0.0432627	0.00001885	0.0002244	0.1911936	20	ENSG00000 20	54208087	54228052	+			NA	0.0206474
mQTL	cg16066008	6	33707823	rs10947434	6	33723724	T	G	0.435844	-0.050766	0.0127626	6.958724e-0	0.349132	0.0319226	7.685007e-	-0.145405	0.0388979	0.00001854	0.00001854	0.2389388	20	ENSG00000 6	33694290	33711727	+			NA	0.0206474
mQTL	cg09336589	17	7204020	rs9292729	17	7202080	G	A	0.358073	-0.051368	0.0135534	0.0001205	0.921486	0.0284801	1.02795e-6	-0.094901	0.0245475	0.00001614	0.00027548	0.1614612	20	ENSG00000 17	7187187	7219841	+			NA	0.0206474
mQTL	cg27207756	4	1605564	rs12501769	4	1606497	G	A	0.450916	0.047018	0.0126536	0.000202	1.10712	0.0226003	0	0.0424687	0.0114621	0.00002113	0.00043468	0.2452306	20	ENSG00000 4	1617915	1684313	-			NA	0.0229471
mQTL	cg08155325	5	141478246	rs1423148	5	141478231	C	T	0.43564	-0.04729	0.0128092	0.0002226	0.995345	0.0262987	0	-0.047511	0.0129302	0.00002384	0.002231	0.4397445	20	ENSG00000 5	141475947	141512977	+			NA	0.0252676
mQTL	cg08307580	6	28225114	rs14434405	6	28179958	C	A	0.03607	-0.078788	0.0171647	4.5e-6	0.5937	0.0185408	1.078948e-1	0.15468	0.0421805	0.00002453	0.00002453	0.1561124	20	ENSG00000 6	28228486	28233487	+			NA	0.0256296
mQTL	cg21118486	6	166849737	rs9356521	6	166845595	G	A	0.3024	-0.049535	0.012882	0.0001204	0.423412	0.0304754	4.375315e-	-0.11699	0.0319063	0.00002457	0.00002457	0.6022821	20	ENSG00000 6	166409364	166906451	+			NA	0.0256296
mQTL	cg14368149	4	103011410	rs7660298	4	103039611	C	T	0.502331	-0.047123	0.012603	0.0001975	0.587935	0.0311095	1.16529e-7	-0.080151	0.0219472	0.00026026	6.227964e-4	0.0914525	20	ENSG00000 4	102885048	103019719	+			NA	0.0267175
mQTL	cg08181642	11	66368153	rs1019183	11	66322561	A	G	0.216585	0.0649089	0.0146169	8.961725e-0	0.5	0.0277572	1.496767e-	0.269802	0.0739284	0.00026228	0.00026228	0.9358776	20	ENSG00000 11	66362521	66372214	+			NA	0.0267601
mQTL	cg14228332	4	118836354	rs56042726	4	118830622	A	T	0.060216	0.0807087	0.0211342	0.0001341	0.70361	0.0636914	2.262234e-	0.114707	0.0317809	0.000307	0.000307	0.3050442	20	ENSG00000 4	118722823	118836683	+			NA	0.0303119
mQTL	cg01148741	2	96145714	rs2969489	2	96145695	T	C	0.436554	0.047893	0.0131976	0.0002846	-0.907343	0.027236	2.412564e-	-0.052784	0.0146314	0.00030091	0.0028008	0.2300725	20	ENSG00000 2	96143169	96145440	-			NA	0.0303119
mQTL	cg06732516	19	51716265	rs17700265	19	55200175	A	G	0.069934	-0.096475	0.0241841	6.18272e-0	0.505787	0.0619579	3.257439e-	-0.191534	0.0502611	0.00009223	0.00141091	0.2978549	11	ENSG00000 19	55151767	55157773	-			NA	0.0310028
mQTL	cg02153427	2	24856710	rs56003423	2	24879731	C	T	0.096106	0.0916766	0.0248507	2.2e-4	0.5189	0.0534634	1.67498e-5	-0.07167	0.0209429	0.00032566	0.0041362	0.1539772	20	ENSG00000 2	24819169	24920237	+			NA	0.0310028
mQTL	cg26419426	5	110738962	rs7732148	5	110561515	G	A	0.085599	0.0790322	0.0213004	0.000207	-0.797049	0.0555469	1.079116e-	-0.099156	0.027603	0.00032779	0.00032779	0.1266613	20	ENSG00000 5	110738136	110765161	+			NA	0.0310028
mQTL	cg10694914	11	111379706	rs3802843	11	111379489	A	G	0.247913	0.0488334	0.0134969	0.0002969	-0.999736	0.0331669	1.282077e-	-0.048842	0.0135967	0.00032279	0.001343	0.6313406	20	ENSG00000 11	111352255	111455630	+			NA	0.0310028
mQTL	cg06926277	15	40151627	rs11854605	15	40150506	A	C	0.291796	0.0490051	0.0136397	0.0003179	-0.844144	0.0357139	0.0001827	-0.099957	0.0248901	0.00032574	0.00032574	0.6891813	20	ENSG00000 15	40160323	40221123	+			NA	0.0311182
mQTL	cg02865717	6	154732856	rs3828933	6	154732839	C	T	0.432821	0.0496068	0.0126334	8.614115e-0	-0.281669	0.0327098	7.233562e-	-0.176117	0.0492949	0.00033533	0.00033533	0.5172043	20	ENSG00000 6	154733378	154834244	+			NA	0.032928
mQTL	cg08195491	16	50712152	rs2066844	16	50712015	T	A	0.04945	0.1638315	0.0447064	0.0002481	-1.13115	0.0713941	1.436255e-	-0.144777	0.040553	0.00035669	0.003987	0.2672852	20	ENSG00000 16	50695588	50734041	+			NA	0.0330302
mQTL	cg00603274	11	61829115	rs1496141	11	61788567	A	C	0.19103	0.0719543	0.0199932	0.0003204	-0.847161	0.0434744	5.229931e-	-0.07765	0.0237716	0.00030676	0.00030676	0.3005774	20	ENSG00000 11	61792980	61867354	+			NA	0.0336838
mQTL	cg17693604	19	3046807	rs55982496	19	3057343	T	C	0.362699	0.0524154	0.0131631	6.833918e-0	0.269981	0.0339222	1.73661e-1	0.194145	0.0545175	0.00036692	0.00036692	0.2582898	4	ENSG00000 19	2997639	3047635	-			NA	0.0336838
mQTL	cg11244477	20	61122435	rs11243115	20	63630786	A	G	0.095439	0.0639219	0.0158429	5.4664e-0	0.381989	0.0506961	4.88782e-	0.16734	0.0470466	0.00033753	0.00033753	0.1272507	20	ENSG00000 20	63587602	63627101	-			NA	0.0337636
mQTL	cg16574073	1	24952529	rs4409027	1	24931810	G	T	0.425113	-0.045498	0.0126889	0.0003574	-0.844144	0.0357139	0.0001856	-0.099957	0.0248901	0.00037773	0.00038115	0.7485556	20	ENSG00000 1	24899511	24965121	+			NA	0.0337636
mQTL	cg18309752	2	202239040	rs3754931	2	202238678	A	G	0.402024	0.0493473	0.0130252	0.0001515	0.328563	0.0323183	2.79858e-2	0.150191	0.0423061	0.00038351	0.00038351	0.8992014	20	ENSG00000 2	202206182	202238599	+			NA	0.0341937
mQTL	cg16518661	14	35402509	rs72666636	14	35367008	C	G	0.235791	-0.04871	0.0136031	0.000426	-0.914644	0.0352686	8.650244e-	0.0529774	0.0149339	0.00039389	6.447214e-0	0.0750996	20	ENSG00000 14	35401513	35404749	-			NA	0.0343075
mQTL	cg16785520	15	90060985	rs11774845	15	90055002	C	T	0.190996	0.0622624	0.015421	5.4019e-5	0.402192	0.0319115	2.517195e-	0.217366	0.0543779	0.00039957	0.00039957	0.4706743	20	ENSG00000 15	90083045	90102477	+			NA	0.0354199
mQTL	cg00462728	19	1120192	rs75919268	19	1123114	T	C	0.038438	-0.127323	0.0358888	0.0003886	-2.78753	0.0689537	0	0.0456759	0.0129242	0.00040091	0.00083284	0.08172	17	ENSG00000 19	1107637	1174268	-			NA	0.0354199
mQTL	cg06198420	16	66133698	rs77806981	16	66128275	T	C	0.068621	0.0897509	0.0252383	0.0003763	-1.73378	0.0557685	3.405282e-	-0.051766	0.0146517	0.00040107	0.00006306	0.4308674	20	ENSG00000 16	66366622	66404784	+			NA	0.0354199
mQTL	cg27386328	11	61829115	rs61896141	11	61788567	A	C	0.19103	0.0719543	0.0199932	0.0003204	-0.847161	0.0434744	5.995965e-	0.101229	0.0286635	0.00040113	0.00040113	1.706368e-0	0.1830132	20	ENSG00000 11	61799627	61829318	+			NA	0.0354199
mQTL	cg05092371	2	203866796	rs11571319	2	203874215	A	G	0.160357	0.0627054	0.017753	0.0004123	-1.67612	0.0211208	0	-0.037441	0.0106022	0.00041728	0.00020074	0.1331874	20	ENSG00000 2	203853888	203873965	+			NA	0.0354199
mQTL	cg02586268	1	173914429	rs6425266	1	173989977	T	C	0.11659	0.082701	0.0208292	7.175432e-0	0.387478	0.051786	4.146076e-	0.213432	0.0607247	0.00044042	0.00044042	0.8392854	20	ENSG00000 1	173903800	173917327	+			NA	0.0366131
mQTL	cg27300194	1	9279321	rs9163801	1	9280979	C	T	0.411429	-0.046078	0.0129025	0.0003553	-0.582803	0.0310759	7.136312e-	0.0790631	0.0225294	0.00044492	0.00044238	0.3588457	20	ENSG00000 1	9292894	9369532	+			NA	0.0369813
mQTL	cg02032097	3	48714426	rs80314031	3	48720990	C	T	0.026927	0.171093	0.046377	0.0002711	-1.0718	0.0468911	4.595995e-	0.09631	0.0276015	0.00044843	0.00010564	0.2632735	20	ENSG00000 3	47732236	47746122	+			NA	0.0369813
mQTL	cg12075498	1	64962533	rs4915675	1	64961793	G	A	0.271516	0.0464329	0.0132326	0.0004498	-1.25257	0.025203	0	-0.03707	0.0105907	0.00044648	0.0424727	0.7919698	20	ENSG00000 1	64833229	65067754	-			NA	0.0378958
mQTL	cg17683908	10	103854671	rs9420904	10	103906987	A	G	0.360128	0.0504933	0.0140855	0.0003384	-0.531159	0.0328813	1.067191e-	-0.095063	0.0271691	0.00046711	0.0065771	0.3665916	20	ENSG00000 10	103594027	103855584	+			NA	0.0378958
mQTL	cg16518661	14	35402509	rs72666636	14	35367008	C	G	0.235791	-0.04871	0.0136031	0.000426	-0.914644	0.0352686	8.650244e-	0.0529774	0.0149339	0.00039389	6.447214e-0	0.0750996	20	ENSG00000 14	35401513	35404749	-			NA	0.0343075
mQTL	cg17655520	15	90060985	rs11774845	15

| | | |

Table S9. The SMR (Summary-based Mendelian Randomization) analysis of depression identified CpG sites with significant associations that passed the HEIDI (Heterogeneity in Dependent Instruments) test.

qtl_name	probeID	ProbeChr	Probe_bp	topSNP	topSNP_ch	topSNP_bp	A1	A2	Freq	b_GWAS	se_GWAS	p_GWAS	b_eQTL	se_eQTL	p_eQTL	b_SMR	se_SMR	p_SMR	o_SMR	m_SMR	HEIDI	nsnp	HEIDI_pos	gene_id	chr	start	end	strand	GWAS_LO	Lead_SNP	Lead_SNP_Pos	Fdr
mQTL_Brai	cg05006813	5	120734241	rs1449164	5	120757927	A	G	0.375555	0.0499382	0.0075995	4.99010E-	0.568641	0.0324679	1.12100E-	0.0878203	0.0142741	7.63038E-	8.17218E-	0.2567961	20	ENSG00000	5	120464300	120687332	+	chr5:120257	rs6876567	120759427	1.00278532E-
mQTL_Brai	cg18991165	5	144467799	rs145716	5	144467655	C	T	0.404409	0.0422996	0.0076721	3.51874E-	0.870909	0.0294794	8.08535E-	0.048557	0.0089614	5.96422E-	1.15522E-	0.9048755	20	ENSG00000	5	144170873	144485686	+	chr5:143961	rs9324959	144457762	0.0003919
mQTL_Brai	cg22502448	3	44581339	rs6441359	3	44584405	A	G	0.314971	0.0413109	0.0078992	1.69702E-	0.624467	0.0334343	7.55483E-	0.0661324	0.0131359	4.75130E-	1.58300E-	0.2759617	20	ENSG00000	3	44578223	44599694	+	chr3:440471	rs6798590	44513369	0.0020814
mQTL_Brai	cg10255761	3	49172596	rs7626076	3	49260706	G	A	0.270139	0.047243	0.0091227	2.23498E-	0.498639	0.0359718	1.07698E-	0.0947444	0.0195301	1.22735E-	5.52411E-	0.1750789	20	ENSG00000	3	49171598	49176486	+	chr3:481902	rs10154992	49238644	0.0031921
mQTL_Brai	cg14383078	9	37033753	rs62533714	9	37030754	A	C	0.103787	0.0525504	0.0095428	3.63555E-	0.531272	0.0524747	4.30819E-	0.0984193	0.0204472	1.31456E-	8.65059E-	0.3406639	20	ENSG00000	9	36833269	37034268	-	chr9:365305	rs57262839	37030319	0.0031921
mQTL_Brai	cg05060158	3	48718423	rs6806356	3	48697043	A	G	0.232055	0.044652	0.0081131	5.55332E-	-0.56742	0.0345359	2.04865E-	-0.07862	0.0165041	1.89039E-	3.10431E-	0.0865541	20	ENSG00000	3	48688003	48740353	+	chr3:481902	rs10154992	49238644	0.0035489
mQTL_Brai	cg03646916	3	44555046	rs13099659	3	44547414	G	T	0.316858	0.0394973	0.0078347	4.62232E-	0.411546	0.0345044	8.52547E-	0.095973	0.0206678	3.42387E-	7.37522E-	0.5980561	20	ENSG00000	3	44555193	44594173	+	chr3:440471	rs6798590	44513369	0.0049996
mQTL_Brai	cg10518543	12	38316898	rs10748433	12	38302550	C	G	0.466562	0.0359474	0.0075578	1.97112E-	-0.457938	0.0310778	4.95727E-	-0.062032	0.0134519	3.99952E-	0.0011044	0.0659255	20	ENSG00000	12	38316762	38329721	+	NA	0.005017
mQTL_Brai	cg22050705	3	44625698	rs13099659	3	44547414	A	G	0.316858	0.0394973	0.0078347	4.62232E-	0.372667	0.0332523	1.59433E-	0.1039579	0.0226955	4.54523E-	6.68099E-	0.7349399	20	ENSG00000	3	44588888	44648471	+	NA	0.005017
mQTL_Brai	cg22850234	17	68019981	rs4081856	17	67949802	G	A	0.193828	0.0432132	0.0087346	7.52338E-	0.462998	0.0380444	1.49466E-	0.0993334	0.0205546	4.58105E-	6.80437E-	0.1226309	20	ENSG00000	17	68035636	68047364	+	NA	0.0108006
mQTL_Brai	cg07690219	3	49412175	rs4955424	3	49345645	A	G	0.257176	0.0467006	0.0096309	1.24049E-	0.470149	0.0360245	6.28596E-	0.0993315	0.021853	5.48188E-	1.68364E-	0.1077295	20	ENSG00000	3	49412212	49416476	+	NA	0.0055418
mQTL_Brai	cg03192919	3	48370755	rs730566	3	48445644	A	C	0.26465	0.0377224	0.008354	6.31658E-	-0.952351	0.0317966	4.22591E-	-0.03961	0.0088711	8.00508E-	3.06921E-	0.0660221	20	ENSG00000	3	48372219	48401259	+	NA	0.0073599
mQTL_Brai	cg06040120	17	63440133	rs17607691	17	63404131	C	G	0.224903	-0.036091	0.0085651	2.38E-05	0.5	0.0324644	0.	0.0270715	0.0064276	1.72673E-	0.0022361	0.5709003	20	ENSG00000	17	63432304	63446354	-	NA	0.0108006
mQTL_Brai	cg01183595	11	46724686	rs4491174	11	46700055	C	A	0.139706	-0.041655	0.0090876	4.56831E-	0.537371	0.0473861	7.34769E-	-0.077444	0.018221	2.13550E-	2.15110E-	0.2111172	20	ENSG00000	11	46719196	46739506	+	NA	0.0117545
mQTL_Brai	cg11547950	5	78356647	rs72760906	5	78356633	C	T	0.23514	-0.037057	0.0086776	1.95087E-	0.776809	0.0363646	3.03500E-	-0.047704	0.0113918	2.81941E-	6.00022E-	0.3900575	20	ENSG00000	5	78360611	78480739	+	NA	0.0148211
mQTL_Brai	cg10407113	16	71870574	rs1078576	16	71858679	G	A	0.300853	0.0450294	0.0085001	1.05E-07	0.544139	0.0355533	2.01E-05	0.0944139	0.0225153	2.97E-05	0.0001179	0.0311734	16	ENSG00000	16	71729000	71809201	-	chr16:71211	rs7192848	72173056	0.01672
mQTL_Brai	cg05730108	13	98442749	rs9517301	13	98442834	C	T	0.383412	0.0314818	0.0075961	3.40610E-	-0.13336	0.017136	0.	-0.023611	0.0057505	3.49436E-	0.0041094	0.9943238	20	ENSG00000	13	98445185	98577940	-	NA	0.01672
mQTL_Brai	cg24590430	10	97337319	rs10786326	10	97310620	A	G	0.399367	0.0315594	0.0075862	3.18180E-	0.811079	0.0294758	1.10596E-	0.0389099	0.0094595	3.90034E-	0.00073295	0.4966103	20	ENSG00000	10	97332497	97334729	-	NA	0.0173813
mQTL_Brai	cg11485154	11	46243819	rs77744	11	46245239	C	T	0.483278	-0.015791	0.0076049	0.0378	0.0000136	0.0314216	0.9995	0.1473705	0.0713545	4.77498E-	0.9135014	0.0634146	20	ENSG00000	11	46275662	46321409	+	NA	0.0179083
mQTL_Brai	cg01904812	1	17419844	rs6688886	1	17427143	A	G	0.363719	-0.031289	0.0077024	4.85953e-0	0.18553	0.0225438	0.	-0.026393	0.0065163	5.17704e-0	0.0020287	0.1813879	20	ENSG00000	1	17406760	17439677	-	NA	0.0179083
mQTL_Brai	cg01032092	2	98612002	rs7595120	2	98615342	G	C	0.246362	0.0399521	0.0092521	1.57324E-	0.423724	0.036712	8.11771e-3	0.094288	0.0233133	5.24605e-	0.00010542	0.2351574	20	ENSG00000	2	98608579	98618515	+	NA	0.0179083
mQTL_Brai	cg26365553	13	41269662	rs1557401	13	41272081	G	A	0.1558	-0.037949	0.0088643	2.00E-05	0.512249	0.0377012	1.64E-	0.0719293	0.0177086	5.72173E-	0.0022316	0.2090123	20	ENSG00000	13	41269161	41272081	+	NA	0.0108006
mQTL_Brai	cg24703533	17	46977952	rs9893713	17	46970014	A	G	0.46592	-0.033222	0.0074904	9.195961e-0	0.2876163	0.0307833	9.35222E-	0.1155509	0.0288288	6.15659e-	6.15659e-	0.3180907	20	ENSG00000	17	46978156	46979253	-	NA	0.0192643
mQTL_Brai	cg16412772	8	142548518	8	64761482	A	G	0.495766	-0.032603	0.0078405	3.20656E-	0.451282	0.0320669	5.55390E-	-0.072246	0.0181165	6.66779e-	4.00094E-	0.0823305	20	ENSG00000	8	64580365	64583627	+	NA	0.0203787
mQTL_Brai	cg20735041	3	52825614	rs2535633	3	52825614	C	T	0.37713	-0.030881	0.0077581	6.87575e-	-0.16196	0.0223522	0.	-0.026577	0.0066964	7.22274e-	0.0022361	0.5709003	20	ENSG00000	3	52833114	52835019	+	NA	0.0210956
mQTL_Brai	cg25066665	1	150463019	rs72698822	1	150464919	A	G	0.1187	-0.043535	0.0109487	7.0046e-3	0.92	0.0450647	2.3039e-	0.0372406	0.0094751	8.4816e-0	0.0206733	0.3608945	20	ENSG00000	1	150363091	150476566	+	NA	0.0242317
mQTL_Brai	cg11891522	5	62309420	rs13359224	5	62187266	T	A	0.489256	-0.03034	0.0074942	5.15483e-0	0.494091	0.032364	1.27476e-	-0.061406	0.0156919	9.10675e-	0.0062034	0.7476697	20	ENSG00000	5	62306162	62391025	+	NA	0.0254464
mQTL_Brai	cg19610905	11	61828890	rs174566	11	61828890	A	C	0.351173	0.029863	0.0075002	0.0001456	0.512126	0.0310753	9.49251e-	0.0314613	0.0080599	9.6001179	0.0031704	0.5527092	20	ENSG00000	11	61792980	61867354	+	NA	0.0238458
mQTL_Brai	cg00152878	1	3292955	rs2500295	1	3292932	T	C	0.214719	-0.038139	0.0098453	0.0001071	-1.05312	0.0337332	5.86726E-	0.0362153	0.0094204	0.0001209	0.0064594	0.4851111	20	ENSG00000	1	3454665	3481113	+	NA	0.0283458
mQTL_Brai	cg14957331	2	27148088	rs1659711	2	27143540	C	A	0.499547	-0.030001	0.0076902	9.57362e-0	0.675476	0.0300558	7.44337E-	-0.044414	0.0115551	0.0001212	0.0001327	0.2091339	20	ENSG00000	2	27149004	27156974	+	NA	0.0283458
mQTL_Brai	cg06294321	11	62785533	rs1785533	11	57719179	A	G	0.332948	0.0300231	0.0077506	0.0001072	0.877416	0.0294992	2.09057e-	0.0342176	0.008908	0.0001224	0.000713	0.06339	20	ENSG00000	11	57741491	57743554	+	NA	0.0283458
mQTL_Brai	cg01078048	11	64729568	rs1	11	47163906	A	G	0.153323	-0.039968	0.0104754	0.0001427	0.262	0.0322139	5.0344E-	0.1284253	0.0332515	0.0001227	0.0001229	0.1163951	20	ENSG00000	11	64576717	46918642	+	NA	0.0283458
mQTL_Brai	cg14511652	9	137908415	rs4740383	9	137908179	A	G	0.405322	0.0289689	0.0075189	0.0001168	0.803655	0.0292273	1.92129e-	0.0360464	0.0094472	0.0001359	0.0055827	0.7094134	20	ENSG00000	9	137892707	137896812	+	NA	0.0302664
mQTL_Brai	cg02971253	2	27081184	rs7602823	2	27086538	A	G	0.376506	-0.031215	0.0079059	7.86900E-	0.463863	0.0333562	1.84013E-	-0.067294	0.0177252	0.0001467	0.0017438	0.4054764	20	ENSG00000	2	27078615	27086403	+	NA	0.0321406
mQTL_Brai	cg01615895	4	140004716	rs4	4	140004716	A	G	0.328107	-0.030525	0.0080043	0.0001466	0.772	0.0325158	1.43365e-	0.0316391	0.0083491	0.0001509	0.0001509	0.1907163	20	ENSG00000	4	139716753	140154184	+	NA	0.0325316
mQTL_Brai	cg10440011	17	2029889	rs55815331	17	2042400	T	C	0.187161	0.0370077	0.0091926	5.67753e-	-0.461359	0.0420464	5.17539e-	-0.080215	0.0212237	0.0001572	0.0024957	0.1156483	20	ENSG00000	17	2030137	2043898	+	NA	0.0328872
mQTL_Brai	cg10989317	17	95718692	rs10882951	10	97518693	G	C	0.426511	0.0294972	0.0075428	0.0001581	-1.30521	0.0161273	0.	-0.021833	0.0057853	0.0001607	0.0028821	0.14	20	ENSG00000	10	97498924	97571206	+	NA	0.0328872
mQTL_Brai	cg02324737	2	171673795	rs10264622	2	171732475	A	G	0.275243	0.0361583	0.0092124	9.49E-05	0.589948	0.0312355	1.23587E-	-0.075715	0.0185053	0.0001614	0.0037722	0.1937478	20	ENSG00000	2	171687499	171750158	+	NA	0.0328872
mQTL_Brai	cg11127915	19	13011567	rs11706798	19	13005358	T	C	0.371772	-0.033232	0.0081084	4.15999e-0	-0.32541	0.0339534	9.33472E-	0.1021222	0.0271002	0.0001644	0.0001644	0.542615	19	ENSG00000	19	12995475	13098796	+	NA	0.0328872
mQTL_Brai	cg14470998	6	50845282	rs556481256	6	50849005	G	A	0.105834	0.0349611	0.0112767	9.68299e-2	0.671579	0.0473383	1.10594e-	0.0654593	0.0174137	0.0001706	0.004161	0.1567163	20	ENSG00000	6	50818723	50847619	+	NA	0.0328872
mQTL_Brai	cg23369564	1	150152544	rs7529457	1	150163098	T	C	0.165995	-0.04225	0.010714	0.0001009	0.734	0.0433415	1.88125E-	0.0511165	0.0130774	0.0001744	0.0017436	0.4853836	20	ENSG00000	1	150149183	150164720	+	NA	0.0328872
mQTL_Brai	cg21579147	4	56822171	rs1629821	4	56821978	A	G	0.373507	0.0299662	0.0076928	9.80543e-2	0.456706	0.0327031	2.54099e-	0.0656138	0.0174871	0.0001753	0.0010757	0.7984715	20	ENSG00000	4	56809860	56821742	-	NA	0.0328872
mQTL_Brai	cg19460792	15	47384626	rs6493274	15	47384292	C	A	0.208191	0.03571	0.0089372	6.45145e-0	-0.414584	0.0390178	1.77039E-	-0.085948	0.0229748	0.0001833	0.0001833	0.3406351	20	ENSG00000	15	47184101	47774228	+	NA	0.0328872
mQTL_Brai	cg08769634	16	71623459	rs6495532	16	71717093	G	A	0.474661	0.0319707	0.0074982	2.01e-05	0.592	0.0322139	5.03442E-	0.1284253	0.0332515	0.0001852	0.0002363	0.2660289	20	ENSG00000	16	71626161	71642114	+	NA	0.0328872
mQTL_Brai	cg25639565	1	40042185	rs35930422	1	40010380	G	A	0.104964	0.0479111	0.0126984	0.0001613	0.89856	0.0499086	1.80889E-	0.0533199	0.0144389	0.0002218	0.0005876	0.1436596	20	ENSG00000	1	40040233	40072649	+	NA	0.0373722
mQTL_Brai	cg12286573	17	44576205	rs11656065	17	44762925	C	G	0.121551	0.0433976	0.0110978	9.21171E-	-0.551883	0.0497495	1.35295E-	-0.078636	0.0213218	0.000226	0.0072092	0.20	ENSG00000	17	44656404	44690308	+	NA	0.037595
mQTL_Brai	cg03709027	4	15005581	rs2702557	4	15085841	T	C	0.352573	0.0323133	0.008357	0.0001104	0.401822	0.0339644	2.70923e-	0.0804417	0.0218804	0.0002376	0.0002376	0.9705563	20	ENSG00000	4	15002481	15070153	+	NA	0.0390279
mQTL_Brai	cg15975636	6	167236109	rs6907681	6	167173276	C	A	0.213634	0.0317192	0.0084027	0.0001618	0.7	0.0324818	1.05263e-	0.0564848	0.0154368	0.0002583	0.0005991	0.0731189	20	ENSG00000	6	167272132	167315500	+	NA	0.0403676
mQTL_Brai	cg05654765	3	49133294	rs6792510	3	48685869	G	C	0.35823	0.0344714	0.0078919	1.25404E-	-0.222892	0.0335091	2.89758E-	-0.154655	0.0423582	0.0002611	0.0009856	0.0772586	20	ENSG00000	3	49121114	49133118	-	NA	0.0403676
mQTL_Brai	cg22105582	18	54828839	rs62091461	18	54821441	T	C	0.229605	-0.033639	0.0079858	2.52785E-	0.260787	0.0360328	4.57038E-	-0.128989	0.0354309	0.000272	0.000272	0.4626099	20	ENSG00000	18	54717860	54895516	+	NA	0.0415677
mQTL_Brai	cg18284672	8	17244469	rs11796071	8	17246679	A	G	0.094737	0.0551961	0.0136522	0.0001655	0.824316	0.0473134	2.06735E-	-0.070632	0.0194441	0.000281	0.000187	0.4932583	20	ENSG00000	8	17224966	17246878	+	NA	0.0419626
mQTL_Brai	cg13397548	1	37556921	rs4652958	1	37542169	A	G	0.450498	-0.027257	0.0075277	0.0002498	0.713147	0.0300839	3.17901e-	-0.03866	0.0106809	0.0002952	0.0001142	0.1440461	20	ENSG00000	1	37556919	37566857	+	NA	0.0435837
mQTL_Brai	cg18548797	10	131963976	rs67888563	10	131946471	A	G	0.155483	0.0496719	0.0133911	0.0002078	0.687244	0.0427773	4.44423E-	0.0722769	0.0199978	0.0003012	0.0021896	0.4105199	17	ENSG00000	10	131967684	131981967	-	NA	0.0439866
mQTL_Brai	cg08461247	3	139029212	rs9586091	3	139040091	G	A	0.173202	0.0376492	0.0104205	0.0003071	0.7	0.0358471	0.	-0.023479	0.0065994	0.0003099	0.0040144	0.0755807	20	ENSG00000	3	139079043	139083281	+	NA	0.0445242
mQTL_Brai	cg12597309	12	123909225	rs57316347	12	123904506	G	A	0.310984	0.0323642	0.0081309	6.87637e-0	0.2987759	0.0351133	1.76312e-	0.108329	0.0300464	0.0003117	0.0003117	0.0853526	20	ENSG00000	12	123918660	123972831	-	NA	0.0445242
mQTL_Brai	cg14529943	9	136216071	rs11103387	9	136216033	T	C	0.38416	-0.031334	0.007852	6.56996e-0	0.265427	0.0323418	2.2691e-16	-0.118074	0.0328955	0.0003315	0.0003315	0.7746425	18	ENSG00000	9	136196250	136205128	+	NA	0.0468424
mQTL_Brai	cg22917372	12	121736630	rs14013024	12	121736601	C	T	0.043831	0.0605243	0.0154095	8.5771E-	0.717522	0.0438795	1.4613E-	-0.082064	0.0228315	0.0003356	0.0003356	0.1240252	10	ENSG00000	12	121717252	121783001	+	NA	0.0469133
mQTL_Brai	cg17320698	11	30488942	rs562152	11	30479507	C	T	0.268598	-0.031125	0.0084648	0.000236	0.53493	0.035321	8.19682E-	-0.058186	0.0162839	0.0003527	2.71906E-	0.1232505	20	ENSG00000	11	30384493	30586872	-	NA	0.0477485
mQTL_Brai	cg06334689	16	30007399	rs12921753	16	30007399	T	C	0.398997	-0.027752	0.0077632	0.0003506	-1.317	0.0142442	0.	0.0210718	0.005899	0.0003541	0.0002155	0.7510488	20	ENSG00000	16	30005514	30023270	+	NA	0.0477485
mQTL_Brai	cg00475140	16	89644697	rs11185826	10	89644697	G	C	0.239679	-0.029261	0.0080834	0.0002947	-0.774155	0.0357924	9.57591E-	0.0377973	0.0105868	0.0003566	0.0034309	0.1973764	20	ENSG00000	10	89582998	89645242	-	NA	0.0477485
mQTL_Brai	cg00956216	1	150028219	rs1756830	1	150402097	C	T	0.118686	-0.043661	0.0109484	0.0001693	0.722	0.0449754	1.22419E-	0.1105258	0.030969	0.0003583	0.0003583	0.6267073	20	ENSG00000	1	150025243	150267093	+	NA	0.0477485
mQTL_Brai	cg19636519	7	99944003	rs2525539	7	99947686	A	G	0.285542	0.0282969	0.0078679	0.0003225	0.904309	0.0318448	2.17825E-	0.0312912	0.0087699	0.0003597	0.0051975	0.5518023	20	ENSG00000	7	99923266	99929620	+	NA	0.0477485
mQTL_Brai	cg09986774	16	69132443	rs71397903	16	69162112	C	T	0.288373	0.0325952	0.0081066	5.79952e-0	0.263654	0.0345877	2.4830666-	0.123629	0.0347623	0.000376	0.000376	0.185687	20	ENSG00000	16	69118010	69132588	-	NA	0.0494107
mQTL_Brai	cg01888601	17	47184629	rs58357937	11	47670605	C	T	0.112063	-0.037528	0.0098972	0.0001703	0.8	0.0427731	2.73160E-	-0.085126	0.0230914	0.0003814	0.0003814	0.2620178	17	ENSG00000	11	47695991	47715389	+	NA	0.0507601
mQTL_Brai	cg18877525	1	244139990	rs6696761	1	244137812	A	G	0.138914	0.0403128	0.0105411	0.0001311	0.431239	0.0460387	7.47113e-2	0.0934813	0.0264026	0.0003992	0.0003992	0.0768264	13	ENSG00000	1	244048547	244057476	+	NA	0.0507601
mQTL_Brai	cg18945744	17	50552122	rs1132414	17	50550731	G	A	0.248623	0.0320992	0.0087831	0.0002575	-0.514516	0.0363525	1.24852e-	-0.062278	0.0175798	0.0004017	0.0007703	0.1644138	20	ENSG00000	17	50543058	50555852	+	NA	0.0507601
mQTL_Brai	cg10561598	17	50507715	rs1869714	17	50509946	A	G	0.2257	0.0337611	0.0095478	0.0004008	0.5	0.0377283	0.	0.0227283	0.0064306	0.0004033	0.0024597	0.2782481	20	ENSG00000	17	50508384	50531501	+	NA	0.0525942
mQTL_Brai	cg12015615	7	55473032	rs66943185	7	55476847	T	C	0.095458	-0.037295	0.01043	0.0003492	-1.12165	0.0538349	2.08465e-	0.0332504	0.0094348	0.0004247	0.0033166	0.2997173	20	ENSG00000	7	55436056	55572988	+	NA	0.0526535
mQTL_Brai	cg00546117	1	8385485	rs3765971	1	8385300	C	T	0.337222	-0.027482	0.0077023	0.0004064	-1.02618	0.0272656	5.45357e-	0.0267805	0.0076073	0.0004431	0.0080607	0.1970462	20	ENSG00000	1	8352397	8348921	-	NA	0.0529317
mQTL_Brai	cg10515671	13	61818423	rs7513533	13	61815584	G	A	0.349213	0.0298622	0.0075773	0.0004292	0.5	0.0301144	0.	-0.264786	0.1145852	0.0021023	0.0054135	0.0034258	0.2636939	20	ENSG00000	13	61799627	61829318	+	NA	0.0530342
mQTL_Brai	cg03162314	9	51097678	rs4802768	19	51092366	A	T	0.269372	-0.030726	0.0087236	0.0004281	0.989203	0.0317499	4.19379e-	-0.031061	0.008875	0.0004656	0.0033642	0.0983556	20	ENSG00000	19	51097606	51108409	+	NA	0.0561344
mQTL_Brai	cg07016994	7	1163709	rs57	7	1154418	A	C	0.133677	-0.028722	0.0076694	0.0001409	0.330883	0.0355657	2.97228E-	-0.095143	0.0272253	0.0004747	0.0031103	0.0673565	20	ENSG00000	7	1137036	1183298	-	NA	0.0562883
mQTL_Brai	cg16755475	16	4752909	rs9915103	16	4759259	C	T	0.339175	-0.028625	0.0079167	0.0003004	0.5	0.0332267	0.	0.4637314	0.1614443	0.0044754	0.0019087	0.3413577	20	ENSG00000	16	4748239	4767624	+	NA	0.0563764
mQTL_Brai	cg18894448	8	75408998	rs11781443	8	75408940	T	C	0.076069	0.0497726	0.0140816	0.0004084	1.23452	0.0586756	2.83778e-	0.0403174	0.0115664	0.0004908	0.0031696	0.5229864	20	ENSG00000	8	75407914	75566834	+	NA	0.0575879
mQTL_Brai	cg11788234	13	28819674	rs4430605	13	28834867	G	A	0.491772	0.0263337	0.0075093	0.0004535	0.715459	0.0310472	1.67701e-	0.0636067	0.0169098	0.0005222	0.0036093	0.5675814	20	ENSG00000	13	28700064	28718970	-	NA	0.0601948
mQTL_Brai	cg23627908	7	2721056	rs798549	7	2721116	A	G	0.269374	0.0312713	0.0089173	0.0004551	0.9	0.0392144	0.	0.0222269	0.0064164	0.0005122	0.0006306	0.7926439	20	ENSG00000	7	2679522	2775590	+	NA	0.0602257
mQTL_Brai	cg04196345	17	44007585	rs423757	17	44030141	A	G	0.455256	-0.028336	0.0075821	0.000186	-0.309419	0.0336569	3.80814e-	0.0915794	0.0264517	0.0005359	0.0024062	0.119733	20	ENSG00000	17	44004622	44009068	+	NA	0.0602257
mQTL_Brai	cg19226100	6	26974367	rs26974367	6	26974367	A	C	0.111256	-0.071464	0.0177995	5.94556e-0	-0.346102	0.0509769	1.126082e-	0.206483	0.059748	0.0005484	0.0045884	0.3305709	20	ENSG00000	6	28224886	28233487	+	NA	0.0610819
mQTL_Brai	cg17372223	3	52534202	rs12489828	3	52532998	G	T	0.468491	0.0260166	0.0075289	0.0005492	-0.917016	0.0266982	1.53559e-	-0.028371	0.0082517	0.0005856	0.0028372	0.1101939	20	ENSG00000	3	52524385	52535054	+	NA	0.0641967
mQTL_Brai	cg13519184	3	173396516	rs762224	3	173406175	C	T	0.471171	-0.026311	0.0076549	0.0005855	0.529933	0.0311045	6.56724e-	0.036147	0.0105142	0.0005862	0.0007494	0.2957224	20	ENSG00000	3	173396284	173494172	+	NA	0.0641967
mQTL_Brai	cg00524676	12	34384315	rs11513566	12	34561470	C	T	0.392127	-0.02783	0.0075494	0.0002724	0.308678	0.0329918	8.26458e-	-0.090159	0.026287	0.0006041	0.0033669	0.250675	5	ENSG00000	12	34022468	34029694	+	NA	0.065608
mQTL_Brai	cg19052722	2	36569040	rs34629504	2	3657204	C	G	0.14998	0.0349395	0.010198	0.0006123	-1.68307	0.0282268	0.	-0.020759	0.0060692	0.0006251	0.0164576	0.3638484	20	ENSG00000	2	3658200	3702671	+	NA	0.0658823
mQTL_Brai	cg15388895	19	49451910	rs1042263	19	49446332	C	T	0.415631	-0.026518	0.0076049	0.0005855	0.529933	0.0310941	6.44199e-	0.0501349	0.0146767	0.0006356	0.0052305	0.3416256	20	ENSG00000	19	49446298	49453497	+	NA	0.0658823
mQTL_Brai	cg18322822	5	111749711	rs1116930	5	111749711	A	G	0.442107	0.0264737	0.0075501	0.0004542	0.492572	0.0327267	3.39717e-	0.0537458	0.0157384	0.0006379

rsQTL_Brai	eq09274810	1		201379120	C	T	0.902558	0.0413444	0.0127151	0.0011476	-0.685797	0.0668584	1.095574e-	-0.060287	0.0194499	0.0019379	0.0019046	0.5120977	20	ENSG00000	15	201359008	201377764	-			NA	0.0779347
rsQTL_Brai	cg12598235	15		89377951	rs150351	15	89387357	A	G	0.321844	-0.026194	0.0079417	0.0009729	-0.46192	0.0509909	1.318021e-	0.0567059	0.0182969	0.0019403	0.0019403	0.3867805	20	ENSG00000	15	89305198	89334861	-			NA	0.0779347
rsQTL_Brai	eq05265359	11		45912021	rs1533613	11	45910695	A	G	0.210731	0.028976	0.0086658	0.0008267	-0.455368	0.0552048	1.601276e-	-0.063632	0.0205345	0.0019431	0.0019431	0.0533158	20	ENSG00000	11	45921621	45929096	+			NA	0.0779347
rsQTL_Brai	eq05502909	1		19792563	rs1964654	11	19785300	T	G	0.475817	0.0271113	0.0074968	0.0002987	0.369183	0.0614269	1.853879e	0.073436	0.0236991	0.0019439	0.0019439	0.1480024	10	ENSG00000	1	19791902	19793478	+			NA	0.0779347
rsQTL_Brai	eq01942863	7		100171809	rs6465765	7	100187820	G	A	0.73388	-0.027236	0.0084696	0.0013014	0.542562	0.0468415	5.029705e-	-0.050198	0.0162008	0.0019452	0.0031269	0.051142	14	ENSG00000	7	100159244	100168617	-			NA	0.0779347
rsQTL_Brai	eq22843912	12		120847621	rs471688	12	120847621	G	A	0.493893	-0.026267	0.0075068	0.0004668	0.287374	0.0433557	3.396047e-	-0.091404	0.0295386	0.0019721	0.0019721	0.1604088	8	ENSG00000	12	120762510	120903458	-			NA	0.0786811
rsQTL_Brai	eq00697626	9		105571302	rs572609713	9	105711302	A	G	0.395501	0.0268327	0.0075595	0.0003859	0.391726	0.0620894	2.734346e-	0.0684986	0.022139	0.0019746	0.0019746	0.192977	12	ENSG00000	9	105662457	105663124	+			NA	0.0786811
rsQTL_Brai	eq14727880	9		19049249	rs2233798	9	19048959	C	T	0.602568	0.0254456	0.0078681	0.0012205	-0.446887	0.0425201	7.769048e-	-0.05694	0.0184211	0.0019948	0.0019948	0.0564185	20	ENSG00000	9	18858906	19049358	-			NA	0.0788767
rsQTL_Brai	eq23872383	14		91285749	rs17802308	14	91285464	G	C	0.820647	-0.032842	0.0102009	0.0012839	-0.629289	0.0571757	3.566084e-	0.0521897	0.0168895	0.0020011	0.0072297	0.3125549	12	ENSG00000	14	91232532	91253925	-			NA	0.0788767
rsQTL_Brai	eq11536612	22		41699136	rs4809	12	41699136	G	T	0.790017	-0.028113	0.0087177	0.0012604	-0.48579	0.0464197	1.842148e-	0.0563629	0.0182478	0.002011	0.002011	0.1269752	8	ENSG00000	22	41673933	41690504	-			NA	0.0788767
rsQTL_Brai	eq09191173	11		108219432	rs228589	11	108222481	T	A	0.556295	-0.025352	0.0077148	0.0010159	0.385903	0.0427298	1.697334e-	-0.065694	0.0212738	0.0020149	0.0020149	0.646611	11	ENSG00000	11	108157215	108222638	-			NA	0.078992
rsQTL_Brai	eq13224197	1		45570926	rs1	1	4131710	T	C	0.933787	-0.056089	0.0173789	0.0021491	0.926953	0.0881373	7.201312e-	-0.060509	0.0196113	0.0020326	0.0020326	0.5171545	20	ENSG00000	1	3889125	3900293	-			NA	0.0790509
rsQTL_Brai	eq00553149	7		101177955	rs11767968	7	100193348	G	A	0.731085	-0.026095	0.0084388	0.0019862	-0.114358	0.0302961	0	0.0228185	0.007404	0.0020566	0.0020566	0.2919211	20	ENSG00000	7	100177563	100221488	+			NA	0.079308
rsQTL_Brai	eq06480153	7		30169564	rs4722970	7	30167115	T	C	0.810159	-0.02682	0.0086819	0.0020309	-1.36437	0.0368511	4.748297e-	0.0196577	0.0063927	0.0021049	0.0059399	0.3064798	19	ENSG00000	7	30134986	30162762	+			NA	0.079308
rsQTL_Brai	eq10840615	4		22146607	rs11732349	4	22162019	A	C	0.706526	-0.027475	0.0082944	0.0009246	0.495796	0.0600473	1.496753e-	-0.055416	0.0180255	0.0021098	0.0021098	0.2792363	11	ENSG00000	4	20728606	21948722	-			NA	0.079308
rsQTL_Brai	eq21908664	1		222814244	rs61839589	1	222282038	A	G	0.761855	0.0251988	0.0081867	0.0020839	1.358	0.0364624	1.329804e-	0.0185558	0.0060491	0.0021582	0.0063583	0.3490034	20	ENSG00000	1	222815022	223005595	+			NA	0.080234
rsQTL_Brai	eq12399411	7		44098233	rs876119	7	44103224	C	T	0.409617	-0.021305	0.0075745	0.0012222	1.08591	0.0274899	0	-0.021462	0.0060964	0.0021584	0.0033859	0.1276395	20	ENSG00000	7	44104345	44114562	+			NA	0.080234
rsQTL_Brai	eq11860091	5		10246986	rs2662528	5	10269691	G	T	0.860471	0.0339748	0.0110395	0.002087	-1.73286	0.046751	9.999506e-	-0.019606	0.0063926	0.0021621	0.0064845	0.2164086	20	ENSG00000	5	10225507	10249897	-			NA	0.080234
rsQTL_Brai	eq04305808	7		100016586	rs4729566	7	100016690	A	G	0.67262	-0.02446	0.0079535	0.002102	-1.09262	0.0286626	0	0.0223869	0.0073029	0.0021733	0.0068333	0.0636489	20	ENSG00000	7	100015572	100041689	+			NA	0.0804358
rsQTL_Brai	eq13310076	3		196569883	rs1766646	3	196573522	C	T	0.194064	-0.029038	0.0086564	0.0007949	0.38189	0.0509017	6.260917e-	-0.076039	0.0248298	0.0021958	0.0021958	0.5923201	12	ENSG00000	3	196554177	196568674	-			NA	0.0804358
rsQTL_Brai	eq26613239	16		30086014	rs9932605	16	30080727	A	G	0.522757	0.0263066	0.0075979	0.0005354	0.287432	0.0438576	5.610816e-	0.0915228	0.0298957	0.002203	0.002203	0.05146	17	ENSG00000	16	30085793	30091924	-			NA	0.0804358
rsQTL_Brai	eq23941394	10		131933207	rs12775472	10	131984079	T	G	0.842429	-0.047456	0.0134612	0.0004229	-0.550315	0.089177	6.784156e-	0.0862335	0.028171	0.0022054	0.0022054	0.1421246	6	ENSG00000	10	131901008	131959834	+			NA	0.0804358
rsQTL_Brai	eq14569776	19		46471910	rs8107491	19	46471910	A	G	0.707923	0.0252914	0.0082449	0.0021585	1.71961	0.0288337	0	0.0210453	0.0070634	0.0022224	0.0046917	0.2515125	20	ENSG00000	19	46466491	46471563	-			NA	0.0804358
rsQTL_Brai	eq24375409	1		37735248	rs12123842	1	37722317	T	C	0.737082	-0.028394	0.0086087	0.0007898	-0.363664	0.0490162	1.177732e-	0.0794521	0.0259817	0.0022282	0.0022282	0.3655732	9	ENSG00000	1	37713880	37765133	-			NA	0.0804358
rsQTL_Brai	eq11613427	3		52898192	rs9844736	3	52897955	G	T	0.776633	0.0265477	0.0084445	0.0016677	-0.61869	0.0478063	2.621559e-	-0.04291	0.0140459	0.002251	0.0034522	0.0939871	17	ENSG00000	3	52833121	52897562	-			NA	0.0808625
rsQTL_Brai	eq01535619	20		16225610	rs2788919	20	16254469	A	G	0.807284	-0.026949	0.0087915	0.0021741	1.49352	0.0402937	9.999987e-	0.0180844	0.0059065	0.0022511	0.0115615	0.100156	20	ENSG00000	20	16272104	16573448	+			NA	0.0808625
rsQTL_Brai	eq01836509	1		226111902	rs12069333	1	226112029	A	G	0.362271	-0.027351	0.0080462	0.0006758	-0.31384	0.0452476	4.031985e-	0.0871493	0.0285513	0.0022704	0.0022704	0.9896573	5	ENSG00000	1	226061851	226072019	+			NA	0.081231
rsQTL_Brai	eq09613507	7		12230150	rs5011438	7	12229172	C	T	0.584145	-0.024504	0.0078508	0.0018009	0.557337	0.0383774	8.721741e-	-0.043967	0.0144079	0.0022765	0.0022765	0.184275	20	ENSG00000	7	12211270	12243367	+			NA	0.081231
rsQTL_Brai	eq16129775	5		57429604	rs10495457	5	57395941	G	T	0.601807	0.0252166	0.0075609	0.0007383	0.445227	0.0412447	3.599848e-	0.0566363	0.018561	0.0022781	0.0022781	0.1230765	18	ENSG00000	5	57400018	57482811	-			NA	0.081231
rsQTL_Brai	eq02049229	2		65436090	rs7562559	2	65452719	G	A	0.676648	0.0266827	0.0082822	0.0012744	0.462099	0.0487066	2.368511e-	0.0577424	0.0189282	0.0022839	0.0022839	0.0748274	14	ENSG00000	2	65310851	65432637	-			NA	0.0812386
rsQTL_Brai	eq26872792	12		120326012	rs2070873	12	120325637	C	A	0.879427	-0.037343	0.0122172	0.0022387	-1.50112	0.0357973	0	0.0248767	0.0081603	0.0022998	0.0099907	0.429508	20	ENSG00000	12	120322115	120327779	+			NA	0.0816077
rsQTL_Brai	eq03325407	1		113881104	rs1217397	1	113904943	G	A	0.7152	0.0297885	0.0087378	0.0006516	-0.458835	0.0676582	1.115932e-	-0.064902	0.0213085	0.0023132	0.0023132	0.4985239	14	ENSG00000	1	113876816	113887581	+			NA	0.0818812
rsQTL_Brai	eq18894440	8		75408998	rs11781443	8	75408940	C	T	0.923931	-0.049773	0.0140816	0.0040484	-0.501191	0.0835162	1.959592e-	0.0993086	0.0326075	0.0023223	0.0023223	0.0999084	6	ENSG00000	8	75407914	75566834	+			NA	0.0819668
rsQTL_Brai	eq09692838	17		47100065	rs12939753	17	47104133	G	A	0.48685	0.0239037	0.007495	0.0014263	0.432661	0.0422541	1.319095e-	0.0552481	0.0181439	0.0023268	0.0023268	0.3041275	20	ENSG00000	17	47117703	47189422	-			NA	0.0819668
rsQTL_Brai	eq04952280	4		1718712	rs2166578	4	1732229	A	G	0.248023	0.026203	0.0085797	0.0022576	1.27396	0.0342988	5.256525e-	0.0205682	0.0067574	0.0023361	0.0107143	0.3730643	20	ENSG00000	4	1715952	1721358	-			NA	0.0820971
rsQTL_Brai	eq01811109	8		664479	rs11785436	8	705961	C	A	0.794479	-0.027818	0.0090119	0.0022363	1.45682	0.0317644	1.000006e-	-0.01936	0.0063627	0.0023444	0.0200107	0.4789552	20	ENSG00000	8	737628	1708476	+			NA	0.0821759
rsQTL_Brai	eq11020853	3		42979072	rs62249007	3	42958405	C	T	0.811694	-0.028716	0.0094229	0.0023077	1.52759	0.0412129	9.999338e-	-0.018798	0.0061893	0.0023876	0.0023876	0.0667941	20	ENSG00000	3	42979087	43067898	+			NA	0.0830192
rsQTL_Brai	eq11526866	1		20486995	rs1253918	1	20486995	T	G	0.7874	0.0253514	0.0079894	0.001508	0.526191	0.0502411	1.14554e-2	0.0481791	0.015865	0.0023908	0.0050162	0.1142815	20	ENSG00000	1	20482391	20486210	-			NA	0.0830192
rsQTL_Brai	eq10761425	3		12947476	rs1972791	3	12967593	C	G	0.51424	-0.025096	0.0075852	0.0021378	1.21294	0.0312729	9.999e-30	-0.019041	0.006272	0.0023979	0.0078116	0.3043471	20	ENSG00000	3	12834485	12841582	-			NA	0.0830665
rsQTL_Brai	eq21167502	14		103729329	rs1155751	14	103820210	G	A	0.410437	0.0229195	0.0075422	0.002375	1.23754	0.0333876	9.99884e-3	0.0185203	0.006115	0.0024563	0.0121911	0.3297176	20	ENSG00000	14	103715730	103733668	+			NA	0.0840517
rsQTL_Brai	eq13300710	11		45148568	rs7129476	11	45108675	C	G	0.852533	0.0315978	0.0104028	0.002386	-1.68811	0.0455436	9.99909e-3	-0.018718	0.0061831	0.0024676	0.0131074	0.1255316	20	ENSG00000	11	45095806	45233110	+			NA	0.0840517
rsQTL_Brai	eq23493167	2		21905473	rs7578383	2	21906129	G	T	0.772636	-0.029417	0.0096868	0.0023907	1.23456	0.0331917	8.288969e-	-0.023828	0.0078725	0.0024718	0.0116429	0.2750861	11	ENSG00000	2	21905424	21906921	-			NA	0.0840517
rsQTL_Brai	eq13826666	9		133735119	rs493901	9	133735079	C	T	0.468976	-0.023418	0.0075496	0.0019228	0.527084	0.0381062	1.634736e-	-0.04443	0.0146791	0.0024722	0.0024722	0.4456891	20	ENSG00000	9	133663560	133739955	+			NA	0.0840517
rsQTL_Brai	eq00609948	5		142108535	rs2338824	5	142100000	G	T	0.783799	0.0307824	0.0101392	0.0023976	-1.22097	0.0347098	4.578294e-	-0.025211	0.0083351	0.0024885	0.0016555	0.1031135	20	ENSG00000	5	142108779	142154440	+			NA	0.0843223
rsQTL_Brai	eq25382128	12		53952725	rs10747688	12	53952711	G	C	0.865596	-0.029748	0.0098052	0.0024142	-1.65831	0.0432532	0	0.0179587	0.0059315	0.002492	0.0066641	0.8815676	17	ENSG00000	12	53954903	53959956	+			NA	0.0843223
rsQTL_Brai	eq22580625	6		105179916	rs1591720	6	105143802	C	G	0.956928	-0.050517	0.0162596	0.0018905	-1.59284	0.123093	2.672949e-	0.0317151	0.010498	0.002519	0.00849	0.5343707	18	ENSG00000	6	105157900	105180014	+			NA	0.0848843
rsQTL_Brai	eq05774698	7		27642059	rs12112192	7	27633694	G	A	0.697099	-0.026326	0.0080946	0.0011449	0.402687	0.0349696	4.77361e-1	-0.065375	0.021655	0.0025365	0.0025365	0.981765	14	ENSG00000	7	27525442	27662883	-			NA	0.0848843
rsQTL_Brai	eq17255214	20		44909731	rs6017444	20	44899830	G	A	0.729979	0.0269959	0.0089159	0.002463	-1.17829	0.0310179	0	-0.022911	0.0075908	0.0025423	0.0094662	0.0884006	20	ENSG00000	20	44910060	44959035	+			NA	0.0848843
rsQTL_Brai	eq19640517	22		41311105	rs5996013	22	41291849	C	T	0.669245	-0.027945	0.0079458	0.0004366	0.268674	0.0456953	4.110748e-1	-0.104009	0.0344609	0.002543	0.002543	0.9938907	9	ENSG00000	22	41301525	41360147	+			NA	0.0848843
rsQTL_Brai	eq08510253	11		31883394	rs11031524	11	31892660	C	T	0.907722	-0.041356	0.0124769	0.0009177	-0.78247	0.107258	2.982255e-	0.0528533	0.0175143	0.0025468	0.0025468	0.2151052	3	ENSG00000	11	31784779	31817961	-			NA	0.0848843
rsQTL_Brai	eq12645284	15		78800536	rs1077190	15	78779042	T	G	0.813751	0.0268426	0.0088666	0.0024669	1.36583	0.0366726	1.331329e-	0.0196529	0.0065132	0.0025493	0.0024599	0.0964095	20	ENSG00000	15	78810487	78898139	+			NA	0.0848843
rsQTL_Brai	eq02097409	10		4024339	rs11252280	10	4024359	C	T	0.772821	-0.032134	0.0106329	0.0025097	1.13584	0.0343295	0	-0.024056	0.007937	0.002586	0.007441	0.403813	20	ENSG00000	10	3775996	3785281	-			NA	0.0853771
rsQTL_Brai	eq21994822	11		66976467	rs4930401	11	66968660	T	C	0.654976	0.0244958	0.0078674	0.0018482	-0.5488	0.0460377	9.237142e-	-0.044635	0.0148165	0.0025908	0.0012426	0.335042	14	ENSG00000	11	66975277	66977009	+			NA	0.0853771
rsQTL_Brai	eq10213353	20		62285849	rs2380129	20	62246124	T	A	0.485063	-0.022848	0.0075592	0.002507	1.21456	0.0327676	9.998598e-	-0.018812	0.0062445	0.0025911	0.0054278	0.5290773	20	ENSG00000	20	62302093	62308862	+			NA	0.0853771
rsQTL_Brai	eq08778805	11		92830715	rs11020072	11	92836144	A	G	0.381429	0.0249155	0.0078745	0.0015558	-0.59187	0.0601871	8.042686e-	-0.042096	0.013976	0.0025953	0.0025953	0.4104919	12	ENSG00000	11	92969651	92985066	+			NA	0.0853771
rsQTL_Brai	eq04759376	16		75430679	rs7078507	10	75381106	G	A	0.611122	-0.026848	0.0076898	0.0004806	0.375425	0.0630499	2.610099e-1	-0.071513	0.0237443	0.0025971	0.0025971	0.5254349	12	ENSG00000	10	75431624	76560168	+			NA	0.0853771
rsQTL_Brai	eq22128724	2		85175805	rs2568200	2	85177909	A	G	0.64116	-0.025112	0.0083172	0.0025342	1.16029	0.0274715	0	-0.021643	0.0071865	0.0025992	0.0030882	0.0991575	20	ENSG00000	2	85133392	85310387	+			NA	0.0853771
rsQTL_Brai	eq12622653	1		4783967	rs12037089	1	4783967	C	T	0.890153	-0.031721	0.0098535	0.0012851	0.887292	0.104414	1.931244e-	-0.015751	0.0118753	0.0026081	0.0026081	0.0702093	9	ENSG00000	1	4654609	4792534	+			NA	0.085393
rsQTL_Brai	eq14572252	3		169591637	rs7635759	3	169591439	G	A	0.918411	-0.045628	0.0146213	0.0018044	0.749938	0.0665616	1.913457e-	-0.060843	0.0202307	0.0026346	0.0075881	0.0903161	5	ENSG00000	3	169083499	169663775	-			NA	0.0855748
rsQTL_Brai	eq10218605	7		155856440	rs55768926	7	155852871	T	C	0.728052	-0.026971	0.0089538	0.0025933	1.24782	0.0331423	0	-0.021615	0.0071985	0.0026765	0.0093618	0.0932149	20	ENSG00000	7	157539056	157587823	+			NA	0.0863758
rsQTL_Brai	eq22970173	22		41240176	rs2235849	22	41257536	T	G	0.661282	-0.025945	0.0079707	0.0011338	0.348529	0.0448897	9.220388e-	0.0744408	0.0247979	0.0026831	0.0026831	0.0969526	15	ENSG00000	22	41229510	41240931	-			NA	0.0863758
rsQTL_Brai	eq22129122	11		75432679	rs570454	11	75432999	T	G	0.299288	-0.02304	0.0076567	0.00262	1.20259	0.0319444	0	-0.019159	0.0063872	0.0027037	0.0027037	0.1473207	20	ENSG00000	11	75422394	75433203	-			NA	0.0864714
rsQTL_Brai	eq19478343	20		51004142	rs8118905	20	50994060	C	T	0.2958	0.0261583	0.0086949	0.0026257	1.19712	0.0320842	1.056565e-	0.021851	0.0072868	0.002711	0.0117561	0.666448	15	ENSG00000	20	51003656	51023107	+			NA	0.0865153
rsQTL_Brai	eq00124095	3		72256395	rs9876609	3	72256395	T	C	0.435277	0.0243651	0.0075567	0.0012629	0.353827	0.0434546	5.268379e-	0.0680814	0.022985	0.0027361	0.0094743	0.1046554	15	ENSG00000	3	72271825	72446621	-			NA	0.0869792
rsQTL_Brai	eq03025013	17		79010104	rs73399884	17	79003120	G	C	0.833962	0.0323474	0.0106657	0.0018256	0.599023	0.0552716	2.278652e-2	0.0555027	0.018527	0.0027375	0.0027375	0.8117842	20	ENSG00000	17	78997116	79009867	-			NA	0.0869792
rsQTL_Brai	eq24283469	12		109155182	rs10849901	12	109150902	G	C	0.57639	0.0225571	0.0075059	0.0026535	-1.05075	0.0288089	2.959961e-	-0.021468	0.0071675	0.0027434	0.003056	0.0914525	20	ENSG00000	12	109116587	109268226	+			NA	0.0869792
rsQTL_Brai	eq14358570	14		92899024	rs72704278	14	92900927	C	T	0.897424	0.0325292	0.0108292	0.0026659	1.96777	0.0530886	1.000015e-	0.0166531	0.0055213	0.0027532	0.0094571	0.1206429	18	ENSG00000	14	92923150	92935285	+			NA	0.0870311
rsQTL_Brai	eq02794174	8		60652421	rs6670644	8	60638547	C	T	0.520897	-0.024666	0.0074892	0.0009894	-0.297453	0.041462	7.278216e-	0.0829234	0.0277041	0.0027609	0.0027609	0.3941768	8	ENSG00000	8	60678740	60868028	+			NA	0.0870311
rsQTL_Brai	eq14827740	17		33216231	rs381598	17	33230858	T	A	0.761381	0.0267879	0.0086279	0.001904	-0.710742	0.0637998	7.995495e-	-0.03769	0.0126019	0.0027823	0.0027823	0.1961442	5	ENSG00000	17	32970376	32997877	+			NA	0.0872618
rsQTL_Brai	eq20251241	14		21481247	rs16973218	14	21481241	C	T	0.734776	-0.026232	0.0085566	0.0021718	0.645545	0.0482189	7.126581e-	-0.040635	0.0135979	0.002805	0.013226	0.3967771	16	ENSG00000	14	21459020	21476960	-			NA	0.0877871
rsQTL_Brai	eq05252487	10		122911046	rs9423289	10	122945179	C	T	0.422954	-0.023207	0.0077495	0.0027478	1.2229	0.0329927	1.000024e-	-0.018977	0.0063572	0.0027037	0.0027037	0.1495113	20	ENSG00000	10	122910610	122913111	+			NA	0.0885867
rsQTL_Brai	eq16662043	16		46812320	rs6500417	16	46812259	C	A	0.230704	-0.025322	0.008157	0.0019074	0.465292	0.0450693	5.492418e-	-0.054421	0.0183063	0.002951	0.002951	0.3325416	18	ENSG00000	16	48538726	48620148	-			NA	0.0916673
rsQTL_Brai	eq3.1119243	1		51603044	rs9846029	3	51607963	A	G	0.844748	-0.034021	0.0101649	0.0008172	0.437702	0.0676771	9.964085e-	-0.077726	0.0261487	0.0029542	0.0029542	0.1979969	4	ENSG00000	3	51662691	51704323	+			NA	0.0916673
rsQTL_Brai	eq13452522	10		91077605	rs6583750	10	91073011	T	A	0.71134	-0.026169	0.0080718	0.0011869	0.34858	0.0455737	1.091875e-	-0.07729	0.0260113	0.0029644	0.0029644	0.2326962	13	ENSG00000	10	91163012	91234337	+			NA	0.0917656
rsQTL_Brai	eq03521737	1		181189865	rs946646	1	181185699	G	A	0.26875	-0.026316	0.0080112	0.0010202	-0.319038	0.045879	3.553209e-	0.0824858	0.0277713	0.0029762	0.0029762	0.0626418	10	ENSG00000	1	181088700	181092900	+			NA	0.0917656
rsQTL_Brai	eq16303742	3		15498964	rs67821448	3	15518829	T	C	0.664474	-0.025308	0.0085128	0.0029501	-1.17798	0.0255914	0	0.0214838	0.0072416	0.0030101	0.0029345	0.4211251	20	ENSG00000	3	15450133	15521751	-			NA	0.0924193
rsQTL_Brai	eq02160738	13		61194344	rs34499924	11	61202856	G	A	0.654345	-0.029985	0.0090661	0.0029433	-1.26584	0.0341513	1.000055e-	0.0189481	0.0063926	0.0030359	0.0030359	0.3894046	20	ENSG00000	11	61203307	61213098	+			NA	0.0930161
rsQTL_Brai	eq00811122	3		13136247	rs20044402	3	13136747	G	A	0.73864	0.0289358	0.0086274	0.0007967	-0.438779	0.0695089	2.744648e-	-0.065946	0.0222653	0.0030581	0.0030581	0.4172712	12	ENSG00000	3	12897043	13283281	-			NA	0.0931544
rsQTL_Brai	eq00600477	8		143632400	rs2242086	8	143613329	C	A	0.8245	0.0280815	0.0092659	0.0024405	0.795567	0.0570411	3.269713e-	0.0352975	0.0119187	0.0030613	0.0128442	0.0940647	20	ENSG00000	8	143636019	143656418	+			NA	0.0931544
rsQTL_Brai	eq10954938	17		81564997	rs9905026	17	81564546	C	T	0.775921	0.0336559	0.0096781	0.000506	-0.290073	0.0515522	1.616636e-4	-0.116025	0.0391799	0.0030629	0.0030629	0.1574188	8	ENSG00000	17	81539885	81553961	-			NA	0.0931544
rsQTL_Brai	eq00753658	20		63235802	rs12479846	20	63188849	C	T	0.7075	-0.024939	0.0083955	0.0029728	1.30394	0.0351791	9.999937e-	-0.019126	0.0064592	0.003066	0.0110418	0.741154	20	ENSG00000	20	63235883	63240495	+			NA	0.0931544
rsQTL_Brai	eq17992056	1		6236275	rs846106	1	6234012	C	T	0.345049	0.0251647	0.0081246	0.0019527	0.603717	0.0607081	2.662737e-	0.0416829	0.0140953	0.0031043	0.0125934	0.3498417	20	ENSG00000	1	6221193	6235972	-			NA	0.0937234
rsQTL_Brai	eq26312353	13		24006564	rs4770546	13	24006401	C	T	0.556212	-0.024552	0.0077817	0.0016177	0.463148	0.0438984	1.643082e-	-0.067146	0.0227104	0.0031104	0.0031104	0.5001181	13	ENSG00000	13	23979005	24007074	+			NA	0.0937234
rsQTL_Brai	eq02013375	14		103820060	rs11628787	14	103857647	G	A	0.466164	0.0222019	0.0074892	0.0030315	1.21808	0.0328627	1.000005e-	0.018227	0.006168	0.0033258	0.0159121	0.0825298	20	ENSG00000	14	103733195	103847575	+			NA	0.0938274
rsQTL_Brai	eq25447894	22		41564139	rs12483786	22	41542532	A	G	0.808254	-0.02614	0.0088188	0.0030352	1.37847	0.0369978	7.303934e-	-0.018963	0.0064177	0.0031286	0.0145603	0.4163172	8	ENSG00000	22	41561010	41577741	+			NA	0.0938274
rsQTL_Brai	eq02643668	2		2872410	rs1656318	2	2867533	G	A	0.590673	-0.023643	0.0075721	0.0017942	-0.393789	0.0431304	6.83777e-2	0.0600039	0.0203222	0.0031332	0.0031332	0.1169298	20

Table S10. The eQTL (expression quantitative trait loci) and mQTL (methylation quantitative trait loci) with significant associations in our three-step SMR (Summary-based Mendelian Randomization) analysis.

Expo_ID	Expo_Chr	Expo_Gene	Expo_bp	Outco_ID	Outco_Chr	Outco_Gen	Outco_bp	topSNP	topSNP_ch	topSNP_bp	A1	A2	Freq	b_Outco	se_Outco	p_Outco	b_Expo	se_Expo	p_Expo	b_SMR	se_SMR	p_SMR	p_HEIDI	nsnp_HEI	Fdr
cg09563216	1		150255241	ENSG00000	1	ENSG00000	151753237	rs11529817	1	150878649	T	C	0.0427435	-0.123771	0.0191041	9.245E-11	-0.459167	0.0723486	2.20138E-10	0.269557	0.0594557	5.795E-06	0.1631956	9	5.991E-05
cg15513708	14		75904643	ENSG00000	14	ENSG00000	75499351	rs3625	14	75904660	A	G	0.476143	0.0249767	0.0081859	0.0022793	-1.07122	0.023816	0	-0.023316	0.0076592	0.002333	0.949114	20	0.0145233
cg06326092	16		30034487	ENSG00000	16	ENSG00000	31134894	rs4787493	16	30139900	G	T	0.348907	-0.046095	0.0166961	0.005766	-0.3361	0.0343611	1.3532E-22	0.137145	0.0516168	0.0078841	0.1238444	19	0.0417067
cg26709300	16		30106682	ENSG00000	16	ENSG00000	31134894	rs9921544	16	30140292	C	T	0.343936	-0.043841	0.0167256	0.0087621	-0.349921	0.0346076	4.93201E-24	0.125289	0.0493782	0.0111703	0.0796272	20	0.0558815
cg10515671	11		61585899	ENSG00000	11	ENSG00000	61558354	rs174533	11	61549025	A	G	0.347913	0.304041	0.0091861	3.18E-240	0.260664	0.0334249	6.26478E-15	1.16641	0.153664	3.183E-14	0.3928612	20	9.912E-13
cg02160738	11		60961816	ENSG00000	11	ENSG00000	61558354	rs557309	11	60960136	G	A	0.367793	-0.044595	0.0092895	1.582E-06	0.363109	0.0327875	1.66581E-28	-0.122815	0.0278835	1.06E-05	0.0542639	20	0.0001051
cg14719333	17		33867795	ENSG00000	17	ENSG00000	33828074	rs59682742	17	33858734	T	C	0.0168986	-0.14089	0.0437003	0.0012641	1.28228	0.122199	9.26272E-26	-0.109874	0.0356524	0.0020574	0.4228784	9	0.0129946
cg07809027	4		15007205	ENSG00000	4	ENSG00000	15038037	rs2702557	4	15087465	T	C	0.335984	-0.284507	0.008234	1.3E-261	0.401822	0.0339644	2.70924E-32	-0.708041	0.0632588	4.424E-29	0.145863	20	3.897E-27
cg09162137	16		30995627	ENSG00000	16	ENSG00000	30011864	rs7200879	16	30947572	G	A	0.250497	-0.043491	0.0089212	1.088E-06	-0.208859	0.0367571	1.33018E-08	0.208231	0.0562802	0.0002157	0.1647341	6	0.0016998
cg26296119	11		46260204	ENSG00000	11	ENSG00000	47072088	rs7113478	11	46260223	A	G	0.414513	-0.023105	0.0083678	0.0057589	0.38656	0.0326593	2.53928E-32	-0.059771	0.022228	0.0071667	0.119401	20	0.0384566
cg26296119	11		46260204	ENSG00000	11	ENSG00000	46724915	rs7113478	11	46260223	A	G	0.414513	0.0225676	0.0083398	0.0068099	0.38656	0.0326593	2.53928E-32	0.0583805	0.0221311	0.0083412	0.292071	20	0.0437454
cg26094004	17		42075116	ENSG00000	17	ENSG00000	42807804	rs76204283	17	42111092	G	A	0.109344	0.0323528	0.01395	0.0203842	-0.941675	0.052295	1.71715E-72	-0.034357	0.0149364	0.0214369	0.1182331	20	0.0953621
cg19179572	17		80377872	ENSG00000	17	ENSG00000	79569704	rs4789687	17	80388013	A	G	0.272366	0.0287714	0.0093244	0.0020314	0.411276	0.0377969	1.41658E-27	0.0699563	0.0235658	0.0029921	0.610228	20	0.0180772
cg09651496	17		80415722	ENSG00000	17	ENSG00000	79569704	rs2380125	17	80431718	A	G	0.249503	0.0319159	0.0097038	0.0010054	0.265628	0.0396034	1.98392E-11	0.120153	0.0406875	0.0031464	0.2207873	20	0.018889

Table S11. Colocalization analysis of comorbid pathway-related genes with psoriasis.

Gene	Tissue	nsnps	PP.H0	PP.H1	PP.H2	PP.H3	PP.H4
C11orf49	Blood	3451	2.22932460(	0.2796267	5.59538975(	0.7018175	0.0185558
CPEB2	Blood	7305	1.40246514'	0.269275	7.52762864'	0.1439446	0.5867804
DBF4B	Brain	9315	6.29685467:	0.3868726	9.86044437(	0.6058088	0.0073185
DBF4B	Blood	4024	0	0.7577218	0	0.2277243	0.0145539
DBF4B	Suprapubic skin	4197	3.27690786:	0.7655985	9.40936455:	0.2198206	0.0145809
DBF4B	Crural skin	4216	6.95758988:	0.7639589	2.01774556:	0.2215385	0.0145026
DBF4B	Whole Blood	4246	1.69575486(	0.7630512	4.94272595(	0.2223969	0.0145519
INO80E	Brain	6388	5.14359345(	0.022088	2.27572428(	0.9772557	0.0006564
INO80E	Blood	2769	0	0.0350027	0	0.9639314	0.0010659
INO80E	Crural skin	2576	4.68116583(	0.0355934	1.26682342(	0.9632319	0.0011747
KAT8	Cultured fibroblasts	2662	6.39748252(	0.0005655	2.85466651(	0.0242567	0.9751779
KAT8	Blood	2807	1.24059866(	0.000587	5.71302910:	0.026058	0.973355
KAT8	Whole Blood	2673	6.44520824(	0.000608	2.87715511(	0.0261689	0.9731937
MLH3	Blood	5199	0	0.0620007	0	0.1469976	0.7910018
TDRKH	Blood	1988	0	0.1034712	0	0.0550935	0.8414353
TRIM56	Blood	5394	1.91899219(	0.000405	5.41239048(	0.0104348	0.9891602
ZNF408	Brain	9875	2.14033369:	0.1380383	1.32652384:	0.8555197	0.0064405

Table S12. Colocalization analysis of comorbid pathway-related genes with atopic dermatitis.

Gene	Tissue	nsnps	PP.H0	PP.H1	PP.H2	PP.H3	PP.H4
DBF4B	Brain	9315	2.01933539	0.124066	1.42342633	0.8745379	0.001396
DBF4B	Blood	4024	0	0.2301744	0	0.7672397	0.0025859
DBF4B	Suprapubic skin	4197	1.55579368	0.363487	2.70675586	0.6323872	0.0041258
DBF4B	Crural skin	4216	1.29294227	0.1419679	7.79974488	0.8564278	0.0016043
DBF4B	Whole Blood	4246	3.06615508	0.13797	1.91222151	0.8604547	0.0015753
FADS1	Brain	10131	1.88093878	0.0123712	1.48693343	0.9779684	0.0096604
FADS1	Blood	4904	0	0.1268857	0	0.1099775	0.7631367
NPLOC4	Suprapubic skin	6866	5.14682741	0.4630111	5.92761838	0.5332477	0.0037412
SLFN12L	Brain	10820	9.69064816	0.044335	7.76875496	0.0347558	0.9209092
TMEM258	Brain	10122	1.78667554	0.0124419	1.41492134	0.9853071	0.002251
TMEM258	Whole Blood	5234	8.04473670	0.1972118	5.84640511	0.0135429	0.7892367
YPEL3	Blood	2804	1.61535485	0.5171049	3.24789157	0.1035917	0.3793034

Table S13. Colocalization analysis of comorbid pathway-related genes with depression.

Gene	Tissue	nsnps	PP.H0	PP.H1	PP.H2	PP.H3	PP.H4
C11orf49	Blood	3451	1.53770154	0.0019288	7.03143704	0.0872853	0.9107859
CPEB2	Blood	7305	5.74531952	0.1103108	5.15278955	0.0981426	0.7915465
DBF4B	Brain	9315	3.25175527	0.0199785	1.50712179	0.9259069	0.0541146
DBF4B	Blood	4024	0	0.0200473	0	0.923441	0.0565117
DBF4B	Suprapubic skin	4197	8.93049344	0.0208647	3.95151686	0.9231544	0.0559809
DBF4B	Crural skin	4216	1.97538129	0.0216901	8.37664476	0.9197157	0.0585942
DBF4BWholeBloo	Whole Blood	4246	4.64046154	0.020881	2.05332598	0.9238948	0.0552242
FADS1	Brain	10131	1.59953102	0.1052035	1.16764814	0.0760003	0.8187962
FADS1	Blood	4902	0	0.6391582	0	0.3534231	0.0074187
INO80E	Brain	6388	4.29324919	0.1843635	3.63621687	0.1554886	0.6601479
INO80E	Blood	546	0	0.1835809	0	0.0600591	0.75636
INO80E	Crural skin	2576	3.82661299	0.1887756	1.18913912	0.0579097	0.7533147
KAT8	Cultured fibroblasts	2662	8.67998273	0.7672067	2.59507770	0.2293704	0.0034229
KAT8	Blood	2807	1.56682666	0.7413488	5.39682023	0.2553489	0.0033024
KAT8WholeBloo	Whole Blood	2673	0.0008116	0.7656034	0.0002437	0.2298857	0.0034556
MLH3	Blood	5199	0	0.8218571	0	0.1695319	0.008611
NPLOC4	Suprapubic skin	1583	2.20714018	0.1853392	3.95306450	0.0324127	0.7822481
SLFN12L	Brain	10820	8.21081605	0.3756474	3.18396206	0.1452581	0.4790946
TDRKH	Blood	1988	0	0.879259	0	0.071878	0.048863
TMEM258	Brain	10122	1.00352099	0.0698822	7.33663393	0.0502315	0.8798863
TMEM258WholeBloo	Whole Blood	4444	1.11901006	0.244046	5.84907410	0.126934	0.6290029
TRIM56	Blood	5394	3.02601001	0.6387015	1.20393524	0.2540079	0.1072906
YPEL3	Blood	2804	1.01690745	0.3255308	7.26381825	0.2320858	0.4423833
ZNF408	Brain	1469	8.18828121	0.0050311	2.51149135	0.1534712	0.8414975

Table S14. TSMR (Two-sample Mendelian Randomization) analysis of comorbid pathway-related genes with psoriasis.

Gene	Tissue	method	b	se	pval	lo_ci	up_ci	or	or_lci95	or_uci95
C11orf49	Blood	Inverse varia	-0.2496044	0.059375	2.624E-05	-0.3659795	-0.1332293	0.7791089	0.693517	0.8752644
CPEB2	Blood	Inverse varia	-0.1640027	0.0381535	1.72E-05	-0.2387837	-0.0892218	0.8487397	0.7875852	0.9146427
DBF4B	Brain	Inverse varia	0.0155762	0.0066222	0.0186674	0.0025966	0.0285558	1.0156982	1.0026	1.0289674
DBF4B	Blood	Inverse varia	0.0704133	0.0174041	5.215E-05	0.0363012	0.1045253	1.0729515	1.0369682	1.1101835
DBF4B	Suprapubic skin	Inverse varia	0.0310544	0.0105057	0.0031171	0.0104632	0.0516457	1.0315417	1.0105181	1.0530026
DBF4B	Crural skin	Inverse varia	0.0320415	0.012383	0.0096662	0.0077709	0.0563121	1.0325603	1.0078011	1.0579278
DBF4B	Whole Blood	Inverse varia	0.0326989	0.0103644	0.0016054	0.0123847	0.053013	1.0332393	1.0124617	1.0544434
INO80E	Brain	Inverse varia	-0.0507832	0.0151195	0.0007828	-0.0804173	-0.021149	0.9504848	0.9227312	0.9790731
INO80E	Blood	Inverse varia	-0.1047605	0.0283307	0.0002175	-0.1602887	-0.0492322	0.9005402	0.8518978	0.95196
INO80E	Crural skin	Inverse varia	-0.0920798	0.0196658	2.838E-06	-0.1306248	-0.0535348	0.9120324	0.877547	0.9478729
KAT8	Cultured fibroblasts	Inverse varia	0.1431707	0.0398436	0.0003265	0.0650772	0.2212642	1.1539268	1.0672415	1.247653
KAT8	Blood	Inverse varia	0.2564153	0.0221789	6.477E-31	0.2129447	0.2998859	1.2922893	1.2373162	1.3497048
KAT8	Whole Blood	Inverse varia	0.9406377	0.0601954	4.812E-55	0.8226547	1.0586207	2.5616145	2.2765354	2.8823926
MLH3	Blood	Inverse varia	-0.1240841	0.0111563	9.77E-29	-0.1459505	-0.1022177	0.8833055	0.8642005	0.902833
TDRKH	Blood	Inverse varia	0.141925	0.0276168	2.761E-07	0.087796	0.196054	1.1524902	1.0917654	1.2165926
TRIM56	Blood	Inverse varia	-0.5730806	0.1365933	2.722E-05	-0.8408035	-0.3053577	0.563786	0.4313638	0.7368598
ZNF408	Brain	Inverse varia	0.1077241	0.0364236	0.0031011	0.0363338	0.1791143	1.1137404	1.0370019	1.1961575

Table S15. TSMR (Two-sample Mendelian Randomization) analysis of comorbid pathway-related genes with atopic dermatitis.

Gene	Tissue	method	b	se	pval	lo_ci	up_ci	or	or_lci95	or_uci95
DBF4B	Brain	Inverse varia	0.0126999	0.0075513	0.0926036	-0.0021006	0.0275004	1.0127809	0.9979016	1.0278821
DBF4B	Blood	Inverse varia	-0.0351779	0.0381098	0.3559713	-0.1098731	0.0395172	0.9654336	0.8959479	1.0403084
DBF4B	Suprapubic s	Inverse varia	0.0189035	0.011346	0.0956946	-0.0033346	0.0411416	1.0190833	0.9966709	1.0419997
DBF4B	Crural skin	Inverse varia	0.025053	0.013462	0.0627429	-0.0013326	0.0514386	1.0253694	0.9986683	1.0527845
DBF4B	Whole Bloo	Inverse varia	0.0086328	0.0119718	0.4708483	-0.0148318	0.0320975	1.0086702	0.9852776	1.0326182
dFADS1	Brain	Inverse varia	-0.0605501	0.0198706	0.0023097	-0.0994964	-0.0216038	0.9412466	0.9052932	0.9786279
FADS1	Blood	Inverse varia	0.0971373	0.0362075	0.007301	0.0261706	0.168104	1.1020117	1.0265161	1.1830597
NPLOC4	Suprapubic s	Inverse varia	-0.010378	0.0375085	0.782022	-0.0838946	0.0631386	0.9896756	0.9195282	1.0651744
SLFN12L	Brain	Inverse varia	0.185374	0.0201309	3.309E-20	0.1459175	0.2248304	1.2036685	1.1571007	1.2521104
dTMEM258	Brain	Inverse varia	0.1031253	0.0369581	0.0052654	0.0306874	0.1755632	1.1086303	1.0311632	1.1919173
TMEM258	Whole Bloo	Inverse varia	0.3155546	0.0455557	4.305E-12	0.2262654	0.4048439	1.3710195	1.2539084	1.4990684
YPEL3	Blood	Inverse varia	0.1379505	0.0243774	1.523E-08	0.0901708	0.1857303	1.1479188	1.0943612	1.2040975

Table S16. TSMR (Two-sample Mendelian Randomization) analysis of comorbid pathway-related genes with depression.

Gene	Tissue	method	b	se	pval	lo_ci	up_ci	or	or_lci95	or_uci95
C11orf49	Blood	Inverse varia	-0.167791	0.0806738	0.0375369	-0.325912	-0.009671	0.8455302	0.7218687	0.9903758
CPEB2	Blood	Inverse varia	-0.107044	0.0176657	1.366E-09	-0.141668	-0.072419	0.8984864	0.867909	0.9301411
DBF4B	Brain	Inverse varia	-0.03208	0.003322	4.592E-22	-0.038591	-0.025569	0.9684289	0.9621439	0.974755
DBF4B	Blood	Inverse varia	-0.078978	0.024081	0.0010392	-0.126177	-0.03178	0.92406	0.8814589	0.9687202
DBF4B	Suprapubic s	Inverse varia	-0.054515	0.0166359	0.0010494	-0.087121	-0.021908	0.9469445	0.916566	0.9783298
DBF4B	Crural skin	Inverse varia	-0.052591	0.0172959	0.0023604	-0.086491	-0.018691	0.9487676	0.9171435	0.9814821
DBF4BWholeBl	Whole Blood	Inverse varia	-0.051087	0.0162151	0.0016294	-0.082869	-0.019306	0.9501958	0.9204719	0.9808795
FADS1	Brain	Inverse varia	-0.054254	0.0049248	3.186E-28	-0.063907	-0.044601	0.9471915	0.9380925	0.9563787
FADS1	Blood	Inverse varia	0.0468963	0.0220506	0.0334406	0.003677	0.0901155	1.0480133	1.0036838	1.0943007
INO80E	Brain	Inverse varia	0.0510291	0.0075852	1.726E-11	0.0361621	0.065896	1.0523535	1.0368239	1.0681156
INO80E	Blood	Inverse varia	0.0700006	0.0147065	1.937E-06	0.041176	0.0988252	1.0725088	1.0420354	1.1038734
INO80E	Crural skin	Inverse varia	0.0620041	0.009861	3.22E-10	0.0426765	0.0813318	1.0639668	1.0436002	1.0847307
KAT8	Cultured fibı	Inverse varia	-0.017116	0.0082922	0.0390118	-0.033368	-0.000863	0.9830301	0.9671824	0.9991375
KAT8	Blood	Inverse varia	-0.014171	0.0099576	0.1546898	-0.033688	0.0053456	0.9859287	0.9668731	1.0053599
KAT8WholeBloc	Whole Blood	Inverse varia	-0.048119	0.0304653	0.1142294	-0.107831	0.0115931	0.9530205	0.8977795	1.0116606
MLH3	Blood	Inverse varia	-0.013339	0.0108008	0.2168329	-0.034509	0.0078307	0.9867496	0.96608	1.0078614
NPLOC4	Suprapubic s	Inverse varia	0.0988067	0.0402278	0.0140423	0.0199602	0.1776532	1.1038529	1.0201608	1.194411
SLFN12L	Brain	Inverse varia	-0.098635	0.0120927	3.446E-16	-0.122337	-0.074934	0.906073	0.88485	0.927805
TDRKH	Blood	Inverse varia	0.0236264	0.0096786	0.0146425	0.0046564	0.0425964	1.0239077	1.0046673	1.0435166
TMEM258	Brain	Inverse varia	0.088327	0.0104826	3.576E-17	0.0677811	0.108873	1.0923453	1.070131	1.1150208
TMEM258Whol	Whole Blood	Inverse varia	0.1767959	0.0277587	1.902E-10	0.1223888	0.2312031	1.1933875	1.1301934	1.2601151
TRIM56	Blood	Inverse varia	-0.075242	0.0474887	0.1130992	-0.16832	0.017836	0.9275192	0.8450837	1.017996
YPEL3	Blood	Inverse varia	-0.085684	0.0293303	0.003485	-0.143172	-0.028197	0.9178839	0.8666052	0.9721967
ZNF408	Brain	Inverse varia	0.1541264	0.0182306	2.809E-17	0.1183944	0.1898585	1.1666384	1.125688	1.2090785

Table S17. GO (Gene Ontology) analysis of genes associated with the comorbid pathway between depression and psoriasis.

ONTOLOG	ID	Description	GeneRatio	BgRatio	RichFactor	FoldEnrich	zScore	pvalue	p.adjust	qvalue	geneID	gene	Count
BP	GO:0007292	female game	3月8日	172/18805	0.0174419	40.999273	10.871783	4.07131558	0.0067584	0.0029571	84148/27030	KAT8(lysine	3
BP	GO:0007140	male meiotic	2月8日	56/18805	0.0357143	83.950893	12.824837	0.0002411	0.0200111	0.0087557	27030/1102	MLH3(mutL	2
BP	GO:0048477	oogenesis	2月8日	115/18805	0.0173913	40.880435	8.8497295	0.0010134	0.0352084	0.0154051	84148/1102	KAT8(lysine	2
BP	GO:0006275	regulation of	2月8日	121/18805	0.0165289	38.853306	8.6176215	0.001121	0.0352084	0.0154051	283899/801	INO80E(IN	2
BP	GO:0032475	regulation of	2月8日	129/18805	0.0155039	36.443798	8.3333385	0.0012726	0.0352084	0.0154051	84148/8184	KAT8(lysine	2
BP	GO:0032606	type I interfe	2月8日	129/18805	0.0155039	36.443798	8.3333385	0.0012726	0.0352084	0.0154051	84148/8184	KAT8(lysine	2
CC	GO:0000228	nuclear chro	2月8日	236/19880	0.0084746	21.059322	6.2198335	0.0037484	0.0347624	0.0105924	283899/270	INO80E(IN	2
CC	GO:0071540	pi-body	1月8日	10/19880	0.1	248.5	15.707163	0.0040178	0.0347624	0.0105924	11022	TDRKH(tud	1
CC	GO:0032300	mismatch re	1月8日	11/19880	0.0909091	225.90909	14.970518	0.0044188	0.0347624	0.0105924	27030	MLH3(mutL	1
CC	GO:0044545	NSL comple	1月8日	11/19880	0.0909091	225.90909	14.970518	0.0044188	0.0347624	0.0105924	84148	KAT8(lysine	1
CC	GO:0000793	condensed c	2月8日	285/19880	0.0070175	17.438596	5.6083615	0.0054167	0.0347624	0.0105924	84148/2703	KAT8(lysine	2
CC	GO:0031011	Ino80 compl	1月8日	16/19880	0.0625	155.3125	12.38937	0.0064217	0.0347624	0.0105924	283899	INO80E(IN	1
CC	GO:0043186	P granule	1月8日	27/19880	0.037037	92.037037	9.4974802	0.0108156	0.0347624	0.0105924	11022	TDRKH(tud	1
CC	GO:0045495	pole plasm	1月8日	27/19880	0.037037	92.037037	9.4974802	0.0108156	0.0347624	0.0105924	11022	TDRKH(tud	1
CC	GO:0060293	germ plasm	1月8日	27/19880	0.037037	92.037037	9.4974802	0.0108156	0.0347624	0.0105924	11022	TDRKH(tud	1
CC	GO:0097346	INO80-type	1月8日	27/19880	0.037037	92.037037	9.4974802	0.0108156	0.0347624	0.0105924	283899	INO80E(IN	1
CC	GO:0071339	MLL1 comp	1月8日	31/19880	0.0322581	80.16129	8.8500529	0.0124091	0.0347624	0.0105924	84148	KAT8(lysine	1
CC	GO:0035267	NuA4 histor	1月8日	32/19880	0.03125	77.65625	8.707343	0.0128072	0.0347624	0.0105924	84148	KAT8(lysine	1
CC	GO:0043185	H4/H2A his	1月8日	32/19880	0.03125	77.65625	8.707343	0.0128072	0.0347624	0.0105924	84148	KAT8(lysine	1
CC	GO:0044665	MLL1/2 con	1月8日	32/19880	0.03125	77.65625	8.707343	0.0128072	0.0347624	0.0105924	84148	KAT8(lysine	1
CC	GO:0000795	synaptonem	1月8日	40/19880	0.025	62.125	7.7642499	0.0159865	0.0379679	0.0115692	27030	MLH3(mutL	1
CC	GO:0099080	synaptonem	1月8日	40/19880	0.025	62.125	7.7642499	0.0159865	0.0379679	0.0115692	27030	MLH3(mutL	1
CC	GO:1902562	H4 histone a	1月8日	45/19880	0.0222222	55.222222	7.306156	0.017969	0.0401659	0.0122389	84148	KAT8(lysine	1
CC	GO:0001673	male germ c	1月8日	53/19880	0.0188679	46.886792	6.7114847	0.0211337	0.0446156	0.0135948	27030	MLH3(mutL	1
MF	GO:0005095	GTPase inhi	1月8日	12/18639	0.0833333	194.15625	13.869299	0.0051399	0.0297289	0.0115546	132864	CPEB2(cyto	1
MF	GO:0030983	mismatched	1月8日	14/18639	0.0714286	166.41964	12.830085	0.0059943	0.0297289	0.0115546	27030	MLH3(mutL	1
MF	GO:0043022	ribosomal la	1月8日	16/18639	0.0625	145.61719	11.991725	0.006848	0.0297289	0.0115546	132864	CPEB2(cyto	1
MF	GO:0000900	mRNA regu	1月8日	18/18639	0.0555556	129.4375	11.296741	0.0077011	0.0297289	0.0115546	132864	CPEB2(cyto	1
MF	GO:0043024	ribosomal sr	1月8日	20/18639	0.05	116.49375	10.708333	0.0085536	0.0297289	0.0115546	132864	CPEB2(cyto	1
MF	GO:0140664	ATP-depend	1月8日	20/18639	0.05	116.49375	10.708333	0.0085536	0.0297289	0.0115546	27030	MLH3(mutL	1
MF	GO:0032934	histone H3K	1月8日	22/18639	0.0454545	105.90341	10.201703	0.0094054	0.0297289	0.0115546	84148	KAT8(lysine	1
MF	GO:0043992	histone H3K	1月8日	22/18639	0.0454545	105.90341	10.201703	0.0094054	0.0297289	0.0115546	84148	KAT8(lysine	1
MF	GO:0043993	histone H3K	1月8日	22/18639	0.0454545	105.90341	10.201703	0.0094054	0.0297289	0.0115546	84148	KAT8(lysine	1
MF	GO:0043994	histone H3K	1月8日	22/18639	0.0454545	105.90341	10.201703	0.0094054	0.0297289	0.0115546	84148	KAT8(lysine	1
MF	GO:0043995	histone H2A	1月8日	22/18639	0.0454545	105.90341	10.201703	0.0094054	0.0297289	0.0115546	84148	KAT8(lysine	1
MF	GO:0044015	histone H2A	1月8日	22/18639	0.0454545	105.90341	10.201703	0.0094054	0.0297289	0.0115546	84148	KAT8(lysine	1
MF	GO:0044014	histone H2B	1月8日	22/18639	0.0454545	105.90341	10.201703	0.0094054	0.0297289	0.0115546	84148	KAT8(lysine	1
MF	GO:0044015	histone H2B	1月8日	22/18639	0.0454545	105.90341	10.201703	0.0094054	0.0297289	0.0115546	84148	KAT8(lysine	1
MF	GO:0044016	histone H3K	1月8日	22/18639	0.0454545	105.90341	10.201703	0.0094054	0.0297289	0.0115546	84148	KAT8(lysine	1
MF	GO:0044017	histone H3K	1月8日	22/18639	0.0454545	105.90341	10.201703	0.0094054	0.0297289	0.0115546	84148	KAT8(lysine	1
MF	GO:0044018	histone H3K	1月8日	22/18639	0.0454545	105.90341	10.201703	0.0094054	0.0297289	0.0115546	84148	KAT8(lysine	1
MF	GO:0046972	histone H4K	1月8日	22/18639	0.0454545	105.90341	10.201703	0.0094054	0.0297289	0.0115546	84148	KAT8(lysine	1
MF	GO:0140908	histone H3K	1月8日	22/18639	0.0454545	105.90341	10.201703	0.0094054	0.0297289	0.0115546	84148	KAT8(lysine	1
MF	GO:0044015	histone H2B	1月8日	23/18639	0.0434783	101.29891	9.9734066	0.0098311	0.0297289	0.0115546	84148	KAT8(lysine	1
MF	GO:0043998	histone H2A	1月8日	24/18639	0.0416667	97.078125	9.7594464	0.0102566	0.0297289	0.0115546	84148	KAT8(lysine	1
MF	GO:0140612	DNA damag	1月8日	24/18639	0.0416667	97.078125	9.7594464	0.0102566	0.0297289	0.0115546	27030	MLH3(mutL	1
MF	GO:0036408	histone H3K	1月8日	28/18639	0.0357143	83.209821	9.020787	0.011957	0.0297289	0.0115546	84148	KAT8(lysine	1
MF	GO:0010484	histone H3 a	1月8日	29/18639	0.0344828	80.340517	8.8602791	0.0123818	0.0297289	0.0115546	84148	KAT8(lysine	1
MF	GO:0035925	mRNA 3'-U	1月8日	30/18639	0.0333333	77.6625	8.7078041	0.0128063	0.0297289	0.0115546	132864	CPEB2(cyto	1
MF	GO:0043995	histone H4K	1月8日	30/18639	0.0333333	77.6625	8.7078041	0.0128063	0.0297289	0.0115546	84148	KAT8(lysine	1
MF	GO:0043996	histone H4K	1月8日	30/18639	0.0333333	77.6625	8.7078041	0.0128063	0.0297289	0.0115546	84148	KAT8(lysine	1
MF	GO:0043997	histone H4K	1月8日	30/18639	0.0333333	77.6625	8.7078041	0.0128063	0.0297289	0.0115546	84148	KAT8(lysine	1
MF	GO:0010485	histone H4 a	1月8日	35/18639	0.0285714	66.567857	8.0454143	0.0149267	0.0334564	0.0130033	84148	KAT8(lysine	1
MF	GO:0004402	histone acet	1月8日	42/18639	0.0238095	55.473214	7.3234002	0.0178885	0.0387585	0.015064	84148	KAT8(lysine	1
MF	GO:0061733	protein-lysin	1月8日	47/18639	0.0212766	49.571809	6.908706	0.0199993	0.0419341	0.0162983	84148	KAT8(lysine	1
MF	GO:0034212	protein N-ac	1月8日	53/18639	0.0188679	43.959906	6.4898529	0.0225271	0.0457581	0.0177845	84148	KAT8(lysine	1
CC	GO:0035097	histone meth	45665	68/19880	0.0147059	36.544118	5.8908709	0.0270435	0.0513827	0.0156568	84148	KAT8(lysine	1
CC	GO:0043073	germ cell nu	45665	68/19880	0.0147059	36.544118	5.8908709	0.0270435	0.0513827	0.0156568	27030	MLH3(mutL	1
BP	GO:0140013	meiotic nucl	45696	197/18805	0.0101523	23.864213	6.6552653	0.002933	0.0552703	0.024183	27030/1102	MLH3(mutL	2
BP	GO:1903046	meiotic cell	45696	220/18805	0.0090909	21.369318	6.2694926	0.0036419	0.0552703	0.024183	27030/1102	MLH3(mutL	2
BP	GO:2000766	negative reg	45665	10/18805	0.1	235.0625	15.273428	0.0042471	0.0552703	0.024183	132864	CPEB2(cyto	1
BP	GO:0007144	female meio	45665	13/18805	0.0769231	180.81731	13.379581	0.0055181	0.0552703	0.024183	27030	MLH3(mutL	1
BP	GO:0014816	skeletal mus	45665	13/18805	0.0769231	180.81731	13.379581	0.0055181	0.0552703	0.024183	84148	KAT8(lysine	1
BP	GO:0006260	DNA replica	45696	280/18805	0.0071429	16.790179	5.4917757	0.0058299	0.0552703	0.024183	283899/801	INO80E(IN	2
BP	GO:0006448	regulation of	45665	14/18805	0.0714286	167.90179	12.887714	0.0059415	0.0552703	0.024183	132864	CPEB2(cyto	1
BP	GO:0033262	regulation of	45665	14/18805	0.0714286	167.90179	12.887714	0.0059415	0.0552703	0.024183	80174	DBF4B(DBI	1
BP	GO:2000105	positive regu	45665	14/18805	0.0714286	167.90179	12.887714	0.0059415	0.0552703	0.024183	80174	DBF4B(DBI	1
BP	GO:1904507	positive regu	45665	15/18805	0.0666667	156.70833	12.445718	0.0063647	0.0552703	0.024183	283899	INO80E(IN	1
BP	GO:0051054	positive regu	45696	293/18805	0.0068259	16.045222	5.354656	0.0063672	0.0552703	0.024183	283899/801	INO80E(IN	2
BP	GO:0051321	meiotic cell	45696	293/18805	0.0068259	16.045222	5.354656	0.0063672	0.0552703	0.024183	27030/1102	MLH3(mutL	2
BP	GO:0007028	cytoplasm o	45665	16/18805	0.0625	146.91406	12.045675	0.0067877	0.0552703	0.024183	11022	TDRKH(tud	1
BP	GO:0060382	regulation of	45665	17/18805	0.0588235	138.27206	11.681327	0.0072106	0.0552703	0.024183	283899	INO80E(IN	1
BP	GO:0034587	piRNA proc	45665	19/18805	0.0526316	123.71711	11.040547	0.0080559	0.0552703	0.024183	11022	TDRKH(tud	1
BP	GO:1904505	regulation of	45665	19/18805	0.0526316	123.71711	11.040547	0.0080559	0.0552703	0.024183	283899	INO80E(IN	1
BP	GO:0007351	tripartite reg	45665	20/18805	0.05	117.53125	10.756665	0.0084783	0.0552703	0.024183	11022	TDRKH(tud	1
BP	GO:0008595	anterior/post	45665	20/18805	0.05	117.53125	10.756665	0.0084783	0.0552703	0.024183	11022	TDRKH(tud	1
BP	GO:0060340	positive regu	45665	20/18805	0.05	117.53125	10.756665	0.0084783	0.0552703	0.024183	81844	TRIM56(tri	1
BP	GO:0009048	dosage com	45665	21/18805	0.047619	111.93452	10.493205	0.0089006	0.0552703	0.024183	84148	KAT8(lysine	1
BP	GO:0006310	DNA recom	45696	352/18805	0.0056818	13.355824	4.8276457	0.0090797	0.0552703	0.024183	283899/270	INO80E(IN	2
BP	GO:2001014	regulation of	45665	22/18805	0.0454545	106.84659	10.247822	0.0093227	0.0552703	0.024183	84148	KAT8(lysine	1
BP	GO:0007549	sex-chromos	45665	23/18805	0.0434783	102.20109	10.01853	0.0097447	0.0557797	0.0244058	84148	KAT8(lysine	1
MF	GO:1990841	promoter-sp	45665	68/18639	0.0147059	34.262868	5.6940734	0.0288215	0.0558128	0.0216924	84148	KAT8(lysine	1
MF	GO:0008080	N-acetyltran	45665	69/18639	0.0144928	33.766304	5.6503145	0.0292399	0.0558128	0.0216924	84148	KAT8(lysine	1

MF	GO:0140295	molecular se	45665	71/18639	0.0140845	32.815141	5.5655364	0.0300761	0.0558128	0.0216924	27030	MLH3(mutI	1
MF	GO:0043535	protein serin	45665	73/18639	0.0136986	31.916096	5.4842023	0.0309117	0.0558128	0.0216924	80174	DBF4B(DBI	1
BP	GO:000713(	synaptonem	45665	24/18805	0.0416667	97.942708	9.8036378	0.0101664	0.0562125	0.0245952	27030	MLH3(mutI	1
BP	GO:0007350	blastoderm s	45665	25/18805	0.04	94.025	9.6016912	0.0105881	0.0562125	0.0245952	11022	TDRKH(tud	1
BP	GO:000728	germ cell de	45696	391/18805	0.0051151	12.023657	4.5442881	0.0111133	0.0562125	0.0245952	84148/1102	KAT8(lysin	2
BP	GO:0070192	synaptonem	45665	27/18805	0.037037	87.060185	9.2317776	0.0114309	0.0562125	0.0245952	27030	MLH3(mutI	1
BP	GO:000639(	mitochondri	45665	28/18805	0.0357143	83.950893	9.0617655	0.011852	0.0562125	0.0245952	84148	KAT8(lysin	1
BP	GO:0010971	positive regu	45665	28/18805	0.0357143	83.950893	9.0617655	0.011852	0.0562125	0.0245952	80174	DBF4B(DBI	1
CC	GO:000079	condensed n	45665	81/19880	0.0123457	30.679012	5.3702165	0.0321401	0.0581583	0.0177214	27030	MLH3(mutI	1
BP	GO:1902751	positive regu	45665	31/18805	0.0322581	75.826613	8.6017016	0.0131146	0.0595497	0.0260554	80174	DBF4B(DBI	1
BP	GO:0022412	cellular proc	45696	429/18805	0.004662	10.958625	4.304556	0.0132731	0.0595497	0.0260554	84148/1102	KAT8(lysin	2
BP	GO:004324	telomere ma	45665	33/18805	0.030303	71.231061	8.3302257	0.0139555	0.0599048	0.0262107	283899	INO80E(IN	1
BP	GO:000028	nuclear divis	45696	448/18805	0.0044643	10.493862	4.1957238	0.0144176	0.0599048	0.0262107	27030/1102	MLH3(mutI	2
BP	GO:000629	mismatch re	45665	35/18805	0.0285714	67.160714	8.0821688	0.0147958	0.0599048	0.0262107	27030	MLH3(mutI	1
BP	GO:006212	regulation o	45665	35/18805	0.0285714	67.160714	8.0821688	0.0147958	0.0599048	0.0262107	84148	KAT8(lysin	1
BP	GO:2000765	regulation o	45665	36/18805	0.0277778	65.295139	7.9658966	0.0152157	0.060071	0.0262835	132864	CPEB2(cyto	1
BP	GO:002261(	DNA strand	45665	37/18805	0.027027	63.530405	7.8543265	0.0156354	0.060071	0.0262835	283899	INO80E(IN	1
BP	GO:000714	female meio	45665	41/18805	0.0243902	57.332317	7.4492522	0.0173128	0.060071	0.0262835	27030	MLH3(mutI	1
BP	GO:0032728	positive regu	45665	41/18805	0.0243902	57.332317	7.4492522	0.0173128	0.060071	0.0262835	81844	TRIM56(tri	1
BP	GO:0033260	nuclear DNA	45665	41/18805	0.0243902	57.332317	7.4492522	0.0173128	0.060071	0.0262835	80174	DBF4B(DBI	1
BP	GO:0090329	regulation o	45665	41/18805	0.0243902	57.332317	7.4492522	0.0173128	0.060071	0.0262835	80174	DBF4B(DBI	1
BP	GO:004828	organelle fis	45696	498/18805	0.0040161	9.440261	3.9381096	0.0176297	0.060071	0.0262835	27030/1102	MLH3(mutI	2
BP	GO:000057	embryonic a	45665	42/18805	0.0238095	55.967262	7.3570457	0.0177318	0.060071	0.0262835	11022	TDRKH(tud	1
BP	GO:0045740	positive regu	45665	44/18805	0.0227273	53.423295	7.1820514	0.0185693	0.0606148	0.0265214	80174	DBF4B(DBI	1
BP	GO:004478	cell cycle DI	45665	45/18805	0.0222222	52.236111	7.0989128	0.0189878	0.0606148	0.0265214	80174	DBF4B(DBI	1
BP	GO:006033	regulation o	45665	45/18805	0.0222222	52.236111	7.0989128	0.0189878	0.0606148	0.0265214	81844	TRIM56(tri	1
MF	GO:000813	translation f	45665	83/18639	0.0120482	28.070783	5.1218193	0.0350804	0.0607175	0.0235987	132864	CPEB2(cyto	1
MF	GO:0180051	translation f	45665	84/18639	0.0119048	27.736607	5.0891122	0.0354964	0.0607175	0.0235987	132864	CPEB2(cyto	1
CC	GO:000012	histone acet	45665	95/19880	0.0105263	26.157895	4.9316193	0.0376026	0.0612027	0.018649	84148	KAT8(lysin	1
CC	GO:0070602	SWI/SNF su	45665	95/19880	0.0105263	26.157895	4.9316193	0.0376026	0.0612027	0.018649	283899	INO80E(IN	1
CC	GO:0034708	methyltransf	45665	101/19880	0.009901	24.60396	4.7716092	0.0399354	0.0612027	0.018649	84148	KAT8(lysin	1
CC	GO:0031248	protein acet	45665	105/19880	0.0095238	23.666667	4.6724594	0.0414878	0.0612027	0.018649	84148	KAT8(lysin	1
CC	GO:190249	acetyltransfe	45665	106/19880	0.009434	23.443396	4.6485308	0.0418756	0.0612027	0.018649	84148	KAT8(lysin	1
BP	GO:0032480	negative reg	45665	47/18805	0.0212766	50.013298	6.9405747	0.0198243	0.0620912	0.0271674	84148	KAT8(lysin	1
BP	GO:000651	protein mon	45665	51/18805	0.0196078	46.090686	6.6519783	0.0214955	0.0632355	0.027668	81844	TRIM56(tri	1
BP	GO:0007129	homologous	45665	53/18805	0.0188679	44.351415	6.5199349	0.0223301	0.0632355	0.027668	27030	MLH3(mutI	1
BP	GO:0045815	transcription	45665	55/18805	0.0181818	42.738636	6.3950627	0.0231642	0.0632355	0.027668	84148	KAT8(lysin	1
BP	GO:0010719	negative reg	45665	56/18805	0.0178571	41.975446	6.3351149	0.023581	0.0632355	0.027668	84148	KAT8(lysin	1
BP	GO:000713	reciprocal m	45665	59/18805	0.0169492	39.841102	6.1643755	0.0248304	0.0632355	0.027668	27030	MLH3(mutI	1
BP	GO:0009948	anterior/pos	45665	59/18805	0.0169492	39.841102	6.1643755	0.0248304	0.0632355	0.027668	11022	TDRKH(tud	1
BP	GO:0140527	reciprocal h	45665	59/18805	0.0169492	39.841102	6.1643755	0.0248304	0.0632355	0.027668	27030	MLH3(mutI	1
BP	GO:0141137	positive regu	45665	59/18805	0.0169492	39.841102	6.1643755	0.0248304	0.0632355	0.027668	84148	KAT8(lysin	1
BP	GO:0032608	interferon-b	45665	60/18805	0.0166667	39.177083	6.1102854	0.0252465	0.0632355	0.027668	81844	TRIM56(tri	1
BP	GO:0032648	regulation o	45665	60/18805	0.0166667	39.177083	6.1102854	0.0252465	0.0632355	0.027668	81844	TRIM56(tri	1
BP	GO:000095	mitochondri	45665	61/18805	0.0163934	38.534836	6.0575101	0.0256625	0.0632355	0.027668	84148	KAT8(lysin	1
BP	GO:0001961	positive regu	45665	61/18805	0.0163934	38.534836	6.0575101	0.0256625	0.0632355	0.027668	81844	TRIM56(tri	1
BP	GO:0006026	positive regu	45665	62/18805	0.016129	37.913306	6.0059966	0.0260784	0.0632355	0.027668	84148	KAT8(lysin	1
BP	GO:0048595	oocyte devel	45665	64/18805	0.015625	36.728516	5.9065573	0.0269096	0.0632355	0.027668	11022	TDRKH(tud	1
BP	GO:0070192	chromosome	45665	65/18805	0.0153846	36.163462	5.8585393	0.027325	0.0632355	0.027668	27030	MLH3(mutI	1
BP	GO:1901224	positive regu	45665	66/18805	0.0151515	35.61553	5.8115984	0.0277402	0.0632355	0.027668	81844	TRIM56(tri	1
BP	GO:0035825	homologous	45665	67/18805	0.0149254	35.083955	5.7656943	0.0281553	0.0632355	0.027668	27030	MLH3(mutI	1
BP	GO:0045143	homologous	45665	67/18805	0.0149254	35.083955	5.7656943	0.0281553	0.0632355	0.027668	27030	MLH3(mutI	1
BP	GO:0070534	protein K63-	45665	67/18805	0.0149254	35.083955	5.7656943	0.0281553	0.0632355	0.027668	81844	TRIM56(tri	1
BP	GO:000999	oocyte differ	45665	68/18805	0.0147059	34.568015	5.720789	0.0285702	0.0632355	0.027668	11022	TDRKH(tud	1
BP	GO:0060760	positive regu	45665	68/18805	0.0147059	34.568015	5.720789	0.0285702	0.0632355	0.027668	81844	TRIM56(tri	1
BP	GO:0070918	regulatory n	45665	68/18805	0.0147059	34.568015	5.720789	0.0285702	0.0632355	0.027668	11022	TDRKH(tud	1
BP	GO:2000144	positive regu	45665	69/18805	0.0144928	34.067029	5.6768462	0.028985	0.0633093	0.0277003	84148	KAT8(lysin	1
BP	GO:000641	translational	45665	72/18805	0.0138889	32.647569	5.5504576	0.0302284	0.0651676	0.0285134	132864	CPEB2(cyto	1
BP	GO:0060260	regulation o	45665	73/18805	0.0136986	32.200342	5.5100376	0.0306425	0.0652135	0.0285335	84148	KAT8(lysin	1
MF	GO:0016410	N-acyltransf	45665	94/18639	0.0106383	24.785904	4.7906753	0.0396478	0.0657739	0.0255639	84148	KAT8(lysin	1
MF	GO:0016407	acetyltransfe	45665	96/18639	0.0104167	24.269531	4.7365248	0.0404762	0.0657739	0.0255639	84148	KAT8(lysin	1
BP	GO:0032200	positive regu	45665	75/18805	0.0133333	31.341667	5.4315905	0.0314703	0.0661275	0.0289334	283899	INO80E(IN	1
BP	GO:0032481	positive regu	45665	76/18805	0.0131579	30.929276	5.3935109	0.031884	0.0661593	0.0289473	81844	TRIM56(tri	1
BP	GO:0009880	embryonic p	45665	77/18805	0.012987	30.527597	5.3561609	0.0322975	0.06619	0.0289608	11022	TDRKH(tud	1
BP	GO:0035914	skeletal mus	45665	80/18805	0.0125	29.382813	5.2482601	0.0335372	0.0678924	0.0297056	84148	KAT8(lysin	1
BP	GO:2000142	regulation o	45665	82/18805	0.0121951	28.666159	5.1795725	0.0343629	0.0687257	0.0300702	84148	KAT8(lysin	1
CC	GO:1904945	ATPase com	45665	127/19880	0.007874	19.566929	4.2115977	0.049987	0.0688837	0.0209895	283899	INO80E(IN	1
CC	GO:0016363	nuclear matr	45665	129/19880	0.0077519	19.263566	4.1754891	0.0507564	0.0688837	0.0209895	84148	KAT8(lysin	1
BP	GO:006033	type I interf	45665	85/18805	0.0117647	27.654412	5.0810268	0.0356002	0.07033	0.0307721	81844	TRIM56(tri	1
BP	GO:0071357	cellular resp	45665	86/18805	0.0116279	27.332849	5.0493049	0.0360123	0.07033	0.0307721	81844	TRIM56(tri	1
BP	GO:000979	post-embryo	45665	89/18805	0.011236	26.411517	4.9572968	0.0372478	0.0718969	0.0314578	84148	KAT8(lysin	1
CC	GO:190255	serine/threo	45665	140/19880	0.0071429	17.75	3.9904946	0.0549782	0.0720405	0.0219514	80174	DBF4B(DBI	1
BP	GO:0045995	regulation o	45665	91/18805	0.010989	25.831044	4.8984447	0.0380707	0.0725909	0.0317614	283899	INO80E(IN	1
BP	GO:0034340	response to t	45665	92/18805	0.0108696	25.550272	4.8697241	0.0384819	0.0725909	0.0317614	81844	TRIM56(tri	1
CC	GO:190291	protein kina	45665	154/19880	0.0064935	16.136364	3.783414	0.0603277	0.0744173	0.0226756	80174	DBF4B(DBI	1
CC	GO:0034395	nuclear peri	45665	155/19880	0.0064516	16.032258	3.7696674	0.0607088	0.0744173	0.0226756	84148	KAT8(lysin	1
MF	GO:0043022	ribosome bi	45665	112/18639	0.0089286	20.802455	4.3556409	0.047081	0.0746406	0.0290101	132864	CPEB2(cyto	1
BP	GO:0045132	meiotic chro	45665	96/18805	0.0104167	24.485677	4.7592581	0.0401252	0.0748403	0.0327456	27030	MLH3(mutI	1
BP	GO:0009979	axis specific	45665	99/18805	0.010101	23.743687	4.6807327	0.0413561	0.076279	0.0333751	11022	TDRKH(tud	1
BP	GO:0035282	segmentatio	45665	102/18805	0.0098039	23.045343	4.60561	0.0425856	0.0776836	0.0339897	11022	TDRKH(tud	1
BP	GO:1901992	positive regu	45665	105/18805	0.0095238	22.386905	4.5336462	0.0438137	0.0782051	0.0342178	80174	DBF4B(DBI	1
BP	GO:2001252	positive regu	45665	105/18805	0.0095238	22.386905	4.5336462	0.0438137	0.0782051	0.0342178	283899	INO80E(IN	1
BP	GO:1901222	regulation o	45665	107/18805	0.0093458	21.968458	4.4873159	0.0446317	0.0788176	0.0344858	81844	TRIM56(tri	1
BP	GO:0010385	regulation o	45665	109/18805	0.0091743	21.565367	4.4422317	0.045449	0.0794162	0.0347477	80174	DBF4B(DBI	1
BP	GO:0032204	regulation o	45665	112/18805	0.0089286	20.987723	4.3768199	0.0466739	0.079875	0.0349485	283899	INO80E(IN	1
BP	GO:0140888	interferon-m	45665	112/18805	0.0089286	20.987723	4.3768199	0.0466739	0.079875	0.0349485	81844	TRIM56(tri	1
CC	GO:000077	kinetochore	45665	174/19880	0.0057471	14.281609	3.5305922	0.0679239	0.0806596	0.0245777	84148	KAT8(lysin	1

CC	GO:000077	condensed c	45665	186/18880	0.0053763	13.360215	3.3981066	0.0724557	0.0834339	0.0254231	84148	KAT8(lysin	1
BP	GO:190274	regulation o	45665	122/18805	0.0081967	19.267418	4.1759916	0.050747	0.0859592	0.0376105	80174	DBF4B(DB	1
BP	GO:001071	regulation o	45665	126/18805	0.0079365	18.655754	4.1022354	0.0523719	0.0869374	0.0380386	84148	KAT8(lysin	1
BP	GO:190198	positive regu	45665	126/18805	0.0079365	18.655754	4.1022354	0.0523719	0.0869374	0.0380386	80174	DBF4B(DB	1
BP	GO:000712	meiosis I	45665	130/18805	0.0076923	18.081731	4.031801	0.0539945	0.0887434	0.0388287	27030	MLH3(mutI	1
BP	GO:003806	non-canonic	45665	133/18805	0.0075188	17.673872	3.9810049	0.0552098	0.0889788	0.0389318	81844	TRIM56(tri	1
BP	GO:005068	regulation o	45665	133/18805	0.0075188	17.673872	3.9810049	0.0552098	0.0889788	0.0389318	84148	KAT8(lysin	1
MF	GO:003029	protein kina	45665	139/18639	0.0071942	16.761691	3.8650125	0.0581363	0.0899729	0.0349692	80174	DBF4B(DB	1
BP	GO:004593	positive regu	45665	136/18805	0.0073529	17.284007	3.931842	0.0564237	0.0900609	0.0394052	80174	DBF4B(DB	1
BP	GO:004573	positive regu	45665	138/18805	0.0072464	17.033514	3.8999304	0.0572322	0.0904814	0.0395892	283899	INO80E(IN	1
BP	GO:006198	meiosis I cel	45665	140/18805	0.0071429	16.790179	3.8686809	0.0580401	0.090893	0.0397693	27030	MLH3(mutI	1
BP	GO:000008	G2/M transi	45665	143/18805	0.006993	16.437937	3.8229977	0.0592509	0.0919219	0.0402195	80174	DBF4B(DB	1
MF	GO:001920	kinase activa	45665	148/18639	0.0067568	15.742399	3.7311729	0.0617964	0.0934132	0.0363063	80174	DBF4B(DB	1
BP	GO:007145	cellular resp	45665	156/18805	0.0064103	15.068109	3.6399557	0.0644817	0.0988475	0.0432497	132864	CPEB2(cyto	1
BP	GO:003150	heterochrom	45665	160/18805	0.00625	14.691406	3.5880022	0.0660861	0.0988475	0.0432497	84148	KAT8(lysin	1
BP	GO:004483	cell cycle G	45665	160/18805	0.00625	14.691406	3.5880022	0.0660861	0.0988475	0.0432497	80174	DBF4B(DB	1
BP	GO:000072	telomere ma	45665	162/18805	0.0061728	14.510031	3.5627208	0.0668874	0.0988475	0.0432497	283899	INO80E(IN	1
BP	GO:000626	DNA-templ	45665	162/18805	0.0061728	14.510031	3.5627208	0.0668874	0.0988475	0.0432497	80174	DBF4B(DB	1
BP	GO:003629	cellular resp	45665	163/18805	0.006135	14.421012	3.5502478	0.0672878	0.0988475	0.0432497	132864	CPEB2(cyto	1

Table S18. KEGG (Kyoto Encyclopedia of Genes and Genomes) analysis of genes associated with the comorbid pathway between depression and psoriasis.

category	subcategory	ID	Description	GeneRatio	BgRatio	RichFactor	FoldEnrich	zScore	pvalue	p.adjust	qvalue	geneID	gene	Count
Genetic Infc	Replication	hsa03430	Mismatch re	1月5日	23/9397	0.0434783	81.713043	8.9417522	0.0121808	0.0609038	0.0512874	27030	MLH3(mutI	1
Organismal	Endocrine s	hsa04914	Progesteron	1月5日	111/9397	0.009009	16.931532	3.8956698	0.0576945	0.0813062	0.0684684	132864	CPEB2(cytc	1
Genetic Infc	Chromosom	hsa03082	ATP-depen	1月5日	117/9397	0.008547	16.063248	3.7828144	0.0607355	0.0813062	0.0684684	283899	INO80E(IN	1
Cellular Pro	Cell growth	hsa04114	Oocyte meic	1月5日	139/9397	0.0071942	13.520863	3.4313147	0.0718187	0.0813062	0.0684684	132864	CPEB2(cytc	1
Cellular Pro	Cell growth	hsa04110	Cell cycle	1月5日	158/9397	0.0063291	11.894937	3.1865316	0.0813062	0.0813062	0.0684684	80174	DBF4B(DB	1

Table S19. GO (Gene Ontology) analysis of genes associated with the comorbid pathway between atopic dermatitis and depression.

ONTOLOG	ID	Description	GeneRatio	BgRatio	RichFactor	FoldEnrich	zScore	pvalue	p.adjust	qvalue	geneID	gene	Count
BP	GO:003497(	response to (	45693	283/18805	0.0070671	26.579505	7.0708662	0.0021902	0.0486654	0.0192932	746/55666	TMEM258(	2
BP	GO:003610(	alpha-linoler	45662	10/18805	0.1	376.1	19.348936	0.0026563	0.0486654	0.0192932	3992	FADS1(fatty	1
BP	GO:003326	regulation o	45662	14/18805	0.0714286	268.64286	16.337136	0.0037173	0.0486654	0.0192932	80174	DBF4B(DBI	1
BP	GO:200010	positive regu	45662	14/18805	0.0714286	268.64286	16.337136	0.0037173	0.0486654	0.0192932	80174	DBF4B(DBI	1
BP	GO:200077	positive regu	45662	18/18805	0.0555556	208.94444	14.394151	0.0047773	0.0486654	0.0192932	83719	YPEL3(yipp	1
BP	GO:004365	linoleic acid	45662	20/18805	0.05	188.05	13.648921	0.005307	0.0486654	0.0192932	3992	FADS1(fatty	1
BP	GO:003953	regulation o	45662	21/18805	0.047619	179.09524	13.316777	0.0055718	0.0486654	0.0192932	55666	NPLOC4(NI	1
BP	GO:004275	long-chain f	45662	27/18805	0.037037	139.2963	11.727325	0.0071591	0.0486654	0.0192932	3992	FADS1(fatty	1
BP	GO:001097	positive regu	45662	28/18805	0.0357143	134.32143	11.513227	0.0074235	0.0486654	0.0192932	80174	DBF4B(DBI	1
BP	GO:003952	RIG-I signal	45662	28/18805	0.0357143	134.32143	11.513227	0.0074235	0.0486654	0.0192932	55666	NPLOC4(NI	1
BP	GO:003097	retrograde p	45662	30/18805	0.0333333	125.36667	11.117467	0.007952	0.0486654	0.0192932	55666	NPLOC4(NI	1
BP	GO:190351	endoplasmic	45662	30/18805	0.0333333	125.36667	11.117467	0.007952	0.0486654	0.0192932	55666	NPLOC4(NI	1
BP	GO:190275	positive regu	45662	31/18805	0.0322581	121.32258	10.934043	0.0082162	0.0486654	0.0192932	80174	DBF4B(DBI	1
CC	GO:014053	endoplasmic	45694	118/19880	0.0169492	56.158192	10.441571	0.0005159	0.0025796	0.0005431	746/55666	TMEM258(	2
CC	GO:000825	oligosacchar	45663	14/19880	0.0714286	236.66667	15.326296	0.0042185	0.0105461	0.0022202	746	TMEM258(	1
MF	GO:003643	K48-linked u	45662	10/18639	0.1	372.78	19.262953	0.00268	0.0235811	0.0062056	55666	NPLOC4(NI	1
MF	GO:001671	oxidoreducta	45662	11/18639	0.0909091	338.89091	18.362058	0.0029476	0.0235811	0.0062056	3992	FADS1(fatty	1
MF	GO:007053	K63-linked u	45662	25/18639	0.04	149.112	12.138695	0.0066891	0.0356753	0.0093882	55666	NPLOC4(NI	1
BP	GO:003326	nuclear DNA	45662	41/18805	0.0243902	91.731707	9.4846104	0.0108551	0.051464	0.0204027	80174	DBF4B(DBI	1
BP	GO:009032	regulation o	45662	41/18805	0.0243902	91.731707	9.4846104	0.0108551	0.051464	0.0204027	80174	DBF4B(DBI	1
BP	GO:004574	positive regu	45662	44/18805	0.0227273	85.477273	9.1489116	0.0116456	0.051464	0.0204027	80174	DBF4B(DBI	1
BP	GO:004478	cell cycle DI	45662	45/18805	0.0222222	83.577778	9.0444931	0.011909	0.051464	0.0204027	80174	DBF4B(DBI	1
BP	GO:003248	negative reg	45662	47/18805	0.0212766	80.021277	8.8456735	0.0124357	0.051464	0.0204027	55666	NPLOC4(NI	1
BP	GO:003252	protein exit	45662	48/18805	0.0208333	78.354167	8.7509226	0.0126989	0.051464	0.0204027	55666	NPLOC4(NI	1
BP	GO:000663	unsaturated	45662	52/18805	0.0192308	72.326923	8.3994526	0.0137513	0.0523496	0.0207538	3992	FADS1(fatty	1
BP	GO:200077	regulation o	45662	54/18805	0.0185185	69.648148	8.2384344	0.0142772	0.0523496	0.0207538	83719	YPEL3(yipp	1
BP	GO:003953	negative reg	45662	59/18805	0.0169492	63.745763	7.8720402	0.0155908	0.0539533	0.0213895	55666	NPLOC4(NI	1
BP	GO:004645	icosanoid bi	45662	61/18805	0.0163934	61.655738	7.7381451	0.0161159	0.0539533	0.0213895	3992	FADS1(fatty	1
CC	GO:190255	serine/threo	45663	140/19880	0.0071429	23.666667	4.6763645	0.0415217	0.056992	0.0119983	80174	DBF4B(DBI	1
CC	GO:190291	protein kina	45663	154/19880	0.0064935	21.515152	4.4406426	0.0455936	0.056992	0.0119983	80174	DBF4B(DBI	1
MF	GO:003159	polyubiquiti	45662	59/18639	0.0169492	63.183051	7.836223	0.0157288	0.0595562	0.0156727	55666	NPLOC4(NI	1
MF	GO:004353	protein serin	45662	73/18639	0.0136986	51.065753	7.0206064	0.0194319	0.0595562	0.0156727	80174	DBF4B(DBI	1
MF	GO:005111	ATPase bind	45662	84/18639	0.0119048	44.378571	6.5270362	0.0223336	0.0595562	0.0156727	55666	NPLOC4(NI	1
MF	GO:004313	ubiquitin bir	45662	100/18639	0.01	37.278	5.9584294	0.026542	0.0606674	0.0159651	55666	NPLOC4(NI	1
BP	GO:000648	protein N-lir	45662	73/18805	0.0136986	51.520548	7.0529143	0.0192617	0.0617978	0.0244995	746	TMEM258(	1
MF	GO:003218	ubiquitin-lik	45662	120/18639	0.0083333	31.065	5.4122105	0.0317821	0.0625285	0.0164549	55666	NPLOC4(NI	1
MF	GO:003029	protein kina	45662	139/18639	0.0071942	26.818705	5.0048101	0.0367393	0.0625285	0.0164549	80174	DBF4B(DBI	1
MF	GO:001920	kinase activa	45662	148/18639	0.0067568	25.187838	4.839264	0.0390803	0.0625285	0.0164549	80174	DBF4B(DBI	1
MF	GO:014003	modification	45662	173/18639	0.0057803	21.547977	4.4477187	0.0455593	0.0635003	0.0167106	55666	NPLOC4(NI	1
MF	GO:001670	oxidoreducta	45662	181/18639	0.0055249	20.59558	4.3394701	0.0476252	0.0635003	0.0167106	3992	FADS1(fatty	1
BP	GO:190401	epithelial ce	45662	80/18805	0.0125	47.0125	6.725756	0.021093	0.0649663	0.0257556	746	TMEM258(	1
BP	GO:190199	positive regu	45662	105/18805	0.0095238	35.819048	5.8347457	0.027611	0.0685616	0.0271809	80174	DBF4B(DBI	1
BP	GO:001038	regulation o	45662	109/18805	0.0091743	34.504587	5.7210319	0.0286506	0.0685616	0.0271809	80174	DBF4B(DBI	1
BP	GO:009039	cellular sene	45662	110/18805	0.0090909	34.190909	5.6935607	0.0289104	0.0685616	0.0271809	83719	YPEL3(yipp	1
BP	GO:000167	long-chain f	45662	111/18805	0.009009	33.882883	5.6664551	0.0291701	0.0685616	0.0271809	3992	FADS1(fatty	1
BP	GO:003355	unsaturated	45662	115/18805	0.0086957	32.704348	5.5615301	0.0302084	0.0685616	0.0271809	3992	FADS1(fatty	1
BP	GO:003650	ERAD pathv	45662	115/18805	0.0086957	32.704348	5.5615301	0.0302084	0.0685616	0.0271809	55666	NPLOC4(NI	1
BP	GO:000627	regulation o	45662	121/18805	0.0082645	31.082645	5.4138344	0.0317643	0.0685616	0.0271809	80174	DBF4B(DBI	1
BP	GO:190274	regulation o	45662	122/18805	0.0081967	30.827869	5.3902639	0.0320234	0.0685616	0.0271809	80174	DBF4B(DBI	1
BP	GO:000669	icosanoid m	45662	124/18805	0.0080645	30.330645	5.3439649	0.0325414	0.0685616	0.0271809	3992	FADS1(fatty	1
BP	GO:190198	positive regu	45662	126/18805	0.0079365	29.849206	5.2987512	0.0330592	0.0685616	0.0271809	80174	DBF4B(DBI	1
BP	GO:003247	regulation o	45662	129/18805	0.0077519	29.155039	5.2328737	0.0338356	0.0685616	0.0271809	55666	NPLOC4(NI	1
BP	GO:003260	type I interf	45662	129/18805	0.0077519	29.155039	5.2328737	0.0338356	0.0685616	0.0271809	55666	NPLOC4(NI	1
BP	GO:003953	regulation o	45662	129/18805	0.0077519	29.155039	5.2328737	0.0338356	0.0685616	0.0271809	55666	NPLOC4(NI	1
BP	GO:004593	positive regu	45662	136/18805	0.0073529	27.654412	5.0875563	0.0356451	0.0703762	0.0279003	80174	DBF4B(DBI	1
BP	GO:000008	G2/M transi	45662	143/18805	0.006993	26.300699	4.9528212	0.0374518	0.0720948	0.0285817	80174	DBF4B(DBI	1
BP	GO:000703	Golgi organi	45662	156/18805	0.0064103	24.108974	4.7265733	0.0408001	0.0754472	0.0299107	55666	NPLOC4(NI	1
BP	GO:004483	cell cycle G2	45662	160/18805	0.00625	23.50625	4.6624387	0.0418285	0.0754472	0.0299107	80174	DBF4B(DBI	1
BP	GO:000626	DNA-templa	45662	162/18805	0.0061728	23.216049	4.6312437	0.0423423	0.0754472	0.0299107	80174	DBF4B(DBI	1
BP	GO:012025	olefinic com	45662	165/18805	0.0060606	22.793939	4.5854922	0.0431127	0.0754472	0.0299107	3992	FADS1(fatty	1
BP	GO:000663	fatty acid bi	45662	170/18805	0.0058824	22.123529	4.511879	0.0443955	0.0759656	0.0301162	3992	FADS1(fatty	1
BP	GO:000275	cytoplasmic	45662	186/18805	0.0053763	20.22043	4.2960823	0.0484913	0.0798367	0.0316509	55666	NPLOC4(NI	1
BP	GO:000926	cellular resp	45662	191/18805	0.0052356	19.691099	4.2341172	0.0497684	0.0798367	0.0316509	3992	FADS1(fatty	1
BP	GO:006220	regulation o	45662	191/18805	0.0052356	19.691099	4.2341172	0.0497684	0.0798367	0.0316509	55666	NPLOC4(NI	1
MF	GO:001988	protein kina	45662	255/18639	0.0039216	14.618824	3.5869167	0.0665656	0.0819269	0.0215597	80174	DBF4B(DBI	1
MF	GO:001920	kinase regul	45662	287/18639	0.0034843	12.98885	3.3528057	0.0746622	0.0834533	0.0219614	80174	DBF4B(DBI	1
MF	GO:003162	ubiquitin pr	45662	302/18639	0.0033113	12.343709	3.2555622	0.078438	0.0834533	0.0219614	55666	NPLOC4(NI	1
MF	GO:004438	ubiquitin-lik	45662	322/18639	0.0031056	11.577019	3.1361415	0.0834533	0.0834533	0.0219614	55666	NPLOC4(NI	1
BP	GO:000648	protein glyc	45662	221/18805	0.0045249	17.0181	3.9063282	0.0574019	0.088399	0.0350454	746	TMEM258(	1
BP	GO:004341	macromolec	45662	221/18805	0.0045249	17.0181	3.9063282	0.0574019	0.088399	0.0350454	746	TMEM258(	1
CC	GO:006169	transferase c	45663	305/19880	0.0032787	10.863388	3.0161671	0.0886038	0.0886038	0.0186534	80174	DBF4B(DBI	1
BP	GO:007233	monocarbox	45662	229/18805	0.0043668	16.423581	3.8296409	0.0594292	0.0891254	0.0353334	3992	FADS1(fatty	1
BP	GO:004259	response to	45662	232/18805	0.0043103	16.211207	3.801875	0.0601886	0.0891254	0.0353334	3992	FADS1(fatty	1
BP	GO:007008	glycosylatio	45662	241/18805	0.0041494	15.605809	3.7215989	0.0624637	0.0907491	0.0359771	746	TMEM258(	1
BP	GO:000865	phospholipic	45662	251/18805	0.0039841	14.984064	3.6373298	0.0649864	0.0926657	0.0367369	3992	FADS1(fatty	1
BP	GO:003166	cellular resp	45662	258/18805	0.003876	14.577519	3.5811676	0.066749	0.0934486	0.0370473	3992	FADS1(fatty	1
BP	GO:009006	positive regu	45662	274/18805	0.0036496	13.726277	3.460656	0.070768	0.0973059	0.0385765	80174	DBF4B(DBI	1
BP	GO:000626	DNA replica	45662	280/18805	0.0035714	13.432143	3.4180397	0.0722715	0.0976299	0.038705	80174	DBF4B(DBI	1
BP	GO:000222	pattern reco	45662	288/18805	0.0034722	13.059028	3.3632134	0.0742732	0.0985632	0.039075	55666	NPLOC4(NI	1
BP	GO:005105	positive regu	45662	293/18805	0.003413	12.836177	3.3300427	0.0755225	0.0985632	0.039075	80174	DBF4B(DBI	1

Table S20. KEGG (Kyoto Encyclopedia of Genes and Genomes) analysis of genes associated with the comorbid pathway between atopic dermatitis and depression.

category	subcategory	ID	Description	GeneRatio	BgRatio	RichFactor	FoldEnrich	zScore	pvalue	p.adjust	qvalue	geneID	gene	Count
Genetic Infc	Folding, sor	hsa04141	Protein proc	2月4日	171/9397	0.0116959	27.476608	7.2102947	0.0019284	0.0115703	0.0020299	746/55666	TMEM258(	2
Metabolism	Lipid metab	hsa01040	Biosynthesi	1月4日	27/9397	0.037037	87.009259	9.2354196	0.0114454	0.0288564	0.0050625	3992	FADS1(fatty	1
Metabolism	Glycan bios	hsa00513	Various typ	1月4日	43/9397	0.0232558	54.633721	7.2739919	0.0181813	0.0288564	0.0050625	746	TMEM258(	1
Metabolism	Glycan bios	hsa00510	N-Glycan bi	1月4日	55/9397	0.0181818	42.713636	6.402341	0.0232107	0.0288564	0.0050625	746	TMEM258(	1
Metabolism	Global and	hsa01212	Fatty acid m	1月4日	57/9397	0.0175439	41.214912	6.2842066	0.024047	0.0288564	0.0050625	3992	FADS1(fatty	1
Cellular Pro	Cell growth	hsa04110	Cell cycle	1月4日	158/9397	0.0063291	14.868671	3.6278577	0.0655884	0.0655884	0.0115067	80174	DBF4B(DB	1

Table S21. Colocalization of comorbid pathway-related genes with immune cells.

Immune cell	Gene	PP.H0	PP.H1	PP.H2	PP.H3	PP.H4
Classical monocytes	C11orf49	3.21974613	0.0074037	4.21435564	0.9690516	0.023544743
	CPEB2	0.4772942	0.0176791	0.4578481	0.0169285	0.03025013
	DBF4B	0	0.0074012	0	0.8688951	0.123703655
	FADS1	0	0.0014023	0	0.0341706	0.96442705
	INO80E	0	0.0251924	0	0.8112876	0.163519986
	KAT8	3.21243438	0.0151422	1.94292142	0.9157504	0.069107445
	MLH3	0	0.0006802	0	0.9968125	0.00250724
	NPLOC4	8.04688791	0.0121278	6.52495427	0.9834002	0.004472003
	SLFN12L	1.16256140	0.0010649	5.60884345	0.5132825	0.485652585
	TDRKH	5.26337751	0.1355667	2.34930788	0.0597054	0.804727917
	TMEM258	4.55359500	0.0274387	1.14089470	0.6871854	0.285375928
	TRIM56	0.0001326	2.90256963	0.1274839	0.027052	0.845302491
	YPEL3	2.39233500	0.0181602	1.12859636	0.8565937	0.125246086
	ZNF408	0.0115518	0.0007131	0.8746688	0.0539317	0.059134649
Non-classic monocytes	C11orf49	3.24835048	0.0002172	1.49504578	0.9995447	0.000238095
	CPEB2	4.17273438	2.72871064	0.9785147	0.0063838	0.015059434
	DBF4B	2.54166956	0.0012076	0.0205659	0.9770991	0.00110202
	FADS1	0	0.0004439	0	0.8812047	0.118351379
	INO80E	7.39307368	0.0080551	8.77257152	0.9557807	0.036164216
	KAT8	9.21857616	0.0111565	5.65769758	0.6844035	0.304439994
	MLH3	0	0.0014911	0	0.1962158	0.802293146
	NPLOC4	4.14667488	0.119955	2.49623580	0.721953	0.158091969
	SLFN12L	4.74048104	0.0434252	4.95633866	0.4535228	0.503051966
	TDRKH	0	3.09194093	0	0.9999098	5.92308720718624e-05
	TMEM258	2.33211685	1.38930498	1.20858046	0.0062061	0.993780047
	TRIM56	0.0016823	1.07160895	0.9811053	0.0062384	0.010963211
	YPEL3	3.67725261	0.0217259	1.52165653	0.8989433	0.079330802
	ZNF408	0.0006674	5.00598460	0.9865997	0.0073943	0.00533354
NK cells	C11orf49	0.274058	0.0708221	0.3350185	0.0863418	0.233759526
	CPEB2	3.00799736	0.1362112	8.26490969	0.0028817	0.860907095
	DBF4B	0	0.0008349	0	0.9985534	0.000611756
	FADS1	0	0.0013751	0	0.9338702	0.064754742
	INO80E	4.17851079	0.0052933	7.33708136	0.9293913	0.065315449
	KAT8	4.65190539	0.0021904	2.08749868	0.9829227	0.014886892
	MLH3	0	0.1396483	0	0.0312523	0.829099332
	NPLOC4	1.55393414	0.0448418	2.81022673	0.8108021	0.144356096
	SLFN12L	2.52521886	0.0091577	2.58949913	0.9390276	0.051814757
	TDRKH	0	0.0595964	0	0.0146648	0.92573878
	TMEM258	1.11121679	0.0006721	7.54704245	0.4559078	0.543420083
	TRIM56	0.0028746	9.08235663	0.9838659	0.0030984	0.010152047
	YPEL3	7.23688335	0.0020908	3.34602512	0.9666685	0.031240672
	ZNF408	0.610098	0.000488	0.3840196	0.0003021	0.005092312
Naive B cells	C11orf49	0.8018722	0.0003515	0.195885	8.40682192	0.00180714
	CPEB2	0.9023509	0.0024508	0.0895421	0.0002378	0.005418346
	DBF4B	0.0085472	1.31005700	0.9659451	0.0014565	0.024038115
	FADS1	0	0.0027241	0	0.9955551	0.00172078
	INO80E	5.15661255	0.0065468	7.61458024	0.966709	0.026744274
	KAT8	1.06441542	0.0086805	1.10476635	0.9008678	0.090451697
	MLH3	7.10766852	0.0002056	3.45221152	0.9987105	0.00108389
	NPLOC4	2.22787965	0.0129393	1.68477524	0.9784881	0.008572612
	SLFN12L	5.21673977	4.77584324	4.45527656	0.0030818	0.996917704
	TDRKH	3.92602222	0.0284434	4.81975478	0.0339808	0.937575835
	TMEM258	4.22909684	0.002581	1.59676209	0.9744785	0.022940535
	TRIM56	0.0069389	2.40312680	0.9813583	0.0033904	0.00828831

	YPEL3	5.85693461	0.0064817	8.66300990	0.9586823	0.034835994
	ZNF408	0.8038725	0.000349	0.193923	8.24238267	0.001773046
Naive CD4+ T cells	C11orf49	0.0011043	0.175269	0.0030797	0.4884458	0.332101142
	CPEB2	0.7281401	0.001155	0.2629321	0.0004097	0.007363161
	DBF4B	0	0.003574	0	0.9937238	0.002702266
	FADS1	0	6.21624413	0	0.9938387	0.006155041
	INO80E	1.60515011	0.0494489	2.18962454	0.6742686	0.276282443
	KAT8	6.86296312	0.0003237	2.08718347	0.9845189	0.015157394
	MLH3	6.73603392	1.95312104	3.44753018	0.9996151	0.000365356
	NPLOC4	6.51650672	0.0187609	2.96724484	0.8541377	0.127101342
	SLFN12L	4.36482859	0.1566015	9.84253440	0.3526402	0.490758279
	TDRKH	0	0.1553556	0	0.078288	0.766356345
	TMEM258	8.59003139	5.25910831	1.62933248	0.9975301	0.002464641
	TRIM56	0.0088004	5.05386466	0.9738462	0.0055809	0.011722029
	YPEL3	6.37052988	0.0005801	1.09426513	0.9964359	0.002983961
	ZNF408	0.3473285	0.000689	0.6416121	0.0012637	0.009106673
Naive CD8+ T cells	C11orf49	0.0242268	0.0177319	0.502713	0.3678552	0.087473142
	CPEB2	0.9957928	1.90401069	0.0041487	3.98216912	3.95029909447879e-05
	DBF4B	5.30696147	0.0053509	9.80035819	0.9881435	0.006505582
	FADS1	0	9.45983453	0	0.9388249	0.061080456
	INO80E	0	0.0071204	0	0.7515794	0.241300231
	KAT8	1.07547971	5.06438947	2.12067141	0.9986141	0.001335299
	MLH3	0	1.82318771	0	0.9999263	5.54463031340389e-05
	NPLOC4	1.19651088	0.000379	3.10702078	0.9842701	0.015350887
	SLFN12L	2.39650886	0.020651	8.08656894	0.6965474	0.28280153
	TDRKH	0	0.0790088	0	0.1080333	0.81295782
	TMEM258	1.75566238	0.0001075	1.62886684	0.9970354	0.002857165
	TRIM56	0.0022374	9.43511105	0.9473004	0.0399366	0.010431303
	YPEL3	6.92821068	0.0019908	3.40221935	0.9776135	0.020395626
	ZNF408	0.0647588	0.000176	0.920918	0.0024914	0.01165582
Naive TREG cells	C11orf49	3.18278439	0.1877209	5.11041917	0.3009016	0.511377496
	CPEB2	0.5690231	0.0034982	0.3944902	0.0023946	0.030593906
	DBF4B	0.0036393	0.0002457	0.8873721	0.0598518	0.048891181
	FADS1	0	0.0005008	0	0.7693573	0.230141958
	INO80E	7.28618945	0.0074667	9.21040780	0.9438165	0.048716739
	KAT8	4.75817179	0.0011458	4.13284049	0.9952206	0.003633627
	MLH3	1.64614559	0.0047693	3.05421210	0.8847797	0.110450957
	NPLOC4	5.13415129	0.0014865	3.35826165	0.9722849	0.026228625
	SLFN12L	5.54272906	0.1967542	4.26544293	0.150761	0.652484839
	TDRKH	0	0.0704709	0	0.0894289	0.840100241
	TMEM258	4.14514544	0.0002532	6.41614405	0.3913249	0.608421862
	TRIM56	0.0017301	3.75388115	0.9661219	0.0209513	0.011159121
	YPEL3	1.89113605	0.005491	3.17770908	0.9225902	0.071918817
	ZNF408	0.3464817	0.0006788	0.6448359	0.0012565	0.006747061
Activated Naive CD4+ T cells	C11orf49	0	0	0	0	0
	CPEB2	0.5140752	0.3167103	0.0024442	0.0013404	0.165429981
	DBF4B	7.74239762	0.0032795	2.33348432	0.9884068	0.008313652
	FADS1	0	1.12357583	0	0.999153	0.000835796
	INO80E	1.32004792	4.53756319	2.90879301	0.9998751	7.9485951857064e-05
	KAT8	1.02902335	8.49852411	0.0014922	0.0113363	0.987171501
	MLH3	1.13125832	0.0798452	9.66874724	0.0673901	0.852764767
	NPLOC4	1.84637721	0.0124962	1.39580012	0.9446295	0.042874305
	SLFN12L	2.77392161	0.1006065	3.09484804	0.0103355	0.889057958
	TDRKH	0	0.1419966	0	0.0033721	0.854631287
	TMEM258	3.99012063	2.43765947	3.54826447	0.2159879	0.784009667
	TRIM56	1.73353425	0.0014764	1.16144969	0.9891712	0.009351231
	YPEL3	3.75079977	4.53756319	8.26507882	0.9998751	7.94859975952555e-05
	ZNF408	0	0	0	0	0

Activated Naive CD8+ T cells	C11orf49	6.18672089	0.2588301	2.67529282	0.1112947	0.629875146
	CPEB2	0.973243	3.35490070	0.0265395	7.31685835	0.000183168
	DBF4B	0	0.0019192	0	0.9962988	0.001782075
	FADS1	0	3.63277955	0	0.996199	0.003764661
	INO80E	3.91973365	0.0135232	2.77391522	0.956983	0.02949377
	KAT8	1.16354992	0.0054806	2.00950369	0.946481	0.048038374
	MLH3	0	0.1882592	0	0.058791	0.752949754
	NPLOC4	1.13220447	0.0032535	3.27607627	0.9413491	0.05539744
	SLFN12L	3.61999977	0.2756533	1.81352643	0.0130983	0.711248387
	TDRKH	3.95517595	0.1882397	3.40783291	0.0008109	0.810949344
	TMEM258	6.03921704	3.62746974	1.65611061	0.9947415	0.005222261
	TRIM56	0.000765	0.0022349	0.251846	0.7356982	0.009455895
	YPEL3	6.97846325	0.0085095	7.94637071	0.9689519	0.022538584
	ZNF408	0.6958191	0.0046865	0.2844509	0.0019027	0.013140806
Memory TREG cells	C11orf49	9.06046324	0.0037853	2.35571749	0.9841616	0.012053143
	CPEB2	0.1572516	0.0013778	0.7927516	0.0069044	0.041714517
	DBF4B	0	0.0041062	0	0.983718	0.012175875
	FADS1	0	3.08904265	0	0.999878	9.11085680758708e-05
	INO80E	0	0.0072855	0	0.1931404	0.799574035
	KAT8	1.14055200	0.0005372	2.11504366	0.9962109	0.003251895
	MLH3	0	4.39171900	0	0.9989188	0.001037287
	NPLOC4	3.44142370	0.0010769	3.05279289	0.9552808	0.043642222
	SLFN12L	3.61022039	0.0330701	7.66864721	0.7021928	0.264737175
	TDRKH	0	0.0063072	0	0.0736842	0.920008525
	TMEM258	5.01250741	3.07224601	1.63087180	0.999587	0.000382229
	TRIM56	4.26152135	0.0014072	0.0287307	0.948713	0.021106479
	YPEL3	3.08118061	0.0088814	2.74757475	0.7917779	0.199340743
	ZNF408	0.0045998	3.00106468	0.9794307	0.0063805	0.009558915
TH1 cells	C11orf49	0.0871428	0.0006232	0.8843911	0.0063027	0.021540302
	CPEB2	0.2287815	0.0019687	0.6957436	0.0059193	0.06758685
	DBF4B	0	0.037161	0	0.9289666	0.033872465
	FADS1	0	0.0003919	0	0.9755269	0.024081184
	INO80E	0	0.0214724	0	0.8793913	0.09913625
	KAT8	3.12451649	0.0014726	2.04963301	0.9659852	0.032542202
	MLH3	0	0.000251	0	0.9989547	0.000794344
	NPLOC4	7.80823008	0.0002249	3.03887048	0.8751551	0.124620043
	SLFN12L	1.04118242	0.0616147	1.17066647	0.0684072	0.869978116
	TDRKH	0	0.2058531	0	0.0133302	0.78081671
	TMEM258	5.88181655	0.0003603	1.46789691	0.8990201	0.10061965
	TRIM56	0.0780617	0.000191	0.9100142	0.0022166	0.009516526
	YPEL3	2.42727580	0.0070099	3.34661163	0.9664603	0.026529828
	ZNF408	0.116014	0.0002151	0.8720033	0.0016067	0.010160977
TH1/17 cells	C11orf49	0.288525	0.0009123	0.6953434	0.0021857	0.013033615
	CPEB2	1.95498591	0.2443597	1.20788341	0.0007549	0.754885389
	DBF4B	5.02490560	0.0015064	3.29463475	0.9876635	0.010830079
	FADS1	0	4.55588634	0	0.9971894	0.002806085
	INO80E	0	0.0108378	0	0.9523516	0.036810566
	KAT8	7.62557121	0.0003592	2.05587393	0.968463	0.031177755
	MLH3	1.91772654	0.0001666	1.15026512	0.9993168	0.000516615
	NPLOC4	9.92412773	0.0029427	2.96678317	0.8795894	0.11746788
	SLFN12L	2.38948141	0.0021889	1.08291589	0.992014	0.005797087
	TDRKH	0	0.0142315	0	0.1206451	0.865123339
	TMEM258	7.78144016	4.76642037	8.20331089	0.5019852	0.498010061
	TRIM56	0.0062237	2.65216172	0.9791272	0.004162	0.010460567
	YPEL3	7.52938941	0.0020743	3.55959953	0.9806492	0.017276461
	ZNF408	0.4024828	0.0005776	0.5896063	0.0008396	0.006493777
	C11orf49	0.0001106	0.0333512	0.0010798	0.3249903	0.64046803
	CPEB2	1.58790478	0.1728228	2.18251499	0.0015498	0.825627475

TH17 cells	DBF4B	0	0.0077627	0	0.986721	0.005516324
	FADS1	0	6.09118206(	0	0.9324838	0.067455242
	INO80E	1.03140265(	0.0033343	3.01485732(	0.9746264	0.022039221
	KAT8	4.01894927:	1.89415280(	2.12161712:	0.9999297	5.13370585840461e-05
	MLH3	3.00955227:	8.73227803(	3.44613338-	0.9999026	8.86435379985606e-05
	NPLOC4	3.47495818:	0.001736	1.99588127:	0.9970838	0.001180214
	SLFN12L	3.55858285:	0.0325963	9.61037176(	0.8802135	0.087190271
	TDRKH	0	0.0024848	0	0.0384509	0.959064383
	TMEM258	9.56042710(	5.89135394'	1.62222843:	0.999654	0.000287091
	TRIM56	0.0050711	2.28463992:	0.9798269	0.0044037	0.010675484
	YPEL3	2.21437212'	0.0047071	4.53707097(	0.9644178	0.030875074
	ZNF408	0.1457023	0.0003785	0.8401587	0.0021709	0.011589537
TH2 cells	C11orf49	0.0025136	0.0441866	0.0371818	0.6533669	0.262751018
	CPEB2	0.6711545	0.0012691	0.3212255	0.0006017	0.005749203
	DBF4B	2.83409868:	0.0025314	1.11138738'	0.992663	0.00480562
	FADS1	0	4.29054304(	0	0.9999018	5.53089153868211e-05
	INO80E	0	0.0010283	9.68368665(	0.9954887	0.003482977
	KAT8	1.44029682:	6.78201947(	2.12018105(	0.9983419	0.001590307
	MLH3	0	0.0001947	0	0.9986962	0.001109191
	NPLOC4	3.87824051'	0.0001957	1.98068499(	0.9995725	0.000231795
	SLFN12L	1.37204666(	0.1256661	2.77460829-	0.2535063	0.62082759
	TDRKH	6.10804065(	0.0946863	3.47009523'	0.0529408	0.852372892
	TMEM258	1.05901074'	6.52744691'	1.18631571(	0.7309429	0.268991797
	TRIM56	0.0040986	1.43915438(	0.9824303	0.0034396	0.010017128
	YPEL3	2.02837981'	0.0008834	2.28562240-	0.9954434	0.003673206
	ZNF408	0.083546	0.0001824	0.9012734	0.0019545	0.013043672
TFH cells	C11orf49	2.74752680:	4.64583943-	0.0005909	0.9992455	0.000117094
	CPEB2	0.9545789	0.0008141	0.0417512	3.27829276:	0.002823021
	DBF4B	0	0.0388278	0	0.9086371	0.052535044
	FADS1	0	1.36941368:	0	0.9850625	0.014923791
	INO80E	0	0.0228136	0	0.8722834	0.104902983
	KAT8	2.29288267(	0.000187	1.22311285:	0.9976851	0.002127914
	MLH3	0	0.0001171	0	0.999532	0.000350907
	NPLOC4	3.76440108(	0.0001122	3.35428946(	0.9995855	0.00030233
	SLFN12L	3.04961160(	0.1104781	1.91571047:	0.0685794	0.820942525
	TDRKH	0	0.01325	0	0.0620459	0.924704091
	TMEM258	1.34697320(	8.28025183(	7.75294047(	0.4760728	0.523918931
	TRIM56	0.0038923	1.82923663:	0.9796022	0.0045918	0.011895356
	YPEL3	2.65986273:	0.0007618	1.01341035(	0.0280551	0.971183097
	ZNF408	9.02707661:	6.36243438:	0.9813757	0.0069053	0.011628092

Table S22. Gene expression differences in psoriasis lesions compared to healthy controls (Top 500 most differentially expressed genes).

Gene	baseMean	log2FoldChange	lfcSE	stat	pvalue	padj
AADACL3	884.676265	-4.936358769	0.640818282	-7.70321152	1.32688451027423e-14	8.45346450949439e-14
ABCG4	36.40932749	5.702842016	0.393411084	14.49588546	1.28632843870228e-47	8.33562089906165e-46
AC004870.5	4.533988425	5.401210974	0.4727323	11.4255171	3.11794108029754e-30	6.28073885950238e-29
AC007163.3	2.256809412	3.800264941	0.450260394	8.440149274	3.16932649317436e-17	2.49379719347518e-16
AC007317.1	6.958004627	-3.480973935	0.363958728	-9.564199651	1.13072941582603e-21	1.22713485806116e-20
AC008268.1	3.577522078	-4.936601006	0.57147024	-8.638421846	5.6994826965313e-18	4.72032150235035e-17
AC010091.1	2.212898969	-3.562744794	0.628551605	-5.668181842	1.44320754599766e-08	5.41898257783676e-08
AC010731.2	2.53501097	3.856859644	0.441947179	8.726969708	2.61587111367373e-18	2.21800977586544e-17
AC011648.1	5.075263349	3.845336636	0.404060197	9.516741971	1.78693552149331e-21	1.90955521962917e-20
AC011752.1	6.513160397	-3.722926209	0.374361199	-9.944743797	2.65857243457643e-23	3.23317044738484e-22
AC016712.1	1.698995495	-4.049677712	0.800222754	-5.06068803	4.17746256826774e-07	1.34353913034403e-06
AC018742.1	1.708588644	-4.070963887	0.596792557	-6.821405261	9.01542161760387e-12	4.53431179625606e-11
AC067960.1	1.870465588	3.48548314	0.509777986	6.837257075	8.07238093804423e-12	4.06871691364025e-11
AC079753.5	17.7143025	-5.541382638	0.444336987	-12.4711262	1.07298777594205e-35	3.21424915039602e-34
AC090625.1	1.560962669	-3.595957023	0.596483968	-6.028589557	1.65396737911189e-09	6.7970430920421e-09
AC092484.1	14.74048353	-4.218627392	0.380450295	-11.08851128	1.42641821159436e-28	2.55354913176059e-27
AC138647.1	2.625013771	-4.499007823	0.513874735	-8.755067175	2.03981956049717e-18	1.74543049847073e-17
ADAM23	95.07786267	3.469783255	0.210739662	16.46478514	6.56954866648285e-61	1.19794956032307e-58
ADAMDEC1	19.91526724	5.755920079	0.453291912	12.69804275	6.06270344937771e-37	1.966397424884e-35
ADCY8	13.35739107	-4.557757191	0.65865466	-6.919797985	4.5228815375563e-12	2.32397864587018e-11
ADGRF1	30.26129225	7.179827126	0.54387812	13.20116927	8.63836917525971e-40	3.29603176171345e-38
ADH7	54.34290368	3.770844995	0.238334225	15.82166804	2.20570662865392e-56	2.85866870665709e-54
ADIPOQ	16.01973449	-3.711793903	0.652151258	-5.691615028	1.2584333330736e-08	4.75708124123423e-08
AGR3	41.33935897	-6.107135935	0.519245966	-11.76154719	6.15951029688865e-32	1.37990629251154e-30
AIM2	18.25383924	4.163209641	0.277347999	15.01077946	6.24099727330736e-51	5.15112206526347e-49
AKR1B10	1214.598381	5.878731911	0.324791231	18.10003274	3.18478467248018e-73	1.61109010431723e-70
AKR1B15	87.05123357	5.262140515	0.341352148	15.41557755	1.28615833295536e-53	1.28060539539085e-51
AL591704.7	8.894756014	7.143124378	0.593648228	12.03258772	2.39533468322794e-33	6.01499415570544e-32
ALDH1A3	150.3817803	3.691272299	0.245683989	15.02447235	5.07639477674475e-51	4.21206470311699e-49
ANKRD30A	3.059733736	-3.909171293	0.551553836	-7.087560707	1.36496434218584e-12	7.33563084789523e-12
AOX2P	4.385846423	4.431170126	0.439110878	10.09123287	6.04060130333426e-24	7.71406430284103e-23
AP001046.6	11.29130365	-3.743426611	0.306453646	-12.21531106	2.57514659363143e-34	7.01101543078613e-33
AP003025.2	11.81097086	-3.513591028	0.387421817	-9.069161504	1.19936401360372e-19	1.12155196549395e-18
APOBEC3A	31.99069693	3.596117601	0.460632499	7.806912466	5.86059429168874e-15	3.83500269903037e-14
APOC1	80.06888911	-3.668888474	0.378530511	-9.692451105	3.24642334574723e-22	3.66525636486739e-21
APOL1	244.1012695	4.121127574	0.250316404	16.46367359	6.69133278199343e-61	1.21310382297365e-58
ARSF	222.4498007	3.482409549	0.227823476	15.2855606	9.54381659648795e-53	8.96204382431881e-51
ATP12A	1535.697496	5.223604408	0.366463884	14.25407695	4.22856403775862e-46	2.44694986125943e-44
ATP2B3	2.60583232	-3.639925834	0.479544228	-7.590386081	3.18953696589917e-14	1.97310921890457e-13
AWAT2	295.9380134	-4.511320698	0.578316925	-7.80077584	6.15277201466765e-15	4.01948638758667e-14
AXDND1	17.0256126	-3.877055217	0.45814307	-8.462542536	2.6161027294571e-17	2.06574637479085e-16
BAALC-AS2	4.755227166	3.496191714	0.443362416	7.885629434	3.12954019097364e-15	2.09330131264016e-14
BATF2	17.29656972	4.147433222	0.313484156	13.2301207	5.87928802162532e-40	2.26811795215568e-38
BMP3	28.9840157	-4.519177652	0.3673812	-12.30105854	8.93948635986094e-35	2.50785375841394e-33
BTC	868.3986488	-4.531058782	0.259580462	-17.4553152	3.13641646514564e-68	9.28024207668188e-66
BX649597.1	4.746896978	-4.832442489	0.529027692	-9.134573782	6.56649222848695e-20	6.26754297791432e-19
C10orf71	5.337098989	-3.854865644	0.383987795	-10.03903168	1.02677110048639e-23	1.28814595182621e-22
C10orf71-AS1	1.410456028	-3.774310192	0.547013588	-6.89984724	5.20584889772572e-12	2.6579235687493e-11
C10orf99	971.4990126	4.880414969	0.279525509	17.45964074	2.90758159691098e-68	8.68508468623963e-66
C12orf74	3.698125556	5.620485132	0.511750172	10.98286906	4.62013085887539e-28	7.94439606676358e-27
C15orf59-AS1	2.622120304	-3.907211505	0.540867879	-7.223966624	5.0492655078809e-13	2.81688302008496e-12
C1orf158	7.297350886	-5.288637786	0.785277798	-6.734734894	1.6422909232657e-11	8.0760132513806e-11
C5orf49	14.72297699	-3.475322003	0.241402846	-14.39635885	5.45422503227855e-47	3.34767737597621e-45
C6	4.496865955	-3.9608982	0.523251124	-7.569784411	3.73844125579355e-14	2.2999700185702e-13
C7orf57	7.662354999	3.584311135	0.264305466	13.56124484	6.79726380413367e-42	2.99423289259618e-40
C9orf152	19.16394717	-4.392456847	0.286319138	-15.34112209	4.06113885429031e-53	3.93128268598646e-51
CACNA1H	284.9804829	-5.284711877	0.391428556	-13.50108928	1.540810288403e-41	6.57496243339749e-40
CAMP	5.229723071	4.113080572	0.491067576	8.375793423	5.48530550068323e-17	4.22913278572834e-16
CASP5	11.89986718	5.70190305	0.469081165	12.15547218	5.36509084756797e-34	1.42602296053493e-32
CBLN4	1.166793647	-3.641017239	0.661959758	-5.500360402	3.7901572915034e-08	1.36152208556537e-07
CCDC172	5.285756009	-4.088466575	0.646630929	-6.322720413	2.56998054903185e-10	1.14479292628654e-09
CCDC60	4.961625789	3.781406823	0.427889755	8.837339015	9.80253418293655e-19	8.56636060500479e-18
CCL20	47.6332555	4.718156694	0.422963756	11.15499053	6.77000276972763e-29	1.23882361067525e-27
CCL3L1	1.144252531	4.33600318	0.876391481	4.947564275	7.51478935387044e-07	2.34942038770726e-06
CCL4	8.866841556	4.406820555	0.407516833	10.81383688	2.96023800889141e-27	4.78335419427461e-26
CCL7	2.811686424	4.794139591	0.539142047	8.892164169	5.99300624921866e-19	5.30523985324567e-18
CD177	24.75275684	5.958114928	0.554889962	10.7374711	6.78782628559756e-27	1.06075427813394e-25
CD274	129.0462303	4.305663312	0.227297416	18.94286084	5.05730057712837e-80	4.06710705900139e-77
CD38	15.50234316	3.609920646	0.283512922	12.7328258	3.88518851359415e-37	1.27064705464408e-35
CDH12	89.71527664	-4.388425734	0.336193793	-13.05326222	6.08834706710051e-39	2.2333908469303e-37
CHAC1	86.32888389	6.03202916	0.397995381	15.15602804	6.91252648696836e-52	6.02234668714655e-50
CHI3L2	1296.743707	4.478962342	0.3077811	14.55242816	5.63662265914111e-48	3.80187167916778e-46

CHRM2	4.004985235	-4.350772483	0.552659809	-7.872424244	3.47834299264613e-15	2.31574505670459e-14
CHRM4	36.38502215	-3.962278315	0.321474731	-12.3253181	6.618181085927e-35	1.87678690396939e-33
CHRNA9	108.9006936	3.66547588	0.235606183	15.55763876	1.41213144272612e-54	1.53252908545543e-52
CLDN17	27.07000861	6.225332099	0.464580789	13.39989137	6.0551720593543e-41	2.4688364086488e-39
CLDN3	11.27102988	-4.329122717	0.377974481	-11.45347883	2.2589416872839e-30	4.59762797404103e-29
CLEC3A	33.47219734	11.40545194	1.064981043	10.70953518	9.18216752612647e-27	1.41727117268421e-25
CLEC7A	419.8181513	3.684607862	0.183418993	20.088475	9.30771868817548e-90	1.71721934668198e-86
CLLU1	2.5285492	4.487144168	0.500884223	8.958445811	3.29286734923317e-19	2.97372564184708e-18
CLLU1OS	2.837277918	4.577799169	0.459931661	9.953216004	2.44162626421477e-23	2.97857511282894e-22
CNGB1	15.46121059	4.993988496	0.404623454	12.34231096	5.35951518107274e-35	1.53092745117637e-33
CPA6	2.259421947	4.672618985	0.615351829	7.593410406	3.11593658475286e-14	1.93100642252892e-13
CT83	1.146257569	3.541649691	0.61004551	5.805549968	6.41550675924893e-09	2.49152989099905e-08
CTA-299D3.8	2.991886938	-3.774462432	0.566688242	-6.660562457	2.72781612682255e-11	1.31968571651492e-10
CTA-384D8.3	2.504098671	3.994502602	0.488226877	8.181652403	2.79977702368931e-16	2.03646119134953e-15
CTA-384D8.3	13.58491132	4.575398083	0.36981453	12.37214256	3.69822936222845e-35	1.0710181506642e-33
CTB-114C7.4	1.90534404	4.489340666	0.729719696	6.152144024	7.64424092997684e-10	3.24254764035425e-09
CTB-147C22.	1.305417083	4.030406205	0.538879259	7.479237946	7.47548157693674e-14	4.48385932643037e-13
CTB-33O18.1	4.235744866	4.185228585	0.496835278	8.423774976	3.64544103985585e-17	2.85553478456641e-16
CTB-92J24.3	8.782406847	-3.649681369	0.415231701	-8.789505618	1.50219536504443e-18	1.2972151825235e-17
CTC-327F10.	2.484794985	-4.478042162	0.554611629	-8.07419449	6.79235381786732e-16	4.80892517254155e-15
CTC-327F10.:	21.03324608	-3.676258058	0.277950017	-13.22632789	6.18354242758239e-40	2.37716122830531e-38
CTC-490G23.	5.535506697	6.028169172	0.562501093	10.71672437	8.4959086667255e-27	1.31587989838607e-25
CTD-2626G1	91.75600114	-3.882686249	0.271871102	-14.28134959	2.86008423197601e-46	1.66735468125828e-44
CTXN3	1.042014063	3.953315695	0.528583982	7.479068281	7.48513781693334e-14	4.48879278184125e-13
CXCL1	57.58022407	6.215345659	0.452094936	13.7478772	5.24458888373819e-43	2.50748911203605e-41
CXCL10	93.40083485	3.969066568	0.49815265	7.967570922	1.61823592832729e-15	1.11205853759985e-14
CXCL11	16.92569606	3.881748505	0.528101017	7.350390133	1.97629167211552e-13	1.14109742275830e-12
CXCL13	8.584549073	5.851736169	0.62200669	9.40783478	5.06462099217027e-21	5.25113298507201e-20
CXCL6	9.12427929	6.0445874	0.692529002	8.728280522	2.58573651445598e-18	2.19364457774946e-17
CXCL8	275.5333161	8.487586319	0.548517191	15.47369245	5.22236117619764e-54	5.42364688510804e-52
CXCL9	95.18378432	4.424104209	0.501738523	8.817549402	1.16991982974432e-18	1.01869421266244e-17
CYP1A2	11.66195062	-5.10474074	0.697350416	-7.320194589	2.47611638535327e-13	1.4171699691646e-12
CYP2W1	72.61912689	-3.437408259	0.280770235	-12.24278015	1.83632908951546e-34	5.03449524157018e-33
DCC	5.865401225	-3.50855611	0.407029454	-8.61990718	6.70084075419989e-18	5.52920729846686e-17
DCD	1420.844859	-3.416908988	0.748651345	-4.564085818	5.01675557788076e-06	1.41778268106553e-05
DEFB103A	4.068066635	5.153895	0.466655896	11.04431561	2.33540430929816e-28	4.094333189314e-27
DEFB103B	3.396401595	4.9090217	0.499187102	9.834031539	8.03368124064021e-23	9.40180516535222e-22
DEFB4A	1274.78991	11.39381482	0.620866303	18.35147882	3.21248696198264e-75	1.86586001991895e-72
DEFB4B	109.959654	11.11881954	0.742475443	14.97533641	1.06427945849246e-50	8.58099252857523e-49
DGAT2L6	240.0357402	-3.870526297	0.602849023	-6.420390764	1.35924977488578e-10	6.20455682426393e-10
DKK4	5.162838169	3.577485	0.365533421	9.787025727	1.28005911051479e-22	1.47873937171955e-21
DYNAP	3.456926578	4.595262785	0.580736425	7.912819978	2.51623086323679e-15	1.69536122007645e-14
EEF1GP2	9.609077982	-4.483801878	0.490378332	-9.143556276	6.0431629906484e-20	5.78388050163859e-19
ELOVL3	440.5573775	-3.996707242	0.473785558	-8.435688196	3.29259533621206e-17	2.58624994051979e-16
ENKUR	22.76856552	3.910439072	0.316024704	12.37383982	3.62088525727984e-35	1.05055916012326e-33
EPGN	130.077697	4.685920267	0.35332087	13.26250631	3.81915009694046e-40	1.4806405888806e-38
EPHB2	157.2162589	4.009015001	0.247370635	16.20651136	4.53597068622487e-59	7.00818643363334e-57
ERBB4	62.12158981	-4.86715247	0.280397725	-17.35803122	1.71504412787468e-67	4.71448582378081e-65
ESPNP	3.252927269	-3.483976644	0.649350964	-5.365321429	8.08051894593954e-08	2.80817059524042e-07
FAAHP1	17.95262557	4.340996062	0.31976543	13.575564	5.59116562117552e-42	2.47685478167442e-40
FABP5	4600.7418	3.52656325	0.161890858	21.78358494	3.3204617609484e-105	3.47143208901286e-101
FABP5P7	92.68897629	3.46098336	0.18799151	18.41031739	1.08584364114266e-75	6.42573584166009e-73
FADS1	1279.722653	-3.660074146	0.376821063	-9.713029613	2.65330995575097e-22	3.01643428904954e-21
FADS2	4421.730721	-4.492031698	0.477393239	-9.409500031	4.98502446418547e-21	5.17031439466644e-20
FADS2P1	2.417070524	4.559628852	0.512840776	8.890924944	6.06023049949893e-19	5.36323559216378e-18
FBP2	1.759755404	-3.413537312	0.713207807	-4.78617491	1.69989926374693e-06	5.08397449300646e-06
FOXE1	99.0349906	3.466090132	0.231206001	14.99135019	8.36355543843834e-51	6.79571380236218e-49
FUT3	91.07446337	3.942101125	0.21820192	18.06629895	5.87233654744791e-73	2.70852887461994e-70
FUT9	4.862505937	-4.122861631	0.702256204	-5.870879617	4.33488964485626e-09	1.71168927132408e-08
G10488	7.605827042	-4.657824373	0.468007418	-9.952458429	2.46028942155195e-23	3.00017563831864e-22
G10706	8.095577865	3.5281569	0.396552465	8.897074698	5.73379115440925e-19	5.08294589505064e-18
G10803	2.614738672	4.338744474	0.519879869	8.345667402	7.08128367347887e-17	5.41833084008273e-16
G11194	3.551754904	-3.977199057	0.534181254	-7.445411135	9.66429675952558e-14	5.72880369619657e-13
G11316	5.318657341	-3.737117851	0.640210541	-5.83732634	5.30451358557107e-09	2.07651977156579e-08
G12085	6.028517991	3.638336773	0.336654476	10.80733224	3.17777242980888e-27	5.11903721050466e-26
G12854	7.809289016	3.624803515	0.29403127	12.32795246	6.40537046706276e-35	1.82137841640033e-33
G13446	1.412560156	-3.967619333	0.583908297	-6.794935697	1.0836085014305e-11	5.40924670362348e-11
G13882	1.674936574	3.459599795	0.54629039	6.332895211	2.40602980734915e-10	1.07466133406008e-09
G13883	15.47861521	5.366324797	0.377727509	14.20686782	8.30581815100086e-46	4.68531799438833e-44
G16052	1.515444249	4.397883606	0.557853141	7.883586702	3.18115256157366e-15	2.12691683950536e-14
G16208	1.386571914	4.578839564	0.518449673	8.831791791	1.03012063300415e-18	8.99212455706714e-18
G18966	1.038805662	4.059701635	0.503625571	8.06095216	7.57024540715275e-16	5.33797610049323e-15
G19270	12.16236186	-5.73248945	0.44072974	-13.00681331	1.11912439169231e-38	4.03450774954457e-37
G23772	4.116729765	-3.630488301	0.420102922	-8.641902048	5.52848185374369e-18	4.58475158278205e-17
G23773	8.942455612	-4.324591126	0.384801498	-11.23849868	2.63830932527886e-29	4.9908283279883e-28
G25046	2.668046154	-4.136259025	0.479347179	-8.62894204	6.19220592924509e-18	5.12433632624916e-17

G25746	942.7349768	-3.740355018	0.324046995	-11.54263139	8.04265906384712e-31	1.69295274415101e-29
G2608	8.871969682	6.653731576	0.564083394	11.79565228	4.11003641053712e-32	9.3006624805257e-31
G26344	18.82985239	-4.048178585	0.276611304	-14.63489931	1.68224537791341e-48	1.17624564403621e-46
G26553	2.143891857	-3.566405462	0.541322867	-6.588314807	4.44846661809642e-11	2.1181373464396e-10
G26809	8.232448215	3.635002101	0.362338008	10.03207509	1.10176383641725e-23	1.37836940428364e-22
G28007	1.852120739	-3.422059098	0.559291317	-6.118562892	9.44230162155985e-10	3.97514561152487e-09
G29706	6.651457354	-3.594874845	0.434873927	-8.266475924	1.37976911594171e-16	1.03306465868693e-15
G30340	2.139620879	3.891963141	0.491742108	7.914642808	2.47963951491054e-15	1.67214392056878e-14
G31721	4.250186231	6.457984184	0.554119824	11.65449043	2.17678706016417e-31	4.73458733391047e-30
G32331	2.838698866	-3.675794816	0.504002108	-7.293213181	3.02648628253554e-13	1.71681526072427e-12
G32422	3.892364352	-4.442924623	0.44321323	-10.02435019	1.19140705947072e-23	1.48341766626597e-22
G33207	18.36511593	-3.580879386	0.305679177	-11.71450219	1.0742034179839e-31	2.37262788743993e-30
G33755	6.179752792	4.974886907	0.381336137	13.04593619	6.70285416869704e-39	2.44451532729086e-37
G33836	6.417439258	-4.888623505	0.614844894	-7.950986592	1.85031973864798e-15	1.26544762937103e-14
G33837	6.863113738	-5.537960404	0.556623774	-9.949198477	2.54222457776716e-23	3.09647889930443e-22
G3386	2.7536489	4.348517483	0.511819519	8.496193128	1.95909933716227e-17	1.560314667617e-16
G33960	7.627032396	-3.482642705	0.439807675	-7.918558279	2.40280316108502e-15	1.62487102941506e-14
G3405	5.126830712	-3.556187832	0.411628902	-8.639305485	5.65557656787017e-18	4.68519554872372e-17
G34070	8.004409126	-4.314637105	0.6110258	-7.061301022	1.64950819881994e-12	8.79550750557442e-12
G34083	2.286545358	3.731186129	0.515432056	7.238948546	4.52176522193417e-13	2.53115553133577e-12
G34162	41.00707539	4.07984667	0.274685906	14.85277032	6.67521300130975e-50	5.16941680427355e-48
G35484	29.83807876	8.19894816	0.599612028	13.67375533	1.45678667051803e-42	6.68970089811529e-41
G36147	35.23229338	-5.280226642	0.640872826	-8.239117698	1.73485215698672e-16	1.28663757511779e-15
G36656	6.316318464	6.506019442	0.600877043	10.82753871	2.54915268927505e-27	4.14042594233157e-26
G3793	28.65671192	-6.613721185	0.433552459	-15.25471958	1.53151550946854e-52	1.41277801291092e-50
G38642	2.406605175	-3.905485955	0.723829094	-5.395591289	6.82982562120107e-08	2.39421762359842e-07
G38643	4.52936345	-4.378417819	0.72066794	-6.075499655	1.23602245525606e-09	5.13805278815786e-09
G38985	1.124632005	4.49888824	0.834571932	5.390653663	7.02018572356123e-08	2.45792704882535e-07
G39123	16.08312378	-3.875949657	0.681138933	-5.690395118	1.26745743464387e-08	4.78830823659002e-08
G39463	38.07020549	-4.059168216	0.285857128	-14.19998948	9.16261615398996e-46	5.14089969684689e-44
G40138	2.234930513	-4.489723229	0.546937491	-8.208841608	2.23332609853037e-16	1.63965448863077e-15
G4024	5.449819148	4.746199868	0.380010856	12.48964286	8.50344987857687e-36	2.57932497090605e-34
G43312	4.425788333	-3.723284356	0.408865756	-9.106373679	8.51815535485655e-20	8.06652851901331e-19
G43621	71.51945719	-4.808711068	1.171572543	-4.104492801	4.0520288951932e-05	0.000102021
G5850	3.445021071	-4.606800605	0.802607958	-5.739789344	9.47943920915907e-09	3.62223600580001e-08
G7721	1.901236785	-3.820677725	0.687951339	-5.553703452	2.79679797936114e-08	1.01825751355476e-07
G7758	1.596265179	-3.899084868	0.72227988	-5.398301924	6.72745859832546e-08	2.36017909930514e-07
G7779	24.30612147	5.600948722	0.405141031	13.82468893	1.80892741298797e-43	8.93467706786687e-42
G8260	3.009854141	3.685593767	0.436304464	8.447297855	2.98122438497156e-17	2.34814469136735e-16
GAL	243.0061937	-4.22527087	0.588829428	-7.175712807	7.19314126118989e-13	3.9496793157556e-12
GDA	541.7081073	5.388170584	0.39186323	13.7501306	5.08376720710868e-43	2.43430953715659e-41
GJB2	13374.27242	5.069974273	0.262999164	19.27753002	8.2943639497314e-83	8.39175583610889e-80
GJB6	4467.189684	3.71076233	0.185936304	19.95716947	1.29862585452573e-88	2.26278340563028e-85
GLDC	154.3374801	-3.499957764	0.424612732	-8.242705639	1.68359414516314e-16	1.25039656094948e-15
GLT6D1	1.089209641	-3.575185321	0.539932766	-6.621537994	3.55480625241934e-11	1.70504577612601e-10
GPC5-AS2	1.82168013	-3.567954983	0.469677092	-7.596612747	3.03982459077441e-14	1.88682086809912e-13
GPD1	155.161059	-3.908607529	0.43011454	-9.087364328	1.01468909208555e-19	9.55123309849077e-19
GPR12	55.96320424	-4.251153137	0.354493342	-11.99219458	3.9042229299041e-33	9.64949156607661e-32
GPR15	7.304369665	3.713647635	0.465376333	7.97988074	1.46474745253558e-15	1.01034394328845e-14
GRIA2	6.679172704	-4.72950292	0.71753164	-6.591351035	4.35841995992344e-11	2.07652261314049e-10
H19	1199.738924	-4.356916585	0.324624156	-13.42141828	4.52960558373499e-41	1.86684033545682e-39
HABP2	2.79978902	5.052186738	0.483416062	10.45101132	1.44971006335496e-25	2.0490629304671e-24
HAND2-AS1	25.64540139	-3.465762493	0.276769724	-12.5221879	5.64571174098398e-36	1.72921975629123e-34
HAO2	63.01343338	-4.952248495	0.539922958	-9.172139144	4.63723928721254e-20	4.47239769385407e-19
HEPHL1	2728.874466	7.184596574	0.412602032	17.41289675	6.5865256043224e-68	1.86107918066638e-65
HGD	22.11959876	-3.803084105	0.412093201	-9.228698993	2.73938843081784e-20	2.68662222464574e-19
HMGN2P23	8.504377451	4.784281726	0.381578157	12.53814359	4.61684302992074e-36	1.42803416953091e-34
HNF4A	4.049650544	-3.432609107	0.423709409	-8.101328486	5.43622464225852e-16	3.87415927470566e-15
HNRNPA1P5	3.064318843	-3.88806092	0.65267531	-5.957113533	2.56731897948135e-09	1.03591139164355e-08
HRH2	53.21767522	4.255716207	0.267926802	15.88387641	8.19532957575147e-57	1.06654903242269e-54
HRH3	7.942844164	4.47704724	0.368111771	12.16219526	4.94127189251836e-34	1.31672091450251e-32
HRNR	389.0382821	4.572970841	0.324354717	14.09867224	3.869822337223e-45	2.10717201015038e-43
HS3ST3A1	32.84473367	4.001686606	0.300423454	13.32015376	1.76743125485351e-40	6.99038006017977e-39
HSD11B1	403.7201381	-3.475844203	0.27189795	-12.78363517	2.02384439326708e-37	6.7170217513681e-36
HSD3B1	103.5428786	-4.230128324	0.437755998	-9.663210416	4.32105856698263e-22	4.831575076465e-21
HSD3BP2	3.50793635	-4.484558575	0.733784776	-6.111544859	9.8671257260677e-10	4.14231737749146e-09
HSD52	1.483587123	-3.604276916	0.614152336	-5.868701792	4.39220601255587e-09	1.73301232076742e-08
HSPD1P2	6.393608922	7.217571169	0.713564236	10.11481631	4.74907055670959e-24	6.0995024136216e-23
HSPD1P3	46.63296099	9.850606166	0.679668843	14.49324368	1.33678036595339e-47	8.62690934110329e-46
HTR3A	83.2088133	4.405568187	0.338428619	13.0177176	9.70279321097195e-39	3.51001621994145e-37
HTR3B	3.214770906	3.864852438	0.470034168	8.222492533	1.99316716630354e-16	1.47056445551504e-15
HTR7	28.02304725	3.727425169	0.290193203	12.8446329	9.21881933509074e-38	3.14281575680202e-36
HYAL4	78.0760386	5.156254877	0.31773638	16.22809097	3.19234358024849e-59	5.00623320254568e-57
IFI27	2821.156038	5.185561752	0.369602745	14.03009536	1.02014318615898e-44	5.44145763447115e-43
IFI44	372.8022589	3.90212603	0.298884823	13.05561786	5.90291711349342e-39	2.1704465691396e-37
IFI6	737.4308159	4.046084388	0.362376947	11.16540228	6.02179771815794e-29	1.10772823244754e-27

IFNE	1.607922723	3.976292767	0.605087865	6.571430361	4.98341925858285e-11	2.36567219049784e-10
IFNG	3.753070062	4.703212502	0.452802274	10.38690124	2.84444645831717e-25	3.95098399994064e-24
IGFL1	65.27760227	4.723076972	0.404276685	11.68278347	1.56098713228322e-31	3.41891064364042e-30
IGHEP1	2.304233579	-4.14712366	0.892930762	-4.644395552	3.41073544719416e-06	9.8566577504651e-06
IGHG3	7.746397479	3.611740324	0.743947301	4.854833562	1.20487897922483e-06	3.66642323706293e-06
IL12A-AS1	9.830421403	-4.467685613	0.759529866	-5.882172401	4.04916240887436e-09	1.60330677682029e-08
IL12B	5.709770641	4.822184112	0.485221184	9.938115378	2.84152009895686e-23	3.44897199627256e-22
IL17A	4.797267106	6.891507609	0.745242915	9.247330598	2.3016897395979e-20	2.27156063539171e-19
IL17C	3.224555593	4.294623337	0.465217221	9.231436714	2.67025861548744e-20	2.62210366988566e-19
IL17F	1.758651724	5.257284168	0.815512952	6.446598007	1.14388657180433e-10	5.25745287779468e-10
IL19	45.51829015	9.714926818	0.801942895	12.11423765	8.87858081940107e-34	2.32250049057294e-32
IL20	27.19186879	7.29522727	0.551889513	13.21863725	6.84936443690363e-40	2.62299714528749e-38
IL22	6.379772363	5.27214019	0.555340078	9.493534497	2.23330532580359e-21	2.36879906116009e-20
IL26	5.021460017	4.78098329	0.454946791	10.50888451	7.86179204710642e-26	1.13160736927694e-24
IL36A	133.4328375	10.68221303	0.6913904	15.4503346	7.50528312035925e-54	7.64271752555025e-52
IL36G	1765.225261	5.019296467	0.224457678	22.36188362	9.2524347608686e-111	2.90193363839883e-106
IMPDH1P11	1.716844987	-3.659671583	0.620421108	-5.898689677	3.66399601223108e-09	1.45686575719594e-08
IQCJ	3.533291287	-4.668142283	0.658994662	-7.083733078	1.40322068545716e-12	7.52318180832109e-12
ISG15	134.5504993	3.78300332	0.347381575	10.89005172	1.28567236157932e-27	2.1369278192143e-26
KB-1410C5.3	14.44846951	-5.01856366	0.341439682	-14.69824373	6.61532814451526e-49	4.81399424418971e-47
KCNIP4-IT1	1.654542782	-3.585524433	0.728762713	-4.920016309	8.65370011824532e-07	2.68435021767032e-06
KCNK10	42.9051376	3.990990265	0.276831224	14.41669117	4.06362083836546e-47	2.51383439791902e-45
KCNV1	5.521983498	-3.949039772	0.442862715	-8.917074377	4.78768154438908e-19	4.27200125058945e-18
KLHDC7B	14.877624	4.140880338	0.362478616	11.42379206	3.18047177445556e-30	6.40258772362159e-29
KLK13	417.7333427	3.715592453	0.169257248	21.95233886	8.22587526723089e-10	1.28998175940715e-102
KLK6	311.8341256	4.345674421	0.352726767	12.32022867	7.04941197109875e-35	1.99726971148637e-33
KRT16	34049.84615	5.911953875	0.406496147	14.54368983	6.40453208756447e-48	4.25575729649093e-46
KRT16P1	8.066897051	5.326224038	0.521515416	10.21297526	1.73462702194819e-24	2.28208229515029e-23
KRT16P2	27.2345147	5.955783903	0.406601809	14.64770636	1.3934056072343e-48	9.82084796972957e-47
KRT16P6	41.24563168	3.878155439	0.349835414	11.08565711	1.47265132908566e-28	2.63180833535286e-27
KRT24	4.84611033	6.666204547	0.799972353	8.333043664	7.87900868307812e-17	6.01404790304362e-16
KRT43P	3.740357962	-4.093729826	0.537989858	-7.609306693	2.75570131756276e-14	1.71726239070213e-13
KRT6A	66371.11857	5.305899158	0.36785788	14.42377461	3.66725304721941e-47	2.28213739232122e-45
KRT6B	15951.49673	4.005598239	0.34833368	11.49931363	1.32968578747802e-30	2.75094096559766e-29
KRT6C	6587.461903	5.583389232	0.552750077	10.10110983	5.4620498005654e-24	6.98946266605194e-23
KRT77	4773.314462	-4.40868436	0.242145504	-18.20675704	4.56180111218105e-74	2.38460550137411e-71
KRTAP5-AS1	8.213382324	4.588194832	0.427102832	10.74259987	6.42102619269897e-27	1.00393352695818e-25
KYNU	387.6846843	5.254547741	0.258071596	20.36081391	3.72346876058438e-92	8.34163387192631e-89
LAIR2	2.522863459	4.582203278	0.567147376	8.079387242	6.50930175140924e-16	4.61477712773959e-15
LCE3A	422.8414013	8.564582222	0.520295154	16.4610071	6.99272628109065e-61	1.26045900620763e-58
LCE3B	3.201977497	5.920776538	1.250182231	4.735930804	2.18051982348639e-06	6.44578923127494e-06
LCE3C	76.0673582	6.401347941	0.891869988	7.177445174	7.10261256127907e-13	3.90338777592355e-12
LCE3D	2660.286661	5.958794528	0.341609965	17.44326904	3.87274551389076e-68	1.11435587429055e-65
LCE3E	915.3117722	6.260168646	0.355303526	17.61921342	1.75427144719937e-69	5.73135100728761e-67
LCN2	697.3875498	5.82782192	0.343722561	16.95501718	1.76709716971316e-64	3.98728313891249e-62
LGALS9B	8.304046493	4.541596544	0.418415912	10.85426347	1.90335018016886e-27	3.12221103822261e-26
LGALS9C	8.67490245	4.642764829	0.515769378	9.001629466	2.22392019888609e-19	2.03712129433012e-18
LINC00114	1.409870064	4.282791264	0.539713301	7.935307986	2.0997361024461e-15	1.42762027134445e-14
LINC00284	1.538381215	-3.417298392	0.551673687	-6.194419773	5.8500128185128e-10	2.51135781603936e-09
LINC01100	1.426124155	-3.416942352	0.889173643	-3.842829103	0.000121624	0.000285632
LINC01181	9.282789491	3.918174842	0.3986934	9.827538754	8.56872958382289e-23	1.00092973805222e-21
LINC01206	10.70898235	6.032731692	0.563423082	10.70728532	9.40801800191809e-27	1.45141700251923e-25
LINC01215	19.83600417	5.036457344	0.451358715	11.15843602	6.51271915295646e-29	1.19453171645222e-27
LINC01219	2.642251708	-3.776099054	0.490595755	-7.696966421	1.39334493542797e-14	8.86067935011414e-14
LINC01269	9.905233533	3.762847656	0.293207704	12.83338604	1.06601359851243e-37	3.61453518959393e-36
LINC01300	7.400573779	-3.776655589	0.393103868	-9.607271496	7.44968861745193e-22	8.1839591522859e-21
LINC01398	2.900423592	4.255259021	0.474644089	8.965157513	3.09837703440533e-19	2.80535500309147e-18
LINC01497	3.397380274	-4.177387304	0.522124022	-8.000756776	1.23656834090898e-15	8.56342005835049e-15
LINC01562	2.074891798	3.473855378	0.430809656	8.063550405	7.41099517297385e-16	5.23274319237172e-15
LINC01605	67.20791356	3.708337097	0.244154931	15.18845875	4.21719046143191e-52	3.73638309695905e-50
LINC01612	9.631598556	-4.91185693	0.672768865	-7.300957558	2.85726875413269e-13	1.62405540421562e-12
LMX1A	3.790999797	-3.741790195	0.4811891	-7.776132495	7.47753904866726e-15	4.85158325863467e-14
LRRC55	39.50337403	4.8346301	0.286357378	16.88320427	5.98085881540984e-64	1.31177381738821e-61
LTF	1264.524502	5.234001645	0.485875567	10.77230879	4.65187192899531e-27	7.37993480935806e-26
LYPD1	6.309991235	3.866652253	0.418487453	9.239589451	2.47444822832963e-20	2.43592574492563e-19
MAB21L1	15.27467216	-4.5138184	0.405843781	-11.12205882	9.79843680060224e-29	1.77333047786549e-27
MATN4	86.22928509	-4.089019491	0.275868494	-14.82235042	1.05043566756122e-49	8.05522353970415e-48
METTL7B	8.206422682	-4.256168668	0.666419079	-6.38662488	1.69586951751576e-10	7.68630802707577e-10
MIR31HG	4.856662832	5.082406766	0.507982436	10.00508366	1.44769283771301e-23	1.79604742353708e-22
MIR3945HG	1.55924769	4.295416287	0.53005261	8.103754616	5.32885324284892e-16	3.80023085740595e-15
MKRN9P	3.378282915	-4.071988952	0.50185609	-8.1138578	4.90375211584451e-16	3.50424427799834e-15
MMP1	22.78301564	5.037477971	0.497150905	10.13269397	3.95597400215533e-24	5.10807610554137e-23
MMP12	209.2287189	3.572983877	0.491493706	7.269643196	3.60438262415322e-13	2.03323483136585e-12
MMP3	24.99396729	3.686240142	0.645393137	5.711619679	1.11905956679824e-08	4.25020395411237e-08
MOGAT1	20.71012156	-5.054083893	0.615696161	-8.208730559	2.23539227968749e-16	1.64078734987405e-15
MOGAT2	49.30084966	-4.325350735	0.535534381	-8.076700367	6.65427836796945e-16	4.71436157065719e-15

MRGPRX3	1.894965667	4.055687292	0.743335618	5.456064788	4.86802372540659e-08	1.7334320631659e-07
MRPL23-AS1	8.746742305	-3.615779323	0.377070064	-9.589144483	8.88183981339572e-22	9.70965576533089e-21
MT4	53.78447948	-3.668798213	0.532499734	-6.889765338	5.58844962076137e-12	2.85001843748878e-11
MTNR1A	1.305669566	4.065068081	0.598840161	6.788235564	1.13513203659254e-11	5.65474606030628e-11
MUC16	136.3813301	-3.962719813	0.421668499	-9.397713661	5.57615361125454e-21	5.7662539354892e-20
MUC7	5.057235223	-4.661827076	0.858245955	-5.431807804	5.57859887104468e-08	1.97413037336619e-07
MX1	811.2325128	3.802932693	0.289864954	13.1196705	2.5403704154208e-39	9.41798790889574e-38
MYBPC1	13.04239409	-3.881421023	0.456592059	-8.500850912	1.88205960083359e-17	1.50124408241467e-16
MYH13	1.662860835	4.523449652	0.527970627	8.56761612	1.0564930554061e-17	8.59109364525716e-17
NLRP7	1.091979445	3.491249266	0.693834966	5.031815113	4.85857710032127e-07	1.55051294438824e-06
NOL4	1.668042125	-3.650369471	0.527299192	-6.922767048	4.42905781500763e-12	2.27838230785467e-11
NOS2	108.2089659	6.674377497	0.423557056	15.75791834	6.05962718708974e-56	7.39510299983979e-54
NPIPB6	7.711177972	-3.690206005	0.446567513	-8.263489606	1.41474525278391e-16	1.05824159571463e-15
NPIPB7	3.593143886	-4.380819005	0.524352535	-8.354720751	6.55876842601434e-17	5.0262714399307e-16
NPY5R	27.40218548	-3.892379259	0.254569897	-15.29002173	8.91204126427219e-53	8.39391177815714e-51
NTM-AS1	2.545327198	-4.1811279	0.470640116	-8.883917368	6.45462410454558e-19	5.69779989909844e-18
NXNL2	2.079753758	-3.866294605	0.503931258	-7.672265899	1.68984187163141e-14	1.06919912168343e-13
OAS2	487.8532631	4.026274186	0.340781647	11.81482108	3.27244841566437e-32	7.46312343645363e-31
OASL	216.4592765	5.278627025	0.365996183	14.42262861	3.72866621884453e-47	2.31576014431366e-45
OBP2B	1.701410547	-3.581095744	0.703351622	-5.091472927	3.55292609526658e-07	1.15141531361791e-06
OLR1	3.732398719	3.534417292	0.502251708	7.037143398	1.96220892972304e-12	1.03939741381242e-11
OR2G6	1.848705056	-3.575766909	0.648347303	-5.515202872	3.48377855804084e-08	1.25678894288466e-07
OSM	9.543839192	4.395393773	0.443417762	9.912534286	3.67211324111779e-23	4.41611041773076e-22
PAPL	935.6256059	3.473693908	0.181625271	19.12560891	1.54558047658852e-81	1.31015097480331e-78
PES1P2	2.50496407	-4.289759872	0.528539026	-8.116259459	4.8077224512414e-16	3.43875500480582e-15
PGLYRP2	9.61377597	3.520644913	0.280381184	12.55663757	3.65539512335591e-36	1.13850856652368e-34
PHBP16	7.080674111	5.908727129	0.496342628	11.90453286	1.12089237400286e-32	2.6592790028915e-31
PI3	3793.760369	8.219230725	0.456778695	17.99390125	2.1749296727787e-72	8.85902522818587e-70
PIP	101.4490517	-3.540038407	0.774146091	-4.57282992	4.81180718253714e-06	1.36367145995387e-05
PITX1	73.87939233	4.284701643	0.293945257	14.57652927	3.96151027416015e-48	2.69520191407286e-46
PLA2G4D	1952.619032	4.077445722	0.205981889	19.79516616	3.27669878677673e-87	5.13851903742327e-84
PLAT	366.1291347	4.039857317	0.267520739	15.10109956	1.59255374067978e-51	1.35730585659458e-49
PM20D1	486.456843	-4.541729135	0.497027535	-9.137781752	6.37464253118173e-20	6.09184303315002e-19
PMCHL1	1.573918656	-4.080731792	0.662822569	-6.156597531	7.43244099495993e-10	3.15569350705189e-09
PNPLA5	75.73680227	-3.918063527	0.492458481	-7.95612966	1.77504384230594e-15	1.21608726671218e-14
PPARGC1A	206.5508799	-3.428829384	0.195297047	-17.55699558	5.25858719229372e-69	1.63297355147624e-66
PRKCQ	57.16641346	3.590332962	0.223951985	16.03170858	7.67433684550154e-58	1.06976844809916e-55
PRKCQ-AS1	23.89942396	3.511484986	0.242552671	14.47720601	1.68821219963629e-47	1.08280342391396e-45
PRSS22	238.0880171	4.343372839	0.267306929	16.24863545	2.28391425290517e-59	3.67347110913424e-57
PRSS27	193.6889112	4.323654314	0.224257737	19.27984454	7.93145139751161e-83	8.29206805438514e-80
RAB3B	473.7515206	-4.00303829	0.233184349	-17.16683947	4.70342754609105e-66	1.19933578500487e-63
RAD17P1	3.521414878	-4.933195024	0.632278395	-7.802251446	6.0812323574683e-15	3.97440657761275e-14
RHCG	1035.168631	7.176481519	0.410478339	17.48321615	1.92338179118204e-68	5.85679092219742e-66
RIMS1	23.51627999	-4.211095985	0.409270471	-10.28927393	7.87680768770056e-25	1.06165963178788e-23
RND1	34.55212613	5.589620507	0.383558771	14.57304831	4.16866669286456e-48	2.83000134534641e-46
RNU5A-8P	6.410233138	4.136206274	0.421184278	9.820419445	9.19601111606219e-23	1.071808593995545e-21
RNU5F-1	47.53905392	3.755287563	0.343887995	10.92008915	9.24050611045716e-28	1.55649427308474e-26
RNU6-140P	5.5274844	3.861904783	0.444164734	8.694757788	3.4757042304055e-18	2.92257339095008e-17
RNU6-745P	1.480593147	4.243952873	0.529102225	8.021045225	1.04849112949101e-15	7.31425173161832e-15
RNY1P7	1.244552239	4.568585072	0.538580702	8.482637895	2.20144961105617e-17	1.74712210529265e-16
ROS1	86.87043402	-4.394588669	0.617911756	-7.112000421	1.14372913338487e-12	6.18161649827381e-12
RP11-1008C2	43.47188352	-4.036607862	0.250923761	-16.0869893	3.14776709305167e-58	4.59193335378942e-56
RP11-1016B1	3.791980782	-4.847658415	0.648761618	-7.472172026	7.88817901719 55e-14	4.71786511623417e-13
RP11-109J4.1	22.25936681	3.985512723	0.265714722	14.99921683	7.42907342341522e-51	6.08369344261084e-49
RP11-115J16.	6.748168932	-3.797010131	0.41810628	-9.081447267	1.07140585708897e-19	1.00609500903409e-18
RP11-150O12	10.09986527	-3.936895015	0.355577938	-11.07182025	1.71873523114274e-28	3.0559190356894e-27
RP11-191A15	4.108981889	-4.039173632	0.487998913	-8.277013582	1.26302823707135e-16	9.49283911514635e-16
RP11-211G23	2.556685995	-3.417056152	0.516390565	-6.617193228	3.66082855755705e-11	1.75402118666696e-10
RP11-217L21	1.399378464	-3.417340603	0.486895251	-7.018636138	2.24044391512441e-12	1.18099635216743e-11
RP11-234K19	3.462519891	-3.589802872	0.438720114	-8.182444243	2.78143456542895e-16	2.02405832274045e-15
RP11-248E9.5	2.700078026	-3.648813368	0.511853499	-7.128628358	1.01374037217725e-12	5.50752694144593e-12
RP11-252C24	16.76619257	-4.499113217	0.438827557	-10.25257677	1.1522995282438e-24	1.53724893253248e-23
RP11-257I8.2	3.052709568	-4.872390278	0.673576163	-7.233614471	4.70305672151593e-13	2.62794710517772e-12
RP11-26L20.3	8.018997879	-4.221373727	0.573834332	-7.356432845	1.88889839605564e-13	1.09285019911251e-12
RP11-26L20.4	2.532142607	-3.535710203	0.513229323	-6.88914301	5.61294911786021e-12	2.86158218681027e-11
RP11-288L9.4	5.721251941	4.029626001	0.47553814	8.473822949	2.37468266534727e-17	1.88127171295 66e-16
RP11-293M1(	2.205895934	-3.415219844	0.509312561	-6.705548035	2.00651872253564e-11	9.81173264945552e-11
RP11-324D17	5.45959449	-3.647937954	0.632606172	-5.766522864	8.09237353163199e-09	3.11307743709194e-08
RP11-350F16.	21.25968236	-5.412319967	0.598264854	-9.046695515	1.47360228738536e-19	1.37064241226437e-18
RP11-350J20.	18.64496115	3.671155466	0.280755391	13.07599277	4.51628785450301e-39	1.6644988515703e-37
RP11-398B16	3.387857215	5.512439335	0.551472548	9.995854474	1.58910754146774e-23	1.96610528325816e-22
RP11-3N13.2	1.670968768	-3.896966236	0.620425932	-6.281114366	3.36154733443825e-10	1.47766742252728e-09
RP11-407H12	7.843459246	-4.53668922	0.528664274	-8.581418191	9.3710523376833e-18	7.65200951624835e-17
RP11-414J4.2	1.905525216	4.668267837	0.461511371	10.11517404	4.73175316519552e-24	6.07975035940976e-23
RP11-420K14	1.1216712	-3.628058145	0.648390607	-5.595482268	2.20009334219047e-08	8.0876380197447e-08
RP11-430H10	6.650689611	5.069868449	0.440934109	11.4980183	1.34978900692121e-30	2.78885259638188e-29

RP11-430H10	3.679823438	4.80852652	0.488364857	9.846176389	7.12013242260358e-23	8.37015866951044e-22
RP11-438F14.	2.037204722	-3.927868821	0.667368888	-5.88560374	3.96603519113512e-09	1.5723767884561e-08
RP11-438F14.	4.810253549	-4.59780637	0.590373135	-7.787966797	6.80960693772376e-15	4.42921012017354e-14
RP11-464C19	11.86234068	-3.920175121	0.322104429	-12.17050982	4.46286302675345e-34	1.19329271927617e-32
RP11-483C6.1	7.555182862	-3.695252574	0.407118794	-9.076595409	1.1202411302367e-19	1.05038095093405e-18
RP11-506N2.	4.090702115	-3.78736102	0.510018392	-7.425930283	1.11989977263857e-13	6.60732439221897e-13
RP11-508M8.	4.261198653	-5.143729184	0.622161312	-8.267516935	1.36777818255038e-16	1.02457594739695e-15
RP11-517M22	14.99767299	-5.369783992	0.582129046	-9.224387671	2.85185651117242e-20	2.7945227614888e-19
RP11-527N22	13.90951303	3.662318845	0.300813518	12.17471499	4.23872137675774e-34	1.13432813362312e-32
RP11-545A16	1.58598135	-3.690173976	0.736170582	-5.012661556	5.36822701164632e-07	1.70586699081333e-06
RP11-546K22	3.307793869	-4.067072816	0.507268237	-8.017598024	1.0783302253332e-15	7.51405225224404e-15
RP11-557H15	29.57228051	4.23840663	0.263014478	16.11472744	2.01048454152962e-58	2.98847569481209e-56
RP11-561N12	1.357269827	-3.826012527	0.68610878	-5.576393479	2.45556159500694e-08	8.99197126279015e-08
RP11-57H12.2	3.066150684	-4.001572423	0.592829569	-6.749954168	1.47891864931898e-11	7.29779806753313e-11
RP11-597M17	1.904399068	-3.554934594	0.552384756	-6.435613142	1.229758844486e-10	5.63561607224705e-10
RP11-603B24	2.953768583	3.612454591	0.739875271	4.882518353	1.04739487449533e-06	3.21244796046074e-06
RP11-616M22	2.060612993	-3.949265572	0.660488842	-5.979307026	2.24088849515102e-09	9.08286724759841e-09
RP11-616M22	1.746498059	-3.768387833	0.603646957	-6.242701613	4.30076876892915e-10	1.86930864285884e-09
RP11-63P12.7	3.603026984	5.623749413	0.494497039	11.37266549	5.7213274621528e-30	1.13356736906482e-28
RP11-641A6.2	13.29075632	-3.951872033	0.369877086	-10.68428455	1.20575139028979e-26	1.83578575752665e-25
RP11-64D24.2	3.572872377	-3.569063005	0.53895518	-6.622188885	3.53918401495893e-11	1.69833181525661e-10
RP11-680F20.	14.43965091	-3.47469968	0.275306258	-12.62121573	1.61311561558152e-36	5.11564794409491e-35
RP11-707A18	22.25349878	-3.74216141	0.359314456	-10.41472546	2.12409545165765e-25	2.97677076612112e-24
RP11-713C5.1	2.033653883	-3.54541453	0.559549173	-6.336198316	2.35503627148965e-10	1.05278445865167e-09
RP11-76C10.(	2.579923737	-4.023694371	0.516850734	-7.785022071	6.97010383260968e-15	4.53078417836207e-14
RP11-818F20.	8.014828716	3.943126371	0.304547784	12.9474801	2.4279365066693e-38	8.57542799495226e-37
RP11-832A4.2	40.84188149	3.420611155	0.196060668	17.4466974	3.64720349393419e-68	1.05917491096067e-65
RP11-93K22.1	3.043860387	3.595163996	0.451663761	7.959823892	1.7228431343509e-15	1.18084029864034e-14
RP3-429O6.1	3.714868021	-3.962245304	0.59330121	-6.678303089	2.41724727573073e-11	1.17414501403157e-10
RP4-529N6.2	56.31257799	4.93549479	0.290347191	16.99859667	8.41093961287837e-65	1.95407933346902e-62
RP4-539M6.1	2.233593758	-4.364557129	0.6653523	-6.5597686	5.38913397071323e-11	2.54939363284238e-10
RP4-683L5.1	5.188534357	-4.521268578	0.484687329	-9.328216996	1.07666802999517e-20	1.09036538885271e-19
RP4-735C1.4	2.097806454	-3.551202238	0.466197358	-7.617379592	2.58877202465705e-14	1.61644924908l1e-13
RP5-1011O1.2	1.452145435	-3.830575888	0.563453637	-6.798387012	1.05796936864056e-11	5.28714966189335e-11
RPL26P34	3.268542349	4.192305592	0.514313363	8.151267099	3.60130710650452e-16	2.59598703949455e-15
RSAD2	190.8554312	3.989186669	0.355554951	11.21960658	3.26720667610846e-29	6.12874821707332e-28
S100A12	134.1280421	7.942021584	0.534775437	14.85113384	6.84018835187245e-50	5.28412974059427e-48
S100A7	30923.08636	7.662296334	0.448152264	17.097529	1.54831098687259e-65	3.76443610792806e-63
S100A7A	5299.685678	9.34002531	0.590649478	15.8131441	2.52542490168027e-56	3.24620600886476e-54
S100A8	45298.14633	8.133419416	0.47237898	17.21799605	1.94610619763073e-66	5.08647289854085e-64
S100A9	58959.28413	8.094719112	0.569858719	14.20478241	8.55680171631898e-46	4.81823211904181e-44
S100P	196.8137337	3.752994108	0.288598331	13.00421277	1.15785083687332e-38	4.16932648079161e-37
SCGB1D2	83.08713137	-4.001236258	0.566984742	-7.057043976	1.70081810810224e-12	9.05678423472301e-12
SCGB2A1	3.065092124	-4.086280065	0.555983283	-7.34964556	1.98733128903272e-13	1.14662727279658e-12
SCGB3A2	8.99702297	-3.829245731	0.352960767	-10.84892737	2.01779325651344e-27	3.30130765244066e-26
SEC14L4	21.41578505	-3.452307518	0.487468763	-7.082110244	1.41975635260691e-12	7.60403658523959e-12
SEC14L6	744.0346191	-3.727066056	0.455931514	-8.174618204	2.96804222597137e-16	2.15447142075344e-15
SERPINA3	314.3616201	3.450252707	0.34390711	10.03251346	1.09688200413075e-23	1.37335757195836e-22
SERPINB3	7446.487848	6.427790708	0.341873132	18.80168431	7.31559982567189e-79	5.21469256664485e-76
SERPINB4	9320.27553	9.509369502	0.529348206	17.96429911	3.70933524860522e-72	1.45424488421567e-69
SERTM1	10.87235837	-5.09226824	0.537520875	-9.473619487	2.70311248787233e-21	2.85648315598476e-20
SHISA9	6.844725681	-3.887666021	0.41773239	-9.306594643	1.3199652030074e-20	1.32690348163859e-19
SLC16A9	33.45676679	3.441577291	0.289413696	11.89154951	1.30954259595991e-32	3.08352056904554e-31
SLC2A14	9.595628586	-3.94716029	0.484018405	-8.15497975	3.49238389381302e-16	2.5197867137233e-15
SLC6A14	1814.008093	4.953328128	0.266217748	18.60630318	2.85660372749579e-77	1.86655248560787e-74
SLCO1A2	5.59931667	-4.619737058	0.499860276	-9.242056793	2.4180370526593e-20	2.38263632169671e-19
SNORD39	1.449849749	3.552599492	0.5004026	7.099482478	1.25224920414649e-12	6.74605703175032e-12
SOST	12.69336997	7.107318085	0.612845654	11.59723993	4.25583359805862e-31	9.11748394600481e-30
SPINK1	11.59772101	-4.122963759	0.346593694	-11.89566871	1.24650565515081e-32	2.94393097651733e-31
SPINK6	2.967393809	3.600927585	0.605883608	5.943266224	2.79398109515297e-09	1.12404339492532e-08
SPRR1A	702.4893934	4.063365717	0.311655906	13.03798722	7.43951825964086e-39	2.69749191555348e-37
SPRR1B	3155.561868	4.212912203	0.266588536	15.80305087	2.96417120997602e-56	3.74872039635839e-54
SPRR2A	4999.572708	9.094930777	0.532287232	17.08650937	1.87040082790576e-65	4.51255781280278e-63
SPRR2B	2074.356504	8.042244591	0.491791393	16.35295922	4.14359038018224e-60	7.06302003717586e-58
SPRR2C	44.4806414	9.824209356	0.710783276	13.82166644	1.88651442623083e-43	9.28864026127216e-42
SPRR2D	3123.651288	6.292648481	0.360308205	17.46462719	2.66435994344106e-68	8.03509473712359e-66
SPRR2E	9308.990418	4.256972934	0.266611601	15.96694562	2.17162845230643e-57	2.94852618087182e-55
SPRR2F	1015.923046	10.46270405	0.57936335	18.05896774	6.70649806692985e-73	3.04844355610417e-70
SPRR2G	6823.183168	5.137634585	0.358861325	14.31649004	1.72624150651484e-46	1.01962031281227e-44
SPRR3	9.228442685	6.727349434	0.624184505	10.77782191	4.38137355281419e-27	6.96489610291253e-26
ST6GALNAC	31.07414789	3.946197792	0.255344949	15.4543797	7.04868593268334e-54	7.22467273178693e-52
SYPL2	18.18505242	-3.550110021	0.495481573	-7.164968817	7.78042623615403e-13	4.26394003967735e-12
SYT9	25.45984177	-4.121344861	0.292086301	-14.11002452	3.29463434958629e-45	1.8128581007092e-43
TCL1A	1.044655663	3.559142908	0.649480055	5.479988003	4.25354677427485e-08	1.52153559567012e-07
TCN1	773.5004696	9.105791644	0.566279276	16.08003689	3.52169213184653e-58	5.06671339556122e-56
TEX101	15.11746817	4.077383549	0.308928364	13.19847582	8.95282041927455e-40	3.407721597453e-38

TEX15	4.884597749	3.79446886	0.452470532	8.386112671	5.02481770234206e-17	3.88747859931565e-16
TGM6	34.19856847	4.996500546	0.495813759	10.07737373	6.95605093382396e-24	8.82206152399736e-23
THRSP	432.560574	-4.613249249	0.540872964	-8.529265757	1.47279493529581e-17	1.18351884065123e-16
TMEM213	20.9660317	-3.470996988	0.627979859	-5.527242539	3.2530310288528e-08	1.17706581897715e-07
TMEM229A	2.342804672	3.647054264	0.687110798	5.307811016	1.10949587121118e-07	3.80350076562109e-07
TMEM63C	37.47333325	-3.880039329	0.335756182	-11.55612179	6.8743895006387e-31	1.45977218888309e-29
TMPRSS11A	17.84143344	5.52919353	0.436338523	12.67179779	8.47495271925785e-37	2.72344689638118e-35
TMPRSS11D	309.3657146	7.462724533	0.375432596	19.8776681	6.35181278406544e-88	1.0485171376812e-84
TMPRSS4	324.1726113	3.647288122	0.247415206	14.74156817	3.48595140014751e-49	2.60938853733237e-47
TNIP3	68.33455067	8.061101625	0.540114961	14.92478863	2.27354866023284e-50	1.81444224375427e-48
TNNC1	39.25971221	-3.550170997	0.262716411	-13.51332023	1.30500465184876e-41	5.59920190158475e-40
TNPO1P2	1.61467901	3.570516015	0.716747619	4.981552669	6.30761110619804e-07	1.98886010590927e-06
TNPO1P3	6.796208313	3.539397163	0.463340357	7.638870891	2.1913490765378e-14	1.37541469754916e-13
TPSG1	6.714973313	-4.624034048	0.536088429	-8.625506155	6.38098038290387e-18	5.27637934957545e-17
TRDN	2.53001535	-3.789159912	0.549019512	-6.901685332	5.1389169278071e-12	2.62546001830497e-11
TRIM10	54.89917789	3.843439068	0.280913318	13.68193965	1.30173378682316e-42	6.00405566028258e-41
TRIM15	52.0026195	3.645410552	0.320980204	11.35711956	6.83616045336015e-30	1.34594687042805e-28
TRIM40	1.710712421	3.418889592	0.542084357	6.306932764	2.84619396091636e-10	1.25906949774585e-09
TRIM55	18.22659088	-4.813957776	0.587474306	-8.19432905	2.51994829629432e-16	1.84017830884691e-15
TUSC5	3.515310613	-3.428320612	0.704274601	-4.867874844	1.12804729541242e-06	3.44499273352629e-06
TYMP	1100.667239	3.944858226	0.242629287	16.25878832	1.93527401165245e-59	3.12875948976637e-57
UGT3A2	169.1671857	-5.243987443	0.35484758	-14.77814063	2.02684662152654e-49	1.5318076490978e-47
ULBP2	14.83617837	3.699824736	0.308948349	11.97554462	4.77293006794175e-33	1.16951702071035e-31
UPP1	225.2393179	4.419533834	0.213884385	20.66319066	7.42895971682468e-95	2.33001892558489e-91
VNN1	47.11784701	4.116688688	0.262739603	15.66832195	2.4906872195999e-55	2.90401167120934e-53
VNN3	66.99789546	7.595187915	0.480611017	15.80319146	2.95756704808678e-56	3.74872039635839e-54
VWC2L	2.465502018	-3.428374117	0.547118573	-6.266236033	3.6987955232699e-10	1.61888114417858e-09
WFDC13	2.768137779	-3.481821245	0.530397107	-6.564555501	5.21883038795891e-11	2.47181208529059e-10
WIF1	228.5611583	-4.69863684	0.359440227	-13.07209511	4.75379529677887e-39	1.74997694469686e-37
WNT2	36.10896988	-6.605064165	0.428358604	-15.41947355	1.2108741309708e-53	1.213350039737e-51
XLOC_00419	8.156576663	3.55154811	0.324717079	10.93736158	7.63907064686244e-28	1.29369228816519e-26
XLOC_00705	15.16141891	4.023381773	0.29852111	13.47771276	2.11564144387058e-41	8.93068347854063e-40
XLOC_00772	4.840876984	-3.836760746	0.400038904	-9.59096905	8.72615376531672e-22	9.54944475559643e-21
XLOC_00887	36.59869167	5.926622781	0.381080213	15.55216613	1.53814249664662e-54	1.65331585850496e-52
XLOC_00889	2.888945426	-3.587340264	0.617793969	-5.806693561	6.3718601116662e-09	2.47519222866359e-08
XLOC_00896	3.102193881	4.322313797	0.859316172	5.029945834	4.90618418544623e-07	1.56522796045505e-06
XLOC_00960	16.27896301	4.18912421	0.305098204	13.73041255	6.6752339652998e-43	3.1341622468213e-41
XLOC_01152	4.213423649	3.982098879	0.424333663	9.384357701	6.33010716636538e-21	6.53513762889677e-20
XLOC_01410	3.723358291	-3.443511276	0.439924586	-7.827503589	4.97652439386054e-15	3.2776923790223e-14
XLOC_01435	1.152718086	-3.505141586	0.545616508	-6.424185365	1.32577571299258e-10	6.05969534571544e-10
ZBP1	13.93002169	3.924659758	0.334835498	11.72115796	9.93052419516364e-32	2.19958305690051e-30
ZC3H12A	1116.919439	3.467573483	0.165844931	20.90852866	4.47830964501557e-97	1.56064115229187e-93
ZNF385D-AS	5.844766086	-5.163071832	0.728623607	-7.086061693	1.3798231927612e-12	7.40786967096239e-12
ZNF676	10.82972284	-3.447385063	0.339606291	-10.15112251	3.27573697163061e-24	4.2524923169794e-23
ZNF725P	17.87882639	-4.741498179	0.548274493	-8.648037142	5.23927802147826e-18	4.35181980576388e-17
ZNF728	3.546306983	-3.54278396	0.447346493	-7.919552331	2.38367229621666e-15	1.61228160229759e-14
ZP4	1.947554483	5.088998498	0.640290083	7.947957702	1.89611366726234e-15	1.29620115649556e-14

Table S23. Gene expression differences in atopic dermatitis lesions compared to healthy controls (Top 500 most differentially expressed genes).

Gene	baseMean	log2FoldChange	lfcSE	stat	pvalue	padj
ABCG4	36.40932749	4.53627416	0.397783	11.4039	3.997808828793e-30	3.7767251839236e-28
AC002331	1.599799047	2.623019951	0.522219	5.022834	5.0914483273165e-07	2.71301708015553e-06
AC002451	1.425496456	-3.016928353	0.487777	-6.185061	6.20783280000462e-10	4.93732702217969e-09
AC003090	52.93400108	-2.89037157	0.418538	-6.905883	4.98921593865139e-12	5.18674584435152e-11
AC004870	4.533988425	3.943513846	0.483523	8.155797	3.46884580819631e-16	6.08824174192889e-15
AC006262	39.09145002	-2.460196623	0.23929	-10.28122	8.56336680569087e-25	4.13838885198287e-23
AC007163	2.256809412	2.619878674	0.466745	5.613085	1.98751094004056e-08	1.29167619402056e-07
AC008268	3.577522078	-5.350929632	0.579395	-9.235376	2.57379741504381e-20	7.27248487616523e-19
AC011288	8.185335943	3.456366147	0.653169	5.291691	1.21190769540382e-07	7.07299459595186e-07
AC011752	6.513160397	-3.922920225	0.390713	-10.04043	1.01235308083685e-23	4.30820108919498e-22
AC018742	1.708588644	-2.616630222	0.579521	-4.515164	6.32678695602397e-06	2.84655495752024e-05
AC022182	3.115770624	2.560567535	0.40492	6.323641	2.55471697959284e-10	2.13669715594533e-09
AC027612	0.946025197	3.187219106	0.542036	5.880083	4.10606856757061e-09	2.93969113401793e-08
AC067959	15.80588181	-2.509085783	0.257585	-9.740822	2.01913971920571e-22	7.25410059028268e-21
AC069363	7.193127507	4.001543197	0.455594	8.783127	1.58991011111086e-18	3.61085740223613e-17
AC079325	1.123742841	3.604828199	0.504672	7.142907	9.13771678782984e-13	1.06303912957528e-11
AC079753	17.7143025	-3.919064908	0.363439	-10.78327	4.12947113421292e-27	2.55457066377621e-25
AC092580	6.369376196	2.567365192	0.347463	7.388879	1.4807128209151e-13	1.90801466372971e-12
AC108142	2.103861431	2.468640923	0.438682	5.627404	1.82941792707602e-08	1.19736777681161e-07
AC112721	0.951022742	3.100546324	0.588912	5.264871	1.40288091702301e-07	8.10163083806106e-07
AC138647	2.625013771	-4.707238225	0.521304	-9.029735	1.72087383054883e-19	4.4276855472792e-18
ACKR2	98.64228567	2.995724685	0.269665	11.10905	1.13358586923418e-28	8.77871288954588e-27
ADAM19	161.2251426	2.925882738	0.208421	14.03832	9.08460663433023e-45	4.01309299266385e-42
ADAM23	95.07786267	2.412960691	0.213475	11.30326	1.26441907856521e-29	1.13631060114955e-27
ADAMDE	19.91526724	3.924862774	0.459932	8.533574	1.41894610391054e-17	2.91446140164048e-16
ADAMTS4	66.43361981	2.832967957	0.251281	11.27412	1.76122891196761e-29	1.53869592186496e-27
ADGRF1	30.26129225	4.418089466	0.55148	8.011339	1.13466365235935e-15	1.86615578356574e-14
ADH6	33.91831053	-2.779521036	0.254214	-10.93379	7.94595473687727e-28	5.50147735910417e-26
ADORA2E	8.666222469	-3.09611848	0.300923	-10.28873	7.92146030360055e-25	3.84595481365523e-23
AGBL4	10.80915778	-2.887060967	0.304585	-9.478669	2.57546214445282e-21	8.18407241120751e-20
AGR3	41.33935897	-3.939343401	0.468176	-8.41424	3.95450091898929e-17	7.75665833790995e-16
AIM2	18.25383924	2.583789501	0.283843	9.10287	8.79753192496343e-20	2.35834009653464e-18
AKR1B10	1214.598381	4.672582588	0.328241	14.23523	5.53801837038102e-46	2.84744931423984e-43
AKR1B15	87.05123357	5.136742498	0.344608	14.90604	3.01106033384618e-50	3.4977369003982e-47
AL591704.	8.894756014	5.629698241	0.601384	9.361242	7.88051785406297e-21	2.36521111937637e-19
ALOX15	108.1235377	3.818726297	0.264937	14.41372	4.24235890303505e-47	2.71545601295492e-44
ANGPTL4	370.4362698	2.65814428	0.206437	12.87633	6.11775312479678e-38	1.39041455801541e-35
ANKRD20	23.77002179	3.242819215	0.419421	7.731654	1.06157887608972e-14	1.55731337089233e-13
ANKRD26	1.094563653	-2.381263749	0.694992	-3.426319	0.000611821	0.001881659
ANKRD34	2.059505796	2.369402932	0.469314	5.048652	4.44938157444816e-07	2.39160931792617e-06
ANKRD34	2.46825313	3.298883079	0.633889	5.204198	1.94835733405696e-07	1.10443302774919e-06
AOX2P	4.385846423	3.053907776	0.450467	6.779421	1.2065881932059e-11	1.19304640894419e-10
AP000344.	5.079415596	-2.682486737	0.412297	-6.5062	7.70757302704354e-11	6.91081533505413e-10
AP000439.	27.56755175	-2.671038126	0.179638	-14.86896	5.24178801429132e-50	5.48011464267443e-47
APOBEC3	31.99069693	5.323980912	0.463047	11.49772	1.35444874963625e-30	1.36156828793562e-28
APOBEC3	28.7634143	2.44248874	0.207121	11.79257	4.26348098024327e-32	5.00823286383333e-30
APOL1	244.1012695	2.439054825	0.253321	9.628323	6.07123221583622e-22	2.05191947432637e-20
AREG	8.767263632	2.685613673	0.322999	8.314613	9.20521642336754e-17	1.73505052826021e-15
ARL14	5.812416455	3.51933277	0.391142	8.997583	2.30741675897343e-19	5.83627574422925e-18
ASS1P10	1.45739005	-2.704897269	0.490905	-5.510025	3.58783503743989e-08	2.24967729136874e-07
ATP12A	1535.697496	2.731258398	0.370418	7.373452	1.66265808753192e-13	2.12587069944359e-12
B3GNT6	1.215335188	4.12917748	0.526093	7.848756	4.20183331290607e-15	6.45378550568002e-14
BATF3	11.41358598	2.509289674	0.266819	9.404464	5.22961732901651e-21	1.60490917717489e-19
BMP3	28.9840157	-3.674159311	0.353067	-10.40642	2.31769964972944e-25	1.18778319957703e-23
BTC	868.3986488	-4.164985258	0.261494	-15.92767	4.07247361856077e-57	1.59661328215675e-53
C10orf71-/	1.410456028	-3.444393717	0.554542	-6.211237	5.25692387121203e-10	4.21575454606735e-09
C10orf99	971.4990126	4.183895557	0.282489	14.81084	1.24668396288675e-49	1.22190611912437e-46
C12orf74	3.698125556	3.069694263	0.537921	5.706592	1.15260547263422e-08	7.75757897933469e-08
C15orf59-/	2.622120304	-2.363417459	0.474673	-4.97904	6.39004986272025e-07	3.35932825837006e-06
C17orf96	155.2115415	2.390309137	0.188902	12.6537	1.06730414696242e-36	2.09218295408308e-34
C1QTNF1-	3.307670354	3.536500045	0.357234	9.899661	4.17688923352933e-23	1.64577831558309e-21
C5orf46	921.0387755	-3.333289508	0.269265	-12.37924	3.38546669019628e-35	5.73955552817925e-33
C6orf223	7.553282623	3.592152373	0.329414	10.90469	1.09466414049522e-27	7.41534473055988e-26
CACNA1F	284.9804829	-3.6020266	0.388445	-9.27293	1.81100859416277e-20	5.21105261902028e-19
CAMP	5.229723071	3.77087169	0.495486	7.610455	2.73133159393348e-14	3.82776962073859e-13
CBLN4	1.166793647	-3.532465373	0.670321	-5.269813	1.36562764046881e-07	7.90249913573134e-07
CCL1	5.812744507	3.585193956	0.566872	6.324525	2.54013180883689e-10	2.12619946763705e-09
CCL13	92.30168663	2.808839567	0.289009	9.718877	2.50529470533235e-22	8.89876139728694e-21
CCL17	38.33333857	3.53595218	0.384015	9.207841	3.32750240812098e-20	9.26031814803074e-19
CCL18	219.4507009	5.013002589	0.416685	12.03068	2.4512244260317e-33	3.41689790658036e-31
CCL2	219.0391117	2.70960795	0.264066	10.26111	1.0548200313302e-24	5.02786861134353e-23
CCL22	242.3671113	2.791283394	0.246728	11.31319	1.12903919615671e-29	1.02344466324448e-27
CCL4	8.866841556	2.544344293	0.418553	6.078908	1.21003709121459e-09	9.31556291822643e-09
CCL7	2.811686424	4.087403804	0.546993	7.472493	7.86894273318141e-14	1.04888023749895e-12
CCR7	34.07952061	2.513885333	0.229504	10.95355	6.3890355803107e-28	4.50304970653629e-26
CD177	24.75275684	6.486336874	0.55882	11.6072	3.78828311491411e-31	4.06903121973172e-29
CD1B	39.50310624	3.448410513	0.309421	11.14472	7.59824166830392e-29	6.04850892600721e-27

CD8BP	13.26308105	2.431642021	0.349874	6.950055	3.65143736926918e-12	3.86773663119752e-11
CDH12	89.71527664	-2.849195396	0.328528	-8.672606	4.22341801825927e-18	9.19245542849992e-17
CH25H	35.48170402	3.307644472	0.29807	11.09687	1.29909001778414e-28	9.91354241308556e-27
CHAC1	86.32888389	3.807610372	0.402898	9.450555	3.3704019053509e-21	1.05288132828113e-19
CHAT	1.713376509	4.961471904	0.679902	7.297337	2.93518324646084e-13	3.63582493451808e-12
CHI3L2	1296.743707	3.638911083	0.311055	11.69863	1.29532062268557e-31	1.46665833970795e-29
CHRM2	4.004985235	-2.45324215	0.474849	-5.166358	2.38698757439578e-07	1.33497643158611e-06
CHRM4	36.38502215	-5.20204312	0.357033	-14.57021	4.34570812119749e-48	3.16973929100553e-45
CHRNA6	2.359707781	3.858341964	0.519933	7.420841	1.16378981903062e-13	1.51834874725776e-12
CHST1	11.57592292	2.610326493	0.287271	9.086645	1.0214252916816e-19	2.71676803221825e-18
CLCN1	2.800328803	3.217933209	0.391906	8.210973	2.19402641654012e-16	3.94572503029611e-15
CLEC10A	139.3384315	2.391824118	0.211634	11.30171	1.28686647649455e-29	1.15317943339357e-27
CLEC3A	33.47219734	8.719476466	1.076449	8.10022	5.48600031543807e-16	9.37161840377993e-15
CLEC4C	2.898201664	2.421165744	0.419883	5.766289	8.10362045787708e-09	5.56884206925628e-08
CLEC7A	419.8181513	2.900662524	0.185431	15.64281	3.71941260518647e-55	8.33254692493347e-52
CLLU1	2.5285492	2.504273195	0.527409	4.74826	2.05173849180662e-06	9.99390061453995e-06
CLLU1OS	2.837277918	2.421129952	0.487925	4.962091	6.97383553586128e-07	3.64242094499173e-06
CNGB1	15.46121059	4.041385558	0.409449	9.87031	5.59912017369857e-23	2.17071452568457e-21
COL6A6	430.3337131	3.325222776	0.305835	10.87262	1.55668039182684e-27	1.0300363672839e-25
COMP	175.1020106	2.411232178	0.340902	7.073086	1.51525358302981e-12	1.70521755931636e-11
CPA6	2.259421947	2.908937078	0.636163	4.572632	4.8163592127014e-06	2.20816094645763e-05
CSF2	4.369899761	2.681691704	0.354769	7.558985	4.06227828583734e-14	5.59057903277764e-13
CTA-384D	2.504098671	3.376420221	0.495835	6.809569	9.7891251484969e-12	9.79974852082530e-11
CTA-384D	13.58491132	3.315834347	0.375804	8.823297	1.11138275637471e-18	2.56871103691499e-17
CTA-392E	1.204487429	2.789191049	0.656171	4.250706	2.13098047239104e-05	8.74703200315043e-05
CTB-114C	1.90534404	4.141804034	0.737298	5.617548	1.93686927909277e-08	1.26216430645057e-07
CTC-327F	2.484794985	-2.619990757	0.503705	-5.201438	1.97752552456145e-07	1.11955073199179e-06
CTC-327F	70.10903757	-3.298236898	0.31785	-10.37672	3.16462531974211e-25	1.60089207303857e-23
CTC-327F	21.03324608	-3.179052401	0.265457	-11.97575	4.76105783332431e-33	6.32736516459253e-31
CTC-490G	5.535506697	4.035588077	0.575201	7.015962	2.28372785000695e-12	2.48790692211247e-11
CTC-518B	138.978454	2.617743469	0.221279	11.83005	2.72969104769867e-32	3.34008722919537e-30
CTD-2022I	1.004399998	2.710584979	0.771312	3.514251	0.000440995	0.001397109
CTLA4	17.50889866	2.975572799	0.327977	9.07251	1.16306750213205e-19	3.06284207698317e-18
CTSC	2124.436234	2.580928739	0.155825	16.56298	1.29040605624345e-61	1.34907651826732e-57
CXCL1	57.58022407	4.789456026	0.457018	10.4798	1.06974004972336e-25	5.63887847386947e-24
CXCL10	93.40083485	2.956943238	0.503623	5.871343	4.32278402193048e-09	3.09049004020578e-08
CXCL11	16.92569606	2.99329319	0.534527	5.599893	2.14484429432608e-08	1.38617136713874e-07
CXCL13	8.584549073	3.61714924	0.633489	5.709883	1.13054175492509e-08	7.61725276078849e-08
CXCL6	9.12427929	6.84145808	0.696327	9.825068	8.78146147506363e-23	3.30241915712105e-21
CXCL8	275.5333161	5.630184232	0.554343	10.1565	3.09991404546807e-24	1.3969210362365e-22
CXCL9	95.18378432	2.834278916	0.507519	5.584581	2.34263726928876e-08	1.5062418063545e-07
CXCR2P1	5.220094124	2.565065453	0.365861	7.011035	2.36561574934312e-12	2.57025931514051e-11
CYP2W1	72.61912689	-2.382621741	0.275632	-8.644228	5.41701771531942e-18	1.16529042265623e-16
CYP4F35P	5.501153246	4.376577157	0.720386	6.075318	1.23742037939027e-09	9.50770523743174e-09
DAW1	8.790291078	-3.348928741	0.395744	-8.462369	2.62001039913995e-17	5.24068916827969e-16
DEFB103A	4.068066635	4.256000342	0.473919	8.980432	2.69705793509244e-19	6.77266013420651e-18
DEFB103E	3.396401595	4.341048144	0.505046	8.595348	8.30131063207956e-18	1.76158529542993e-16
DEFB4A	1274.78991	7.104156996	0.627178	11.32718	9.62577835450451e-30	8.80183417815392e-28
DEFB4B	109.959654	6.74017306	0.750682	8.978727	2.73917966897443e-19	6.87293049101713e-18
DRAIC	3.353683098	2.586718681	0.357364	7.238327	4.54253686888402e-13	5.49449002528648e-12
DSC2	5123.453935	2.491229969	0.191495	13.00937	1.08233603825198e-38	2.7598689027427e-36
EBI3	3.791200252	2.752818779	0.39046	7.050192	1.78670675013357e-12	1.98717271316274e-11
EEF1GP2	9.609077982	-4.788309685	0.513726	-9.320739	1.15533090695018e-20	3.39286503423083e-19
EGR4	2.000723111	3.451796519	0.491772	7.019102	2.23299160325286e-12	2.43686668908916e-11
ELF3	137.0743412	2.365981619	0.213151	11.10004	1.25392271677939e-28	9.61565576749845e-27
ELF5	126.1375728	2.928224907	0.271314	10.79274	3.72494911153771e-27	2.32265017761966e-25
ENKUR	22.76856552	3.462884662	0.319325	10.84439	2.12052880245613e-27	1.38270821954749e-25
EPGN	130.077697	3.610783399	0.357211	10.10827	5.07731377224893e-24	2.23032029625792e-22
EPHA8	1.207623604	2.487536814	0.549194	4.529434	5.91417727177637e-06	2.67395496543166e-05
ERBB4	62.12158981	-2.770849059	0.253155	-10.94528	6.99979394343024e-28	4.91144378616881e-26
FABP7	420.5772871	-2.600044227	0.369792	-7.031099	2.04912334730269e-12	2.25346089287523e-11
FAM133A	2.790786819	-2.480892297	0.455639	-5.444869	5.18436696906 57e-08	3.18391395374538e-07
FER1L6	2.395570841	2.419925743	0.484073	4.999089	5.76019401278622e-07	3.04864537659512e-06
FLJ26245	0.978471725	-2.569578589	0.6829	-3.762747	0.000168057	0.000581974
FMO2	185.794306	3.031726462	0.2752	11.01646	3.18347319139195e-28	2.31662304349924e-26
FOSL1	66.56144682	3.968935164	0.268857	14.76223	2.56652880928863e-49	2.43929119922814e-46
FUT3	91.07446337	2.704071353	0.221108	12.22963	2.15923889083117e-34	3.30353017424531e-32
G10019	5.314618473	-3.107436601	0.415353	-7.481437	7.35144838762792e-14	9.82406592371376e-13
G10488	7.605827042	-4.912734388	0.488127	-10.06445	7.93274613170651e-24	3.41761881421488e-22
G10489	12.75783133	-3.930246309	0.496429	-7.917037	2.43236483305526e-15	3.84519609999724e-14
G11194	3.551754904	-4.258949008	0.546633	-7.791233	6.63583519417659e-15	9.99158519866445e-14
G12186	3.984696744	-3.049128645	0.422889	-7.210231	5.58570880050885e-13	6.68964947411144e-12
G13548	1.63806151	-2.953532981	0.526932	-5.605145	2.0808064250911e-08	1.34728349951605e-07
G13883	15.47861521	3.488575959	0.385092	9.059071	1.31566174421665e-19	3.43870124546758e-18
G16052	1.515444249	2.369919938	0.598935	3.956892	7.59312506713287e-05	0.000282537
G16208	1.386571914	3.457550216	0.537806	6.428995	1.28450320256501e-10	1.11800565670017e-09
G18355	16.91669956	-2.600582331	0.320166	-8.122601	4.56298799170471e-16	7.88939114508415e-15
G19270	12.16236186	-5.827878614	0.455869	-12.7841	2.01181145063237e-37	4.32181194093381e-35
G19573	3.499934126	2.375375667	0.462021	5.141273	2.72883825050826e-07	1.51294472138839e-06
G23772	4.116729765	-3.129190518	0.388664	-8.051136	8.20287915278126e-16	1.37727570528818e-14
G23773	8.942455612	-3.099932815	0.313296	-9.894571	4.39490060343039e-23	1.72517725314131e-21

G23907	10.77177641	-2.872099552	0.363536	-7.900459	2.77878092061363e-15	4.37079662959508e-14
G25046	2.668046154	-4.095636826	0.488593	-8.382507	5.18120711256837e-17	1.00372686768743e-15
G25251	2.059815052	4.276357267	0.549236	7.786007	6.91602208662752e-15	1.03886071228441e-13
G25746	942.7349768	-2.741845376	0.32678	-8.390499	4.84083378035149e-17	9.43030501161144e-16
G2584	14.4949968	2.440442426	0.336514	7.252134	4.1025477672835e-13	4.99310470209856e-12
G2608	8.871969682	5.452661479	0.570615	9.555763	1.22676871413165e-21	4.02472530858003e-20
G26457	2.618790015	2.820851729	0.617529	4.567967	4.92476890516551e-06	2.25489710863666e-05
G26809	8.232448215	2.382168122	0.370496	6.429668	1.27883089128497e-10	1.11414589095171e-09
G27536	17.17759192	-2.792150818	0.526031	-5.307958	1.1085992855963e-07	6.5027319980255e-07
G28007	1.852120739	-2.568657296	0.545692	-4.707155	2.51197806689013e-06	1.20430571828099e-05
G30143	6.358988089	-2.605580557	0.278796	-9.345843	9.11600135914547e-21	2.71008783533875e-19
G30345	18.24553506	-3.868472164	0.284572	-13.594	4.34631605740395e-42	1.45018996621721e-39
G31721	4.250186231	2.400161686	0.609763	3.936223	8.27741435773289e-05	0.000305787
G32308	1.802872374	3.121775733	0.422563	7.38771	1.4937921160627e-13	1.92328801018845e-12
G32422	3.892364352	-3.718636474	0.425623	-8.736922	2.39547110593484e-18	5.33984049513435e-17
G33755	6.179752792	4.343357275	0.385202	11.27555	1.7330150568596e-29	1.5182760961828e-27
G33836	6.417439258	-3.14610766	0.55405	-5.678381	1.35975657946806e-08	9.05272879610192e-08
G33837	6.863113738	-4.465610736	0.547014	-8.163607	3.25164612485223e-16	5.73914626110666e-15
G3386	2.7536489	4.549218299	0.512078	8.883832	6.45955603921195e-19	1.54536625182184e-17
G3405	5.126830712	-3.888199109	0.439968	-8.837449	9.79288945554585e-19	2.28359988761145e-17
G34082	2.810351679	2.447812434	0.349587	7.002012	2.52312816382036e-12	2.72786596794422e-11
G34083	2.286545358	3.454916619	0.520017	6.643858	3.05576809306271e-11	2.87121361506348e-10
G34162	41.00707539	2.697221116	0.278851	9.672628	3.94124060568408e-22	1.36137742683563e-20
G35484	29.83807876	6.186091055	0.605625	10.2144	1.70940699171332e-24	8.00206580419353e-23
G36419	3.326043723	-2.549865964	0.425713	-5.989635	2.10312951236763e-09	1.56569081476141e-08
G36656	6.316318464	2.889655071	0.629271	4.592071	4.38869899499584e-06	2.02690554084891e-05
G3793	28.65671192	-4.071860922	0.289084	-14.08541	4.66933128158697e-45	2.15366038699549e-42
G39634	53.88742304	4.525416638	0.316753	14.28689	2.64125933823509e-46	1.45334136639308e-43
G39805	4.737969119	-3.408846872	0.397219	-8.581788	9.34094421706351e-18	1.96623741224148e-16
G40138	2.234930513	-4.594903876	0.554577	-8.285421	1.1769230741518e-16	2.18420208862114e-15
G41001	26.84604309	3.357104436	0.228048	14.72106	4.72169558673442e-49	4.23117886806681e-46
G41767	1.529409453	-2.374606896	0.506485	-4.688407	2.7533953436789e-06	1.31302425975638e-05
G43312	4.425788333	-2.915107926	0.356293	-8.181778	2.79684879439332e-16	4.97563049275962e-15
G43485	2.638183333	-3.018048329	0.529189	-5.703159	1.17607316963967e-08	7.90196205924989e-08
G43605	3.537369753	2.876873305	0.867833	3.315006	0.00091641	0.00270725
G5664	1.127295096	-3.385239801	0.587923	-5.757962	8.5135648322739e-09	5.83521519666605e-08
G7779	24.30612147	3.91131874	0.410852	9.520013	1.73156805395116e-21	5.60463368876411e-20
G8260	3.009854141	2.821792617	0.446175	6.324404	2.5421206223031e-10	2.1272964567213e-09
GAL3ST1	3.046235973	-2.562266346	0.378939	-6.761694	1.36387447890793e-11	1.33634986430704e-10
GDA	541.7081073	3.01984642	0.396182	7.622365	2.49069649623225e-14	3.50148834190176e-13
GJB2	13374.27242	3.560352619	0.265792	13.39526	6.44513913168461e-41	2.00143904679362e-38
GLRA3	5.944486796	-2.509763299	0.328358	-7.643367	2.1161413694903e-14	2.99777136010361e-13
GLT6D1	1.089209641	-3.24908579	0.547322	-5.936332	2.91470116033228e-09	2.1264639961075e-08
GNL2P1	2.534782518	-2.457330038	0.466715	-5.265164	1.40064478702204e-07	8.0916970160544e-07
GPC5-AS2	1.82168013	-3.216953694	0.475504	-6.765357	1.32980964391872e-11	1.3054193950506e-10
GPR158	28.78468402	3.324626776	0.424178	7.837819	4.58438440308781e-15	7.01388450821688e-14
GPRIN1	183.6742755	3.017069268	0.19153	15.75248	6.60427813699005e-56	2.07136579488556e-52
GSX2	5.91377743	-2.547888963	0.351869	-7.241013	4.45345487705718e-13	5.38881785355021e-12
GZMB	29.46591285	2.756573964	0.325491	8.468981	2.47549182504128e-17	4.96110706713064e-16
HABP2	2.79978902	3.623486062	0.498275	7.272058	3.54051862276391e-13	4.34107998766096e-12
HAS3	445.8247251	2.974691556	0.250747	11.86332	1.83553204471236e-32	2.26652075001411e-30
HEPHL1	2728.874466	5.626736921	0.416972	13.49429	1.68969721393777e-41	5.40772075693287e-39
HMGA2	5.317206516	2.736616502	0.412595	6.632688	3.296278985114e-11	3.08518335091362e-10
HRH2	53.21767522	2.937421878	0.271638	10.81375	2.96303706539993e-27	1.87364303466136e-25
HRH3	7.942844164	4.243017922	0.370494	11.45233	2.28908334387608e-30	2.22274953552103e-28
HRNR	389.0382821	2.494349828	0.328008	7.604547	2.85902648808965e-14	3.99601188825507e-13
HS3ST3A1	32.84473367	3.747307554	0.303273	12.35621	4.50921781901299e-35	7.44353198292229e-33
HSD11B1	403.7201381	-2.776306182	0.273542	-10.14947	3.33174293484015e-24	1.49708861616514e-22
HSD17B13	44.58515027	-3.13031241	0.419339	-7.464868	8.33831387261971e-14	1.10720946782745e-12
HSPD1P2	6.393608922	3.130518032	0.747757	4.186542	2.83236398967701e-05	0.000113512
HSPD1P3	46.63296099	4.9679026	0.692298	7.175959	7.18020554048735e-13	8.50453045966183e-12
HTR3A	83.2088133	3.835111582	0.342008	11.2135	3.50073488797231e-29	2.94860165099094e-27
HTR7	28.02304725	2.964109796	0.29385	10.08717	6.29608313415141e-24	2.74704772934038e-22
ICOS	18.86154203	2.675787343	0.287074	9.320884	1.15375055164845e-20	3.39139946597021e-19
IFI27	2821.156038	4.346456676	0.373523	11.63639	2.69182836762797e-31	2.95197569658334e-29
IFI6	737.4308159	3.022120484	0.366251	8.251509	1.56406456871596e-16	2.86036857919576e-15
IFNE	1.607922723	3.742745136	0.610557	6.130045	8.78539595177603e-10	6.86118422887721e-09
IGFL1	65.27760227	3.70282126	0.408767	9.058519	1.32233319767167e-19	3.45326048391125e-18
IGFL4	107.3896329	2.602275585	0.212512	12.24532	1.77968269616694e-34	2.74965360012709e-32
IGHD	2.031191032	-2.629937711	0.756646	-3.475782	0.000509366	0.001593908
IGHG1	95.42133701	4.259982621	0.604992	7.041385	1.90337978062488e-12	2.10425109057169e-11
IGHG2	16.76240275	2.814971709	0.677421	4.155427	3.24680509707784e-05	0.000128853
IGHG4	30.18733249	6.561959403	1.126469	5.825245	5.70289886488215e-09	4.00595117577074e-08
IGHGP	8.693738349	4.440785348	0.830055	5.349988	8.79599559423832e-08	5.23089885888682e-07
IGKV1-5	6.257718937	2.40378778	0.831928	2.889418	0.003859553	0.009896259
IGKV2-24	1.093021414	-2.884498742	0.65924	-4.375493	1.21158592374152e-05	5.2012292516054e-05
IGKV3-20	5.792807247	2.358295449	0.742884	3.174514	0.001500874	0.004233825
IGKV6-21	1.602170182	-2.392038446	0.496046	-4.822213	1.41974440839586e-06	7.09058337976558e-06
IL13	5.897498188	4.94657274	0.528028	9.368016	7.39084380944188e-21	2.22462980076137e-19
IL13RA2	7.270827862	2.732947968	0.327052	8.356322	6.4703687059817e-17	1.24424674490748e-15
IL17F	1.758651724	2.91897473	0.846622	3.447789	0.000565196	0.00175166

IL19	45.51829015	8.208018874	0.809472	10.13996	3.67242864683961e-24	1.63843601820025e-22
IL20	27.19186879	5.593947361	0.557551	10.03306	1.0908302105301e-23	4.62335117879272e-22
IL22	6.379772363	6.078160564	0.555623	10.93937	7.47208028355376e-28	5.19767268987561e-26
IL26	5.021460017	4.610335038	0.457344	10.08066	6.72695454845621e-24	2.91817707410485e-22
IL2RA	22.3368745	3.22503002	0.299165	10.7801	4.2740527121689e-27	2.63362257886965e-25
IL36A	133.4328375	7.256784754	0.697941	10.39743	2.54722446550608e-25	1.30115876443213e-23
IL36G	1765.225261	2.441176012	0.226945	10.7567	5.51064928410981e-27	3.36912288785225e-25
IL37	935.2384378	-2.701999084	0.21084	-12.81541	1.34422444693502e-37	2.96903208124435e-35
IL4I1	26.4498637	3.274375259	0.307124	10.66139	1.54267276378136e-26	8.9435099007835e-25
IL6	1.633452698	3.36612832	0.595335	5.654179	1.56592809181134e-08	1.0350636179467e-07
ITGAX	67.60262665	2.566241056	0.204849	12.52745	5.28357335612322e-36	9.50017256616024e-34
KB-1410C.	2.008806296	-2.412179841	0.436268	-5.529119	3.21843584028802e-08	2.03637324379249e-07
KB-1410C.	4.070835643	-3.405017256	0.427694	-7.961333	1.70195806501857e-15	2.74025732809253e-14
KB-1410C.	14.44846951	-3.657790545	0.250559	-14.59853	2.86974907117959e-48	2.14301928258278e-45
KCNK10	42.9051376	3.144729361	0.280228	11.22202	3.17928541120072e-29	2.69500290910539e-27
KCNV1	5.521983498	-3.093665758	0.391856	-7.894911	2.90522440421141e-15	4.55369606265301e-14
KLHDC7B	14.877624	3.609333889	0.366371	9.85158	6.74746433032432e-23	2.57454344594029e-21
KLK6	311.8341256	2.633552718	0.356651	7.384107	1.53480144257822e-13	1.97042621551467e-12
KRT16	34049.84615	5.903511061	0.410806	14.37056	7.91916055734316e-47	4.51593730400929e-44
KRT16P1	8.066897051	4.302687054	0.527839	8.151516	3.59388771740289e-16	6.29713376361028e-15
KRT16P2	27.2345147	3.716498377	0.413128	8.996001	2.34088342153408e-19	5.91325275869974e-18
KRT16P3	11.34723434	3.303723988	0.32565	10.14502	3.48719579226101e-24	1.56246298326392e-22
KRT16P5	4.159581113	3.039037705	0.381679	7.962292	1.68881735557008e-15	2.72189452929599e-14
KRT16P6	41.24563168	3.881502574	0.353075	10.99343	4.11006023411255e-28	2.94310340599785e-26
KRT24	4.84611033	3.182555876	0.828294	3.842303	0.000121885	0.000435996
KRT43P	3.740357962	-2.427590459	0.462681	-5.246791	1.54771563461271e-07	8.88142620417376e-07
KRT6A	66371.11857	4.915798371	0.371759	13.22308	6.45655257307088e-40	1.82435418830446e-37
KRT6B	15951.49673	3.781519962	0.352027	10.74212	6.45443104810738e-27	3.90804585700463e-25
KRT6C	6587.461903	5.867778052	0.558607	10.5043	8.25286070133108e-26	4.40958642310984e-24
KRT77	4773.314462	-3.518158484	0.244463	-14.39137	5.86265552969681e-47	3.60541819673354e-44
LAIR2	2.522863459	3.184556031	0.582936	5.462963	4.682512740375e-08	2.89326890443502e-07
LCE3A	422.8414013	8.233511087	0.525423	15.67026	2.41572152617226e-55	5.82820691898976e-52
LCE3B	3.201977497	4.553150972	1.266207	3.595898	0.000323274	0.001060251
LCE3C	76.0673582	5.714391041	0.901154	6.341192	2.27994200085569e-10	1.92122785907679e-09
LCE3D	2660.286661	5.95137986	0.345212	17.23979	1.33517056850111e-66	4.18762897104689e-62
LCE3E	915.3117722	5.915201809	0.359021	16.47593	5.46386324534575e-61	4.2842151706756e-57
LCE5A	418.4839228	-3.647634106	0.242134	-15.06453	2.77128503570933e-51	3.77906886347772e-48
LCN2	697.3875498	2.836710603	0.347595	8.160974	3.32332595063398e-16	5.84920286844468e-15
LGALS9B	8.304046493	3.813569874	0.423454	9.005862	2.13978155822137e-19	5.42978226472939e-18
LGALS9C	8.67490245	4.680946826	0.51904	9.018475	1.90725945568325e-19	4.87524739755905e-18
LINC0047	3.453865918	3.284555675	0.451232	7.279076	3.36113175143846e-13	4.13243968060039e-12
LINC0115	1.125954509	-2.628669749	0.664322	-3.956919	7.5922590624432e-05	0.000282537
LINC0120	10.70898235	4.885233376	0.569647	8.575901	9.83138191088842e-18	2.06669880866692e-16
LINC0121	19.83600417	5.173996153	0.45467	11.37967	5.28008708358019e-30	4.91408460799434e-28
LINC0121	2.642251708	-2.417204455	0.437189	-5.528969	3.22117921335032e-08	2.03769795981281e-07
LINC0122	6.163833829	-2.386436252	0.295182	-8.084614	6.23613187466436e-16	1.06125903481808e-14
LINC0125	1.94587128	2.396987796	0.402176	5.960046	2.52167548989055e-09	1.85352308565567e-08
LINC0144	1.506172382	-2.737263022	1.027831	-2.663146	0.007741375	0.018334251
LINC0152	287.9008447	2.363923504	0.29674	7.966318	1.63472370274605e-15	2.64013770406423e-14
LINC0160	67.20791356	3.968693091	0.246134	16.12412	1.72705575550182e-58	9.02789611925986e-55
LINGO2	4.462793333	-2.42928598	0.406086	-5.98219	2.20157656970353e-09	1.63200774124749e-08
LTF	1264.524502	5.546843935	0.490999	11.29705	1.35701528706687e-29	1.20913146203331e-27
LURAP1L	341.98104	2.359593565	0.161447	14.61532	2.24286833152322e-48	1.71573956950961e-45
MAB21L1	15.27467216	-2.975208008	0.356276	-8.35086	6.77676742190281e-17	1.29997879767927e-15
MATK	31.50534286	3.013819464	0.213925	14.08821	4.48794947123908e-45	2.10089622710362e-42
MDFI	199.1173426	2.754638713	0.173667	15.86166	1.16769626482024e-56	4.0692917388691e-53
MIR31HG	4.856662832	4.669953446	0.512212	9.11723	7.70690493027654e-20	2.07306489050766e-18
MIR3945H	1.55924769	3.732449406	0.539273	6.921266	4.47624997589768e-12	4.68758277943422e-11
MMP1	22.78301564	6.150630289	0.499769	12.30694	8.31114109934765e-35	1.31521432394405e-32
MMP10	1.619467628	3.435636312	0.723544	4.748342	2.05090737363933e-06	9.99140398676978e-06
MMP12	209.2287189	5.869083467	0.496151	11.82923	2.75653128301148e-32	3.3510018279214e-30
MMP3	24.99396729	4.650678169	0.650568	7.148642	8.7640689286737e-13	1.02374770159747e-11
MTNR1B	1.144616441	2.801776373	0.513995	5.450975	5.00944507883442e-08	3.08252374833359e-07
MX1	811.2325128	2.419646564	0.293005	8.258029	1.48097105985716e-16	2.71791552494792e-15
NELL2	693.1786111	4.036121568	0.302492	13.34291	1.30279311358081e-40	3.96706827323771e-38
NHEG1	12.08048606	-2.613883059	0.231972	-11.26809	1.88627136817532e-29	1.63880928508174e-27
NPIPB6	7.711177972	-3.507084794	0.439269	-7.983916	1.41762172992048e-15	2.30733201524429e-14
NPIPB7	3.593143886	-3.488618782	0.507382	-6.875728	6.16740137273196e-12	6.3400320109592e-11
NPY5R	27.40218548	-2.830521822	0.228783	-12.37207	3.70159319398542e-35	6.24176177076122e-33
NR4A3	78.45267072	2.713685417	0.21062	12.88425	5.52063528090539e-38	1.27315591875233e-35
NTM-AS1	2.545327198	-2.661810881	0.408514	-6.515841	7.22837285076485e-11	6.4978700513439e-10
NTRK1	12.33145484	6.446446769	0.571444	11.28097	1.62938719506488e-29	1.43955211228211e-27
NXNL2	2.079753758	-2.912610461	0.486803	-5.983141	2.18874583805606e-09	1.62364769311235e-08
OAS2	487.8532631	2.869523554	0.34446	8.330507	8.04971203947146e-17	1.52920150457894e-15
OASL	216.4592765	4.250345115	0.369914	11.4901	1.47934823293436e-30	1.4776521648966e-28
OGDHL	4.778430587	3.779386428	0.4907	7.702033	1.33918326257199e-14	1.94364386151355e-13
OLFM4	34.46750336	6.405768231	0.693971	9.230599	2.6912156596771e-20	7.57695583035123e-19
OR2I1P	2.890250991	3.186556993	0.490861	6.491769	8.48342613639237e-11	7.55463308750171e-10
OSM	9.543839192	3.226546816	0.450439	7.163114	7.88648419172968e-13	9.30243287662316e-12
PAK7	7.368020891	-2.523273498	0.350591	-7.19719	6.1466190416087e-13	7.32734928244072e-12
PCAT29	1.527380023	2.362505937	0.453479	5.209732	1.89113960448872e-07	1.07452359701421e-06

PGF	123.1687924	2.426329643	0.18426	13.16799	1.34125922281108e-39	3.59549181745698e-37
PHBP16	7.080674111	3.931006459	0.507261	7.749476	9.22723977192897e-15	1.36639824460236e-13
PHYHIP	405.4481978	-3.234728652	0.195194	-16.57188	1.11291404063682e-61	1.34907651826732e-57
PI3	3793.760369	5.25464454	0.461631	11.38277	5.09543847704702e-30	4.75634917839592e-28
PITX1	73.87939233	2.858233984	0.297727	9.600176	7.98083759193308e-22	2.67140864710127e-20
PLAC1	5.86788043	-2.4068123	0.344936	-6.97757	3.00328650892239e-12	3.22034454925955e-11
PLAT	366.1291347	3.00953569	0.270437	11.1284	9.12592512908706e-29	7.20971072414828e-27
PLPPR5	1.134507005	-2.6032739	0.606476	-4.292462	1.76702455507691e-05	7.36980826402023e-05
PMCHL1	1.573918656	-3.74699805	0.671352	-5.581274	2.38763799188728e-08	1.53391802493963e-07
PPP1R3C	534.1276072	3.12252672	0.235097	13.28188	2.94895063314387e-40	8.48540253742424e-38
PRSS22	238.0880171	3.462572537	0.270214	12.81419	1.3656094069845e-37	2.99517296787846e-35
PRSS27	193.6889112	3.046872467	0.226896	13.4285	4.11638672867718e-41	1.29106353358231e-38
PSG5	13.78233721	-2.86423776	0.312138	-9.176191	4.46610473522632e-20	1.23088672157854e-18
RAB3B	473.7515206	-3.487306057	0.234234	-14.88813	3.93603560537466e-50	4.40892216882039e-47
RAD17P1	3.521414878	-4.023902768	0.62811	-6.40637	1.49025374896449e-10	1.28584095137613e-09
RBPJP7	1.760774446	-2.897947536	0.543784	-5.329222	9.86343309365379e-08	5.83802067464347e-07
RHCG	1035.168631	3.727623442	0.414981	8.982638	2.643520835131e-19	6.64886828172002e-18
RN7SL142	0.922483181	3.049540558	0.605224	5.038696	4.68715336364819e-07	2.51123809527608e-06
RNA5S9	10.00303055	3.028835993	0.448643	6.751099	1.46729278354203e-11	1.43097546215834e-10
RNA5SP49	1.668956889	3.200463885	0.555019	5.7664	8.09829266404897e-09	5.56640041891807e-08
RND1	34.55212613	3.406528621	0.389564	8.744459	2.24086749812861e-18	5.01302198368799e-17
RNU2-63P	3.58017136	2.415026701	0.441382	5.471517	4.46198272754015e-08	2.76463109969517e-07
RNU5A-8P	6.410233138	2.625310039	0.431559	6.083316	1.17722307001335e-09	9.07854053796375e-09
RNU5F-1	47.53905392	3.09808828	0.347713	8.909904	5.10767435339599e-19	1.23799921499159e-17
RNU6-140	5.5274844	3.058907317	0.451336	6.777447	1.22317920767753e-11	1.20868912002514e-10
RNU6-495	2.170560136	-3.194551613	0.436825	-7.313113	2.61023495119746e-13	3.25646018334754e-12
RNU6-745	1.480593147	2.520807895	0.561762	4.487321	7.21242799722961e-06	3.21639294355279e-05
RP11-1070	1.397514218	2.647439403	0.435729	6.075886	1.23305087252449e-09	9.47645370395932e-09
RP11-121E	1.259425101	-2.477286578	0.522138	-4.744505	2.09016885995834e-06	1.01621541038185e-05
RP11-138E	1.862935685	2.420014546	0.530991	4.557543	5.17556096115416e-06	2.36076634650435e-05
RP11-150C	1.104243423	2.479035256	0.551911	4.491731	7.06466236029148e-06	3.15410776182465e-05
RP11-150C	10.09986527	-3.425238257	0.3298	-10.38579	2.87769362215039e-25	1.45809342108441e-23
RP11-15A1	2.726612631	-2.551285401	0.365166	-6.986651	2.81525904591449e-12	3.02885307522749e-11
RP11-15F1	5.356522545	2.617184002	0.367702	7.117684	1.0975550865254e-12	1.26048032712496e-11
RP11-184N	3.303369119	2.658025243	0.395724	6.716869	1.85671017379264e-11	1.78357910844815e-10
RP11-217L	1.399378464	-2.767425555	0.493423	-5.608625	2.03939985723568e-08	1.32320515354448e-07
RP11-243E	2.124933803	3.229018679	0.555339	5.8145	6.0815323247273e-09	4.25097347521166e-08
RP11-275I	2.347094394	2.695089062	0.424227	6.352938	2.11240768762616e-10	1.7887028810666e-09
RP11-350J	18.64496115	3.055759976	0.284316	10.74776	6.07194043542336e-27	3.68356556705258e-25
RP11-398E	3.387857215	3.597250723	0.569	6.322055	2.58107136566854e-10	2.15816375134172e-09
RP11-3L21	1.872028374	-2.648713328	0.531613	-4.982409	6.27976210439548e-07	3.30356354649882e-06
RP11-402P	6.454866786	3.115779457	0.305996	10.18243	2.3756291527333e-24	1.08772602549383e-22
RP11-414J	1.905525216	2.776068706	0.494849	5.609936	2.0240170422322e-08	1.31431201889381e-07
RP11-416L	0.973957552	3.002271143	0.554829	5.411167	6.2615268055678e-08	3.7963759275049e-07
RP11-420k	1.1216712	-2.673333096	0.650155	-4.111837	3.92524187688489e-05	0.0001532
RP11-430I	6.650689611	4.797742935	0.443585	10.81583	2.89645156353262e-27	1.83895357972949e-25
RP11-430I	3.679823438	4.569432045	0.491777	9.291683	1.51867073149569e-20	4.40218011299731e-19
RP11-514F	1.004839563	-2.492047912	0.562839	-4.42764	9.52698793223083e-06	4.16917049681161e-05
RP11-527N	13.90951303	3.886628339	0.301936	12.87234	6.44176817224517e-38	1.45352242413164e-35
RP11-544M	1.158216139	-2.645106327	0.545855	-4.845801	1.26101847111629e-06	6.34637088063084e-06
RP11-546k	3.307793869	-2.511631203	0.431379	-5.822333	5.80316729620476e-09	4.06818370760318e-08
RP11-557I	29.57228051	2.914541843	0.267438	10.89802	1.17795808768328e-27	7.96238738407292e-26
RP11-589E	1.520351789	-2.55058566	0.505121	-5.049451	4.43082555646176e-07	2.38245178729413e-06
RP11-597M	1.904399068	-2.903975614	0.54859	-5.293531	1.19976934870777e-07	7.00606327552979e-07
RP11-616M	2.060612993	-2.561215685	0.649781	-3.941657	8.09205515739107e-05	0.000299574
RP11-616M	1.746498059	-2.452910462	0.598483	-4.098548	4.15749752734631e-05	0.000161341
RP11-63P1	3.603026984	2.810684057	0.52667	5.336707	9.46499445753457e-08	5.60960102354713e-07
RP11-641A	13.29075632	-3.136944946	0.338923	-9.255614	2.13003089174335e-20	6.0954643146568e-19
RP11-651k	1.684784942	-2.546646021	0.534791	-4.761945	1.91736191578848e-06	9.38600579472293e-06
RP11-707A	22.25349878	-2.828498581	0.345778	-8.180096	2.83618717366346e-16	5.04275365730005e-15
RP11-70D2	1.313242251	-2.564164868	0.557664	-4.59805	4.26464537302171e-06	1.97542958912203e-05
RP11-757C	1.895999722	3.805432329	0.679794	5.59792	2.16938416475077e-08	1.40174217023575e-07
RP11-757C	1.143060485	3.228088165	0.817215	3.950107	7.81161715693092e-05	0.000290048
RP11-7F17	0.936341853	3.181404329	0.671273	4.739363	2.14390917562223e-06	1.04089113597857e-05
RP11-83M	1.304245833	-2.580512474	0.593052	-4.351241	1.35369086582126e-05	5.75768379653078e-05
RP11-875C	1.090255948	2.469136963	0.525281	4.700602	2.59395979814608e-06	1.24228057885255e-05
RP11-973F	1.267785128	-2.466178548	0.532134	-4.63451	3.5778473838l4e-06	1.68012584737l5e-05
RP4-529N6	56.31257799	3.44691091	0.29422	11.71543	1.06252205976557e-31	1.2074254305249e-29
RP4-735C1	2.097806454	-2.567418392	0.430235	-5.967483	2.40940751685682e-09	1.77557935523255e-08
RP4-736H5	1.316270195	-2.534405514	0.572909	-4.423745	9.7004408575953e-06	4.23621034610998e-05
RP5-1011C	1.452145435	-3.714391558	0.571119	-6.503704	7.83657927626843e-11	7.01846009197267e-10
RP5-1097P	6.264753183	2.542064851	0.357481	7.111059	1.15156106064126e-12	1.31719770627107e-11
RP5-884M	1.309462501	2.894274669	0.808168	3.581279	0.000341916	0.001114282
RPL7AP15	3.443059409	-2.38284532	0.39325	-6.059361	1.36663297397035e-09	1.04365903568556e-08
RSU1P2	1.537103365	-2.699906891	0.618129	-4.367873	1.25462482255871e-05	5.37569029162999e-05
RTP4	57.38266995	2.656246487	0.239283	11.10084	1.24267859088657e-28	9.55278708935454e-27
RUFY4	6.362718166	3.813604238	0.397874	9.584964	9.24896540180017e-22	3.06967778690011e-20
S100A12	134.1280421	5.593038518	0.540433	10.34918	4.22066160138008e-25	2.11802928745096e-23
S100A2	4177.858381	2.722112204	0.177645	15.32336	5.33871821149128e-53	9.84962105795368e-50
S100A7	30923.08636	6.238598199	0.452904	13.77467	3.62039382837632e-43	1.36807267509874e-40
S100A7A	5299.685678	6.804548231	0.596895	11.39991	4.18539986253937e-30	3.91853376981148e-28

S100A8	45298.14633	6.32050657	0.477388	13.23978	5.17020263668131e-40	1.4741657772443e-37
S100A9	58959.28413	6.402380999	0.575901	11.11715	1.03530686816909e-28	8.09759716041281e-27
S100P	196.8137337	2.464401299	0.291912	8.442284	3.11194862718847e-17	6.16570794334424e-16
SCGB3A2	8.99702297	-3.266067471	0.326916	-9.990543	1.67659937809042e-23	6.91906090716158e-22
SCUBE1	10.07409264	-2.398722781	0.263619	-9.099189	9.10088403219949e-20	2.43549596233707e-18
SELE	151.0710938	2.416074975	0.225186	10.72926	7.41892569970824e-27	4.41531661566697e-25
SERPINB3	7446.487848	4.562457139	0.345503	13.20526	8.1818809730556e-40	2.27094260919395e-37
SERPINB4	9320.27553	7.573252153	0.534943	14.15712	1.68774632470375e-45	8.4022977346045e-43
SERPINE1	91.12407019	3.009013788	0.232134	12.96242	1.99850918128811e-38	4.97470174300955e-36
SH2D5	12.15820212	4.464709771	0.359972	12.40293	2.51941793955916e-35	4.34170462946887e-33
SLAMF1	27.67533793	2.451846575	0.237616	10.31851	5.81189220718073e-25	2.87514490829679e-23
SLAMF9	1.55403988	2.826050402	0.463254	6.100436	1.05779633061815e-09	8.21002823892792e-09
SLC18A3	1.001239664	4.593285702	1.342992	3.420189	0.000625776	0.001919308
SLC5A5	31.59868613	6.80569515	0.527109	12.91137	3.88309625515709e-38	9.08876350348857e-36
SLCO1A2	5.59931667	-3.644900506	0.451813	-8.067268	7.18884515955544e-16	1.21547676325767e-14
SLN	4.306890658	-2.393495599	0.393268	-6.086164	1.15648201515636e-09	8.93176604859987e-09
SNORD39	1.449849749	3.358142708	0.504582	6.655293	2.82735534156332e-11	2.66698264459525e-10
SOCS3	444.4856298	3.34743204	0.22488	14.88542	4.09915024864953e-50	4.43330166891875e-47
SOST	12.69336997	4.464222899	0.623462	7.160377	8.04555016080402e-13	9.45727463043792e-12
SOX2	21.17906935	2.696151375	0.221025	12.1984	3.17003673056995e-34	4.80314164336212e-32
SPINK1	11.59772101	-3.183973656	0.306212	-10.39794	2.53357258404366e-25	1.29629641967284e-23
SPINK6	2.967393809	2.928925043	0.614314	4.767798	1.86250117102282e-06	9.12599386470234e-06
SPRR1A	702.4893934	4.250673648	0.314915	13.49783	1.61057942314367e-41	5.20765082757506e-39
SPRR1B	3155.561868	3.875334052	0.269412	14.3844	6.48383219974767e-47	3.83696062477144e-44
SPRR2A	4999.572708	6.718172401	0.537914	12.4893	8.54014084178101e-36	1.50479200764955e-33
SPRR2B	2074.356504	6.567530494	0.496977	13.21496	7.19266858200668e-40	2.01420408398266e-37
SPRR2C	44.4806414	5.800019746	0.720612	8.048745	8.36474018050222e-16	1.40140807405614e-14
SPRR2D	3123.651288	4.777506651	0.364133	13.12021	2.52224806872118e-39	6.70404986672635e-37
SPRR2E	9308.990418	3.425824433	0.269441	12.71456	4.90847093877049e-37	1.01282422712893e-34
SPRR2F	1015.923046	6.556780113	0.585371	11.20106	4.02863571860788e-29	3.3694434847578e-27
SPRR2G	6823.183168	5.02339701	0.362662	13.85144	1.24683239928328e-43	5.0135450475796e-41
SPRR3	9.228442685	5.079864357	0.63241	8.032554	9.54644095384451e-16	1.58924493316156e-14
STRA8	2.316058636	-3.022206337	0.561188	-5.385369	7.22963007830097e-08	4.34970492568256e-07
TBX20	0.992313241	3.954869033	0.716877	5.516806	3.45215205769499e-08	2.1728536451444e-07
TCN1	773.5004696	6.183828892	0.572229	10.80657	3.20430148938302e-27	2.01402228282583e-25
TEX101	15.11746817	3.245626446	0.313294	10.35968	3.7822086885042e-25	1.90409620074231e-23
TEX11	2.428734929	3.737362401	0.544318	6.866143	6.59609853541135e-12	6.74755494013834e-11
TEX15	4.884597749	3.784591596	0.454689	8.323466	8.54274596760086e-17	1.61601136627161e-15
TGM6	34.19856847	4.012683724	0.50129	8.004713	1.19745368764639e-15	1.96119777855568e-14
TMC1	9.170185199	2.395164354	0.3383	7.080001	1.44153682944789e-12	1.62517473468022e-11
TMEM105	6.226539101	2.51045145	0.288189	8.711132	3.00854286098008e-18	6.65443852551335e-17
TMEM229	2.342804672	2.979995968	0.696667	4.277506	1.8899903567483e-05	7.84095999326108e-05
TMPRSS1	309.3657146	3.375677771	0.380328	8.875695	6.94980937682349e-19	1.6550783697395e-17
TMPRSS4	324.1726113	3.999270712	0.249896	16.00373	1.20335983623925e-57	5.39173970054397e-54
TMPRSS6	33.68177967	-2.469975523	0.245975	-10.04157	1.00066553304155e-23	4.26424915466239e-22
TNC	1772.995696	2.926984672	0.202872	14.42777	3.46066242614082e-47	2.26125450694751e-44
TNFRSF21	362.8191501	2.596591572	0.165079	15.72937	9.51558563106886e-56	2.4870568977737e-52
TNFRSF4	9.360995727	2.359418582	0.286931	8.222947	1.98562240526528e-16	3.58532303504549e-15
TNFRSF9	23.01019839	3.125075058	0.334286	9.3485	8.88990945668005e-21	2.65040988782617e-19
TNIP3	68.33455067	3.872477935	0.54869	7.057681	1.69304659596435e-12	1.89239891075644e-11
TNNC1	39.25971221	-3.622931268	0.264808	-13.68136	1.31219106104703e-42	4.67676823166806e-40
TNPO1P2	1.61467901	3.741681678	0.719079	5.203433	1.95640240522632e-07	1.10839243203361e-06
TNPO1P3	6.796208313	3.736434626	0.465338	8.029511	9.78617947463265e-16	1.62743230669342e-14
TRAV12-2	1.688251664	2.811617795	0.559073	5.02907	4.92863480393983e-07	2.63252217286732e-06
TRAV12-3	1.810869377	2.634469019	0.523547	5.03196	4.85491238515389e-07	2.59712556793393e-06
TRAV21	1.548354586	2.383461102	0.507342	4.697933	2.62807275145931e-06	1.25650722220686e-05
TRAV23D	0.980368043	2.594400538	0.582832	4.45137	8.53239887615039e-06	3.76121093958652e-05
TRAV3	1.249360824	2.399686101	0.520185	4.613135	3.96639754011928e-06	1.84792175353983e-05
TRBV3-1	1.074146704	2.601701423	0.486831	5.344159	9.08379142032194e-08	5.39386660558457e-07
TRBV6-5	1.170483518	2.547418729	0.533321	4.776519	1.78355421516202e-06	8.76930465658279e-06
TREML2	8.962071064	3.850431831	0.346255	11.12023	1.00014670536857e-28	7.84215031679494e-27
TRIM10	54.89917789	3.679936834	0.283602	12.97572	1.68016322089249e-38	4.21573114080576e-36
TRIM15	52.0026195	3.82209657	0.323846	11.80221	3.80184347924245e-32	4.51670526071819e-30
TRIM40	1.710712421	3.194258661	0.54695	5.840127	5.21611860563097e-09	3.69296487465033e-08
TRIM60P1	1.752819476	-3.049709716	0.530173	-5.752294	8.80404548159842e-09	6.01852838894623e-08
TYMP	1100.667239	3.146047924	0.24522	12.82951	1.12072419624128e-37	2.49293572275968e-35
UGT1A7	152.5041642	2.884760477	0.243855	11.82983	2.73690351327385e-32	3.34008722919537e-30
UGT3A1	1.148589441	-2.566874788	0.526461	-4.875721	1.08412011443241e-06	5.51270156761642e-06
UGT3A2	169.1671857	-4.100037786	0.349027	-11.74706	7.31193432713378e-32	8.46241727808944e-30
ULBP2	14.83617837	3.303661549	0.312121	10.58456	3.51439928221223e-26	1.96480604433698e-24
VNN3	66.99789546	3.776959098	0.48829	7.735077	1.03340364308161e-14	1.51811109422068e-13
WDR66	113.4611766	2.494899757	0.237481	10.50567	8.13417542395715e-26	4.36409971197049e-24
WFIKKN2	6.982496201	-2.796019663	0.332875	-8.399607	4.47977247494509e-17	8.75411737720734e-16
WIF1	228.5611583	-2.87108932	0.357776	-8.024818	1.01676704220663e-15	1.68462131599412e-14
XCL2	3.124878191	2.530210097	0.448413	5.642585	1.67515626242022e-08	1.10238357143407e-07
XLOC_001	1.706276947	-2.744533908	0.511316	-5.367589	7.97960154406793e-08	4.77345456471765e-07
XLOC_002	5.976344222	3.837917368	0.462092	8.305525	9.93788730009964e-17	1.86307171117947e-15
XLOC_003	29.9054152	2.907751791	0.249673	11.64624	2.39817200411231e-31	2.65781861261408e-29
XLOC_003	5.484863593	2.684769185	0.366724	7.320945	2.46230886352063e-13	3.08171808441585e-12
XLOC_004	6.64729582	2.373899591	0.336182	7.061355	1.64886391061694e-12	1.84816932627715e-11
XLOC_004	8.156576663	3.19636994	0.327967	9.745996	1.91887306771755e-22	6.91764768918313e-21

XLOC_005	2.640964186	-2.389668745	0.492566	-4.851464	1.22553251424324e-06	6.18067241947661e-06
XLOC_006	1.469830985	-2.681031349	0.581827	-4.607952	4.0665455949673e-06	1.88980791288419e-05
XLOC_007	15.16141891	4.2373616	0.299552	14.14564	1.98690838388504e-45	9.73709289877663e-43
XLOC_007	2.071435875	3.38157404	0.545653	6.197293	5.7442493179351e-10	4.58429098238465e-09
XLOC_008	36.59869167	3.96756646	0.386379	10.2686	9.76156321820627e-25	4.68137108219911e-23
XLOC_008	3.102193881	3.926301879	0.868096	4.522892	6.10004937284874e-06	2.7516460309223e-05
XLOC_009	16.27896301	4.107740671	0.307107	13.3756	8.39760156539473e-41	2.58218015193177e-38
XLOC_011	2.366360485	-3.244677778	0.53429	-6.072883	1.25633990548988e-09	9.64126371318442e-09
XLOC_011	4.213423649	2.614135492	0.43795	5.969029	2.38669500984713e-09	1.76091042787216e-08
XLOC_013	1.47846039	-3.684817765	0.565253	-6.518879	7.08349487942057e-11	6.37494213481053e-10
XLOC_013	5.240513234	2.787782388	0.366834	7.599584	2.97084441063394e-14	4.14490943483643e-13
XLOC_013	1.798791495	3.016464976	0.458163	6.583824	4.58501380416185e-11	4.22705387871053e-10
XLOC_014	1.447033698	-2.406893603	0.500647	-4.807566	1.52778735127506e-06	7.60233579016198e-06
XLOC_014	1.152718086	-2.750180379	0.552597	-4.976832	6.4633509544586e-07	3.39444975444808e-06
ZIM2	1.164539669	-2.794131252	0.623181	-4.483661	7.33732729187714e-06	3.26561562625847e-05
ZNF534	1.653444821	-2.409542681	0.52357	-4.602139	4.18172994063895e-06	1.93874024919734e-05
ZP4	1.947554483	3.787700521	0.656363	5.770739	7.89244306504584e-09	5.4296684424676e-08
ZSCAN4	2.721766918	-2.712609306	0.43429	-6.246082	4.20877594850981e-10	3.42334151579517e-09

Table S24. Gene expression differences in MDD (Major Depressive Disorder) patients compared to healthy controls.

Gene	logFC	AveExpr	t	P.Value	adj.P.Val	B
AADAT	-0.281204	7.2725294	-3.518121	0.0011827	0.2103744	-0.967117
AATK	0.6345602	9.9596756	3.6704018	0.0007687	0.1880503	-0.575344
ACD	0.1894408	6.6642443	2.0635166	0.0462265	0.6301052	-4.197655
ACHE	0.4072403	7.2227388	2.8595803	0.0069721	0.3505004	-2.561187
ACTB	0.1952768	13.156336	2.4753987	0.0180781	0.4624836	-3.397343
ADNP	-0.199025	10.033169	-3.040262	0.0043548	0.308582	-2.142098
AFDN	-0.118523	10.704723	-2.424116	0.02042	0.4822742	-3.502741
AFMID	0.460559	7.1698206	3.0878444	0.0038388	0.2991694	-2.029251
AGRN	0.5181983	9.5022981	2.9261487	0.0058713	0.3323376	-2.408567
AHRR	-0.62891	5.6612311	-3.35749	0.0018491	0.2355709	-1.371886
AIDA	-0.140376	9.1892405	-2.426014	0.0203286	0.4820876	-3.498867
ALAD	0.1575171	9.0201315	2.116345	0.0411966	0.6068979	-4.101145
ALK	-0.213456	7.1064497	-2.053969	0.0471909	0.6337819	-4.214893
APC	-0.27842	13.029957	-2.176653	0.03605	0.5823474	-3.98868
APOD	0.4258246	8.7935332	2.1517124	0.0381049	0.591698	-4.035483
APOE	-0.486933	10.819338	-2.287439	0.0280645	0.5333642	-3.775888
APPAT	-0.533367	8.577978	-3.414968	0.0015773	0.2209586	-1.228103
AREG	-1.067582	1.5057315	-2.219262	0.0327662	0.5621019	-3.907775
ARSF	-0.69229	4.6573375	-2.987468	0.0050037	0.3225295	-2.266123
ASPA	0.7524951	7.8337438	2.2742675	0.0289227	0.5384348	-3.801599
ATIC	-0.287164	7.8834558	-2.546261	0.0152444	0.4329196	-3.249183
ATOSB	0.1502909	7.8113036	2.4296134	0.0201563	0.4817497	-3.491517
BCAM	0.5532753	6.1944075	2.0957634	0.0430958	0.6151606	-4.138969
BHMT	-0.87234	3.8345556	-3.130227	0.0034284	0.2892674	-1.927906
BLM	-0.346417	6.2717868	-2.341665	0.0247672	0.5125265	-3.668892
BOK	0.5586231	7.4664076	2.3192802	0.0260835	0.5205993	-3.713283
BSG	0.1543842	10.325761	2.0365132	0.0489998	0.6337819	-4.24625
CACTIN	0.3215319	6.6417897	2.9614764	0.0053556	0.3276255	-2.326715
CALCB	-0.933512	2.4922458	-2.68286	0.0108993	0.3867881	-2.955627
CAPS	0.5059509	5.4197321	2.8551535	0.0070517	0.3515669	-2.57126
CARMN	0.7897561	5.0685304	2.2526071	0.0303852	0.5466124	-3.843641
CASK	-0.262214	9.4725342	-2.652385	0.0117555	0.3941888	-3.022004
CBL	-0.226484	9.5131056	-3.32756	0.0020078	0.2442341	-1.446269
CCIN	-1.007096	2.3383914	-2.821912	0.0076776	0.3563418	-2.64659
CCNF	0.2244361	6.2508776	2.3730277	0.0230236	0.4996916	-3.606178
CCNJL	-0.464001	4.4003045	-2.536383	0.0156134	0.4350921	-3.270008
CCNO	0.8878356	4.3600738	3.0932632	0.0037839	0.2969095	-2.016337
CDON	-0.253335	7.9117352	-2.607295	0.0131366	0.4068722	-3.119288
CENPB	0.4988084	8.8283917	3.43276	0.0015013	0.220178	-1.183355
CENPE	-0.26703	5.4984856	-2.040022	0.0486314	0.6337819	-4.239964
CERCAM	0.9966919	10.087424	2.7304691	0.0096766	0.3733665	-2.850946
CHADL	0.597525	6.350629	2.3934956	0.0219464	0.4881681	-3.564926
CHGA	0.39604	10.754778	2.0850379	0.0441158	0.6194454	-4.158567
CHKA	-0.214097	8.7451641	-2.570106	0.0143865	0.4252858	-3.198684
CHKB	0.6984274	3.0984319	3.2045754	0.0028071	0.2750136	-1.748288
CHPF	0.2473148	8.1614135	2.5710443	0.0143537	0.4251836	-3.19669
CHRD	0.2184344	8.8014867	2.2204424	0.0326792	0.5618578	-3.905517
CIC	0.5603289	9.3005871	2.7093405	0.0102027	0.3792463	-2.897551
CLASRP	0.5243347	7.3434661	2.3566303	0.0239209	0.5060453	-3.639042
CLNK	-0.674604	0.9035215	-2.32165	0.0259413	0.5193862	-3.708599
CLUH	0.3555137	9.1972979	3.1973055	0.0028628	0.275979	-1.765952
CNP	0.605936	11.442826	2.4548177	0.0189869	0.4717589	-3.439828
COASY	0.2411148	7.8333308	3.0235782	0.0045508	0.314186	-2.181429
COLQ	-0.269257	6.867681	-2.369293	0.0232252	0.5017594	-3.613677
COPE	0.2737802	7.8143271	3.0437759	0.0043146	0.3076129	-2.133799
CPOX	0.2513604	8.1925618	2.0297984	0.0497116	0.6337819	-4.258256
CPTP	0.2714141	7.0620635	3.2916035	0.0022157	0.2547811	-1.535182
CRACDL	0.4040054	9.8880939	3.300972	0.0021596	0.2534144	-1.512064
CRMA	0.7901636	4.4655687	2.9576622	0.0054092	0.3297299	-2.335581
CRYGS	-0.328407	4.899313	-2.883675	0.0065531	0.3416867	-2.506192
CSK	0.320266	7.1221185	2.4678491	0.0184068	0.46589	-3.412956
CTDSPL	-0.140125	8.5273766	-2.365088	0.0234542	0.5029314	-3.622113

CTSD	0.3106592	9.1005356	4.0459571	0.0002589	0.1380051	0.4194949
CTTN	0.1452932	10.422426	2.5931317	0.0136004	0.4135454	-3.149617
CUTALP	0.4164836	7.9655321	2.0413911	0.0484883	0.6337819	-4.237509
CYTIP	-0.617017	3.3936346	-2.044992	0.0481137	0.6337819	-4.231045
DBNL	0.1248255	9.930722	2.6706206	0.011236	0.3890858	-2.982346
DCX	-0.416827	8.1662326	-3.145605	0.0032901	0.2854205	-1.890943
DEPTOR	0.3521724	7.4751955	2.565764	0.0145394	0.4265238	-3.207903
DGKQ	0.2301272	8.3225058	2.1122817	0.0415656	0.6098529	-4.108635
DGKZ	0.1778655	11.841326	2.2304048	0.0319527	0.5576486	-3.886423
DIABLO	0.2256236	5.7010559	2.170814	0.0365221	0.5841979	-3.999673
DLST	-0.134674	8.592265	-2.323471	0.0258324	0.5193862	-3.704995
DMD	-0.227154	11.188826	-3.812037	0.000512	0.1642015	-0.20461
DMGDH	-0.379491	5.8011297	-2.385972	0.0223369	0.4930836	-3.580119
DMKN	0.5466397	5.4943354	2.1597301	0.0374333	0.5892115	-4.020482
DMTN	0.3721267	10.633414	2.717253	0.0100026	0.3745072	-2.880125
DMWD	0.388968	8.2619891	3.0391672	0.0043675	0.3088989	-2.144684
DROSHA	-0.192631	9.3359113	-2.279093	0.0286056	0.5370433	-3.792192
DSEL	-0.180338	8.3316818	-2.145483	0.0386341	0.593666	-4.047109
DTYMK	0.2800917	5.7286888	2.354049	0.0240649	0.506728	-3.644201
DXO	0.260507	5.9572144	2.2572996	0.0300629	0.5432643	-3.834558
EDAR	-0.659087	2.5064128	-2.130007	0.039977	0.6007139	-4.07588
EDNRB	-0.892853	9.405279	-2.926694	0.005863	0.3323376	-2.407308
EFS	0.6300287	6.4739899	2.3942377	0.0219082	0.4879822	-3.563426
EGF	-0.3527	5.7986981	-2.533494	0.0157228	0.4357025	-3.276088
EGILA	0.2540038	0.0991172	2.3914027	0.0220544	0.4886374	-3.569156
ELL	0.3635281	6.1408867	2.4070796	0.0212569	0.4849822	-3.537409
ENKUR	-0.364052	6.4219703	-2.222554	0.0325239	0.5611429	-3.901475
EOMES	0.5404946	0.557135	2.1675083	0.0367918	0.5853918	-4.005888
ERFL	0.7151791	1.5792731	2.0537347	0.0472148	0.6337819	-4.215316
ERMN	0.7226398	10.65075	2.1850953	0.0353771	0.5776336	-3.972744
ESRRA	0.2847003	7.4269285	2.3848605	0.0223952	0.4936626	-3.582361
EVL	0.1820247	10.44917	2.2893798	0.02794	0.5323965	-3.77209
EZR	-0.552342	9.6411944	-2.508386	0.016704	0.4475287	-3.328733
FAAH	0.3311045	7.9804864	3.6881497	0.0007308	0.1877184	-0.529211
FADD	0.4964264	3.5593325	3.2696073	0.0023528	0.2581236	-1.589327
FANCB	0.4286071	6.3073484	2.6166253	0.0128391	0.4046568	-3.099249
FASN	0.490285	11.113668	3.1071177	0.0036468	0.2938775	-1.98326
FASTK	0.1958794	8.2609444	3.1488961	0.0032612	0.2853857	-1.883019
FCRLB	0.4599372	4.6142037	2.0519555	0.0473966	0.6337819	-4.218522
FDPS	-0.195855	6.6788834	-2.039857	0.0486487	0.6337819	-4.24026
FER	-0.117222	9.9970939	-2.456445	0.0189136	0.4717589	-3.436479
FEV	0.5573974	0.7587733	2.2301658	0.0319699	0.5576486	-3.886882
FKRP	0.3603014	7.3990953	3.779	0.0005632	0.1730812	-0.291599
FLII	0.1616003	9.0476448	2.2347193	0.0316425	0.5545531	-3.878134
FLNC	0.6039081	7.3399727	2.4345618	0.0199217	0.479748	-3.481398
FSBP	-0.406864	4.2935568	-2.691375	0.0106707	0.3833937	-2.936994
FTX	-0.351845	8.8000925	-3.877435	0.0004237	0.151907	-0.031531
FURIN	0.2489441	8.4772788	2.1884791	0.0351105	0.5764894	-3.966343
FUS	-0.349729	9.0359314	-2.293488	0.0276781	0.5318376	-3.764044
FUZ	0.2392897	6.4708684	3.1674194	0.0031029	0.2822702	-1.83834
GABRP	0.7126659	0.6116325	2.9101205	0.0061204	0.3368892	-2.445509
GAK	0.1779388	9.4329075	2.1523386	0.0380521	0.5912331	-4.034313
GALM	-0.349814	5.0204931	-2.225183	0.0323317	0.5595255	-3.896439
GALNS	0.3168775	7.0727824	2.1787961	0.0358781	0.5810391	-3.984638
GCHFR	0.2453403	5.8533558	3.2663109	0.002374	0.2581236	-1.597425
GCSAM	-1.133967	2.8504892	-3.958429	0.0003346	0.1399991	0.184369
GGN	0.795229	3.4301985	3.4271694	0.0015248	0.2205223	-1.197428
GLDN	0.747255	8.4534866	2.4117043	0.0210267	0.4849822	-3.528015
GLYAT	0.6385543	1.0811375	2.3580816	0.0238402	0.5056886	-3.63614
GLYCTK	0.4533517	5.5376145	2.2729179	0.0290119	0.5384348	-3.804227
GMDS	-0.386921	6.3965324	-4.888218	2.04908440	0.1026715	2.7541984
GNPTG	0.2046038	8.7197686	4.2671554	0.0001344	0.1256084	1.0212338
GPHN	-0.180043	9.4343978	-2.390733	0.022089	0.4886374	-3.570508
GRHPR	0.1480954	8.3775292	2.1692328	0.0366509	0.5844826	-4.002647
GSCAR	-0.686034	2.2879638	-2.393843	0.0219285	0.4881681	-3.564225
GSDME	-0.187073	8.2387849	-2.100597	0.042643	0.6128828	-4.130111

GYPA	-0.588548	4.3704521	-3.165178	0.0031216	0.2822964	-1.843755
GYPE	-0.72822	5.6611759	-5.441072	3.72651624	0.0464927	4.3274638
HADH	-0.25191	7.0992863	-2.704494	0.010327	0.3804058	-2.908209
HASPIN	0.542157	0.6858996	2.0301781	0.0496711	0.6337819	-4.257578
HDC	-0.815723	2.7101381	-2.539482	0.0154968	0.4341368	-3.263481
HELZ	-0.158706	10.624382	-2.899315	0.0062938	0.3385026	-2.470345
HEXD	0.31581	6.5223931	2.3311286	0.0253791	0.5182897	-3.689825
HGF	-0.691358	7.1077781	-2.204027	0.0339084	0.5707803	-3.936838
HGS	0.2914975	9.0598982	4.4439394	7.91115887	0.1057584	1.5088733
HIBCH	-0.263159	8.4032858	-2.348365	0.024385	0.5082844	-3.655545
HNRNPD	-0.239826	9.7883976	-2.759071	0.0090046	0.3619903	-2.787486
HNRNPL	0.1213282	9.6304776	2.2132412	0.0332135	0.566142	-3.919279
HR	0.5014397	8.9997784	4.7103948	3.52831427	0.1026715	2.2529067
HRG	0.5832677	0.4643058	2.2853124	0.0282015	0.5345339	-3.780046
INHBA	-0.635065	5.6936426	-2.040705	0.04856	0.6337819	-4.23874
INTU	-0.373815	8.7466231	-4.095385	0.0002238	0.1359413	0.5530552
INVS	-0.288434	8.011901	-2.89766	0.0063208	0.3385643	-2.474144
IQCE	0.2576392	9.1939388	3.5141076	0.0011961	0.2105247	-0.977339
IQCJ	-0.543053	6.0898871	-2.828881	0.0075422	0.3563418	-2.630845
ITGAM	-0.686746	6.0174146	-2.350778	0.0242487	0.5076042	-3.650732
JRK	0.1851106	8.5335284	2.4821118	0.0177904	0.4612371	-3.383431
KHK	0.207667	6.1346322	2.0274973	0.0499576	0.6337819	-4.262363
LCOR	-0.206117	9.5868552	-2.727541	0.009748	0.3733665	-2.857419
LHPP	0.3299797	7.522904	2.2257504	0.0322903	0.5595255	-3.895352
LIPE	0.7026902	6.521763	3.043638	0.0043162	0.3076129	-2.134125
LNCPTCTS	0.5450271	0.4193669	2.2492029	0.030621	0.5478147	-3.850221
LPL	0.6373169	7.6599685	2.5352225	0.0156573	0.4350921	-3.272452
LSAMP	-0.218481	9.9050539	-3.140792	0.0033328	0.2865326	-1.902521
LSR	0.5281217	5.9520415	2.454711	0.0189917	0.4717589	-3.440047
LUARIS	-0.413374	5.6922421	-2.184973	0.0353868	0.5776336	-3.972976
LYN	-0.748209	6.4235004	-3.048961	0.0042559	0.3076129	-2.121542
MAFK	0.3350785	7.497437	2.3672824	0.0233345	0.5020849	-3.617712
MAG	0.9100668	9.2649893	2.6961885	0.0105434	0.3814743	-2.926443
MAGOH	-0.205017	6.3026862	-2.275295	0.0288549	0.5383924	-3.799596
MBP	0.8379404	13.140306	2.4019004	0.0215174	0.486354	-3.547913
MCC	-0.37237	9.0292152	-2.083431	0.0442704	0.6199418	-4.161497
MCUB	-0.359068	5.4258831	-2.482506	0.0177736	0.4611411	-3.382614
MECR	0.1563865	7.6490153	2.3044676	0.0269889	0.5278267	-3.742486
MERTK	-0.533478	8.5126301	-2.317147	0.0262122	0.5210592	-3.717496
MLNR	-0.746094	1.5597809	-2.399098	0.0216596	0.4867664	-3.553591
MNT	0.4531903	7.0931636	2.4994527	0.0170664	0.4530357	-3.347375
MRTFA	0.3308439	8.7531127	2.9092944	0.0061335	0.3370087	-2.44741
MSRA	-0.206999	8.8797559	-3.255522	0.0024448	0.2636546	-1.623899
MTHFR	0.1675077	8.4057136	2.2688538	0.0292822	0.5402053	-3.812134
MTURN	0.3284323	13.582135	2.49558	0.0172257	0.453534	-3.355442
MVP	0.5022941	7.1840815	2.1059999	0.0421418	0.6113175	-4.120192
MYPOP	0.3592916	6.7898691	2.6489279	0.0118564	0.3964778	-3.029502
MYRF	0.8508952	8.895284	2.3007478	0.0272206	0.5291519	-3.749798
NACAD	0.5288224	9.0512855	2.704844	0.010318	0.3804058	-2.907439
NAGLU	0.3221504	5.7539456	2.1927201	0.0347789	0.5738503	-3.958311
NAGPA	0.2602865	8.3421579	2.7036294	0.0103493	0.3804058	-2.910108
NAGS	0.6114932	4.1172967	3.1054555	0.003663	0.2938775	-1.987233
NARF	0.1645157	8.478638	2.7862133	0.0084072	0.3568331	-2.726877
NCDN	0.3378587	12.039655	2.0832163	0.0442911	0.6200631	-4.161888
NCKIPSD	0.3950739	9.1440509	3.0172456	0.0046273	0.316441	-2.196324
NCLN	0.2355603	7.9924145	2.7186739	0.0099671	0.3745072	-2.876992
NEB	-0.420243	8.1499673	-2.638979	0.0121514	0.3975579	-3.051044
NELFA	0.341101	7.3400028	2.6472884	0.0119046	0.3968425	-3.033056
NELFB	0.2439025	8.6443078	3.13074	0.0034237	0.2892674	-1.926673
NEPNP	-0.800155	1.4227121	-2.702405	0.010381	0.3804058	-2.912799
NFIB	-0.278042	10.653278	-2.905218	0.0061985	0.3384206	-2.456785
NFIX	0.4256591	10.228465	2.055116	0.0470742	0.6337819	-4.212826
NFKBIE	-0.549944	6.1911137	-2.768301	0.0087971	0.3608033	-2.766918
NFYB	0.2244766	8.8582056	2.0871881	0.0439096	0.6179559	-4.154644
NIN	-0.255726	10.751012	-3.506709	0.0012212	0.2105247	-0.99617
NIPBL	-0.130772	10.430235	-2.193526	0.0347162	0.5738503	-3.956783

NISCH	0.2078654	11.11853	3.5956254	0.0009507	0.1980683	-0.768649
NOBOX	0.3047919	0.206873	2.1608981	0.0373363	0.5882553	-4.018293
NOTUM	0.5959629	3.404106	2.0335371	0.0493142	0.6337819	-4.251575
NPEPPS	-0.178533	10.6452	-2.456062	0.0189308	0.4717589	-3.437267
NRADDP	-0.611063	1.3658586	-2.243409	0.031026	0.5509348	-3.861403
NRGN	0.5883044	10.613386	3.2094329	0.0027704	0.2732617	-1.736473
NSMAF	-0.153505	8.6051707	-2.916944	0.0060132	0.3355256	-2.429797
NTM	-0.165646	10.349221	-2.657347	0.011612	0.3936565	-3.011231
NYX	-0.414448	0.316289	-2.043119	0.0483083	0.6337819	-4.234408
OGFR	0.2854022	8.8414647	3.1864494	0.0029479	0.2772335	-1.792289
OTULINL	-0.335317	6.8238107	-2.082655	0.0443453	0.620166	-4.162911
PALM	0.3963455	10.474581	2.9725983	0.0052023	0.3255742	-2.300826
PAPOLA	-0.203018	10.513475	-3.722608	0.0006622	0.1822395	-0.439373
PAPPA	-0.418969	6.0255532	-2.131332	0.0398604	0.6005347	-4.073422
PARAIL	-0.319839	8.1370958	-3.125351	0.0034735	0.2898127	-1.939603
PARN	0.1384812	8.5253704	2.1134379	0.0414603	0.6087027	-4.106505
PBK	-0.66245	0.9874343	-2.349128	0.0243418	0.5076042	-3.654023
PCTP	-0.360124	6.1655204	-3.358537	0.0018438	0.2355709	-1.369277
PDGFA	0.1507561	8.0984062	2.1243382	0.0404791	0.6038968	-4.086378
PDGFC	-0.266109	7.2552104	-2.157743	0.0375988	0.5897243	-4.024203
PEMT	0.1864786	5.779264	2.477662	0.0179806	0.4624836	-3.392655
PFAS	0.1272426	7.8844784	2.0325304	0.0494209	0.6337819	-4.253375
PFKL	0.1846703	10.160552	2.3665885	0.0233723	0.5021779	-3.619104
PHEX	-0.384277	4.8528642	-2.223785	0.0324338	0.560411	-3.899119
PIGQ	0.3309372	8.275272	3.1302722	0.003428	0.2892674	-1.927796
PIGT	0.3447851	8.0202448	4.1218273	0.000207	0.134046	0.6247289
PIGZ	0.2684425	6.4469707	2.2521876	0.0304142	0.5466124	-3.844452
PLEC	0.555783	11.662637	2.6607579	0.0115143	0.3916298	-3.003817
PLGLA	-0.361806	5.8696616	-2.199011	0.0342922	0.5722498	-3.946375
PLGRKT	-0.247693	5.7771704	-2.236756	0.0314971	0.5540578	-3.874217
PLLP	0.5360512	7.6937566	2.1867756	0.0352445	0.5770339	-3.969566
PNISR	-0.183586	11.129822	-2.617974	0.0127966	0.4040992	-3.096348
PNKD	0.2780328	8.8695197	2.380749	0.0226117	0.4952581	-3.590646
PNP	-0.866783	5.6941543	-2.403154	0.0214541	0.4860651	-3.545372
POLG	0.1715953	8.7637097	2.8747351	0.0067057	0.3451918	-2.52663
POLQ	-0.391656	6.0106938	-2.118944	0.0409621	0.6058791	-4.096348
POLRMT	0.3149275	8.4236795	3.8208377	0.0004992	0.1632855	-0.181385
POTEB	0.8426798	0.4815896	3.2977748	0.0021786	0.254288	-1.519957
POTED	0.3298377	0.1389363	2.5311728	0.0158113	0.4358997	-3.280971
PPAN	0.4869657	4.2236904	2.7951836	0.008218	0.3563418	-2.706763
PRKCD	-0.348554	7.2947677	-3.021519	0.0045755	0.3149863	-2.186274
PRKCSH	0.2897718	8.8587167	2.1556502	0.0377737	0.5900856	-4.02812
PSCA	0.7888347	1.3812052	2.3448379	0.0245855	0.5101311	-3.662575
PSD	0.2462113	11.096595	2.7725323	0.0087035	0.3604728	-2.757474
PSPN	0.3277232	5.376385	3.3267439	0.0020123	0.2442341	-1.448293
PTN	-0.466514	10.011788	-2.524771	0.0160576	0.4378956	-3.294419
PTPRA	-0.180265	10.917484	-2.627451	0.0125017	0.4014221	-3.075937
PTPRC	-0.513902	6.6798472	-2.162988	0.0371634	0.5872768	-4.014374
PTPRE	-0.166965	9.2882222	-2.722458	0.009873	0.3740916	-2.868643
PTPRG	-0.152561	10.458047	-2.076559	0.044937	0.6226905	-4.174005
PTPRN	0.2978996	10.972306	2.1040834	0.042319	0.6113743	-4.123713
PTPRQ	-0.377652	6.0059943	-2.268011	0.0293385	0.5402179	-3.813772
PTPRU	0.3694001	8.5738523	2.4219247	0.0205259	0.4824284	-3.507209
PURG	-0.331158	8.1162402	-3.307901	0.002119	0.2521944	-1.494944
PXK	0.3825191	9.4974829	2.2458345	0.0308559	0.5487847	-3.856724
PYGM	-0.515113	7.8164139	-2.040583	0.0485728	0.6337819	-4.238959
QDPR	0.4579232	10.134348	3.0802594	0.003917	0.3003311	-2.047306
QKILA	0.3072168	0.1016029	2.2809156	0.0284866	0.5368877	-3.788635
RALY	0.1488452	8.3391329	2.4551775	0.0189706	0.4717589	-3.439087
RASEF	-0.401773	8.4599696	-2.087818	0.0438494	0.6176707	-4.153495
RECK	-0.18136	7.3922208	-2.279876	0.0285544	0.5368877	-3.790664
RFNG	0.2699129	6.9697609	2.3186502	0.0261215	0.5209216	-3.714527
RFXAP	-0.249538	6.6196584	-2.80833	0.0079479	0.3563418	-2.677212
RIMKLB	-0.220527	9.5950368	-2.610096	0.0130466	0.4060245	-3.113278
ROCR	-0.532101	0.5690482	-2.134664	0.0395686	0.5994961	-4.067238
RPRML	0.5405976	5.0271425	2.5825569	0.0139564	0.4193459	-3.172188

RPSA	0.2975445	10.632558	2.3966126	0.0217864	0.4867664	-3.558622
RPTOR	0.1913336	9.0006072	2.1449306	0.0386813	0.5939865	-4.048138
RRH	-0.422736	3.9929297	-2.397935	0.0217189	0.4867664	-3.555946
RTKN	0.5845172	7.6038916	2.2001062	0.0342081	0.5717876	-3.944294
RUBCNL	-0.460516	4.8571369	-2.683094	0.010893	0.3867881	-2.955117
SCAP	0.1497763	9.3865461	2.9421996	0.0056315	0.3319696	-2.371451
SCEL	0.5860828	1.9393469	2.0748201	0.0451071	0.6228198	-4.177164
SCRIB	0.5411581	8.549499	2.6332261	0.0123251	0.3996779	-3.063476
SELE	-1.615106	3.8547432	-2.152773	0.0380155	0.5912331	-4.033501
SELPLG	-0.887893	6.0742175	-2.443208	0.0195177	0.4764615	-3.463683
SFTPC	0.4842782	4.3308025	3.210048	0.0027658	0.2732617	-1.734976
SFTPD	0.3904101	4.2936305	2.1187682	0.0409779	0.6058791	-4.096672
SGCD	-0.385022	8.2879954	-3.398744	0.0016499	0.2250666	-1.268812
SGTA	0.2844386	8.6769241	3.7146205	0.0006775	0.1822395	-0.460228
SHPRH	-0.106688	10.178434	-2.055021	0.0470838	0.6337819	-4.212998
SINHCAF	-0.579265	4.7181233	-2.765857	0.0088516	0.3612789	-2.772369
SLA	-0.475078	5.9822118	-2.329971	0.0254472	0.5182897	-3.692122
SNCAIP	-0.444148	6.4933531	-3.081461	0.0039046	0.3003311	-2.044448
SNPH	0.1919643	10.715442	2.6457226	0.0119508	0.3968425	-3.036448
SON	-0.203604	11.686422	-3.657001	0.0007987	0.1880763	-0.610114
SPIDR	-0.095199	9.404847	-2.106575	0.0420887	0.6110426	-4.119135
SPINDOC	0.2022024	7.0507546	2.4424666	0.019552	0.4766029	-3.465204
STAMBP	0.1320473	8.2367384	2.5077473	0.0167297	0.4477813	-3.330067
SYMPK	0.2987919	9.0969975	2.7009036	0.01042	0.3804058	-2.916095
SYNPO	0.2646481	11.145913	2.4292972	0.0201714	0.4817497	-3.492163
TAGAP	-0.31318	6.271188	-2.788023	0.0083687	0.3565411	-2.722822
TASL	-0.982618	2.4651737	-2.997558	0.004873	0.3202181	-2.242517
TBILA	-1.071105	2.5026706	-3.201851	0.0028278	0.2752981	-1.754909
TDRP	-0.178347	7.5910194	-2.220774	0.0326548	0.5618578	-3.904883
TECTA	-0.463779	6.7612232	-3.20727	0.0027867	0.2735365	-1.741735
TFEC	-0.535761	5.0270751	-2.184497	0.0354244	0.5780357	-3.973875
TGFA	0.5328056	6.8061013	2.9319074	0.0057842	0.3323376	-2.395265
TGFBI	-0.698954	5.3607083	-2.173269	0.0363229	0.5836726	-3.995053
TILAM	0.2506397	0.1250253	2.1106233	0.041717	0.6100443	-4.111688
TKFC	0.2032278	6.8538981	2.6640255	0.0114214	0.3900929	-2.996709
TMLHE	-0.183761	7.8016627	-2.611437	0.0130038	0.4059659	-3.110399
TNIK	-0.271401	10.989515	-2.932778	0.0057711	0.3323376	-2.393252
TNMD	0.7381793	1.2322813	2.4214118	0.0205508	0.4824284	-3.508255
TNR	-0.333537	10.716132	-3.103097	0.0036861	0.2938775	-1.992868
TNXB	0.6288377	7.9771344	2.3472363	0.024449	0.5090025	-3.657796
TONSL	0.4550503	5.5621793	2.4787664	0.0179333	0.4624836	-3.390367
TPPP	0.3433806	11.75221	2.8794137	0.0066254	0.3434503	-2.515939
TPRN	0.4827192	7.4410916	3.3126808	0.0020914	0.2508903	-1.483123
TRABD	0.4580984	6.8778454	2.6644622	0.011409	0.3900929	-2.995759
TRADD	0.4920448	4.9158917	3.5588396	0.0010547	0.1987491	-0.863093
TRH	-0.666998	2.8214984	-2.489082	0.0174961	0.4578401	-3.36896
TRIO	-0.157568	11.696496	-3.044709	0.004304	0.3076129	-2.131593
TRMU	0.171809	8.0249435	2.1735092	0.0363035	0.5836726	-3.994602
TTN	-0.408554	11.417503	-4.020587	0.0002789	0.1385444	0.3511584
TYMSOS	0.6534156	2.2433424	2.2935117	0.0276766	0.5318376	-3.763997
UMLILO	0.1752943	0.0590982	2.321763	0.0259345	0.5193862	-3.708375
UNK	0.2667846	7.2319087	2.2044702	0.0338747	0.5706322	-3.935995
UNKL	0.3522612	7.7881509	3.5799658	0.0009937	0.1980683	-0.808907
VASN	0.6702649	6.0447246	2.3964596	0.0217942	0.4867664	-3.558932
VCL	-0.29625	8.721184	-2.313702	0.0264212	0.522877	-3.724295
VEGFA	-0.406737	8.7947799	-2.048301	0.0477717	0.6337819	-4.225098
VEGFD	-0.373308	4.1850947	-2.453119	0.0190637	0.4717589	-3.443323
VIT	-0.476427	4.3331986	-2.214093	0.0331499	0.5654311	-3.917653
ZGPAT	0.3624341	7.0502324	3.0691248	0.0040345	0.3030874	-2.073766

Table S25. Mediation MR (Mendelian Randomization) analysis results of inflammatory dermatoses and mental disorders.

exposure	outcome	method	b	se	pval	lo_ci	up_ci	or	or_lci95	or_uci95
depression	insomnia	Inverse varia	0.1739751	0.0605273	0.004049	0.0553415	0.2926087	1.190026	1.0569015	1.3399184
insomnia	psoriasis	Inverse varia	0.1352879	0.0651987	0.0379855	0.0074986	0.2630773	1.1448664	1.0075268	1.3009273
atopic dermatitis	omega-6/omega-3 ratio	Inverse varia	0.0222535	0.0072586	0.0021709	0.0080265	0.0364804	1.0225029	1.0080588	1.0371539
omega-6/omega-3 ratio	depression	Inverse varia	0.0683868	0.0134057	3.373E-07	0.0421116	0.094662	1.0707794	1.0430109	1.0992872

Table S26. TSMR (Two-sample Mendelian Randomization) analysis of comorbid pathway-related genes with insomnia.

Gene	Tissue	method	b	se	pval	lo_ci	up_ci	or	or_lci95	or_uci95
C11orf49	Blood	Inverse variance	-0.053517	0.0211308	0.0113208	-0.094933	-0.0121	0.9478902	0.909434	0.9879727
CPEB2	Blood	Inverse variance	-0.049803	0.0140003	0.0003747	-0.077244	-0.022363	0.9514168	0.9256644	0.9778857
DBF4B	Brain	Inverse variance	-0.007845	0.002772	0.0046526	-0.013278	-0.002412	0.9921854	0.9868093	0.9975908
DBF4B	Blood	Inverse variance	-0.001268	0.0081137	0.8757965	-0.017171	0.0146346	0.9987326	0.9829756	1.0147422
DBF4B	Suprapubic skin	Inverse variance	-0.004174	0.0055481	0.4518206	-0.015049	0.0067	0.9958344	0.985064	1.0067225
DBF4B	Crural skin	Inverse variance	-0.004397	0.0065616	0.5027745	-0.017258	0.0084636	0.9956125	0.9828902	1.0084995
DBF4B	Whole Blood	Inverse variance	0.0004784	0.0070373	0.9458065	-0.013315	0.0142715	1.0004785	0.9867735	1.0143738
INO80E	Brain	Inverse variance	0.0350604	0.0061173	9.964E-09	0.0230704	0.0470503	1.0356822	1.0233386	1.0481747
INO80E	Blood	Inverse variance	0.0597685	0.0115634	2.356E-07	0.0371043	0.0824328	1.0615908	1.0378012	1.0859257
INO80E	Crural skin	Inverse variance	0.0503332	0.0151059	0.0008622	0.0207256	0.0799408	1.0516214	1.0209418	1.0832229
KAT8	Cultured fibrobla	Inverse variance	-0.002862	0.0060761	0.6376711	-0.014771	0.0090476	0.9971425	0.9853377	1.0090887
KAT8	Blood	Inverse variance	0.0060445	0.0098887	0.5410362	-0.013337	0.0254264	1.0060628	0.9867511	1.0257524
KAT8	Whole Blood	Inverse variance	0.0120838	0.0257727	0.6391703	-0.038431	0.0625983	1.0121571	0.9622984	1.0645991
MLH3	Blood	Inverse variance	0.0015976	0.0058607	0.7851629	-0.009889	0.0130846	1.0015989	0.9901594	1.0131706
TDRKH	Blood	Inverse variance	-0.060048	0.0107894	2.614E-08	-0.081195	-0.038901	0.9417192	0.9220136	0.961846
TRIM56	Blood	Inverse variance	0.0265923	0.0095632	0.005424	0.0078486	0.0453361	1.0269491	1.0078794	1.0463795
ZNF408	Brain	Inverse variance	-0.004865	0.0153818	0.7517664	-0.035014	0.0252829	0.9951464	0.9655921	1.0256052

Table S27. TSMR (Two-sample Mendelian Randomization) analysis of comorbid pathway-related genes with omega-6/omega-3 ratio.

Gene	Tissue	method	b	se	pval	lo_ci	up_ci	or	or_lci95	or_uci95
DBF4B	Brain	Inverse varia	-0.010917	0.0019896	4.092E-08	-0.014817	-0.007017	0.9891425	0.9852926	0.9930074
DBF4B	Blood	Inverse varia	-0.020335	0.0064947	0.0017417	-0.033065	-0.007606	0.97987	0.9674757	0.9924231
DBF4B	Suprapubic	Inverse varia	-0.010113	0.0033087	0.0022391	-0.016598	-0.003628	0.9899379	0.9835389	0.9963785
DBF4B	Crural skin	Inverse varia	-0.010989	0.0038753	0.004574	-0.018584	-0.003393	0.9890714	0.9815873	0.9966126
DBF4B	Whole Bloo	Inverse varia	-0.011894	0.0031804	0.0001842	-0.018128	-0.00566	0.9881766	0.9820358	0.9943557
FADS1	Brain	Inverse varia	-0.593891	0.0209562	1.12E-176	-0.634965	-0.552817	0.5521748	0.5299541	0.5753271
FADS1	Blood	Inverse varia	0.7778315	0.091658	2.134E-17	0.5981818	0.9574813	2.1767469	1.8188088	2.6051266
NPLOC4	Suprapubic	Inverse varia	-0.001458	0.0126571	0.9082848	-0.026266	0.0233499	0.9985429	0.9740758	1.0236246
SLFN12L	Brain	Inverse varia	0.0155735	0.0026261	3.023E-09	0.0104264	0.0207207	1.0156954	1.010481	1.0209368
TMEM258	Brain	Inverse varia	0.8142741	0.150372	6.127E-08	0.519545	1.1090032	2.2575363	1.6812625	3.0313351
TMEM258	Whole Bloo	Inverse varia	2.6760974	0.0722331	1.93E-300	2.5345204	2.8176743	14.528284	12.610382	16.737878
YPEL3	Blood	Inverse varia	0.0191697	0.0084735	0.0236781	0.0025616	0.0357778	1.0193546	1.0025649	1.0364255