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## Genetic correlations among psychiatric and immune-related phenotypes based on genome-wide association data

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**Genetic correlations among psychiatric and immune-related phenotypes based on genome-wide association data.**

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Keywords:	genome-wide association, genetic correlation, pleiotropy

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For Peer Review

## Reviewer Comments to Author:

### Reviewer: 1

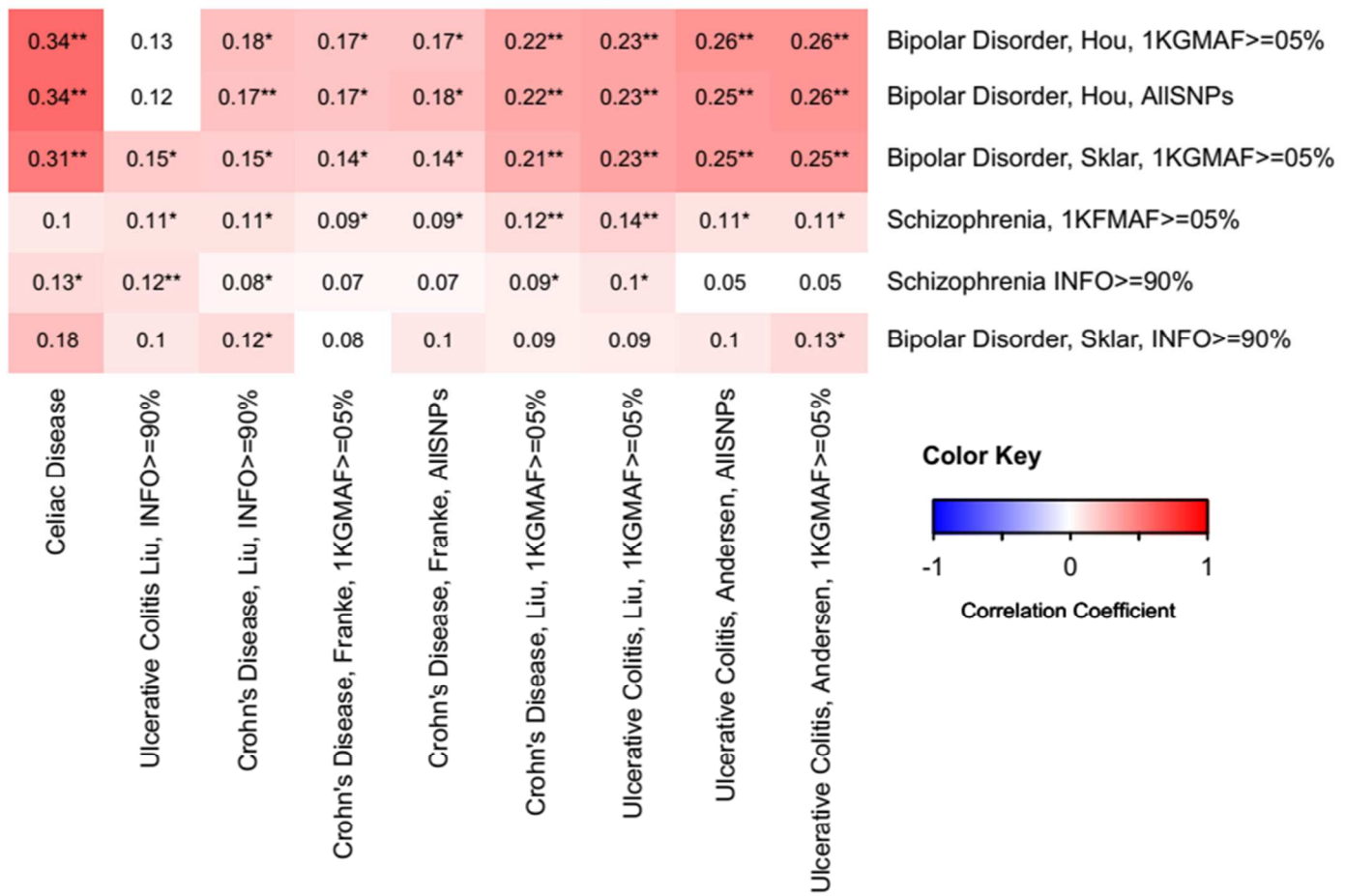
**Reviewer Comment 1:** “..the datasets used to obtain several of the key findings (ulcerative colitis and Crohn's disease, from Liu et al) is a trans-ethnic, multi-platform expansion of the dataset from the IBD consortium. Correctly, the authors (based on the sample numbers) appear to have removed the Immunochip and non-European samples, to avoid bias in the correlations. However, the remaining GWAS samples form a subset of the samples in a previous publication, Jostins L et al, 2012, and which have been previously analyzed in Bulik-Sullivan B et al, 2015 (and shown to not correlate with the same bipolar and schizophrenia datasets which are reported as significantly correlated here). To their credit, the authors discuss the issue (in relation to the different filtering scheme used in this paper), but nevertheless using a less-stringent filtering approach, to analyze a subset of a previously non-correlating dataset, to arrive at significant correlations, raises serious questions regarding the reliability of those results. At a minimum, it would be required to see either a similarly significant result using the larger dataset from Jostins L et al 2012, and preferably also a demonstration that the Liu et al 2015 dataset produces this significant correlation without extra filtering.”

**Author Response 1:** The reviewer raises an excellent point; our findings appear to be discrepant with other reports, and that deserves a more thorough investigation. We've made major revisions to address this concern. We obtained multiple versions of each data set and processed them in various ways to explore the effects on LD-score regression findings. Specifically, we examined the following data sets:

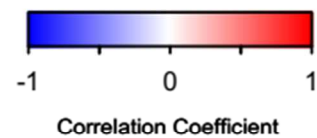
Bipolar - Sklar et al., 2011, N=16k, 1KGv3\_MAF>0.05  
 Bipolar - Sklar et al., 2011, N=16k, INFO > 0.9  
 Bipolar - Hou et al., 2016, N= 40k, 1KGv3\_MAF>0.05  
 Bipolar - Hou et al., 2016, N= 40k, All SNPS (No INFO available)  
 PGC Schizophrenia European = 75k, 1KGv3\_MAF>0.05  
 PGC Schizophrenia European = 75k, INFO > 0.9  
 Crohn's Disease, Frank, N=24K, 1KGv3\_MAF>0.05  
 Crohn's Disease, Frank, N=24K, 1KGv3\_MAF>0.05  
 Crohn's Disease, Liu, N=21K, 1KGv3\_MAF>0.05  
 Crohn's Disease, Liu, N=21K, INFO > 0.9  
 [Jostins et al., does not provide full summary data, so is not analyzed in our study]  
 Ulcerative Colitis, Andersen, N=21K, 1KGv3\_MAF>0.05  
 Ulcerative Colitis, Andersen, N=21K, All SNPS (No INFO available)  
 Ulcerative Colitis, Liu, N=27K, 1KGv3\_MAF>0.05  
 Ulcerative Colitis, Liu, N=27K, All SNPS (No INFO available)

We compared the correlations among these different versions of the data. The findings are depicted in Supplementary Figures 3 and 4 [embedded below]. We describe these analyses and the pattern of results in the Discussion section of the paper [excerpted below]. We demonstrate that different patterns of pre-filtering alter the results, such that correlations with schizophrenia and bipolar (for Sklar et al.,) generally become less significant when relatively rare variants (below MAF 5%) are included in the analyses. There is evidence from another genetic correlation study, using a similar method, that differences in magnitude and significance (and in rare cases, even the directionality) of the correlation can change when the analyses are stratified by MAF (<https://www.ncbi.nlm.nih.gov/pubmed/29220677>). For our study, we chose to exclude relatively rare variation. We discuss this as a limitation as follows:

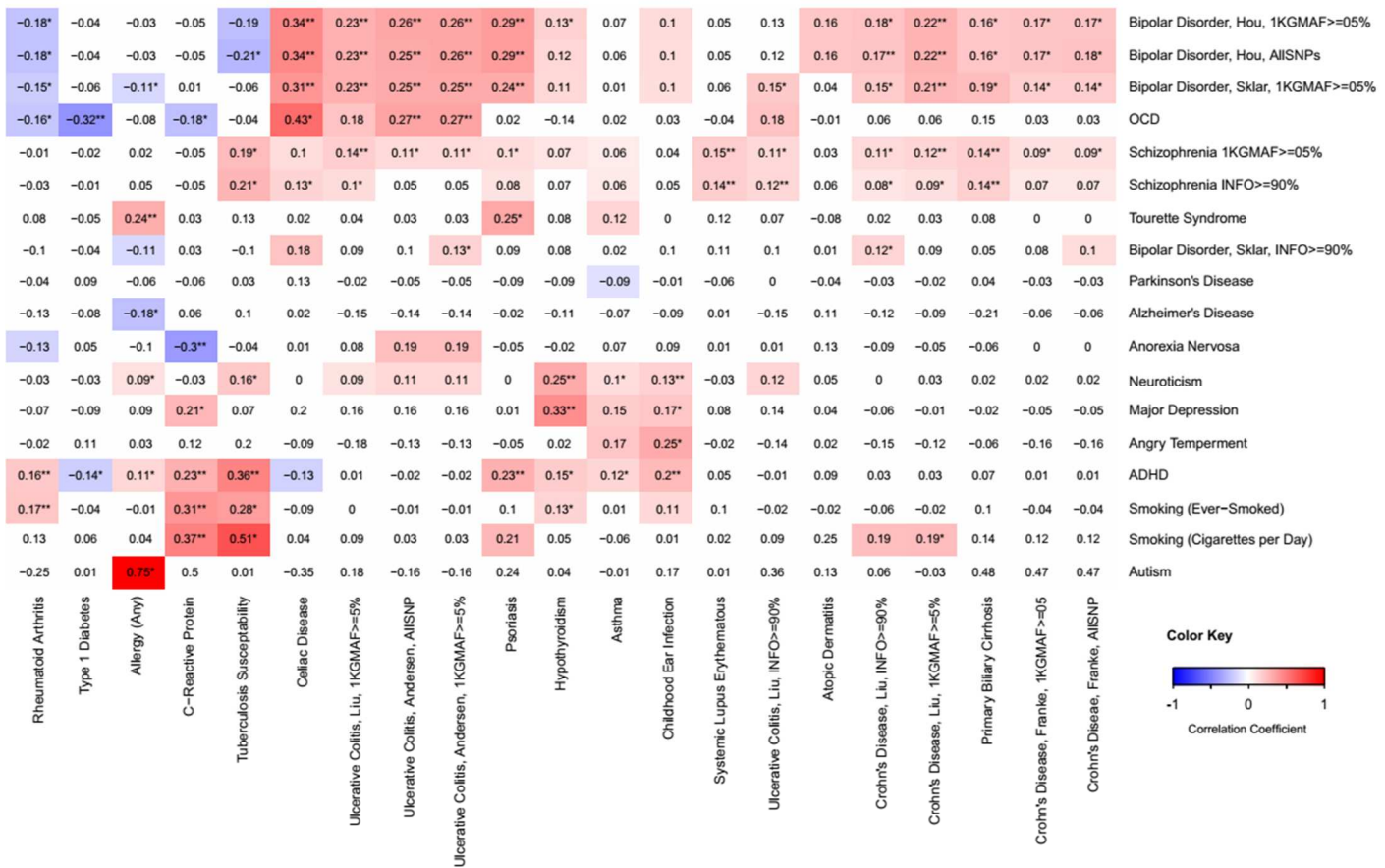
## Supplementary Figure 2



Color Key



Supplementary Figure 1



**Response 1 Continued [Excerpt from Discussion]:** “The LDSC approach featured here attempts to quantitate similarities and differences in association signals across the entire genome. Some of our phenotype pairs have been examined previously using genome-wide assessment methods, yielding apparently contradictory findings.<sup>24,25,71</sup> For example, a previous study implementing a REML-based approach did not find significant SNP-based co-heritabilities between CD and the major psychiatric phenotypes.<sup>105</sup> Additionally, the first study implementing the LDSC method found no significant correlation ( $rg = 0.08 \pm 0.08$ , uncorrected  $p = 0.33$ ) between BD and UC;<sup>22</sup> this study used a smaller data set for BD (Sklar et al., 2011;  $N = 16,731$ ) and a different version of the UC data set (reported as Jostins et al., 2012;  $N = 27,432$ ). A similar non-correlation is also reported in LD-Hub (<http://ldsc.broadinstitute.org/>), using what appears to be the same data sets, although referencing a related article (Liu et al., 2015;  $N = 27,432$ ). The analyses portrayed in our main text utilized a larger BD data set (Hou et al.,  $N = 40,225$ ), the same data set for UC (Liu et al., 2015;  $N = 27,432$ ), and uniform criteria for SNP retention based on inclusion in the HapMap3 panel and  $MAF > 5\%$  within the 1000 Genomes Project Phase 3 European samples. In order to resolve apparent discrepancies, we obtained additional versions of the available data for BD, SZ, CD, and UC and pre-filtered under both inclusive (imputation INFO score  $> 0.9$  or all SNPs, when INFO score unavailable) or exclusive criteria ( $MAF > 5\%$  within the 1000 Genomes Project Phase 3 European samples). We found that correlations between SZ and each of CD, PBC, and UC tended to be more positive and more significant (i.e., reaching a BH-corrected threshold) when using the SZ data filtered at  $MAF > 5\%$  (Supplementary Figure 3). A similar pattern held true for inclusive vs. exclusive pre-filtering for the BD data set generated by Sklar et al., but this was not the case for the larger Hou et al., data set. A side-by-side comparison of the effects of different pre-filtering decisions for the BD, SZ, CD, and UC data sets in relation to the other phenotypes is provided in Supplementary Figure 4. These observations indicate that decisions pertaining to SNP inclusion can have a considerable effect on the result of the LDSC analysis; this idea is further supported by the observation that stratified genetic correlation analyses based on MAF thresholds can produce different levels of statistical significance and opposite patterns of correlation directionality.<sup>104</sup> Thus, our study suggests that genetic correlations between psychiatric and immune-related disorders may be more significant when analyses are restricted to common variation. Reassuringly, the developers of the HESS method use the same data sets examined presently, and also report positive genetic correlations between SZ and the inflammatory bowel disorders.<sup>23</sup>

**Reviewer Comment 2:** “Secondly, the issue of sample ethnicity and its match to the reference used in LDSC. The paper states: “In order to facilitate cross-study comparison, we utilized studies that reported samples of European ancestry, broadly defined to include Central, Southern and Eastern Europe, Scandinavia, and Western Russia. One exception to this was the PGC-II schizophrenia summary data, which reflects a meta-analysis of 46 European cohorts and 3 cohorts of East Asian ancestry (Ripke et al., 2014).” However, using a non-matching ancestry (in arguably the best-powered dataset in the study) is known to produce inaccurate results in LDSC, and a European-only version of the data is available from the PGC Schizophrenia group (as used in, for example, Anttila et al 2016). It would be highly recommended to re-run the analysis using the ethnicity-matching version and report that instead, in particular because the datasets reported to have correlations to (PBC, SLE and celiac disease) are fairly small, and thus more easily to produce errant results from error sources such as this.”

“... the criteria for phenotype inclusion (the “logical test” in Supplementary Table 1) is overly lenient. I would encourage the authors to use either the same criteria for inclusion used by Bulik-Sullivan B et al, 2015 and Anttila et al, 2016 (heritability  $z$ -score $>3$ ) or the one employed by LDHub (heritability  $z$ -score $>4$ ).”

**Author Response 2:** We have revised the paper to use the European-Only version of PGC Schizophrenia data. Additionally, we obtained better powered data for bipolar disorder, autism, and ADHD. We removed phenotypes with either  $N < 5000$  or heritability  $z < 3$ . This has made the paper stronger and more focused.

**Reviewer Comment 3:** “Third, as a more minor issue, there are phenotypes (e.g. the tobacco phenotypes) which have already been covered in previous publications (Bulik-Sullivan B et al, 2015 and Anttila et al, 2016), and their results never appear to be dealt with within this publication. It would be better to either focus on all of the phenotypes, or remove those which are not of primary interest.”

**Author Response 3:** We agree with the author’s sentiment and have revised to address this. We’ve generally consolidated the scope of the paper to focus on phenotypes central to our hypotheses. As part of this, we removed the Cigarettes per Day phenotype. We ultimately decided to retain the Ever-Smoked phenotype, which shows positive correlations with C-reactive protein (not previously reported) and rheumatoid arthritis, because they reflect a type of positive control (a correlation with strong epidemiological support) and are illustrative of some of the possible difficulties with interpreting genetic correlations. We’ve discussed this as follows:

“Finally, positive correlations involving cigarette smoking behavior and CRP ( $r_g = 0.31 + 0.07$ ,  $p = 3.6 \times 10^{-5}$ ), as well as rheumatoid arthritis ( $r_g = 0.17 + 0.05$ ,  $p = 2.3 \times 10^{-3}$ ), are perhaps unsurprising given considerable evidence of elevated CRP in persons who smoke,<sup>125</sup> and increased incidence of smoking behavior among individuals diagnosed with rheumatoid arthritis.<sup>126</sup> These findings may indicate a need for more adequate statistical control over smoking behavior in GWAS studies. SNP-based genetic correlations could arise from a wide variety of underlying factors, including the possibility that the relationship between phenotypes is mediated by behavioral or cultural factors, or influenced by a heritable but unexamined underlying trait that confers risk to both phenotypes.<sup>22,25</sup> Other factors that could contribute to genetic correlations include effects mediated by parental genotypes and their influence on parental behaviors that impact the offspring.<sup>127</sup> Additionally, GWAS studies of psychiatric phenotypes typically do not screen affected cases based the presence of other medical conditions (and vice-versa), thus over-representation of a given phenotype in the sample of another phenotype could bias the data toward the detection of a genetic correlation.

**Reviewer Comment 4:** “I would recommend not reporting results with and without the MHC locus. While it is admittedly important to many of the phenotypes in question, its inclusion violates the basic assumptions of LDSC, as it mostly just inflates the error function (as can be observed in the univariate estimates from the smaller phenotypes, e.g. type 1 diabetes [ $h^2_g$  0.18, SE 0.03 without MHC, vs. 0.29, SE 0.12 with it]). Using LDSC to arrive at a genome-wide estimate while including MHC is not correct.”

**Author Response 4:** We now perform all analyses with MHC removal and have revised the paper according to the reviewer’s recommendation.

**Reviewer Comment 5:** “Sixth, for practical reasons, I would very much encourage the authors to find a more concise way to represent the last thousand pages or so; listing thousands of shared SNPs at a fairly high p-value threshold requires at least a better format, but more likely a consideration of what the message is and what would be a more effective way of communication that information. Once these technical issues are resolved, and if the reported correlations remain robustly significant, this paper should make for a very interesting publication for Neuropsychiatric Genetics.”

**Author Response 5:** We appreciate the practical feedback. Based on recommendations from both reviewers, we made a substantial revision to the paper, including using a quantitative method to identify the loci potentially mediating the genome-wide genetic correlations. We provide a concise report of loci that are significantly correlated (BH corrected for total # loci  $p < 0.05$ ; Table 3). We report nominally significant local correlations in Supplementary Table 3, within approximately 1000 lines of data.

**Reviewer: 2**

### Comments to Author

**Reviewer Comment 1.** “The authors performed numerous genetic correlations. However, in their manuscript, they did not investigate, or at discuss, causal relationships among the traits analyzed. They may consider to use methods, such as two-sample Mendelian randomization. If this is not possible, they may consider to include some discussion about this topic.”

**Author Response 1:** The reviewer makes an excellent point, which we’ve addressed in several ways in the revised manuscript. While we ultimately did not utilize Mendelian Randomization-based methods, we instead chose to use the new Heritability Estimate from Summary Statistics (HESS) method, which could help shed light on the causal directionality question while also addressing the author’s concerns in Comment 2. The HESS method estimates local genetic correlations within LD-based blocks, and then uses the genome-wide hits for each disorder as “instruments” to make an inference about the direction of causality. We report and discuss these findings as follows:

**[Results]** “The results of the HESS analysis of putative causal directionality (Table 5), indicated that local genetic correlations were stronger in the loci containing GW hits for SZ ( $r_g \approx 0.46 \pm 0.12$ ) as compared with those containing hits for the paired autoimmune diseases ( $r_g \approx 0.18 \pm 0.12$ ).”

**[Discussion]** “The results of the HESS analysis of putative causal directionality indicate that the local genetic correlations are higher in loci occupied by SZ GW hits, as compared to the loci harboring hits for the paired autoimmune disorders.<sup>23</sup> This pattern is consistent with the hypothesis that genetic liability toward SZ tends to impart a greater genetic risk for the corresponding paired disorder, rather than the opposite directional hypothesis. A related interpretation may be there is an unobserved intermediate phenotype (*e.g.*, a shared biological pathways/mechanism) that is pleiotropic for both measured phenotypes, but more strongly influences the SZ phenotype. This pattern of findings could also be caused by the presence of a confounding factor (*e.g.*, smoking, socioeconomic status) that portends risk for both phenotypes.<sup>23</sup> Thus, we caution against over-interpretation of these findings. Extensions of Mendelian randomization methods to incorporate two GWAS samples using multi-allelic risk stratifying instruments will be better suited to address these hypotheses,<sup>106</sup> especially as future GWASs provide well-powered genetic estimates of potentially relevant intermediate phenotypes (*e.g.*, brain structure morphometry, circulating immune cell phenotypes, and serum cytokine levels).<sup>107–109</sup> Other limitations of the HESS method, including assumptions related to sample overlap and ancestry stratification, are discussed extensively by the method’s developers.<sup>23</sup>”



**Table 5. HESS Analysis of Putative Causal Directionality**

Phenotype 1, Phenotype 2	Local Genetic Correlation ± Error at Loci Reaching GWS Only for Phenotype 1	Local Genetic Correlation ± Error at Loci Reaching GWS Only for Phenotype 2	Suggested Direction
SZ-CD	0.37 ± 0.09	0.11 ± 0.08	SZ → CD
SZ-PBCs	0.58 ± 0.18	0.26 ± 0.17	SZ → PBC
SZ-SLE	0.26 ± 0.13	0.16 ± 0.16	SZ → SLE
SZ-UC	0.43 ± 0.09	0.16 ± 0.10	SZ → UC

**Reviewer Comment 2:** “The authors conducted an analysis to characterize psychiatric-immunologic pleiotropic Tag SNPs. Did the authors conduct a permutation analysis to verify that the overlaps observed are not random findings? Which are the criteria for selecting p-value = 0.005 as the association threshold? The authors may replace this analysis with one of the more sophisticated methods currently available”

**Author Response 2:** We agree with the reviewer’s concerns and have attempted to use more empirical and quantitative methods. Specifically, for reasons discussed above, we chose to use the HESS method to identify LD-based blocks of the genome that are significantly correlated between the phenotype pairs, and that may comprise the LDSC-based finding. We focus our reporting on results that are robustly significant after correction for the total number of interrogated loci (BH  $p < 0.05$ ). The findings are summarized in Table 3 (shown below). We find that most of the phenotypes used in the present study were likely under-powered for local genetic correlation analysis, but robustly significant findings were obtained for SZ and several autoimmune disorders. We prioritize reporting loci that co-localize with previously reported genome-wide hits and associated candidate genes.

**Table 3. Significant Local Genetic Correlations Based on HESS Analysis**

Phenotype Pair	# of Correlated Loci (BH $p < .05$ / $p < .05$ ) with GWS Hits and Associated Genes Contained within Correlated Loci (BH $p < 0.05$ )
ADHD-CRP	0 / 7
ADHD-CEA	0 / 3
ADHD-Psoriasis	0 / 5
ADHD-RA	0 / 5
ADHD-Tuberculosis Susceptibility	0 / 0
Anorexia Nervosa-CRP	0 / 0
BD-Celiac Disease	0 / 30
BD -CD	0 / 12
BD -Psoriasis	0 / 3
BD -UC	0 / 5
Cigarettes (Ever-Smoked)-CRP	0 / 0
Cigarettes (Ever-Smoked)-RA	0 / 0
Major Depression-HPT	0 / 0
Neuroticism-CEA	0 / 14
Neuroticism-HPT	0 / 15
OCD-Type 1 Diabetes	0 / 1

	<b>32 / 251</b>
	SZ 4:102921704-103198082** ( <i>ACTR3BD4, BDH2, CENPE, SLC39A8, SLC9B1, SLC9B2</i> )
1	CD 4:103188709-103198082** ( <i>CENPE</i> )
2	CD 8:126529074-126568355 ( <i>FAM84B</i> )
3	CD 10:64301873-64588424 (No Genes)
4	CD 12:40337163-40815560 ( <i>CNTN1, LRRK2, MUC19, RNU6-713P</i> );
5	CD 21:16790941-16841303 (No Genes)
6	
7	<b>37 / 256</b>
8	SZ 1:30427639-30437268 (No Genes)
9	SZ 10:18725659-18816236 ( <i>AIFM1P1, CACNB2</i> )
10	PBC 3:16955259-16955259** ( <i>PLCL2</i> )
11	PBC 11:118579747-118743772** ( <i>ARCNI, CXCR5, DDX6, MIR6716, PHLDB1, RNU6-1157P, RNU6-376P, TREH, TREHP</i> )
12	PBC 22:39670851-39747780 ( <i>CACNA1I, ENTHD1</i> )
13	
14	<b>20 / 200</b>
15	SZ 1:149999764-150507233 ( <i>ANP32E, APH1A, C1orf54, CA14, CIART, MIR6878, MRPS21, OTUD7B, PLEKHO1, PRPF3, RN7SL480P, RNU2-17P, RPRD2, TARS2, VPS45</i> )
16	SZ 2:58377014-58383820 ( <i>FANCL, VRK2</i> )
17	SLE 1:161444369-161501904 ** ( <i>FCGR2A</i> )
18	SLE 7:128562446-128771234 ( <i>CALU, CICP14, FAM71F1, FAM71F2, IMP3P2, RN7SL81P, RNA5SP242, RNA5SP243, RNU6-177P</i> )
19	SLE 8:11332026-11394233 ( <i>FAM167A-AS1, RN7SL293P, RNU6-1084P, SLC35G5, TDH</i> )
20	SLE 22:21910280-21999229** ( <i>MAPK1, PPM1F, PRAMENP, TOP3B, UBE2L3</i> )
21	
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24	<b>8 / 205</b>
25	UC 11:63804569-65898631** ( <i>CCDC88B, RPS6KA4, TRPT1, FLRT1</i> )
26	Tourette's Syndrome-Allergy 0 / 0

**[Discussion]** While it is tempting to speculate about these observations, we must acknowledge limitations and caveats of the present approach. Current methods for assessing genetic correlations are not well-suited for fine mapping shared liability across disorders; other methods are better suited for this task.<sup>21,101–103</sup> With respect to local genetic correlations, we have prioritized reporting of loci that co-localize with GW hits. However, this implies that the presence of the GW hit is contributing to the observed correlation, which we have not demonstrated presently. As such, our discussion of potentially pleiotropic loci and candidate genes should be considered anecdotal at this time. One indirect approach to assessing the role of GW hits in a local genetic correlation might be to re-estimate the local correlation after the removal of the smaller region of GW signal from the original data sets. When we conducted this analysis for the SZ-CD pair, we found that the number of significant loci (BH  $p < 0.05$ ) was reduced from 32 to 8, suggesting that GW hits likely play an important role in many of the local genetic correlations. Future studies will be able to combine larger GWAS sample sizes with new methods aimed at stratifying genetic correlations by biological annotations (*e.g.*, tissue type or signaling pathways) in order to more precisely define the parts of the genome that mediate a genetic correlation.<sup>104</sup>

**Reviewer Comment 3:** It would be nice if the authors can conduct enrichment analyses for gene ontologies and molecular pathways shared among the traits investigated.

**Author Response 3:** We agree with the reviewer's sentiment. In order to extend upon our local genetic correlation analysis, we investigated methods to quantitatively assess enrichment within the loci that mediate a genome-wide genetic correlation. Regrettably, at the present time, there are no available methods to directly address this question. It is a considerable challenge to perform analyses that are statistically rigorous (correcting for LD-structures in the genome, applying appropriate multiple test correction thresholds) and still powerful enough to detect an effect with the current GWAS sizes. Currently available methods for partitioning genome-wide heritability or correlations through some annotation set are limited to very low resolution features (*e.g.*, basic tissue type, intragenic vs. promoters). The use of more refined pathway-level categories poses a problem of inadequate statistical power. The moderators of the LDSC user form assure us that this is an area of active development, but that no agreed upon methods are available. Indeed, we found one method under development that proposes to use fine-grained biological annotations, but the software is currently under revision and is not available for download. (<https://www.biorxiv.org/content/early/2017/03/07/114561>). As such, we opted to refrain from performing an annotation-based analysis that might result in false positive findings. We restrict

our reporting to LD-based loci that show significant genetic correlations. We discuss these considerations above.

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For Peer Review

## Running Head: Genetic Correlations: Psychiatric &amp; Immune Phenotypes - 1

**Title:** Genetic correlations among psychiatric and immune-related phenotypes based on genome-wide association data.

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**Abstract**

Individuals with psychiatric disorders have elevated rates of autoimmune comorbidity and altered immune signaling. It is unclear whether these altered immunological states have a shared genetic basis with those psychiatric disorders. The present study sought to use existing summary-level data from previous genome-wide association studies (GWASs) to determine if commonly varying single nucleotide polymorphisms (SNPs) are shared between psychiatric and immune-related phenotypes. We estimated heritability and examined pair-wise genetic correlations using the linkage disequilibrium score regression (LDSC) and heritability estimation from summary statistics (HESS) methods. Using LDSC, we observed significant genetic correlations between immune-related disorders and several psychiatric disorders, including anorexia nervosa, attention deficit-hyperactivity disorder, bipolar disorder, major depression, obsessive compulsive disorder, schizophrenia, smoking behavior, and Tourette syndrome. Loci significantly mediating genetic correlations were identified for schizophrenia when analytically paired with Crohn's disease, primary biliary cirrhosis, systemic lupus erythematosus, and ulcerative colitis. We report significantly correlated loci and highlight those containing genome-wide associations and candidate genes for respective disorders. We also used the LDSC method to characterize genetic correlations amongst the immune-related phenotypes. We discuss our findings in the context of relevant genetic and epidemiological literature, as well as the limitations and caveats of the study.

**Keywords:** allergy, anorexia nervosa, attention deficit-hyperactivity disorder, autoimmune disorder, bipolar disorder, celiac disease, childhood ear infection, C-reactive protein, Crohn's disease, genetic correlation, genome-wide association, hypothyroidism, major depression, neuroticism, obsessive schizophrenia, primary biliary cirrhosis, rheumatoid arthritis, smoking, systemic lupus erythematosus, Tourette syndrome, tuberculosis susceptibility, type 1 diabetes, ulcerative colitis.

## Introduction

The biological bases of major psychiatric disorders have been studied for decades, yet they remain largely unresolved. Evidence from both clinical and biomedical literature has demonstrated that individuals with these conditions show differences in circulating immunologic markers, functional capacities of isolated immune cells, and atypical prevalence of clinical immune-related phenotypes compared to individuals not affected by psychiatric or neurodevelopmental disorders.<sup>1-10</sup> It remains unclear what roles (if any) altered immunologic functions may play in the major psychiatric phenotypes, though plausible mechanisms linking altered immune functions with neurobiological changes during early brain development and in fully developed adults have been identified.<sup>11-18</sup> While some studies have already suggested potential genetic bases for the immune dysregulation observed in a subset of psychiatric patients,<sup>19-22</sup> the extent to which co-occurrence or segregation of clinical phenotypes may be influenced by similarities in genome-wide genetic risk signals warrants further examination. Genome-wide association studies (GWASs) and meta-analyses can shed light on the regions of the genome that tend to associate with a clinical phenotype, quantitative trait, or biomarker; this is accomplished through tagging and association-testing of single nucleotide polymorphisms (SNPs) that vary within the population. Recently developed methods like linkage disequilibrium (LD) score regression (LDSC)<sup>23</sup> and Heritability Estimation from Summary Statistics (HESS)<sup>24</sup> allow for direct comparison of GWAS summary statistics for two different phenotypes for quantitative assessment of genetic correlation.

In the present study, we leveraged existing data to explore the genetic associations of a set of medical phenotypes that are enriched with immune and inflammatory processes; these included allergic conditions, classic autoimmune diseases, other inflammatory diseases, and vulnerability to infectious disease. We sought to cross-correlate the genetic associations of these phenotypes with the associations obtained from studies of a set of psychiatric and behavioral phenotypes. We hypothesized that some phenotype-pairs with evidence for increased clinical comorbidity might also share similarities in their genome-wide association profile, which would be reflected in our analyses as significant positive correlations. Additionally, in light of literature suggesting shared genetic risk among some immune and

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3 inflammatory disorders, we assessed genetic correlations within this set of phenotypes using the LDSC  
4 method; these findings are reported within the Supplementary Materials. Genetic correlations within the  
5 set of psychiatric phenotypes have been reported previously<sup>23,25,26</sup> and are not examined in the present  
6 study.  
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## 11 **Materials and Methods**

### 12 **Literature Search**

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14 We searched the published literature (Pubmed, SCOPUS), data repositories (dbGaP and  
15 immunobase.org), and the downloads page of the Psychiatric Genomics Consortium (PGC) website  
16 (<https://www.med.unc.edu/pgc/downloads>) to identify phenotypes with potentially usable GWAS and  
17 GWAS meta-analysis summary statistics. For studies identified in the published literature, we contacted  
18 corresponding authors to request summary statistics. In order to facilitate cross-study comparison, we  
19 utilized studies that reported samples of European ancestry, broadly defined to include Central, Southern  
20 and Eastern Europe, Scandinavia, and Western Russia. Our initial search yielded a large number of  
21 datasets reflecting a wide-range of behavioral and immune-related phenotypes (Supplementary Table 1);  
22 the set of phenotypes ultimately retained for final analyses was selected based on criteria described below.  
23 When multiple studies were identified for a given phenotype, we pursued the studies with the largest  
24 effective sample sizes and ultimately used the available study with the largest heritability z-score. In  
25 several instances, data from the largest existing studies could not be shared or reflected a mixed-ancestry  
26 meta-analysis; in these cases, we deferred to the next largest European-ancestry study. We chose to retain  
27 datasets with an effective sample size greater than 5000 individuals and with estimated SNP heritability z-  
28 score  $\geq 3$ , in keeping with previous recommendations.<sup>23</sup> This filter resulted in the exclusion of many  
29 relevant immune-related phenotypes, including eosinophilic esophagitis,<sup>27</sup> granulomatosis with  
30 polyangiitis,<sup>28</sup> IgA nephropathy,<sup>29</sup> HIV-related neurocognitive phenotypes,<sup>30</sup> morning cortisol levels,<sup>31</sup>  
31 myeloid leukemias,<sup>32</sup> psoriatic arthritis,<sup>33</sup> sarcoidosis,<sup>34</sup> and systemic sclerosis.<sup>35</sup> This also resulted in  
32 exclusion of several psychiatric and behavior phenotypes, including adolescent alcohol abuse,<sup>36</sup> anxiety-  
33 spectrum disorders,<sup>37</sup> borderline personality disorder,<sup>38</sup> language impairment,<sup>39</sup> personality domains (five  
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factor model),<sup>40</sup> post-traumatic stress disorder,<sup>41</sup> and reading disability.<sup>42</sup> We also ultimately excluded data from studies of ethanol, opiate, and cocaine dependence,<sup>43–45</sup> as genetic correlations involving these phenotypes were frequently outside the boundaries tolerated by the LDSC software, making them difficult to interpret; this may have been related to the ordinal-ranked phenotypes used in the GWASs. Finally, while relationships between tobacco-smoking behavior and other psychiatric phenotypes have been examined previously,<sup>23,25</sup> we chose to retain smoking data in order to assess relationships with a more complete set of immune-related phenotypes. The full list of phenotypes identified in the search and retained for analyses is shown in Supplementary Table 1, along with identification of the study cohorts and consortia that generated these data, full citations of the respective publications, and indications of sample size, information regarding genomic inflation, and estimated SNP heritability.

**GWAS Phenotypes Retained for Genetic Correlation**

For our psychiatric and behavior-related phenotypes, we ultimately retained GWAS summary data reflecting studies of Alzheimer's disease,<sup>46</sup> angry temperament<sup>47</sup>, anorexia nervosa,<sup>48</sup> attention deficit-hyperactivity disorder (ADHD),<sup>49</sup> autism,<sup>50</sup> bipolar disorder (BD),<sup>51,52</sup> cigarette smoking (ever-smoked status),<sup>53</sup> major depressive disorder,<sup>54</sup> trait neuroticism,<sup>55</sup> obsessive-compulsive disorder (OCD),<sup>56</sup> Parkinson's disease,<sup>57</sup> schizophrenia (SZ),<sup>58</sup> and Tourette Syndrome (personal communication from PGC Working Group). Collectively, these phenotypes were treated as a set. For phenotypes that are known or suspected to involve alterations to immune cells and/or inflammatory signaling, we ultimately retained GWAS data reflecting allergy (any, self-reported),<sup>57,59</sup> asthma (self-reported),<sup>57</sup> atopic dermatitis,<sup>60</sup> childhood ear infection (self-reported),<sup>57</sup> celiac disease,<sup>61</sup> serum C-reactive protein (CRP),<sup>62</sup> Crohn's disease (CD),<sup>63,64</sup> hypothyroidism (self-reported),<sup>57</sup> primary biliary cirrhosis (PBC),<sup>65</sup> psoriasis,<sup>66</sup> rheumatoid arthritis,<sup>67</sup> systemic lupus erythematosus (SLE),<sup>68</sup> susceptibility to pulmonary tuberculosis,<sup>69</sup> type 1 diabetes,<sup>70</sup> and ulcerative colitis (UC).<sup>71</sup> These phenotypes were treated as a set in subsequent analyses.

**Data Pre-Processing and Analysis**



Our primary analyses were performed using the LDSC software (<https://github.com/bulik/ldsc>).<sup>23</sup> Briefly, this set of tools can be used with existing GWAS summary data in order to distinguish polygenicity from confounding caused by uncontrolled population stratification or cryptic relatedness among samples,<sup>72</sup> to estimate the heritability of a given phenotype,<sup>23</sup> and to estimate the genetic correlation between two phenotypes based on two separate or related sets of summary statistics.<sup>23</sup> In the latter application, the minimal requirements for each set of summary statistics include columns of data indicating SNP ID, the identities of reference and non-reference alleles, association *p*-value, effect size, test statistic (*e.g.*, odds ratio, regression  $\beta$ , or Z-score), and sample size (per SNP or for all SNPs). For each pair of phenotypes, this tool compares the strength and direction of association signal at each locus while correcting for the correlation that would be expected based on genetic linkage alone, and it provides an estimate of the genetic correlation between phenotypes. This method relies on adjustment for the linkage between SNPs (*i.e.*, covariance caused by genomic proximity); for our analyses, we used the set of LD scores provided by the software's creators, based on the 1000 Genomes Project's European sample (file = eur\_w\_ld\_chr, URL = <https://data.broadinstitute.org/alkesgroup/LDSCORE>). Because minor allele frequencies (MAFs) and imputation quality scores were not available for all the obtained sets of GWAS results, we filtered the GWAS results to retain only SNPs that were included within the HapMap3 panel and had a MAF  $\geq 5\%$  within the 1000 Genomes Project Phase 3 European samples;<sup>23</sup> this decision resulted in the exclusion of a sizable proportion of SNPs, but ensured equitable treatment of all datasets. The extended major histocompatibility complex (MHC) region contains high amounts of long-range LD, making it challenging to accurately map association signals in this region. For this reason, and following the work of others,<sup>23,25</sup> we excluded this region from our analyses (chromosome 6, base positions  $25 \times 10^6$  to  $35 \times 10^6$ ). Additional SNP quality control (QC) routines followed those implemented by the GWAS authors and the defaults employed with the LDSC *munge\_sumstats.py* function; this function checks alleles to ensure that the supplied alleles match those in the HapMap3 reference panel. For each dataset, we estimated the phenotype's heritability. The results of this analysis, along with features of each GWAS dataset (sample size, number of QC-positive SNPs, genomic inflation factor, *etc.*), are shown for all

phenotypes in Supplementary Table 1. All phenotypes with sample size  $\geq 5000$  and estimated SNP heritability z-score  $\geq 3$  were retained for correlation analysis (indicated in Supplementary Table 1 in green highlight). Pair-wise genetic correlations were assessed between retained phenotypes based on the intersection of QC-positive SNPs, and heatmaps were constructed to depict these relationships. For correlation coefficients returned within the bounds of the LDSC software,  $p$ -values were corrected using the Benjamini-Hochberg (BH) method for the total number of unique tests depicted in each correlation matrix. Within the main text, we describe only correlations that survived family-wise multiple-test correction. Correlations are reported as the coefficient  $\pm$  standard error. For phenotype-pairs showing statistically significant genetic correlations, we re-evaluated the genetic correlations and estimated heritability using the HESS method (<https://github.com/huwenboshi/hess>).<sup>24</sup>

### Characterization of Genetically Correlated Loci and Associated Genes

For psychiatric-immune phenotype-pairs showing significant genetic correlations after BH correction for multiple testing, we used the HESS software to estimate partitioned heritability and genetic correlations based on smaller LD-based segments of the genome (average size = 1.5 Mb). We report the number and identity of genomic partitions (based on HG19 reference) displaying significant local genetic correlations and apply correction for the total number of partitions ( $\approx 1694$ , after MHC removal). Because presently available methods are poorly suited for fine-mapping the loci mediating a genetic correlation, we prioritized reporting correlated loci that also contain genome-wide significant associations for the relevant phenotypes (*i.e.*, associations with  $p < 5 \times 10^{-8}$ ; subsequently called GW hits). We report GW hits contained within the present datasets, but also cross-reference these findings with those contained in [immunobase.org](http://immunobase.org), in order to identify loci associated with multiple immune-related disorders. We report the HGNC symbols for candidate genes proposed to mediate those associations. The full list of genes contained within each correlated loci is provided in Supplementary Table 3. Additionally, we used HESS to examine patterns of local genetic correlation in relationship to GWAS hits to make inferences about putative causal directionality between the phenotype-pairs. For all HESS analyses, we used the 1000 Genomes Project Phase 3 European reference panel and the LD-independent genome partitions

recommended by the software developers.<sup>73</sup> Following the developers' practices, we assumed no sample overlap for comparisons of data generated by different consortia.<sup>24</sup>

## Results

### Genome-Wide Correlations between Psychiatric and Immune-Inflammatory Phenotypes

All pair-wise LDSC genetic correlations between psychiatric and immune-related phenotypes are depicted in Figure 1. Notably, twenty-one correlations survived BH correction for multiple testing (denoted with \*\*) and 6 survived a more stringent Bonferroni correction (denoted with \*\*\*). Full results for these analyses are provided in Supplementary Table 2. Significant positive relationships were observed between ADHD and each of: CRP ( $rg = 0.23 \pm 0.06, p = 2.0 \times 10^{-4}$ ), childhood ear infections ( $rg = 0.20 \pm 0.05, p = 2.0 \times 10^{-4}$ ), psoriasis ( $rg = 0.23 \pm 0.07, p = 1.0 \times 10^{-3}$ ), rheumatoid arthritis ( $rg = 0.16 \pm 0.05, p = 9.0 \times 10^{-4}$ ), and tuberculosis susceptibility ( $rg = 0.36 \pm 0.11, p = 1.6 \times 10^{-3}$ ). Anorexia nervosa showed a negative genetic correlation with CRP ( $rg = -0.30 \pm 0.08, p = 1.0 \times 10^{-4}$ ). BD was positively correlated with each of: celiac disease ( $rg = 0.31 \pm 0.09, p = 4.0 \times 10^{-4}$ ), CD ( $rg = 0.21 \pm 0.05, p = 3.7 \times 10^{-5}$ ), psoriasis ( $rg = 0.25 \pm 0.08, p = 3.8 \times 10^{-3}$ ), and UC ( $rg = 0.23 \pm 0.06, p = 2.0 \times 10^{-4}$ ). Major depressive disorder was positively correlated with hypothyroidism ( $0.33 \pm 0.09, p = 5.0 \times 10^{-4}$ ). Similarly, neuroticism was positively correlated with hypothyroidism ( $rg = 0.25 \pm 0.06, p = 7.2 \times 10^{-5}$ ), in addition to childhood ear infection ( $rg = 0.13 \pm 0.04, p = 8.0 \times 10^{-4}$ ). OCD was negatively correlated with type 1 diabetes ( $rg = -0.32 \pm 0.11, p = 5.4 \times 10^{-3}$ ). Smoking behavior was positively correlated with CRP ( $rg = 0.31 \pm 0.07, p = 3.6 \times 10^{-5}$ ) and with rheumatoid arthritis ( $rg = 0.17 \pm 0.05, p = 2.3 \times 10^{-3}$ ). SZ showed positive genetic correlations with CD ( $rg = 0.12 \pm 0.03, p = 2.0 \times 10^{-4}$ ), PBC ( $rg = 0.14 \pm 0.05, p = 2.0 \times 10^{-3}$ ), SLE ( $rg = 0.15 \pm 0.04, p = 2.0 \times 10^{-4}$ ), and UC ( $rg = 0.14 \pm 0.04, p = 2.0 \times 10^{-4}$ ). Finally, we observed a positive genetic correlation between Tourette syndrome and allergy ( $rg = 0.24 \pm 0.06$ , uncorrected  $p = 2.7 \times 10^{-5}$ ). Additionally, several large-magnitude correlations attained a nominal threshold of statistical significance (e.g., autism-allergy and OCD-celiac); these correlations tended to have a higher standard error and were generated using relatively smaller GWAS sample sizes. As such, they may be more likely to reflect false positives and should be regarded with appropriate skepticism.

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3 For phenotypes involved in correlations that survived multiple test correction, estimated SNP  
4 heritability is shown in Table 2. For these phenotypes, we reassessed SNP heritability and the magnitude  
5 of genome-wide genetic correlations using the HESS method (Tables 1 and 2). Correlation coefficients  
6 were not correlated between the two methods (pearson  $r = 0.25$ ,  $p = 0.25$ ; Supplementary Figure 1) and  
7 the absolute value of the difference was negatively related to sample size ( $r = -0.45$ ,  $p = 0.035$ ;  
8 Supplementary Figure 2), which is consistent with the software developer's guidelines.<sup>24</sup> LDSC-based  
9 correlations among the immune-related phenotypes are reported in the Supplementary Text and  
10 Supplementary Table 5.  
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**Characterization of Loci Contributing to Psychiatric-Immune Genetic Correlations**

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22 For psychiatric-immune phenotype-pairs that demonstrated a significant genome-wide correlation  
23 with the LDSC method (*i.e.*, those in Table 1), we used the HESS software to examine the genetic  
24 correlation within the ~1694 partitioned genomic loci. The number of correlated loci before and after BH  
25 multiple test correction are depicted in Table 3; detailed results for these analyses, including local  
26 heritability, correlation strength, and the lists of gene symbols within each loci are provided in  
27 Supplementary Table 3. Only SZ displayed robust local genetic correlations with immune-related  
28 phenotypes, including thirty-two loci with CD, 37 loci with PBC, 20 loci with SLE, and 8 with UC (Table  
29 3, depicted in Figure 2). Upon closer examination of the loci implicated between SZ and CD, we noticed  
30 that five of these loci contained GW hits, including one locus on chromosome 4q24 (4:100678360-  
31 103221356; highlighted green in Figure 2) that contained GW hits for both SZ and CD within the present  
32 data, and with 4 other autoimmune diseases (immunobase.org); these signals are near autoimmunity  
33 candidate genes *NFKB1* and *MANBA*, as well as proposed SZ candidate gene *SLC39A8*, among others  
34 contained within the locus (see Supplementary Table 3). The locus on 10p12.3 (10:18725659-18816236,  
35 highlighted green) contains a GW hit for SZ attributed to calcium channel gene *CACNB2*. Another locus  
36 mediating a significantly correlated locus on 12q12 (12:39227169-40816185, highlighted green) contains  
37 a GW hit for CD attributed to *LRRK2*. When examining the loci implicated between SZ and PBC, we  
38 observed 3 harboring GW hits for the former and 3 harboring signals for the latter, including loci within  
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3 3p24.3 (3:16282442-17891118, highlighted orange) containing *PLCL2* and within 11q23.3  
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5 (11:117747110-119215476, highlighted orange), containing candidate genes *CXCR5*, *DDX6*, and *TREH*.  
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7 Among the loci implicated between SZ and SLE, we observed two harboring GW hits for the former and  
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9 3 harboring hits for the latter. One such locus within 1q21 (1:148361253-151538881, highlighted yellow)  
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11 contains a SZ association signal localizing near candidate gene *APH1A*. Another locus within 1q23  
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13 (1:159913048-162346721, highlighted yellow) contains a GW hit for SLE, as well as several other  
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15 autoimmune diseases, associated with candidate gene *FCGR2A*. Similarly, a locus within 22q11.21  
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17 (22:19912358-22357325, highlighted yellow) containing multi-disease association signal is associated  
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19 with *MAPK1* and *UBE2L3*. Among the loci implicated between SZ and UC, one within 11q13.1  
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21 (11:63804569-65898631) harbored GW hits for multiple autoimmune disorders.  
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24 We also sought to examine whether the specific loci might be implicated across multiple  
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26 psychiatric-immune disorder pairs (Figure 2). An analysis limited to only those surviving BH correction  
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28 for multiple testing yielded only two loci shared by multiple disease pairs. The first locus (within 3p24.3;  
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30 3:21643707-22204244) was identified in correlations of SZ with PBC and with CD; it contained no GWS  
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32 hits and two genes of unclear consequence *ZNF385D* and *ZNF385D-AS2*. The second locus within  
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34 8p32.1 (8:11278998-13491775, highlighted brown) was identified in correlations of SZ with PBC and  
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36 with SLE; this locus contained numerous genes and is adjacent to a GWS hit for SLE associated with  
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38 candidate gene *BLK*. When we broadened the scope to examine all loci implicated in nominally  
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40 significant correlations (uncorrected  $p < 0.05$ ), we find several that are common to multiple psychiatric-  
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42 immune disorder pairs (Table 4). The most widely implicated locus was shared among the 5 pairs of  
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44 psychotic and inflammatory bowel disorders (within 17q12; 17:36809344-38877404, highlighted purple)  
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46 and contains a GW hit for BD ascribed to candidate gene *ERBB2*. There were another eight loci that were  
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48 implicated in four disorder pairs. Among these, one located within 1q32.1 (1:200137649-201589975,  
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50 highlighted purple) contains GW hits for multiple autoimmune disorders (including celiac disorder, CD,  
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52 multiple sclerosis, and UC) and is near candidate genes *CACNA1S* and *KIF21B*. The full list of loci  
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54 implicated across multiple disorder pairs is available in Supplementary Table 3. The results of the HESS  
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3 analysis of putative causal directionality (Table 5) indicated that local genetic correlations were stronger  
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5 in the loci containing GW hits for SZ ( $rg \approx 0.41 \pm 0.12$ ) as compared with those containing hits for the  
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7 paired autoimmune diseases ( $rg \approx 0.17 \pm 0.13$ ).  
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## 9 10 Discussion

11 In contrast to previous studies examining large sets of medical, anthropomorphic, metabolic, and  
12 behavioral phenotypes,<sup>23–26,74</sup> the present study performed a focused comparison of psychiatric and  
13 immune-related phenotypes using two methods to estimate genetic correlation from summary statistics.  
14 We used updated versions of psychiatric GWASs<sup>49–51,56</sup> and compiled a more comprehensive set of  
15 immune-related phenotypes, while simultaneously reducing the burden imposed by multiple testing.  
16 Additionally, this analysis reflects the first application of the LDSC and HESS method for some of these  
17 phenotype-pairs. We identified several genome-wide correlations that were robust to multiple testing.  
18 Furthermore, we used the HESS method to validate genome-wide correlations and to conduct a  
19 quantitative analysis that localizes correlations to regions of the genome. We prioritized the reporting of  
20 findings based on co-localization with GW hits. As such, this study provides a quantitative map of  
21 genetic relationships between psychiatric and immune-related disorders and serves, along with previous  
22 work,<sup>75</sup> as a starting point for identifying and characterizing potentially pleiotropic loci.  
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37 Prominent among the LDSC genome-wide significant findings was a cluster of modest positive  
38 correlations involving BD ( $rgs$  ranging 0.25 to 0.33) and SZ ( $rgs$  ranging 0.12 to 0.15) in conjunction  
39 with immune-related disorders involving the gastrointestinal tract (*i.e.*, CD, PBC, UC). These findings  
40 are consistent with available epidemiological evidence indicating that the presence of one set of disorders  
41 portends increased risk for a diagnosis from the other class of disorders, though the causality and  
42 temporality of these relationships is not clearly established.<sup>76–82</sup> Positive genetic inter-correlations among  
43 these phenotypes are also consistent with recent work demonstrating that the positive correlation between  
44 BD and SZ are significantly mediated by both CNS and immunologic tissues.<sup>83</sup> Our local genetic  
45 correlation analyses were inadequately powered to detect loci relevant to most of the psychiatric-immune  
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3 disorder pairs, including BD. However, comparisons with SZ yielded 97 loci that were robust to multiple  
4 test correction, 18 of which also were shown to harbor GW hits in previous studies. In several instances,  
5 these GW hits localize near genes with functions that are pleiotropic and relevant to both brain and  
6 immune system phenotypes. For example, we identified a SZ-CD correlated locus at 4q24 (4:100678360-  
7 103221356) that contained GW hits for both SZ (putatively attributed to *SLC39A8*) and several  
8 autoimmune diseases (putatively attributed to *NFKBI* and *MANBA*); others have proposed that  
9 associations at this locus may exert pleiotropic effects on a wide range of phenotypes (additionally  
10 including body mass index, serum levels of manganese, N-terminal pro-B-type natriuretic peptide, and  
11 HDL-cholesterol) through a functional variant found in European populations affecting the *SLC39A8*  
12 cation transporter.<sup>84,85</sup> A locus within 11q23.3 (11:117747110-119215476) was significantly correlated  
13 between SZ and PBC and harbors a region of GW hits for multiple autoimmune disorders attributed to  
14 *PLCL2*, a catalytically inactive phospholipase-like protein thought to influence intracellular signaling,  
15 calcium homeostasis, and GABA-ergic receptor trafficking in immune and neuronal cell types, among  
16 others.<sup>86-88</sup> A *de-novo* missense mutation affecting this gene was identified in an exome sequencing study  
17 of SZ affected individuals, though no replication appears to have been reported.<sup>89</sup> Similarly, a correlated  
18 locus within 22q13.1 (22:39307894-40545797, highlighted yellow in Figure 2) contains GW hits for  
19 PBC, which overlaps with voltage gated calcium channel gene *CACNA1I*; this gene has been implicated  
20 by both GWAS and rare-variant studies of SZ.<sup>58,90</sup> Another correlated locus within 11q23 (11:118579747-  
21 118743772) contained GW hits for multiple autoimmune disorders and is suspected to exert pleiotropic  
22 effects through several genes, whose functions include repression of aberrant interferon signaling  
23 (*DDX6*),<sup>91</sup> chemokine signaling between T-helper and B-cells (*CXCR5*),<sup>92,93</sup> and enzymatic break down of  
24 microbial disaccharides (*TREH*).<sup>94</sup> Notably, functional genomic studies have identified *DDX6* as a gene  
25 that is perturbed during neuronal differentiation of samples derived from individuals with schizophrenia,<sup>95</sup>  
26 and as a peripheral blood marker of cerebrospinal fluid serotonin metabolite levels,<sup>96</sup> supporting its  
27 relevance to psychiatric phenotypes.

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We also examined loci that showed a nominal genetic correlation across multiple disorder pairs, and found these loci also harbored GW hits for respective phenotypes. The locus at 17q12 shared among multiple disorders contains a GW hit for BD (17:36809344-38877404) ascribed to candidate gene *ERBB2*.<sup>52</sup> This gene and its relatives encode receptor tyrosine kinases that interact with a family of growth factors called neuregulins to regulate the assembly of neural circuitry, myelination, neurotransmission and synaptic plasticity. A large body of evidence implicates both ligands and receptors from these families as susceptibility genes for SZ and BD.<sup>97</sup> Notably, *ERBB2* overlaps with GW hits for multiple autoimmune disorders, though these have been attributed to different genes in the region. Another locus at 1q32.1 (1:200137649-201589975) contains GW hits for multiple autoimmune disorders (including celiac disease, CD, multiple sclerosis, and UC) and is near candidate genes *C1orf106*, *CACNAIS*, *GPR25*, and *KIF21B*. Genetic disruptions of voltage-gated calcium channels, including *CACNAIS*, are well-established susceptibility factors in psychiatric and neurological disorders.<sup>98,99</sup> *KIF21B* encodes a neuronal motor protein implicated in GABA<sub>A</sub> receptor trafficking,<sup>100</sup> in addition to having a suspected role in regulating inflammatory signaling in several lymphocyte subtypes.<sup>101</sup>

While it is tempting to speculate about these observations, we must acknowledge limitations and caveats of the present approach. Current methods for assessing genetic correlations are not well-suited for fine-mapping shared liability across disorders; other methods are better suited for this task, including extensions of GWAS that model multiple phenotypes simultaneously.<sup>22,55,102,103</sup> With respect to local genetic correlations, we have prioritized reporting of loci that co-localize with GW hits. However, this implies that the presence of the GW hit is contributing to the observed correlation, which we have not demonstrated presently. As such, our discussion of potentially pleiotropic loci and candidate genes should be considered anecdotal at this time. One indirect approach to assessing the role of GW hits in a local genetic correlation might be to re-estimate the local correlation after the removal of the smaller region of GW signal from the original datasets. When we conducted this analysis for the SZ-CD pair, we found that the number of significant loci (BH  $p < 0.05$ ) was reduced from 32 to 8, suggesting that GW



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3 hits likely play an important role in many of the local genetic correlations. Future studies will be able to  
4 combine larger GWAS sample sizes with new methods aimed at stratifying genetic correlations by  
5 biological annotations (*e.g.*, tissue type or signaling pathways) in order to more precisely define the parts  
6 of the genome that mediate a genetic correlation.<sup>83</sup>  
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12 Several methods have now been used to examine quantitative SNP-based genetic relationships  
13 between psychiatric and immune-related phenotypes, including restricted maximum likelihood (REML)  
14 co-heritability, polygenic risk scores, genetic analysis incorporating pleiotropy and annotations, and other  
15 permutation-based methods.<sup>22,104–106</sup> Different approaches rest on unique assumptions, test different sets  
16 of hypotheses, and appear prone to generating sometimes conflicting results. Using several approaches  
17 that were not dependent on the directionality of a given SNP's effect, Wang and colleagues concluded  
18 that many (24 of 35) pairs of psychiatric and immune-related phenotypes shared a statistically significant  
19 proportion of risk-associated loci; among these findings was a significant genetic overlap between BD (as  
20 well as SZ) and UC.<sup>22</sup> However, many of the other relationships identified in that study were not  
21 significant in the present study. Another recent study demonstrated that polygenic risk scores reflecting  
22 additive risk for several autoimmune diseases can explain a small proportion of variance in SZ case-  
23 control status, yet the genome-wide significant SNPs from the autoimmune GWASs were not over-  
24 represented among SZ's genome-wide significant hits when permutation-based analysis was  
25 performed.<sup>105</sup> The apparent disagreement between different approaches for assessing shared genetic  
26 liability thus underscores the value of examining the consensus across studies and methods.<sup>105</sup>  
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44 The LDSC approach featured here attempts to quantitate similarities and differences in  
45 association signals across the entire genome. Some of our phenotype-pairs have been examined  
46 previously using genome-wide assessment methods, yielding apparently contradictory findings.<sup>25,26,72</sup> For  
47 example, a previous study implementing a REML-based approach did not find significant SNP-based co-  
48 heritabilities between CD and the major psychiatric phenotypes.<sup>106</sup> Additionally, the first study  
49 implementing the LDSC method found no significant correlation ( $rg = 0.08 \pm 0.08$ , uncorrected  $p = 0.33$ )  
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3 between BD and UC;<sup>23</sup> this study used a smaller dataset for BD (Sklar *et al.*, 2011;  $N = 16,731$ ) and a  
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5 different version of the UC dataset (reported as Jostins *et al.*, 2012;  $N = 27,432$ ). A similar non-  
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7 correlation is also reported in LD-Hub (<http://ldsc.broadinstitute.org/>), using what appears to be the same  
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9 datasets, although referencing a related article (Liu *et al.*, 2015;  $N = 27,432$ ). The analyses portrayed in  
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11 our main text utilized a larger BD dataset (Hou *et al.*,  $N = 40,225$ ), the same dataset for UC (Liu *et al.*,  
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13 2015;  $N = 27,432$ ), and uniform criteria for SNP retention based on inclusion in the HapMap3 panel and  
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15  $MAF \geq 5\%$  within the 1000 Genomes Project Phase 3 European samples. In order to resolve apparent  
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17 discrepancies, we obtained additional versions of the available data for BD, SZ, CD, and UC and pre-  
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19 filtered under both inclusive (imputation INFO score  $\geq 0.9$  or all SNPs, when INFO score unavailable) or  
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21 exclusive criteria ( $MAF > 5\%$  within the 1000 Genomes Project Phase 3 European samples). We found  
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23 that correlations between SZ and each of CD, PBC, and UC tended to be more positive and more  
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25 significant (*i.e.*, reaching a BH-corrected threshold) when using the SZ data filtered at  $MAF > 5\%$   
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27 (Supplementary Figure 3). A similar pattern held true for inclusive *vs.* exclusive pre-filtering for the BD  
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29 dataset generated by Sklar *et al.*, but this was not the case for the larger Hou *et al.*, dataset. A side-by-  
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31 side comparison of the effects of different pre-filtering decisions for the BD, SZ, CD, and UC datasets in  
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33 relation to the other phenotypes is provided in Supplementary Figure 4. These observations indicate that  
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35 decisions pertaining to SNP inclusion can have a considerable effect on the result of the LDSC analysis;  
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37 this idea is further supported by the observation that stratified genetic correlation analyses based on MAF  
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39 thresholds can produce different levels of statistical significance and opposite patterns of correlation  
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41 directionality.<sup>83</sup> Thus, our study suggests that genetic correlations between psychiatric and immune-  
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43 related disorders may be more significant when analyses are restricted to common variation.  
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45 Reassuringly, the developers of the HESS method use the same datasets examined presently, and also  
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47 report positive genetic correlations between SZ and the inflammatory bowel disorders.<sup>24</sup> The results of the  
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49 HESS analysis of putative causal directionality indicate that the local genetic correlations are higher in  
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51 loci occupied by SZ GW hits, as compared to the loci harboring hits for the paired autoimmune  
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53 disorders.<sup>24</sup> This pattern is consistent with the hypothesis that genetic liability toward SZ tends to impart  
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3 a greater genetic risk for the corresponding paired disorder, rather than the opposite directional  
4 hypothesis. A related interpretation may be there is an unobserved intermediate phenotype (*e.g.*, a shared  
5 biological pathways/mechanism) that is pleiotropic for both measured phenotypes, but more strongly  
6 influences the SZ phenotype. This pattern of findings could also be caused by the presence of a  
7 confounding factor (*e.g.*, smoking, socioeconomic status) that portends risk for both phenotypes.<sup>24</sup> Thus,  
8 we caution against over-interpretation of these findings. Extensions of Mendelian randomization methods  
9 to incorporate two GWAS samples using multi-allelic risk stratifying instruments will be better suited to  
10 address these hypotheses,<sup>107</sup> especially as future GWASs provide well-powered genetic estimates of  
11 potentially relevant intermediate phenotypes (*e.g.*, brain structure morphometry, circulating immune cell  
12 phenotypes, and serum cytokine levels).<sup>108-110</sup> Other limitations of the HESS method, including  
13 assumptions related to sample overlap and ancestry stratification, are discussed extensively by the  
14 method's developers.<sup>24</sup>

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29 Our study also identified many phenotype-pairs that demonstrated significant genome-wide  
30 correlations using the LDSC method, but for which HESS-based genome-wide and local genetic  
31 correlations could not be identified. This is unsurprising, given that the sample sizes for these phenotypes  
32 were generally below the recommended sample size for HESS analyses ( $N \geq 50,000$ ).<sup>24</sup> Nonetheless,  
33 some of these relationships are supported by evidence from clinical and epidemiological studies, and thus  
34 may warrant follow-up using larger sample sizes and alternative methods for assessing genetic  
35 relationships. For example, we observed a modest positive correlation between self-reported  
36 hypothyroidism and major depression ( $rg = 0.33 \pm 0.09, p = 5.0 \times 10^{-4}$ ), as well as trait neuroticism ( $rg =$   
37  $0.25 \pm 0.06, p = 7.2 \times 10^{-5}$ ). This could be consistent with two different sets of clinical observations. The  
38 first is that symptoms of depression are common in individuals with hypothyroidism, and that subclinical  
39 hypothyroidism could play a role in a subset of persons diagnosed with major depression; thus cross-  
40 contamination of GWAS samples could lead to a biased positive correlation. However, the second  
41 observation is that there is an increased incidence of major depression and depressive symptomatology in  
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3 persons with autoimmune thyroiditis receiving hormone replacement therapy.<sup>111,112</sup> It is worth noting that  
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5 GWAS data for allergy, asthma, hypothyroidism, childhood ear infection, and Parkinson's disease were  
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7 obtained through 23andMe, Inc.. These data are based on self-report, and thus could be more susceptible  
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9 to bias stemming from misdiagnosis or misreporting, though previous work supports their validity.<sup>113</sup>  
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11 None the less, the samples sizes are an order of magnitude larger than many other datasets, resulting in  
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13 smaller standardized errors and better power for the detection of weak genetic correlations. It is yet  
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15 unclear whether small magnitude genetic correlations like these might be clinically meaningful. The  
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17 LDSC correlations observed presently were relatively weak magnitude ( $r_{gs} \approx 0.12$  to  $0.30$ ) and of modest  
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19 modest statistical significance ( $1 \times 10^{-5} \leq \text{uncorrected } p \leq 5 \times 10^{-3}$ ), when compared to the strongest genetic  
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21 correlations observed within each group of datasets (e.g., SZ-BD  $r_g = 0.87$  with  $p = 7.4 \times 10^{-94}$ ; CD-UC  $r_g$   
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23  $= 0.71$  with  $p = 3.5 \times 10^{-36}$ ).

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27 Several other significant genetic correlations are supported in the clinical and epidemiological  
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29 literature. For example, we found a positive correlation between ADHD and rheumatoid arthritis ( $r_g =$   
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31  $0.16 \pm 0.05$ ,  $p = 9.0 \times 10^{-4}$ ); this finds support in large registry-based studies indicating an increase in  
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33 ADHD diagnosis in individuals with autoimmune disease,<sup>114</sup> children with mother's affected by  
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35 autoimmune disease,<sup>114</sup> and children of mothers with rheumatoid arthritis.<sup>115</sup> Registry-based studies also  
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37 provide support for increased incidence of ear infections ( $r_g = 0.20 \pm 0.05$ ,  $p = 2.0 \times 10^{-4}$ ) and psoriasis ( $r_g$   
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39  $= 0.23 \pm 0.07$ ,  $p = 1.0 \times 10^{-3}$ ) among individuals with ADHD.<sup>114,116-118</sup> On the other hand, ADHD was  
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41 positively correlated with CRP ( $r_g = 0.23 \pm 0.06$ ,  $p = 2.0 \times 10^{-4}$ ), though a relatively large epidemiological  
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43 study finds no association in affected individuals.<sup>119</sup> The negative correlation between anorexia nervosa  
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45 and CRP ( $r_g = -0.30 \pm 0.08$ ,  $p = 1.0 \times 10^{-4}$ ) is borne out in a recent meta-analysis of relevant studies.<sup>120</sup>  
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47 Another negative correlation between OCD and type 1 diabetes ( $r_g = -0.32 \pm 0.11$ ,  $p = 5.4 \times 10^{-3}$ ) finds no  
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49 support within a limited body of literature.<sup>121</sup> However, the positive correlation between Tourette  
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51 syndrome and allergy ( $r_g = 0.24 \pm 0.06$ ,  $p = 2.7 \times 10^{-5}$ ) is consistent with evidence of increased  
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53 comorbidity between these phenotypes.<sup>122,123</sup> There is a paucity of clinical studies directly assessing the  
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3 relationship between SZ and PBC ( $rg = 0.14 \pm 0.05, p = 2.0 \times 10^{-3}$ ). On the other hand, the correlation  
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5 between SZ and SLE ( $rg = 0.15 \pm 0.04, p = 2.0 \times 10^{-4}$ ) appears to be supported by both epidemiological  
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7 evidence of increased comorbidity<sup>124</sup> and the well-documented (although rare) phenomenon of CNS lupus  
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9 presenting with SZ-like symptoms,<sup>125</sup> which may contribute to misdiagnosis. Finally, positive  
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11 correlations involving cigarette smoking behavior and CRP ( $rg = 0.31 \pm 0.07, p = 3.6 \times 10^{-5}$ ), as well as  
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13 rheumatoid arthritis ( $rg = 0.17 \pm 0.05, p = 2.3 \times 10^{-3}$ ), are perhaps unsurprising given considerable  
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15 evidence of elevated CRP in persons who smoke,<sup>126</sup> and increased incidence of smoking behavior among  
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17 individuals diagnosed with rheumatoid arthritis.<sup>127</sup> These findings may indicate a need for more adequate  
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19 statistical treatment of smoking behavior in GWAS studies.

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22 The present study identified a number of intriguing and previously unreported genetic  
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24 correlations, some of which appear to localize near established risk factors for complex disease. On the  
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26 whole, these findings are consistent with the idea that similar signatures of common genetic variation may  
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28 increase risk for both psychiatric and immune-related disorders. However, it is important to keep in mind  
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30 that these findings do not necessarily imply causality or even shared genetic etiology. SNP-based genetic  
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32 correlations could arise from a wide variety of underlying factors, including the possibility that the  
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34 relationship between phenotypes is mediated by behavioral or cultural factors, or influenced by a heritable  
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36 but unexamined underlying trait that confers risk to both phenotypes.<sup>23,26</sup> Other factors that could  
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38 contribute to genetic correlations include effects mediated by parental genotypes and their influence on  
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40 parental behaviors that impact the offspring.<sup>128</sup> Additionally, GWAS studies of psychiatric phenotypes  
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42 typically do not screen affected cases on the presence of other medical conditions (and *vice-versa*), thus  
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44 over-representation of a given phenotype in the sample of another phenotype could bias the data toward  
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46 the detection of a genetic correlation. Finally, estimates of genetic similarities could be influenced by  
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48 misdiagnosed cases.<sup>129</sup> Other general limitations of this method (in comparison with other approaches)  
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50 have been discussed previously elsewhere.<sup>23,26</sup> In light of the exploratory nature of the present study,  
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52 another critique pertains to the lack of clearly identified positive and negative control comparisons.  
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3 Additionally, the clinical significance of weak or modest genetic correlations is yet unclear. Future work  
4 could shed light on this topic by comparing the strength of reported genetic correlations with estimates of  
5 effect size from epidemiological associations, in order to create an atlas of concordance and shed light on  
6 the sensitivity and specificity of these genetic methods. One final critique of this approach is that it falls  
7 short of identifying plausible genetic and biological mechanisms that mediate potentially pleiotropic loci.  
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9 Future work incorporating expression quantitative trait loci, differentially expressed or methylated genes,  
10 or enriched ontological and functional terms may provide a clearer context for assessing biological  
11 similarities between phenotypes. Despite these limitations, the present study indicates that shared aspects  
12 of common genetic variation may underlie long-recognized epidemiological links between psychiatric  
13 and immune-related disorders and serves as a start point for the identification and characterization of  
14 potentially pleiotropic loci.  
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### Legends for Tables and Supplementary Tables

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37  
38 Table 1. This table displays psychiatric-immune phenotype-pairs showing genome-wide genetic  
39 correlation with the linkage disequilibrium score regression (LDSC) method after correction for the total  
40 number of genetic correlations depicted in Figure 1 using the Benjamini-Hochberg (BH) method. We  
41 also report the genome-wide correlation estimates produced by the heritability estimation from summary  
42 statistics (*p*-HESS) method. Abbreviations: attention deficit-hyperactivity disorder (ADHD), bipolar  
43 disorder (BD), C-reactive protein (CRP), Crohn's disease (CD), obsessive compulsive disorder (OCD),  
44 primary biliary cirrhosis (PBC), schizophrenia (SZ), systemic lupus erythematosus (SLE), ulcerative  
45 colitis (UC).

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47  
48 Table 2. This table displays phenotype names, data sources, and estimated SNP heritability using the  
49 linkage disequilibrium score regression (LDSC) and heritability estimation from summary statistics  
50 (HESS) methods, as well as the GWAS sample size and number of SNPs surviving quality control. Full  
51 publication references, consortia names, links to web resources, and additional details on the original  
52 studies are provided in Supplementary Table I. GWAS N denoted with \* indicates the median N for all  
53 SNPs. Abbreviations: Attention deficit-hyperactivity disorder (ADHD), bipolar disorder (BD), C-  
54 reactive protein (CRP), Crohn's disease (CD), obsessive-compulsive disorder (OCD), primary biliary  
55 cirrhosis (PBC), Psychiatric Genomics Consortium (PGC), quality control (QC), single nucleotide  
56 polymorphism (SNP), schizophrenia (SZ), systemic lupus erythematosus (SLE), ulcerative colitis (UC).

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Table 3. This table summarizes findings of local genetic correlation analysis, including the number of significantly correlated loci before and after Benjamini-Hochberg (BH) correction for multiple testing (**shown in bold**). Loci that showed robust correlations were interrogated for co-localization with significant genome-wide associations (GWS hits, with  $p < 5 \times 10^{-8}$ ). The chromosomal coordinates containing GWS signal are provided, along with associated genes. Proposed candidate genes are highlighted with **bold text**. Abbreviations: Attention deficit-hyperactivity disorder (ADHD), Benjamini-Hochberg (BH), , bipolar disorder (BD), childhood ear infection (CEA), Crohn's disease (CD), hypothyroidism (HPT), comparison (NC-H), obsessive compulsive disorder (OCD), primary biliary cirrhosis (PBC), rheumatoid arthritis (RA), schizophrenia (SZ), systemic lupus erythematosus (SLE), ulcerative colitis (UC).

Table 4. This table depicts the loci that showed significant (uncorrected  $p < 0.05$ ) correlations across multiple pairs of phenotypes. **Bold font** denotes phenotype-pairs for which the locus survived BH multiple test correction. The \*\* symbol denotes loci at which multiple autoimmune disorders show an association reaching genome-wide significance (per immunobase.org). **Bold font** is also used to indicate proposed candidate genes. Abbreviations: Bipolar disorder (BD), Crohn's disease (CD), genome-wide significance (GWS) defined as  $p < 5 \times 10^{-8}$ , hypothyroidism (HPT), primary biliary cirrhosis (PBC), systemic lupus erythematosus (SLE), ulcerative colitis (UC).

Table 5. Depicts the results of HESS analysis of putative causal directionality. Within this analysis, local genetic correlations are examined within loci containing GWS associations for each phenotype. The phenotype for which GWS loci produce the larger local correlations suggests that genetic liability for this phenotype may contribute to genetic risk for the other, especially when the correlation error bounds of the second phenotype overlap with zero. When both phenotypes show correlations overlapping with zero, no directionality is supported. Abbreviations: Crohn's disease (CD), genome-wide significance (GWS) defined as  $p < 5 \times 10^{-8}$ , primary biliary cirrhosis (PBC), systemic lupus erythematosus (SLE), ulcerative colitis (UC).

Supplementary Table 1. GWAS Sample Information and Single Phenotype Statistics, MHC Excluded.

Supplementary Table 2. LDSC Psychiatric-Immune Correlations

Supplementary Table 3. HESS Local Genetic Correlations.

Supplementary Table 4. LDSC Immune-Immune Correlations

### Figure Legends.

Figure 1. A heatmap depicting LDSC genome-wide genetic correlations between psychiatric and immune-related conditions such that red reflects more positive correlation coefficients while blue reflects more negative coefficients. Correlation coefficients are provided within each cell, with full details provided in Supplementary Table 2. Correlations reaching trend-level significance ( $0.05 < \text{uncorrected } p < 0.10$ ) are depicted as colored panels, while relationships surpassing uncorrected  $p < 0.05$  are additionally denoted with \*, and relationships surpassing BH- $p < 0.05$  (for the total number of tests depicted in the figure) are denoted with \*\*. The rows and columns of the heatmap are hierarchically

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3 clustered based on correlation coefficients. Abbreviations: Attention deficit-hyperactivity disorder  
4 (ADHD), obsessive-compulsive disorder (OCD).  
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6 Figure 2. This figure depicts the HESS local genetic correlation data with respect to the genome and  
7 previously reported genome-wide association signals for respective disorders. A model genome using  
8 HG19 coordinates is depicted in grey. Moving outward from the center of the plot, the first track  
9 containing a red histogram depicts loci significantly associated with SZ (GWAS  $p < 5 \times 10^{-8}$ ), with larger  
10 peaks indicating more significance (plotted as  $-\log(p\text{-value})$ ). The second track (labeled SZ-CD) depicts  
11 regions of genetic correlation between SZ and CD, such that blue reflects uncorrected  $p < 0.05$  and red  
12 reflects BH corrected  $p < 0.05$ . The next track (labeled CD Hits) contains a histogram depicting CD  
13 GWAS signal as described previously. The next pair of tracks depict genetic correlations for SZ-PBC  
14 and PBC GWAS signal, respectively. The third pair of tracks depicts this information for SZ-SLE (with  
15 SLE GWAS signal). The fourth pair of tracks depicts this information for SZ-UC and UC GWAS signal,  
16 respectively. In the center of the plot, we identify several GWAS candidate genes using colored text and  
17 arrows to indicate the pertinent locus; colored text and arrows are used to indicate the relevant phenotype-  
18 pairs, such that green = SZ-CD, orange = SZ-PBC, yellow = SZ-SLE, brown = SZ-PBC/SLE, and purple  
19 = SZ/BD-CD/PBC/UC.  
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23 Supplementary Figure 1. Depicts the relationship between LDSC and HESS genome-wide genetic  
24 correlation coefficients (pearson  $r = 0.25$ ,  $p = 0.25$ ).  
25

26 Supplementary Figure 2. Depicts the absolute value of the difference between LDSC and HESS genome-  
27 wide genetic correlation coefficients and the average sample size of the two contributing GWAS studies  
28 (pearson  $r = -0.44$ ,  $p = 0.035$ ).  
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30 Supplementary Figure 3. Depicts differences in LDSC-based genome-wide correlations based on dataset  
31 selection and pre-filtering decisions for a select set of phenotypes. Each dataset is coded with the GWAS  
32 first author's name and the filtering threshold. 1KGMAF $\geq$ 05% reflects retention of SNPs with minor  
33 allele frequencies  $\geq 5\%$  within the thousand genomes phase 3 reference panel. INFO $\geq$ 90% reflects  
34 retention of SNPs with imputation quality scores  $\geq 0.9$ . ALL SNPs indicates that no SNPs were filtered,  
35 because INFO score was not available for these data. Correlations reaching trend-level significance ( $0.05$   
36  $<$  uncorrected  $p < 0.10$ ) are depicted as colored panels, while relationships surpassing uncorrected  $p <$   
37  $0.05$  are additionally denoted with \*, and relationships surpassing BH- $p < 0.05$  (for the total number of  
38 tests depicted in Supplementary Figure 2) are denoted with \*\*.  
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42 Supplementary Figure 4. Depicts differences in LDSC-based genome-wide correlations based on dataset  
43 selection and pre-filtering decisions for a select set of phenotypes in relation to the larger set of  
44 phenotypes. Datasets that were differentially processed are indicated with first author's name and the  
45 filtering threshold. 1KGMAF $\geq$ 05% reflects retention of SNPs with minor allele frequencies  $\geq 5\%$   
46 within the thousand genomes phase 3 reference panel. INFO $\geq$ 90% reflects retention of SNPs with  
47 imputation quality scores  $\geq 0.9$ . ALL SNPs indicates that no SNPs were filtered, because INFO score  
48 was not available for these data. Correlations reaching trend-level significance ( $0.05 <$  uncorrected  $p <$   
49  $0.10$ ) are depicted as colored panels, while relationships surpassing uncorrected  $p < 0.05$  are additionally  
50 denoted with \*, and relationships surpassing BH- $p < 0.05$  (for the total number of tests depicted in  
51 Supplementary Figure 2) are denoted with \*\*. Full results are provided in Supplementary Table 2.  
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**Manuscript Abbreviations**

Attention deficit-hyperactivity disorder (ADHD), Benjamini-Hochberg (BH), bipolar disorder (BD), C-reactive protein (CRP), Crohn's disease (CD), genome-wide association study (GWAS), genome-wide significant associations (GW hits), heritability estimation from summary statistics (HESS), linkage disequilibrium (LD), linkage disequilibrium score regression (LDSC), major histocompatibility (MHC), obsessive compulsive disorder (OCD), primary biliary cirrhosis (PBC), Psychiatric Genomics Consortium (PGC), quality control (QC), restricted maximum likelihood (REML), schizophrenia (SZ), single nucleotide polymorphism (SNP), systemic lupus erythematosus (SLE), ulcerative colitis (UC).

For Peer Review



**Table 1. Significant Genome-Wide Psychiatric-Immune Genetic Correlations**

Psychiatric Phenotype	Immune-Related Phenotype	LDSC Correlation $\pm$ Error, Uncorrected $p$ -Value	HESS Correlation $\pm$ Error
ADHD	CRP	$0.23 \pm 0.06, p = 2.0 \times 10^{-4}$	$0.21 \pm 0.04$
ADHD	Childhood Ear Infection	$0.20 \pm 0.05, p = 2.0 \times 10^{-4}$	$0.14 \pm 0.03$
ADHD	Psoriasis	$0.23 \pm 0.07, p = 1.0 \times 10^{-3}$	$1.99 \pm 0.20$
ADHD	Rheumatoid Arthritis	$0.16 \pm 0.05, p = 9.0 \times 10^{-4}$	$0.29 \pm 0.04$
ADHD	Tuberculosis Susceptibility	$0.36 \pm 0.11, p = 1.6 \times 10^{-3}$	$0.87 \pm 0.25$
Anorexia Nervosa	CRP	$-0.30 \pm 0.08, p = 1.0 \times 10^{-4}$	$-0.53 \pm 0.12$
BD	Celiac Disease	$0.34 \pm 0.08, p = 4.5 \times 10^{-5}$	$1.91 \pm 0.12$
BD	CD	$0.22 \pm 0.06, p = 5.0 \times 10^{-4}$	$1.31 \pm 0.07$
BD	Psoriasis	$0.29 \pm 0.07, p = 2.7 \times 10^{-5}$	$5.76 \pm 0.58$
BD	UC	$0.23 \pm 0.07, p = 1.5 \times 10^{-3}$	$1.59 \pm 0.08$
Cigarettes (Ever-Smoked)	CRP	$0.31 \pm 0.07, p = 3.6 \times 10^{-5}$	$2.24 \pm 0.73$
Cigarettes (Ever-Smoked)	Rheumatoid Arthritis	$0.17 \pm 0.05, p = 2.3 \times 10^{-3}$	$0.51 \pm 0.22$
Major Depression	Hypothyroidism	$0.33 \pm 0.09, p = 5.0 \times 10^{-4}$	$0.45 \pm 0.09$
Neuroticism	Childhood Ear Infection	$0.13 \pm 0.04, p = 8.0 \times 10^{-4}$	$0.06 \pm 0.01$
Neuroticism	Hypothyroidism	$0.25 \pm 0.06, p = 7.2 \times 10^{-5}$	$0.03 \pm 0.01$
OCD	Type 1 Diabetes	$-0.32 \pm 0.11, p = 5.4 \times 10^{-3}$	$0.98 \pm 0.18$
SZ	CD	$0.12 \pm 0.03, p = 2.0 \times 10^{-4}$	$0.31 \pm 0.03$
SZ	PBC	$0.14 \pm 0.05, p = 2.0 \times 10^{-3}$	$0.88 \pm 0.05$
SZ	SLE	$0.15 \pm 0.05, p = 1.2 \times 10^{-3}$	$0.12 \pm 0.02$
SZ	UC	$0.14 \pm 0.04, p = 2.0 \times 10^{-4}$	$0.56 \pm 0.03$
Tourette's Syndrome	Allergy (Any)	$0.24 \pm 0.06, p = 2.7 \times 10^{-5}$	$0.29 \pm 0.07$

Table 1. This table displays psychiatric-immune phenotype-pairs showing genome-wide genetic correlation with the linkage disequilibrium score regression (LDSC) method after correction for the total number of genetic correlations depicted in Figure 1 using the Benjamini-Hochberg (BH) method. We also report the genome-wide correlation estimates produced by the heritability estimation from summary statistics ( $p$ -HESS) method. Abbreviations: attention deficit-hyperactivity disorder (ADHD), bipolar disorder (BD), C-reactive protein (CRP), Crohn's disease (CD), obsessive compulsive disorder (OCD), primary biliary cirrhosis (PBC), schizophrenia (SZ), systemic lupus erythematosus (SLE), ulcerative colitis (UC).

**Table 2. Sample Characteristics for Phenotypes Involved in Significant Correlations**

Phenotype	Data Source	Estimated Genome-Wide SNP Heritability $\pm$ Error (LDSC / HESS)	GWAS <i>N</i>	QC-Positive SNPs (MHC Excluded)
ADHD	Demontis <i>et al.</i> (2017)	0.24 $\pm$ 0.02 / 0.26 $\pm$ 0.02	53,293	1,004,958
Allergy (Any, Self-Report)	The 23andMe Research Team	0.08 $\pm$ 0.01 / 0.15 $\pm$ 0.01	181,000	1,060,611
Anorexia Nervosa	Duncan <i>et al.</i> (2017)	0.26 $\pm$ 0.04 / 0.09 $\pm$ 0.04	14,477	1,054,719
BP	Hou <i>et al.</i> , (2016)	0.20 $\pm$ 0.02 / 0.14 $\pm$ 0.02	40,225	1,052,397
Childhood Ear Infection	The 23andMe Research Team	0.07 $\pm$ 0.01 / 0.10 $\pm$ 0.01	122,000	1,060,612
Celiac Disease	Dubois <i>et al.</i> , (2010)	0.30 $\pm$ 0.05 / 0.13 $\pm$ 0.04	15,283	271,764
Cigarettes (Ever-Smoked)	Tobacco and Genetics Consortium	0.07 $\pm$ 0.01 / 0.01 $\pm$ 0.02	74,035	963,355
CD	Liu <i>et al.</i> (2015)	0.47 $\pm$ 0.06 / 0.33 $\pm$ 0.03	21,389	1,062,075
CRP	Dehghan <i>et al.</i> (2011)	0.13 $\pm$ 0.02 / 0.11 $\pm$ 0.02	66,185	965,855
Hypothyroidism (Self-Report)	The 23andMe Research Team	0.05 $\pm$ 0.01 / 0.08 $\pm$ 0.01	135,000	1,060,612
Major Depression	PGC Depression Working Group	0.14 $\pm$ 0.03 / 0.07 $\pm$ 0.04	18,759	967,534
Neuroticism	Social Science Genetics Consortium	0.09 $\pm$ 0.01 / 0.44 $\pm$ 0.01	168,105	1,053,712
OCD	PGC OCD/TS Working Group	0.29 $\pm$ 0.05 / 0.09 $\pm$ 0.04	10,215*	1,054,746
PBC	Cordell <i>et al.</i> , (2015)	0.37 $\pm$ 0.06 / 0.17 $\pm$ 0.04	13,239	940,715
Psoriasis	Tsoi <i>et al.</i> , (2015)	0.82 $\pm$ 0.13 / 0.09 $\pm$ 0.04	5,116*	1,037,355
Rheumatoid Arthritis	Okada <i>et al.</i> , (2014)	0.14 $\pm$ 0.02 / 0.10 $\pm$ 0.01	58,284	1,051,805
SZ	PGC Schizophrenia Working Group	0.47 $\pm$ 0.02 / 0.62 $\pm$ 0.01	77,096	1,061,529
SLE	Bentham <i>et al.</i> , (2015)	0.27 $\pm$ 0.05 / 0.27 $\pm$ 0.03	23,210	1,056,783
Tourette Syndrome	PGC OCD/TS Working Group	0.35 $\pm$ 0.04 / 0.08 $\pm$ 0.05	13,341*	1,041,689
Tuberculosis Susceptibility	Curtis <i>et al.</i> , (2015)	0.18 $\pm$ 0.05 / 0.02 $\pm$ 0.05	11,936	819,917
Type 1 Diabetes	Bradfield <i>et al.</i> , (2011)	0.18 $\pm$ 0.03 / 0.15 $\pm$ 0.03	26,890	854,164
UC	Liu <i>et al.</i> , (2015)	0.25 $\pm$ 0.03 / 0.23 $\pm$ 0.03	27,432	1,062,094

Table 2. This table displays phenotype names, data sources, and estimated SNP heritability using the linkage disequilibrium score regression (LDSC) and heritability estimation from summary statistics (HESS) methods, as well as the GWAS sample size and number of SNPs surviving quality control. Full publication references, consortia names, links to web resources, and additional details on the original studies are provided in Supplementary Table I. GWAS *N* denoted with \* indicates the median *N* for all SNPs. Abbreviations: Attention deficit-hyperactivity disorder (ADHD), bipolar disorder (BD), C-reactive protein (CRP), Crohn's disease (CD), obsessive-compulsive disorder (OCD), primary biliary cirrhosis (PBC), Psychiatric Genomics Consortium (PGC), quality control (QC), single nucleotide polymorphism (SNP), schizophrenia (SZ), systemic lupus erythematosus (SLE), ulcerative colitis (UC).

**Table 3. Significant Local Genetic Correlations Based on HESS Analysis**

Phenotype Pair	# of Correlated Loci (BH $p < .05$ / $p < .05$ ) with GWS Hits and Associated Genes Contained within Correlated Loci (BH $p < 0.05$ )
ADHD-CRP	0 / 7
ADHD-CEA	0 / 3
ADHD-Psoriasis	0 / 5
ADHD-RA	0 / 5
ADHD-Tuberculosis	0 / 0
Anorexia Nervosa-CRP	0 / 0
BD-Celiac Disease	0 / 30
BD -CD	0 / 12
BD -Psoriasis	0 / 3
BD -UC	0 / 5
Cigarettes (Ever-Smoked)-CRP	0 / 0
Cigarettes (Ever-Smoked)-RA	0 / 0
Major Depression-HPT	0 / 0
Neuroticism-CEA	0 / 14
Neuroticism-HPT	0 / 15
OCD-Type 1 Diabetes	0 / 1
	<b>32 / 251</b>
<b>SZ-CD</b>	SZ 4:102921704-103198082** ( <i>ACTR3BD4</i> , <i>BDH2</i> , <i>CENPE</i> , <b><i>SLC39A8</i></b> , <i>SLC9B1</i> , <i>SLC9B2</i> ) CD 4:103188709-103198082** ( <i>CENPE</i> ) CD 8:126529074-126568355 ( <i>FAM84B</i> ) CD 10:64301873-64588424 (No Genes) CD 12:40337163-40815560 ( <i>CNTN1</i> , <b><i>LRRK2</i></b> , <i>MUC19</i> , <i>RNU6-713P</i> ); CD 21:16790941-16841303 (No Genes)
	<b>37 / 256</b>
<b>SZ-PBC</b>	SZ 1:30427639-30437268 (No Genes) SZ 10:18725659-18816236 ( <i>AIFM1P1</i> , <b><i>CACNB2</i></b> ) PBC 3:16955259-16955259** ( <b><i>PLCL2</i></b> ) PBC 11:118579747-118743772** ( <i>ARCNI</i> , <b><i>CXCR5</i></b> , <b><i>DDX6</i></b> , <i>MIR6716</i> , <i>PHLDB1</i> , <i>RNU6-1157P</i> , <i>RNU6-376P</i> , <b><i>TREH</i></b> , <i>TREHP</i> ) PBC 22:39670851-39747780 ( <b><i>CACNA1I</i></b> , <i>ENTHD1</i> )

	<b>20 / 200</b>
	SZ 1:149999764-150507233 ( <i>ANP32E</i> , <b><i>APH1A</i></b> , <i>C1orf54</i> , <i>CA14</i> , <i>CIART</i> , <i>MIR6878</i> , <i>MRPS21</i> , <i>OTUD7B</i> , <i>PLEKHO1</i> , <i>PRPF3</i> , <i>RN7SL480P</i> , <i>RNU2-17P</i> , <i>RPRD2</i> , <i>TARS2</i> , <i>VPS45</i> )
	SZ 2:58377014-58383820 ( <i>FANCL</i> , <i>VRK2</i> )
<b>SZ-SLE</b>	SLE 1:161444369-161501904 ** ( <b><i>FCGR2A</i></b> )
	SLE 7:128562446-128771234 ( <i>CALU</i> , <i>CICP14</i> , <i>FAM71F1</i> , <i>FAM71F2</i> , <i>IMP3P2</i> , <i>RN7SL81P</i> , <i>RNA5SP242</i> , <i>RNA5SP243</i> , <i>RNU6-177P</i> )
	SLE 8:11332026-11394233 ( <i>FAM167A-AS1</i> , <i>RN7SL293P</i> , <i>RNU6-1084P</i> , <i>SLC35G5</i> , <i>TDH</i> )
	SLE 22:21910280-21999229** ( <b><i>MAPK1</i></b> , <i>PPM1F</i> , <i>PRAMENP</i> , <i>TOP3B</i> , <b><i>UBE2L3</i></b> )
<b>SZ-UC</b>	<b>8 / 205</b>
	UC 11:63804569-65898631** ( <i>CCDC88B</i> , <i>RPS6KA4</i> , <i>TRPT1</i> , <i>FLRT1</i> )
Tourette's Syndrome-Allergy	0 / 0

Table 3. This table summarizes findings of local genetic correlation analysis, including the number of significantly correlated loci before and after Benjamini-Hochberg (BH) correction for multiple testing (**shown in bold**). Loci that showed robust correlations were interrogated for co-localization with significant genome-wide associations (GWS hits, with  $p < 5 \times 10^{-8}$ ). The chromosomal coordinates containing GWS signal are provided, along with associated genes. Proposed candidate genes are highlighted with **bold text**. Abbreviations: Attention deficit-hyperactivity disorder (ADHD), Benjamini-Hochberg (BH), , bipolar disorder (BD), childhood ear infection (CEA), Crohn's disease (CD), hypothyroidism (HPT), comparison (NC-H), obsessive compulsive disorder (OCD), primary biliary cirrhosis (PBC), rheumatoid arthritis (RA), schizophrenia (SZ), systemic lupus erythematosus (SLE), ulcerative colitis (UC).

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**Table 4. Loci Implicated Across Multiple Phenotype-Pairs at Uncorrected  $p < 0.05$**

Locus	# of Pairs	Phenotype Pairs	GWS Associations and Nearby Genes
17:36809344-38877404	5	BD-CD, BD-UC, SZ-CD, SZ-PBC, SZ-UC	BP 17: 37839493-37893484 ( <b>ERBB2</b> ) / CD 17:37912377-38064876 / SLE 17: 38007190-38007319 / PBC 17:37912377-38080865 / UC 17: 37903731-38089717 ( <i>RNU6-489P, TBC1D3C, TBC1D3D, TBC1D3K, TBC1D3L</i> )
1:200137649-201589975	4	BD-CD, BD-UC, <b>SZ-PBC</b> , SZ-UC	CD 1:200599616-201069559** / UC 1: 200864267-201024059** ( <i>C1orf106, CACNAIS, GPR25, KIF21B</i> )
2:69139564-70755198	4	BD-CD, SZ-CD, SZ-SLE, SZ-UC	None
3:38356116-40221298	4	Neuroticism-HPT, SZ-PBC, SZ-SLE, SZ-UC	None
6:17386405-19207487	4	SZ-CD, SZ-PBC, SZ-SLE, SZ-UC	None
8:11278998-13491775	4	Neuroticism-HPT, SZ-CD, <b>SZ-PBC</b> , <b>SZ-SLE</b>	Neuroticism 8:11281273-11895516 / SLE 8:11426026-11546260** ( <b>BLK</b> , <i>C8orf49, CTSB, FAM167A, FAM167A-AS1, FDFT1, GATA4, LINC00208, MTMR9, NEIL2, RN7SL293P, RNU6-1084P, SLC35G5, SUB1P1, TDH</i> )
8:9640787-10463197	4	Neuroticism-HPT, SZ-PBC, SZ-SLE, SZ-UC	Neuroticism 8:9793601-10459000 (LINC00599, MIR124-1, MSRA)
11:27020461-28481593	4	SZ-CD, <b>SZ-PBC</b> , SZ-SLE, SZ-UC	None
22:19912358-22357325	4	SZ-CD, SZ-PBC, <b>SZ-SLE</b> , SZ-UC	CD 22:21916166-21985094** / SLE 22: 21910280-21999229** ( <i>CCDC116, MAPK1, RIMBP3, UBE2L3, YDJC</i> )

Table 4. This table depicts the loci that showed significant (uncorrected  $p < 0.05$ ) correlations across multiple pairs of phenotypes. **Bold font** denotes phenotype-pairs for which the locus survived BH multiple test correction. The \*\* symbol denotes loci at which multiple autoimmune disorders show an association reaching genome-wide significance (per immunobase.org). **Bold font** is also used to indicate proposed candidate genes. Abbreviations: Bipolar disorder (BD), Crohn’s disease (CD), genome-wide significance (GWS) defined as  $p < 5 \times 10^{-8}$ , hypothyroidism (HPT), primary biliary cirrhosis (PBC), systemic lupus erythematosus (SLE), ulcerative colitis (UC).

**Table 5. HESS Analysis of Putative Causal Directionality**

<b>Phenotype 1, Phenotype 2</b>	<b>Local Genetic Correlation <math>\pm</math> Error at Loci Reaching GWS Only for Phenotype 1</b>	<b>Local Genetic Correlation <math>\pm</math> Error at Loci Reaching GWS Only for Phenotype 2</b>	<b>Suggested Direction</b>
SZ-CD	0.37 $\pm$ 0.09	0.11 $\pm$ 0.08	SZ $\rightarrow$ CD
SZ-PBCs	0.58 $\pm$ 0.18	0.26 $\pm$ 0.17	SZ $\rightarrow$ PBC
SZ-SLE	0.26 $\pm$ 0.13	0.16 $\pm$ 0.16	SZ $\rightarrow$ SLE
SZ-UC	0.43 $\pm$ 0.09	0.16 $\pm$ 0.10	SZ $\rightarrow$ UC

Table 5. Depicts the results of HESS analysis of putative causal directionality. Within this analysis, local genetic correlations are examined within loci containing GWS associations for each phenotype. The phenotype for which GWS loci produce the larger local correlations suggests that genetic liability for this phenotype may contribute to genetic risk for the other, especially when the correlation error bounds of the second phenotype overlap with zero. When both phenotypes show correlations overlapping with zero, no directionality is supported. Abbreviations: Crohn's disease (CD), genome-wide significance (GWS) defined as  $p < 5 \times 10^{-8}$ , primary biliary cirrhosis (PBC), systemic lupus erythematosus (SLE), ulcerative colitis (UC).

1	0.11*	-0.13	0.16**	0.23**	0.36**	-0.14*	0.23**	0.01	0.05	0.09	0.07	0.03	0.15*	0.12*	0.2**	ADHD
2	0.01	-0.09	0.17**	0.31***	0.28*	-0.04	0.1	0	0.1	-0.02	0.1	-0.02	0.13*	0.01	0.11	Smoking (Ever-Smoked)
3	0.09	0.2	-0.07	0.21*	0.07	-0.09	0.01	0.16	0.08	0.04	-0.02	-0.01	0.33**	0.15	0.17*	Major Depression
4	0.09*	0	-0.03	-0.03	0.16*	-0.03	0	0.09	-0.03	0.05	0.02	0.03	0.25***	0.1*	0.13**	Neuroticism
5	0.75*	-0.35	-0.25	0.5	0.01	0.01	0.24	0.18	0.01	0.13	0.48	-0.03	0.04	-0.01	0.17	Autism
6	0.02	0.1	-0.01	-0.05	0.19*	-0.02	0.1*	0.14**	0.15**	0.03	0.14**	0.12**	0.07	0.06	0.04	Schizophrenia
7	0.24***	0.02	0.08	0.03	0.13	-0.05	0.25*	0.04	0.12	-0.08	0.08	0.03	0.08	0.12	0	Tourette Syndrome
8	0.03	-0.09	-0.02	0.12	0.2	0.11	-0.05	-0.18	-0.02	0.02	-0.06	-0.12	0.02	0.17	0.25*	Angry Temperament
9	0.06	0.13	-0.04	-0.06	0.03	0.09	-0.09	-0.02	-0.06	-0.04	0.04	-0.02	-0.09	-0.09	-0.01	Parkinson's Disease
10	0.28*	0.02	-0.13	0.06	0.1	-0.08	-0.02	-0.15	0.01	0.11	-0.21	-0.09	-0.11	-0.07	-0.09	Alzheimer's Disease
11	0.1	0.01	-0.13	-0.30***	-0.04	0.05	-0.05	0.08	0.01	0.13	-0.06	-0.05	-0.02	0.07	0.09	Anorexia Nervosa
12	0.03	0.34***	-0.18*	-0.05	-0.19	-0.04	0.29***	0.23**	0.05	0.16	0.16*	0.22**	0.13*	0.07	0.1	Bipolar Disorder
13	0.08	0.43*	-0.16*	-0.18*	-0.04	-0.32**	0.02	0.18	-0.04	-0.01	0.15	0.06	-0.14	0.02	0.03	OCD

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Celiac Disease  
Rheumatoid Arthritis  
C-Reactive Protein  
Tuberculosis Susceptibility  
Type 1 Diabetes  
Psoriasis  
Ulcerative Colitis  
Systemic Lupus Erythematosus  
Atopic Dermatitis  
Primary Biliary Cirrhosis  
Crohn's Disease  
Hypothyroidism  
Asthma  
Childhood Ear Infection

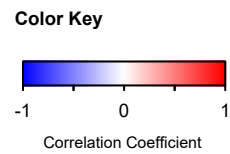
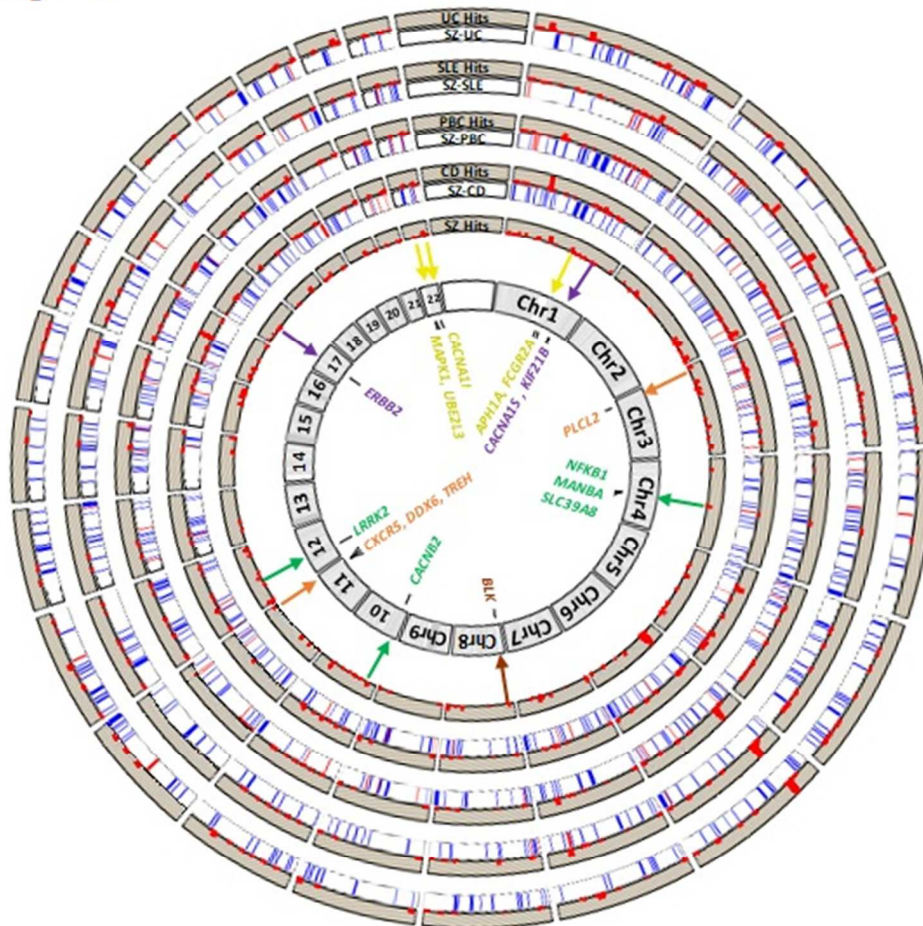


Figure 2



This figure depicts the HESS local genetic correlation data with respect to the genome and previously reported genome-wide association signals for respective disorders. A model genome using HG19 coordinates is depicted in grey. Moving outward from the center of the plot, the first track containing a red histogram depicts loci significantly associated with SZ (GWAS  $p < 5 \times 10^{-8}$ ), with larger peaks indicating more significance (plotted as  $-\log(p\text{-value})$ ). The second track (labeled SZ-CD) depicts regions of genetic correlation between SZ and CD, such that blue reflects uncorrected  $p < 0.05$  and red reflects BH corrected  $p < 0.05$ . The next track (labeled CD Hits) contains a histogram depicting CD GWAS signal as described previously. The next pair of tracks depict genetic correlations for SZ-PBC and PBC GWAS signal, respectively. The third pair of tracks depicts this information for SZ-SLE (with SLE GWAS signal). The fourth pair of tracks depicts this information for SZ-UC and UC GWAS signal, respectively. In the center of the plot, we identify several GWAS candidate genes using colored text and arrows to indicate the pertinent locus; colored text and arrows are used to indicate the relevant phenotype-pairs, such that green = SZ-CD, orange = SZ-PBC, yellow = SZ-SLE, brown = SZ-PBC/SLE, and purple = SZ/BD-CD/PBC/UC.

152x157mm (96 x 96 DPI)



## Supplementary Text: Genetic Correlations: Psychiatric &amp; Immune Phenotypes - 1

**Supplementary Text:** Genetic correlations among psychiatric and immune-related phenotypes based on genome-wide association data.

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## Supplementary Text: Genetic Correlations: Psychiatric &amp; Immune Phenotypes - 2

**Correlations among Immune-Inflammatory Phenotypes**

In addition to correlations between psychiatric and immune-related phenotypes, we also examined the correlations among the set of immune-related phenotypes, some of which have not previously been examined using the LD score regression (LDSC) method. We observed several highly significant correlations, which are depicted in Supplementary Figure 5, with full summary statistics in Supplementary Table 4. Specifically, thirty-one correlations survived family-wise BH correction.

Among the inflammatory bowel disorders, celiac disease was positively correlated with Crohn's disease ( $rg = 0.27 \pm 0.08$ , uncorrected  $p = 8.0 \times 10^{-4}$ ), rheumatoid arthritis ( $rg = 0.24 \pm 0.08$ ,  $p = 2.2 \times 10^{-3}$ ), type 1 diabetes ( $rg = 0.32 \pm 0.09$ ,  $p = 6.0 \times 10^{-4}$ ), allergy ( $rg = 0.19 \pm 0.07$ ,  $p = 6.8 \times 10^{-3}$ ), hypothyroidism ( $rg = 0.38 \pm 0.09$ ,  $p = 2.0 \times 10^{-5}$ ), and psoriasis ( $rg = 0.23 \pm 0.09$ ,  $p = 0.01$ ). Crohn's disease was additionally positively correlated with ulcerative colitis ( $rg = 0.71 \pm 0.06$ ,  $p = 3.5 \times 10^{-36}$ ), psoriasis ( $rg = 0.34 \pm 0.07$ ,  $p = 2.3 \times 10^{-7}$ ), and primary biliary cirrhosis ( $rg = 0.24 \pm 0.08$ ,  $p = 1.6 \times 10^{-3}$ ). Ulcerative colitis was likewise positively correlated with psoriasis ( $rg = 0.39 \pm 0.08$ ,  $p = 1.6 \times 10^{-6}$ ) and primary biliary cirrhosis ( $rg = 0.32 \pm 0.09$ ,  $p = 4.0 \times 10^{-4}$ ), as well as susceptibility pulmonary tuberculosis ( $rg = 0.34 \pm 0.14$ ,  $p = 0.14$ ).

Rheumatoid arthritis was found to be positively correlated with type 1 diabetes ( $rg = 0.41 \pm 0.14$ ,  $p = 2.1 \times 10^{-3}$ ), hypothyroidism ( $rg = 0.34 \pm 0.07$ ,  $p = 7.4 \times 10^{-6}$ ), primary biliary cirrhosis ( $rg = 0.27 \pm 0.08$ ,  $p = 1.4 \times 10^{-3}$ ), psoriasis ( $rg = 0.17 \pm 0.07$ ,  $p = 0.01$ ), and systemic lupus erythematosus ( $rg = 0.46 \pm 0.06$ ,  $p = 1.8 \times 10^{-13}$ ). Allergy was positively correlated with susceptibility to pulmonary tuberculosis ( $rg = 0.22 \pm 0.08$ ,  $p = 8.1 \times 10^{-3}$ ), asthma ( $rg = 0.79 \pm 0.04$ ,  $p = 2.0 \times 10^{-107}$ ), atopic dermatitis ( $rg = 0.25 \pm 0.07$ ,  $p = 2.0 \times 10^{-4}$ ), childhood ear infections ( $rg = 0.22 \pm 0.05$ ,  $p = 2.9 \times 10^{-6}$ ), CRP ( $rg = 0.13 \pm 0.05$ ,  $p = 5.4 \times 10^{-3}$ ), and hypothyroidism ( $rg = 0.20 \pm 0.05$ ,  $p = 4.0 \times 10^{-5}$ ). Asthma was positively correlated with atopic dermatitis ( $rg = 0.39 \pm 0.07$ ,  $p = 1.5 \times 10^{-7}$ ), childhood ear infections ( $rg = 0.15 \pm 0.04$ ,  $p = 3.0 \times 10^{-4}$ ), and CRP ( $rg = 0.17 \pm 0.05$ ,  $p = 6.0 \times 10^{-4}$ ).

Finally, hypothyroidism was positively correlated with type 1 diabetes ( $rg = 0.40 \pm 0.10$ ,  $p = 4.6 \times 10^{-5}$ ), childhood ear infections ( $rg = 0.14 \pm 0.05$ ,  $p = 5.4 \times 10^{-3}$ ), and primary biliary cirrhosis ( $rg =$

## Supplementary Text: Genetic Correlations: Psychiatric &amp; Immune Phenotypes - 3

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3  $0.24 \pm 0.09, p = 7.6 \times 10^{-3}$ ). Primary biliary cirrhosis was additionally positively correlated with psoriasis  
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5  $(rg = 0.27 \pm 0.10, p = 5.4 \times 10^{-3})$  and systemic lupus erythematosus  $(rg = 0.62 \pm 0.08, p = 2.2 \times 10^{-13})$ .  
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For Peer Review

GWAS Identifier	Estimated Heritability based on LD Score Regression Method (Color Scaled To Number)
12_i_iganeph.sumstats	0.142
14a_i_HAND_dementia.txt.sumstats	0.5305
14a_i_HAND_exec.txt.sumstats	0.0705
14a_i_HAND_neuronba.txt.sumstats	-0.1497
14a_i_HAND_speed.txt.sumstats	0.0052
14a_i_hiv_control.sumstats	0.2895
14c_i_tb.sumstats	0.1752
21_i_psorarth.sumstats	0.2265
22_i_RA_okada.sumstats	0.1386
23_i_sarcoid.sumstats	0.9692
24_i_sclero.sumstats	0.2049
28_i_t1d.sumstats	0.1783
3_i_allergyany.sumstats	0.0808
3_i_asthma.sumstats	0.0685
3_i_atopicdermatitis.sumstats	0.0772
3_i_childhoodear.sumstats	0.0719
3_i_crp.sumstats	0.1298
3_i_hypothyroid.sumstats	0.0539
3_i_pbc.sumstats	0.3716
3_i_psoriasis.sumstats	0.8165
3_i_sle.sumstats	0.2676
30_i_wegners.sumstats	0.1074
31b_i_cort.sumstats	0.0605
32a_i_myeloid.sumstats	0.2626
36_b_anger_temp.sumstats	0.2114
36_b_borderline.sumstats	-0.0073
36_b_p_agree.sumstats	0.019
36_b_p_conc.sumstats	0.0732
36_b_p_extrav.sumstats	0.041
36_b_p_neuroticism.sumstats	0.0192
36_b_p_openess.sumstats	0.1238
37_b_37_etoh_cc.sumstats	0.0931
37_b_etoh_cont.sumstats	0.7406
37_b_37_opiate_cont.sumstats	0.8496
37_b_cocaine_cont.sumstats	0.7143
37_b_sub_cigperday.sumstats	0.0348
37_b_sub_evrrsmk.sumstats	0.0715
38_b_neuroticism.sumstats	0.0933
39_b_psy_adhd.sumstats	0.2366
39_b_psy_alz.sumstats	0.0794
39_b_psy_anor.sumstats	0.2609

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2	39_b_psy_anx_cc.sumstats	0.0713
3	39_b_psy_anx_score.sumstats	0.0727
4	39_b_psy_asd.sumstats	0.3387
5	39_b_psy_bipolar_05.sumstats	0.4399
6	39_b_psy_bipolar_info9.sumstats	0.4374
7	39_b_psy_bipolar_conligen_1kgMAF05.sumstats	0.201
8	39_b_psy_bipolar_conligen_all.sumstats	0.2058
9	39_b_psy_mddprimary_nomhc.sumstats	0.1425
10	39_b_psy_ocd.sumstats	0.293
11	39_b_psy_parkinson.sumstats	0.0257
12		
13	39_b_psy_ptsd.sumstats	0.0776
14		
15	39_b_psy_sz_eur_05.sumstats	0.4559
16	39_b_psy_sz_eur_info9.sumstats	0.4561
17	39_b_psy_td.sumstats	0.3491
18		
19	40_b_adol_alc.sumstats	0.0743
20	40_b_beh_pureLI.sumstats	0.0843
21	40_b_beh_pureRD.sumstats	0.1881
22	40_b_beh_RDLI.sumstats	0.1315
23		
24	5_i_celiac.sumstats	0.3045
25	6_i_crohns_franke_05.sumstats	0.4747
26	6_i_crohns_franke_all.sumstats	0.4672
27	6_i_crohns_liu_05.sumstats	0.4655
28	6_i_crohns_liu_info9.sumstats	0.4782
29		
30	7_i_uc_andersen_05.sumstats	0.2216
31	7_i_uc_andersen_all.sumstats	0.2413
32	7_i_uc_liu_05.sumstats	0.2499
33	7_i_uc_liu_info9.sumstats	0.2526
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35	9_i_eoe.sumstats	0.1832
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Error of Estimated Heritability based on LD Score Regression Method	Z-score of Estimated Heritability	GWAS N (provided as median, min, max; if N was supplied per SNP)	Phenotype Retained
0.0923	1.538461538	4603	No
0.3231	1.64190653	1287, 1183, 1287	No
0.4082	0.172709456	1138, 1040, 1138	No
0.3487	-0.429308861	1287, 1183, 1287	No
0.4007	0.01297729	1131, 1036, 1131	No
0.1349	2.146034099	3622	No
0.0495	3.539393939	11936	Yes
0.1316	1.72112462	3967	No
0.019	7.294736842	58284	Yes
0.2988	3.243641232	1870	No
0.0863	2.374275782	7444	No
0.0328	5.43597561	26890, 26890, 26890	Yes
0.0056	14.42857143	181000	Yes
0.0079	8.670886076	157000	Yes
0.0165	4.678787879	40529, 469, 40835	Yes
0.006	11.98333333	122000	Yes
0.0195	6.656410256	66185	Yes
0.0075	7.186666667	135000	Yes
0.0627	5.926634769	13239	Yes
0.129	6.329457364	5116,671, 5116	Yes
0.0471	5.681528662	23210	Yes
0.3044	0.35282523	1962	No
0.0358	1.689944134	12592, 433, 12593	No
0.1365	1.923809524	3198	No
0.0579	3.651122625	8736, 8303, 8747	Yes
0.111	-0.065765766	7325, 7269, 7325	No
0.0301	0.631229236	17375	No
0.0335	2.185074627	17375	No
0.0295	1.389830508	17375	No
0.0314	0.611464968	17375	No
0.0309	4.006472492	17375	No
0.0668	1.393712575	3931, 3931, 3931	No
0.0863	8.581691773	6720, 6720, 6720	No
0.0924	9.194805195	6720, 6720, 6720	No
0.0909	7.858085809	6720, 6720, 6720	No
0.0083	4.192771084	68028	Yes
0.0071	10.07042254	74035	Yes
0.0067	13.92537313	168105	Yes
0.0171	13.83625731	53293	Yes
0.0135	5.881481481	54162	Yes
0.039	6.68974359	14477	Yes

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2	0.0314	2.270700637	17310, 613.99, 17310	No
3	0.0282	2.578014184	17310, 613.99, 17310	No
4	0.0259	13.07722008	13574	Yes
5	0.0399	11.02506266	16731	Yes
6	0.0365	11.98356164	16731	Yes
7	0.0152	13.22368421	40255	Yes
8	0.0149	13.81208054	40255	Yes
9	0.0265	5.377358491	18759	Yes
10	0.0544	5.386029412	10215, 1604, 10215	Yes
11	0.0027	9.518518519	335000	Yes
12	0.0454	1.709251101	20070	No
13	0.0178	25.61235955	77096	Yes
14	0.0192	23.75520833	77096	Yes
15	0.0438	7.970319635	13341, 1097, 13341	Yes
16	0.101	0.735643564	4304	No
17	0.1092	0.771978022	4291	No
18	0.1112	1.691546763	4280	No
19	0.112	1.174107143	4470	No
20	0.0494	6.163967611	15283	Yes
21	0.0665	7.138345865	21389	Yes
22	0.0603	7.747927032	21389	Yes
23	0.0562	8.282918149	20883	Yes
24	0.0551	8.67876588	20883	Yes
25	0.0368	6.02173913	21389	Yes
26	0.0352	6.855113636	21389	Yes
27	0.032	7.809375	27432	Yes
28	0.0328	7.701219512	27432	Yes
29	0.0899	2.0378198	6346, 6342, 6347	No
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**Phenotype Description****Full Citation**

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8	IgA Nephropathy	Kirylyuk K, Li Y, Scolari F, et al. Discovery
9	Dementia among HIV infected individuals (case	Levine AJ, Service S, Miller EN, et al. Ge
10	Executive function among HIV infected individ	Levine AJ, Service S, Miller EN, et al. Ge
11	Neurocognitive impairment among HIV infecte	Levine AJ, Service S, Miller EN, et al. Ge
12	Processing speed among HIV infected individu	Levine AJ, Service S, Miller EN, et al. Ge
13	HIV viral load control in unmedicated patients	The_International_HIV_Controllers_Stu
14	Vulnerability to tuberculosis infection	Curtis J, Luo Y, Zenner HL, et al. Suscep
15	Psoriatic arthritis	Ellinghaus E, Stuart PE, Ellinghaus D, et
16	Rheumatoid arthritis	Okada Y, Wu D, Trynka G, et al. Genetic
17	Sarcoidosis	Hofmann S, Fischer A, Nothnagel M, et
18	Systemic sclerosis / scleroderma	Radstake TRDJ, Gorlova O, Rueda B, et
19	Type 1 diabetes	Bradfield JP, Qu HQ, Wang K, et al. A ge
20	Allergy (Any, Self-Report)	Pickrell, J. K., Berisa, T., Liu, J. Z., Ségu
21	Asthma (Self-Report)	Hinds, D. A., McMahon, G., Kiefer, A. K.
22	Atopic dermatitis	EARly Genetics and Lifecourse Epidemic
23	Childhood Ear Infection (Self-Report)	Pickrell, J. K., Berisa, T., Liu, J. Z., Ségu
24	C-Reactive Protein	Dehghan, A., Dupuis, J., Barbalic, M., Bi
25	Hypothyroidism (Self-Report)	Pickrell, J. K., Berisa, T., Liu, J. Z., Ségu
26	Primary Biliary Cirrhosis	Cordell, H. J., Han, Y., Mells, G. F., Li, Y.,
27	Psoriasis	Tsoi, L. C., Spain, S. L., Ellinghaus, E., St
28	Systemic Lupus Erythematosus	Bentham, J., Morris, D. L., Cunningham
29	Granulomatosis with polyangiitis / Wegner's gr	Xie G, Roshandel D, Sherva R, et al. Ass
30	Morning plasma cortisol	Bolton JL, Hayward C, Direk N, et al. Ge
31	Myeloid leukemias	Tapper W, Jones A V., Kralovics R, et al.
32	Anger proneness - temperament	Mick E, McGough J, Deutsch CK, Frazier
33	Borderline personality disorder	Lubke GH, Laurin C, Amin N, et al. Genc
34	Big Five personality - agreeableness	de Moor MHM, Costa PT, Terracciano /
35	Big Five personality - conscientiousness	de Moor MHM, Costa PT, Terracciano /
36	Big Five personlaity -extraversion	de Moor MHM, Costa PT, Terracciano /
37	Big Five personality - neuroticism	de Moor MHM, Costa PT, Terracciano /
38	Big Five personality - Openess to experience	de Moor MHM, Costa PT, Terracciano /
39	Alcohol dependence, case/control	Gelernter J, Kranzler HR, Sherva R, et a
40	Alcohol dependence, ordinal	Gelernter J, Kranzler HR, Sherva R, et a
41	Opioid dependence, ordinal	Gelernter J, Kranzler HR, Sherva R, et a
42	Cocaine dependence, ordinal	Gelernter J, Sherva R, Koesterer R, et a
43	Cigarettes per day	Tobacco and Genetics Consortium. Ger
44	Ever-smoked-status	Tobacco and Genetics Consortium. Ger
45	Neuroticism	Turley P, Walters RK, Maghizan O, et al
46	Attention defecit-hyperactivity disorder	Demontis D, Walters RK, Martin J, Mat
47	Alzheimer's disease	Lambert JC, Ibrahim-Verbaas CA, Harol
48	Anorexia nervosa	Duncan L., Yilmaz Z., Gaspar H., et al. Si
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2	Anxiety-spectrum disorders, case/control	Otowa T, Hek K, Lee M, et al. Meta-ana
3	Anxiety-spectrum disorders, case/control	Otowa T, Hek K, Lee M, et al. Meta-ana
4	Autism	Anney RJL, Ripke S, Anttila V, Grove J, et al.
5	Bipolar disorder	Large-scale genome-wide association a
6	Bipolar disorder	Large-scale genome-wide association a
7	Bipolar disorder	Hou L, Bergen SE, Akula N, et al. Genom
8	Bipolar disorder	Hou L, Bergen SE, Akula N, et al. Genom
9	Bipolar disorder	Hou L, Bergen SE, Akula N, et al. Genom
10	Major depressive disorder	Ripke S, Wray NR, Lewis CM, et al. A m
11	Obsessive compulsive disorder	PGC OCD/TS Working Group; Personal
12	Parkinson's Disease (Self-Report)	Pickrell, J. K., Berisa, T., Liu, J. Z., Séguin
13	Parkinson's Disease (Self-Report)	Pickrell, J. K., Berisa, T., Liu, J. Z., Séguin
14	Post-traumatic stress disorder	Duncan LE, Ratanatharathorn A, Aiello
15	Schizophrenia - European only	Anttila V, Bulik-Sullivan B, Finucane H, et al.
16	Schizophrenia - European only	Anttila V, Bulik-Sullivan B, Finucane H, et al.
17	Tourette syndrome	NA
18	Tourette syndrome	NA
19	Adolescent alcohol-related problems	Edwards AC, Aliev F, Wolen AR, et al. G
20	Childhood language impairment	Eicher JD, Powers NR, Miller LL, et al. G
21	Childhood reading disability.	Eicher JD, Powers NR, Miller LL, et al. G
22	Childhood reading disability.	Eicher JD, Powers NR, Miller LL, et al. G
23	Childhood combined reading disability and lan	Eicher JD, Powers NR, Miller LL, et al. G
24	Celiac disease	Dubois PCA, Trynka G, Franke L, et al. M
25	Crohn's disease	Franke A, McGovern DPB, Barrett JC, et al.
26	Crohn's disease	Franke A, McGovern DPB, Barrett JC, et al.
27	Crohn's disease	Liu, J. Z., van Sommeren, S., Huang, H.,
28	Crohn's disease	Liu, J. Z., van Sommeren, S., Huang, H.,
29	Crohn's disease	Liu, J. Z., van Sommeren, S., Huang, H.,
30	Ulcerative colitis	Anderson CA, Boucher G, Lees CW, et al.
31	Ulcerative colitis	Anderson CA, Boucher G, Lees CW, et al.
32	Ulcerative colitis	Liu, J. Z., van Sommeren, S., Huang, H.,
33	Ulcerative colitis	Liu, J. Z., van Sommeren, S., Huang, H.,
34	Ulcerative colitis	Liu, J. Z., van Sommeren, S., Huang, H.,
35	Eosinophilic esophagitis	Sleiman PMA, Wang M-L, Cianferoni A,
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Web Link (for data downloads)	Quality Control (QC) + SNPs	Mean Association Chi-Squared of QC+ SNPs	Maximum Association Chi-Squared of QC+ SNPs
NA	1037762	1.0392	32.513
NA	959848	1.0038	21.489
NA	959854	1.0114	22.327
NA	959854	1.0037	22.548
NA	959854	1.0031	26.057
NA	968263	1.0303	24.577
NA	1065104	1.0835	35.223
NA	819917	1.029	38.092
<a href="http://plaza.umin.ac.jp/~yokada/">http://plaza.umin.ac.jp/~yokada/</a>	1051805	1.1313	678.256
NA	494649	1.1473	174.048
NA	231820	1.0554	54.005
NA	854164	1.1791	358.513
23andme.com	1063433	1.3488	132.717
23andme.com	1063434	1.2681	309.715
NA	1056034	1.0809	99.532
23andme.org	1063434	1.1846	141.623
NA	965855	1.1763	397.913
23andme.com	1063434	1.1775	431.457
Immunobase.org	940715	1.1131	119.665
NA	1037355	1.0562	111.17
Immunobase.org	1056783	1.2235	293.251
NA	273542	1.0227	1060.517
NA	957682	1.0195	48.49
NA	853994	1.02	133.001
NA	479525	1.0215	25.42
NA	519294	1.208	31.73
<a href="http://www.tweelingenregister.org/GPC">www.tweelingenregister.org/GPC</a>	771122	1.0095	20.04
<a href="http://www.tweelingenregister.org/GPC">www.tweelingenregister.org/GPC</a>	771160	1.0294	29.753
<a href="http://www.tweelingenregister.org/GPC">www.tweelingenregister.org/GPC</a>	771121	1.0165	24.859
<a href="http://www.tweelingenregister.org/GPC">www.tweelingenregister.org/GPC</a>	771203	1.0233	20.73
<a href="http://www.tweelingenregister.org/GPC">www.tweelingenregister.org/GPC</a>	771143	1.0373	30.849
NA	1058370	1.0623	109.183
NA	1058352	1.195	576.609
NA	1058352	1.1414	773.152
NA	1058352	1.1134	650.654
<a href="https://www.med.unc.edu/pgc/re">https://www.med.unc.edu/pgc/re</a>	963495	1.0524	152.803
<a href="https://www.med.unc.edu/pgc/re">https://www.med.unc.edu/pgc/re</a>	963355	1.1114	23.205
<a href="https://www.thessgac.org/data">https://www.thessgac.org/data</a>	1053712	1.3329	67.525
NA	1004958	1.3094	50.675
<a href="https://www.med.unc.edu/pgc/re">https://www.med.unc.edu/pgc/re</a>	1037219	1.1185	565.218
<a href="http://www.med.unc.edu/pgc/file">http://www.med.unc.edu/pgc/file</a>	1054719	1.083	31.789

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2	<a href="https://www.med.unc.edu/pgc/re">https://www.med.unc.edu/pgc/re</a>	974672	1.0303	31.867
3	<a href="https://www.med.unc.edu/pgc/re">https://www.med.unc.edu/pgc/re</a>	1062352	1.025	35.434
4	<a href="https://www.med.unc.edu/pgc/re">https://www.med.unc.edu/pgc/re</a>	59319	3.937	4.209
5	<a href="https://www.med.unc.edu/pgc/re">https://www.med.unc.edu/pgc/re</a>	964863	1.1721	38.476
6	<a href="https://www.med.unc.edu/pgc/re">https://www.med.unc.edu/pgc/re</a>	1061989	1.1657	38.476
7	<a href="https://www.med.unc.edu/pgc/re">https://www.med.unc.edu/pgc/re</a>	1061989	1.1657	38.476
8	<a href="http://www.nimh.nih.gov/hgb-dat">http://www.nimh.nih.gov/hgb-dat</a>	1052397	1.157	171.62
9	<a href="http://www.nimh.nih.gov/hgb-dat">http://www.nimh.nih.gov/hgb-dat</a>	1171775	1.1466	171.62
10	<a href="https://www.med.unc.edu/pgc/re">https://www.med.unc.edu/pgc/re</a>	967534	1.0738	28.359
11	NA	1054746	1.0608	22.083
12	<a href="https://www.med.unc.edu/pgc/re">https://www.med.unc.edu/pgc/re</a>	1063435	1.2072	244.863
13	<a href="https://www.med.unc.edu/pgc/re">https://www.med.unc.edu/pgc/re</a>	1063435	1.2072	244.863
14	AE, et al. Largest GWAS of PTSD (N	1062356	1.0144	21.769
15	<a href="https://www.med.unc.edu/pgc/re">https://www.med.unc.edu/pgc/re</a>	1062106	1.7948	74.435
16	<a href="https://www.med.unc.edu/pgc/re">https://www.med.unc.edu/pgc/re</a>	1123942	1.7976	120.758
17	NA	1041689	1.1129	27.989
18	NA	1047699	1.0048	24.417
19	NA	430923	1.0152	27.717
20	NA	430935	1.0002	20.777
21	NA	430935	1.0002	20.777
22	NA	430932	1.0059	25.097
23	NA	271764	1.1505	100.937
24	NA	271764	1.1505	100.937
25	<a href="http://www.ibdgenetics.org/dowr">http://www.ibdgenetics.org/dowr</a>	812155	1.3878	308.793
26	<a href="http://www.ibdgenetics.org/dowr">http://www.ibdgenetics.org/dowr</a>	870702	1.3824	308.793
27	<a href="http://www.ibdgenetics.org/dowr">http://www.ibdgenetics.org/dowr</a>	1062075	1.2463	272.495
28	<a href="http://www.ibdgenetics.org/dowr">http://www.ibdgenetics.org/dowr</a>	1066693	1.2444	272.495
29	<a href="http://www.ibdgenetics.org/dowr">http://www.ibdgenetics.org/dowr</a>	1023135	1.3038	152.949
30	<a href="http://www.ibdgenetics.org/dowr">http://www.ibdgenetics.org/dowr</a>	1023135	1.3038	152.949
31	<a href="http://www.ibdgenetics.org/dowr">http://www.ibdgenetics.org/dowr</a>	1141914	1.3019	219.203
32	<a href="http://www.ibdgenetics.org/dowr">http://www.ibdgenetics.org/dowr</a>	1062094	1.1961	134.232
33	<a href="http://www.ibdgenetics.org/dowr">http://www.ibdgenetics.org/dowr</a>	1092320	1.1953	186.328
34	NA	895928	1.051	22.595
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3 **Genome-Wide**  
4 **Significant**  
5 **Associated SNPs**  
6 **after QC**  
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8 **Genomic Inflation**  
9 **Factor (Lambda**  
10 **GC)**  
11 **LD Score Regression**  
12 **Intercept (with Error)**

8	1	1.0345	1.0259 (0.0063)
9	0	1.0195	0.9898 (0.0065)
10	0	1.0105	1.0099 (0.0071)
11	0	1.0016	1.0076 (0.0067)
12	0	1.0135	1.003 (0.0072)
13	0	1.0405	1.0087 (0.0074)
14	0	1.0802	1.0402 (0.0083)
15	6	1.0255	1.0101 (0.0082)
16	1	1.0466	0.9596 (0.0093)
17	521	1.1459	1.11 (0.0095)
18	37	1.0436	1.028 (0.0099)
19	2	1.1301	1.075 (0.0106)
20	251	1.2697	1.0439 (0.0102)
21	581	1.1779	1.0454 (0.0105)
22	640	1.0496	1.018 (0.0076)
23	124	1.1587	1.0061 (0.0091)
24	159	1.105	0.9974 (0.0095)
25	448	1.1144	1.0265 (0.0093)
26	359	1.0557	1.0089 (0.0096)
27	288	1.0345	0.9719 (0.0084)
28	213	1.1747	1.0917 (0.0114)
29	298	1.0195	1.0189 (0.009)
30	5	1.0165	1.0041 (0.0071)
31	11	1.0345	1.002 (0.0074)
32	8	1.0165	0.9838 (0.0083)
33	0	1.2103	1.2091 (0.0114)
34	1	0.9986	1.0021 (0.0099)
35	0	1.0195	1.0004 (0.0095)
36	1	1.0195	1.0001 (0.0092)
37	0	1.0255	1.0156 (0.0087)
38	0	1.0405	0.9885 (0.0094)
39	2	1.0772	1.0479 (0.0073)
40	3	1.1019	1.1035 (0.0076)
41	640	1.0375	1.038 (0.007)
42	822	1.0135	1.0257 (0.007)
43	669	1.0135	1.0257 (0.007)
44	63	1.0557	1.0046 (0.0065)
45	0	1.0926	1.005 (0.0069)
46	471	1.2531	0.996 (0.0104)
47	81	1.2631	1.0413 (0.0115)
48	159	1.0957	1.0316 (0.0082)
49	195	1.0802	1.006 (0.0074)
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2	3	1.0345 1.0049 (0.0077)
3	14	1.0195 0.9987 (0.0066)
4	0	8.7142 3.8683 (0.0031)
5	17	1.1491 1.0225 (0.0085)
6	24	1.1459 1.0219 (0.0072)
7	34	1.1301 0.9916 (0.0077)
8	34	1.1207 0.984 (0.0065)
9	0	1.071 1.019 (0.0068)
10	0	1.0557 1.0027 (0.0079)
11	0	1.1459 1.0228 (0.0094)
12	359	1.1459 1.0228 (0.0094)
13	0	1.0165 0.9985 (0.0069)
14	0	1.0165 0.9985 (0.0069)
15	1287	1.607 1.0662 (0.0127)
16	1725	1.592 1.0571 (0.0117)
17	0	1.1113 1.0167 (0.0082)
18	0	1.1113 1.0167 (0.0082)
19	0	1.0046 0.9981 (0.0073)
20	0	1.0075 1.0086 (0.007)
21	0	1.0075 1.0086 (0.007)
22	0	1.0016 0.9853 (0.0084)
23	0	1.0135 0.9957 (0.0079)
24	34	1.1175 1.0665 (0.0107)
25	915	1.2531 1.1654 (0.0142)
26	933	1.2531 1.1686 (0.0119)
27	997	1.1491 1.0424 (0.0114)
28	1009	1.1459 1.0313 (0.0114)
29	459	1.2431 1.1825 (0.0109)
30	641	1.2365 1.1775 (0.0087)
31	641	1.2365 1.1775 (0.0087)
32	381	1.1333 1.0563 (0.01)
33	399	1.1333 1.0531 (0.0102)
34	0	1.0466 1.0265 (0.0083)
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3 **Ratio  $[(\text{Intercept}-1)/(\text{mean}(\chi^2)-1)]$  measuring the proportion of**  
4 **the inflation in the mean chi-squared that the LD Score regression**  
5 **intercept ascribes to causes other than polygenic heritability.**  
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8 Ratio: 0.6596 (0.1599)

9 Ratio < 0 (usually indicates GC correction).

10 Ratio: 0.8641 (0.6204)

11 Ratio: 2.0719 (1.8092)

12 Ratio: 0.9607 (2.3205)

13 Ratio: 0.2875 (0.2431)

14 Ratio: 0.4817 (0.0989)

15 Ratio: 0.3498 (0.2838)

16 Ratio < 0 (usually indicates GC correction).

17 Ratio: 0.7469 (0.0646)

18 Ratio: 0.5047 (0.1787)

19 Ratio: 0.419 (0.0594)

20 Ratio: 0.1259 (0.0292)

21 Ratio: 0.1694 (0.039)

22 Ratio: 0.2224 (0.0941)

23 Ratio: 0.0328 (0.0492)

24 Ratio < 0 (usually indicates GC correction).

25 Ratio: 0.1493 (0.0525)

26 Ratio: 0.0784 (0.0849)

27 Ratio < 0 (usually indicates GC correction).

28 Ratio: 0.4103 (0.0509)

29 Ratio: 0.8349 (0.3969)

30 Ratio: 0.2094 (0.3633)

31 Ratio: 0.0994 (0.3694)

32 Ratio < 0 (usually indicates GC correction).

33 Ratio: 1.0052 (0.0546)

34 Ratio: 0.2229 (1.0408)

35 Ratio: 0.0125 (0.3226)

36 Ratio: 0.0042 (0.56)

37 Ratio: 0.6721 (0.3761)

38 Ratio < 0 (usually indicates GC correction).

39 Ratio: 0.7698 (0.1174)

40 Ratio: 0.5308 (0.0392)

41 Ratio: 0.2686 (0.0495)

42 Ratio: 0.2268 (0.0614)

43 Ratio: 0.0882 (0.124)

44 Ratio: 0.0447 (0.0619)

45 Ratio < 0 (usually indicates GC correction).

46 Ratio: 0.1336 (0.0372)

47 Ratio: 0.2671 (0.0693)

48 Ratio: 0.0717 (0.0896)

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2 Ratio: 0.1631 (0.2535)  
3 Ratio < 0 (usually indicates GC correction).  
4 Intercept: 3.8683 (0.0031)  
5 Ratio: 0.1307 (0.0496)  
6 Ratio: 0.1323 (0.0437)  
7 Ratio < 0 (usually indicates GC correction).  
8 Ratio < 0 (usually indicates GC correction).  
9 Ratio: 0.2574 (0.0924)  
10 Ratio: 0.0452 (0.1298)  
11 Ratio: 0.1102 (0.0453)  
12 Ratio < 0 (usually indicates GC correction).  
13 Ratio: 0.0833 (0.016)  
14 Ratio: 0.0716 (0.0146)  
15 Ratio: 0.1477 (0.0724)  
16 Ratio < 0 (usually indicates GC correction).  
17 Ratio: 0.5699 (0.4633)  
18 Ratio < 0 (usually indicates GC correction).  
19 Ratio < 0 (usually indicates GC correction).  
20 Ratio: 0.4415 (0.0709)  
21 Ratio: 0.4266 (0.0367)  
22 Ratio: 0.4409 (0.0311)  
23 Ratio: 0.1721 (0.0463)  
24 Ratio: 0.1281 (0.0468)  
25 Ratio: 0.6007 (0.0358)  
26 Ratio: 0.5879 (0.0288)  
27 Ratio: 0.2869 (0.0509)  
28 Ratio: 0.2722 (0.0521)  
29 Ratio: 0.5199 (0.1631)  
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\*Note: p-values < 0.05 (before and after correction) are highlighted in red.

**Phenotype 1 Code**

**Phenotype 2 Code**

14c_i_tb.sumstats	3_b_psy_parkinson.sumstats
14c_i_tb.sumstats	36_b_anger_temp.sumstats
14c_i_tb.sumstats	37_b_sub_cigperday.sumstats
14c_i_tb.sumstats	37_b_sub_evrrsmk.sumstats
14c_i_tb.sumstats	38_b_neuroticism.sumstats
14c_i_tb.sumstats	39_b_psy_adhd.sumstats
14c_i_tb.sumstats	39_b_psy_alz.sumstats
14c_i_tb.sumstats	39_b_psy_anor.sumstats
14c_i_tb.sumstats	39_b_psy_bipolar_05.sumstats
14c_i_tb.sumstats	39_b_psy_bipolar_info9.sumstats
14c_i_tb.sumstats	39_b_psy_mddprimary_nomhc.sumstats
14c_i_tb.sumstats	39_b_psy OCD.sumstats
14c_i_tb.sumstats	39_b_psy_sz_eur_05.sumstats
14c_i_tb.sumstats	39_b_psy_sz_eur_info9.sumstats
14c_i_tb.sumstats	39_b_psy_td.sumstats
22_i_RA_okada.sumstats	3_b_psy_parkinson.sumstats
22_i_RA_okada.sumstats	36_b_anger_temp.sumstats
22_i_RA_okada.sumstats	37_b_sub_cigperday.sumstats
22_i_RA_okada.sumstats	37_b_sub_evrrsmk.sumstats
22_i_RA_okada.sumstats	38_b_neuroticism.sumstats
22_i_RA_okada.sumstats	39_b_psy_adhd.sumstats
22_i_RA_okada.sumstats	39_b_psy_alz.sumstats
22_i_RA_okada.sumstats	39_b_psy_anor.sumstats
22_i_RA_okada.sumstats	39_b_psy_asd.sumstats
22_i_RA_okada.sumstats	39_b_psy_bipolar_05.sumstats
22_i_RA_okada.sumstats	39_b_psy_bipolar_info9.sumstats
22_i_RA_okada.sumstats	39_b_psy_mddprimary_nomhc.sumstats
22_i_RA_okada.sumstats	39_b_psy OCD.sumstats
22_i_RA_okada.sumstats	39_b_psy_sz_eur_05.sumstats
22_i_RA_okada.sumstats	39_b_psy_sz_eur_info9.sumstats
22_i_RA_okada.sumstats	39_b_psy_td.sumstats
28_i_t1d.sumstats	3_b_psy_parkinson.sumstats
28_i_t1d.sumstats	36_b_anger_temp.sumstats
28_i_t1d.sumstats	37_b_sub_cigperday.sumstats
28_i_t1d.sumstats	37_b_sub_evrrsmk.sumstats
28_i_t1d.sumstats	38_b_neuroticism.sumstats
28_i_t1d.sumstats	39_b_psy_adhd.sumstats
28_i_t1d.sumstats	39_b_psy_alz.sumstats
28_i_t1d.sumstats	39_b_psy_anor.sumstats
28_i_t1d.sumstats	39_b_psy_bipolar_05.sumstats
28_i_t1d.sumstats	39_b_psy_bipolar_info9.sumstats



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2	28_i_t1d.sumstats	39_b_psy_mddprimary_nomhc.sumstats
3	28_i_t1d.sumstats	39_b_psy OCD.sumstats
4	28_i_t1d.sumstats	39_b_psy_sz_eur_05.sumstats
5	28_i_t1d.sumstats	39_b_psy_sz_eur_info9.sumstats
6	28_i_t1d.sumstats	39_b_psy_td.sumstats
7	28_i_t1d.sumstats	39_b_psy_td.sumstats
8	3_i_allergyany.sumstats	3_b_psy_parkinson.sumstats
9	3_i_allergyany.sumstats	36_b_anger_temp.sumstats
10	3_i_allergyany.sumstats	37_b_sub_cigperday.sumstats
11	3_i_allergyany.sumstats	37_b_sub_evrrsmk.sumstats
12	3_i_allergyany.sumstats	38_b_neuroticism.sumstats
13	3_i_allergyany.sumstats	38_b_neuroticism.sumstats
14	3_i_allergyany.sumstats	39_b_psy_adhd.sumstats
15	3_i_allergyany.sumstats	39_b_psy_alz.sumstats
16	3_i_allergyany.sumstats	39_b_psy_anor.sumstats
17	3_i_allergyany.sumstats	39_b_psy_anor.sumstats
18	3_i_allergyany.sumstats	39_b_psy_asd.sumstats
19	3_i_allergyany.sumstats	39_b_psy_bipolar_05.sumstats
20	3_i_allergyany.sumstats	39_b_psy_bipolar_info9.sumstats
21	3_i_allergyany.sumstats	39_b_psy_mddprimary_nomhc.sumstats
22	3_i_allergyany.sumstats	39_b_psy_mddprimary_nomhc.sumstats
23	3_i_allergyany.sumstats	39_b_psy OCD.sumstats
24	3_i_allergyany.sumstats	39_b_psy_sz_eur_05.sumstats
25	3_i_allergyany.sumstats	39_b_psy_sz_eur_info9.sumstats
26	3_i_allergyany.sumstats	39_b_psy_sz_eur_info9.sumstats
27	3_i_asthma.sumstats	39_b_psy_td.sumstats
28	3_i_asthma.sumstats	39_b_psy_td.sumstats
29	3_i_asthma.sumstats	3_b_psy_parkinson.sumstats
30	3_i_asthma.sumstats	36_b_anger_temp.sumstats
31	3_i_asthma.sumstats	37_b_sub_cigperday.sumstats
32	3_i_asthma.sumstats	37_b_sub_evrrsmk.sumstats
33	3_i_asthma.sumstats	38_b_neuroticism.sumstats
34	3_i_asthma.sumstats	38_b_neuroticism.sumstats
35	3_i_asthma.sumstats	39_b_psy_adhd.sumstats
36	3_i_asthma.sumstats	39_b_psy_alz.sumstats
37	3_i_asthma.sumstats	39_b_psy_alz.sumstats
38	3_i_asthma.sumstats	39_b_psy_anor.sumstats
39	3_i_asthma.sumstats	39_b_psy_anor.sumstats
40	3_i_asthma.sumstats	39_b_psy_asd.sumstats
41	3_i_asthma.sumstats	39_b_psy_asd.sumstats
42	3_i_asthma.sumstats	39_b_psy_bipolar_05.sumstats
43	3_i_asthma.sumstats	39_b_psy_bipolar_info9.sumstats
44	3_i_asthma.sumstats	39_b_psy_bipolar_info9.sumstats
45	3_i_asthma.sumstats	39_b_psy_mddprimary_nomhc.sumstats
46	3_i_atopicdermatitis.sumstats	39_b_psy_mddprimary_nomhc.sumstats
47	3_i_atopicdermatitis.sumstats	39_b_psy OCD.sumstats
48	3_i_atopicdermatitis.sumstats	39_b_psy OCD.sumstats
49	3_i_atopicdermatitis.sumstats	39_b_psy_sz_eur_05.sumstats
50	3_i_atopicdermatitis.sumstats	39_b_psy_sz_eur_05.sumstats
51	3_i_atopicdermatitis.sumstats	39_b_psy_sz_eur_info9.sumstats
52	3_i_atopicdermatitis.sumstats	39_b_psy_sz_eur_info9.sumstats
53	3_i_atopicdermatitis.sumstats	39_b_psy_td.sumstats
54	3_i_atopicdermatitis.sumstats	39_b_psy_td.sumstats
55	3_i_atopicdermatitis.sumstats	3_b_psy_parkinson.sumstats
56	3_i_atopicdermatitis.sumstats	36_b_anger_temp.sumstats
57	3_i_atopicdermatitis.sumstats	37_b_sub_cigperday.sumstats
58	3_i_atopicdermatitis.sumstats	37_b_sub_evrrsmk.sumstats
59		37_b_sub_evrrsmk.sumstats
60		38_b_neuroticism.sumstats

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2	3_i_atopicdermatitis.sumstats	39_b_psy_bipolar_info9.sumstats
3	3_i_atopicdermatitis.sumstats	39_b_psy_mddprimary_nomhc.sumstats
4	3_i_atopicdermatitis.sumstats	39_b_psy OCD.sumstats
5	3_i_atopicdermatitis.sumstats	39_b_psy_sz_eur_05.sumstats
6	3_i_atopicdermatitis.sumstats	39_b_psy_sz_eur_info9.sumstats
7	3_i_atopicdermatitis.sumstats	39_b_psy_td.sumstats
8	3_i_atopicdermatitis.sumstats	3_b_psy_parkinson.sumstats
9	3_i_childhoodhear.sumstats	36_b_anger_temp.sumstats
10	3_i_childhoodhear.sumstats	37_b_sub_cigperday.sumstats
11	3_i_childhoodhear.sumstats	37_b_sub_evrrsmk.sumstats
12	3_i_childhoodhear.sumstats	38_b_neuroticism.sumstats
13	3_i_childhoodhear.sumstats	39_b_psy_adhd.sumstats
14	3_i_childhoodhear.sumstats	39_b_psy_alz.sumstats
15	3_i_childhoodhear.sumstats	39_b_psy_anor.sumstats
16	3_i_childhoodhear.sumstats	39_b_psy_asd.sumstats
17	3_i_childhoodhear.sumstats	39_b_psy_bipolar_05.sumstats
18	3_i_childhoodhear.sumstats	39_b_psy_bipolar_info9.sumstats
19	3_i_childhoodhear.sumstats	39_b_psy_mddprimary_nomhc.sumstats
20	3_i_childhoodhear.sumstats	39_b_psy OCD.sumstats
21	3_i_childhoodhear.sumstats	39_b_psy_sz_eur_05.sumstats
22	3_i_childhoodhear.sumstats	39_b_psy_sz_eur_info9.sumstats
23	3_i_childhoodhear.sumstats	39_b_psy_td.sumstats
24	3_i_childhoodhear.sumstats	3_b_psy_parkinson.sumstats
25	3_i_childhoodhear.sumstats	36_b_anger_temp.sumstats
26	3_i_childhoodhear.sumstats	37_b_sub_cigperday.sumstats
27	3_i_childhoodhear.sumstats	37_b_sub_evrrsmk.sumstats
28	3_i_crp.sumstats	38_b_neuroticism.sumstats
29	3_i_crp.sumstats	39_b_psy_adhd.sumstats
30	3_i_crp.sumstats	39_b_psy_alz.sumstats
31	3_i_crp.sumstats	39_b_psy_anor.sumstats
32	3_i_crp.sumstats	39_b_psy_asd.sumstats
33	3_i_crp.sumstats	39_b_psy_bipolar_05.sumstats
34	3_i_crp.sumstats	39_b_psy_bipolar_info9.sumstats
35	3_i_crp.sumstats	39_b_psy_mddprimary_nomhc.sumstats
36	3_i_crp.sumstats	39_b_psy OCD.sumstats
37	3_i_crp.sumstats	39_b_psy_sz_eur_05.sumstats
38	3_i_crp.sumstats	39_b_psy_sz_eur_info9.sumstats
39	3_i_crp.sumstats	39_b_psy_td.sumstats
40	3_i_crp.sumstats	3_b_psy_parkinson.sumstats
41	3_i_crp.sumstats	36_b_anger_temp.sumstats
42	3_i_crp.sumstats	37_b_sub_cigperday.sumstats
43	3_i_crp.sumstats	37_b_sub_evrrsmk.sumstats
44	3_i_crp.sumstats	38_b_neuroticism.sumstats
45	3_i_crp.sumstats	39_b_psy_adhd.sumstats
46	3_i_crp.sumstats	39_b_psy_alz.sumstats
47	3_i_crp.sumstats	39_b_psy_anor.sumstats
48	3_i_hypothyroid.sumstats	39_b_psy_asd.sumstats
49	3_i_hypothyroid.sumstats	39_b_psy_bipolar_05.sumstats
50	3_i_hypothyroid.sumstats	39_b_psy_bipolar_info9.sumstats
51	3_i_hypothyroid.sumstats	39_b_psy_mddprimary_nomhc.sumstats
52	3_i_hypothyroid.sumstats	39_b_psy OCD.sumstats
53	3_i_hypothyroid.sumstats	39_b_psy_sz_eur_05.sumstats
54	3_i_hypothyroid.sumstats	39_b_psy_sz_eur_info9.sumstats
55	3_i_hypothyroid.sumstats	39_b_psy_td.sumstats
56	3_i_hypothyroid.sumstats	3_b_psy_parkinson.sumstats
57	3_i_hypothyroid.sumstats	36_b_anger_temp.sumstats
58	3_i_hypothyroid.sumstats	37_b_sub_cigperday.sumstats
59		37_b_sub_evrrsmk.sumstats
60		38_b_neuroticism.sumstats

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3	3_i_hypothyroid.sumstats	39_b_psy_bipolar_info9.sumstats
4	3_i_hypothyroid.sumstats	39_b_psy_mddprimary_nomhc.sumstats
5	3_i_hypothyroid.sumstats	39_b_psy_ocd.sumstats
6	3_i_hypothyroid.sumstats	39_b_psy_sz_eur_05.sumstats
7	3_i_hypothyroid.sumstats	39_b_psy_sz_eur_info9.sumstats
8	3_i_hypothyroid.sumstats	39_b_psy_td.sumstats
9	3_i_hypothyroid.sumstats	
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11	3_i_pbc.sumstats	36_b_anger_temp.sumstats
12	3_i_pbc.sumstats	37_b_sub_cigperday.sumstats
13	3_i_pbc.sumstats	37_b_sub_evrrsmk.sumstats
14	3_i_pbc.sumstats	38_b_neuroticism.sumstats
15	3_i_pbc.sumstats	39_b_psy_adhd.sumstats
16	3_i_pbc.sumstats	39_b_psy_alz.sumstats
17	3_i_pbc.sumstats	39_b_psy_anor.sumstats
18	3_i_pbc.sumstats	39_b_psy_asd.sumstats
19	3_i_pbc.sumstats	39_b_psy_bipolar_05.sumstats
20	3_i_pbc.sumstats	39_b_psy_bipolar_info9.sumstats
21	3_i_pbc.sumstats	39_b_psy_mddprimary_nomhc.sumstats
22	3_i_pbc.sumstats	39_b_psy_ocd.sumstats
23	3_i_pbc.sumstats	39_b_psy_sz_eur_05.sumstats
24	3_i_pbc.sumstats	39_b_psy_sz_eur_info9.sumstats
25	3_i_pbc.sumstats	39_b_psy_td.sumstats
26	3_i_pbc.sumstats	
27	3_i_pbc.sumstats	3_b_psy_parkinson.sumstats
28	3_i_pbc.sumstats	36_b_anger_temp.sumstats
29	3_i_psoriasis.sumstats	37_b_sub_cigperday.sumstats
30	3_i_psoriasis.sumstats	37_b_sub_evrrsmk.sumstats
31	3_i_psoriasis.sumstats	38_b_neuroticism.sumstats
32	3_i_psoriasis.sumstats	39_b_psy_adhd.sumstats
33	3_i_psoriasis.sumstats	39_b_psy_alz.sumstats
34	3_i_psoriasis.sumstats	39_b_psy_anor.sumstats
35	3_i_psoriasis.sumstats	39_b_psy_asd.sumstats
36	3_i_psoriasis.sumstats	39_b_psy_bipolar_05.sumstats
37	3_i_psoriasis.sumstats	39_b_psy_bipolar_info9.sumstats
38	3_i_psoriasis.sumstats	39_b_psy_mddprimary_nomhc.sumstats
39	3_i_psoriasis.sumstats	39_b_psy_ocd.sumstats
40	3_i_psoriasis.sumstats	39_b_psy_sz_eur_05.sumstats
41	3_i_psoriasis.sumstats	39_b_psy_sz_eur_info9.sumstats
42	3_i_psoriasis.sumstats	39_b_psy_td.sumstats
43	3_i_psoriasis.sumstats	
44	3_i_psoriasis.sumstats	3_b_psy_parkinson.sumstats
45	3_i_psoriasis.sumstats	36_b_anger_temp.sumstats
46	3_i_psoriasis.sumstats	37_b_sub_cigperday.sumstats
47	3_i_psoriasis.sumstats	37_b_sub_evrrsmk.sumstats
48	3_i_psoriasis.sumstats	38_b_neuroticism.sumstats
49	3_i_sle.sumstats	39_b_psy_adhd.sumstats
50	3_i_sle.sumstats	39_b_psy_alz.sumstats
51	3_i_sle.sumstats	39_b_psy_anor.sumstats
52	3_i_sle.sumstats	
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4	3_i_sle.sumstats	39_b_psy_mddprimary_nomhc.sumstats
5	3_i_sle.sumstats	39_b_psy OCD.sumstats
6	3_i_sle.sumstats	39_b_psy_sz_eur_05.sumstats
7	3_i_sle.sumstats	39_b_psy_sz_eur_info9.sumstats
8	3_i_sle.sumstats	39_b_psy_td.sumstats
9	3_i_sle.sumstats	
10	5_i_celiac.sumstats	3_b_psy_parkinson.sumstats
11	5_i_celiac.sumstats	36_b_anger_temp.sumstats
12	5_i_celiac.sumstats	37_b_sub_cigperday.sumstats
13	5_i_celiac.sumstats	37_b_sub_evrrsmk.sumstats
14	5_i_celiac.sumstats	38_b_neuroticism.sumstats
15	5_i_celiac.sumstats	39_b_psy_adhd.sumstats
16	5_i_celiac.sumstats	39_b_psy_alz.sumstats
17	5_i_celiac.sumstats	39_b_psy_anor.sumstats
18	5_i_celiac.sumstats	39_b_psy_asd.sumstats
19	5_i_celiac.sumstats	39_b_psy_bipolar_05.sumstats
20	5_i_celiac.sumstats	39_b_psy_bipolar_info9.sumstats
21	5_i_celiac.sumstats	39_b_psy_mddprimary_nomhc.sumstats
22	5_i_celiac.sumstats	39_b_psy OCD.sumstats
23	5_i_celiac.sumstats	39_b_psy_sz_eur_05.sumstats
24	5_i_celiac.sumstats	39_b_psy_sz_eur_info9.sumstats
25	5_i_celiac.sumstats	39_b_psy_td.sumstats
26	5_i_celiac.sumstats	
27	5_i_celiac.sumstats	3_b_psy_parkinson.sumstats
28	5_i_celiac.sumstats	36_b_anger_temp.sumstats
29	6_i_crohns_franke_05.sumstats	37_b_sub_cigperday.sumstats
30	6_i_crohns_franke_05.sumstats	37_b_sub_evrrsmk.sumstats
31	6_i_crohns_franke_05.sumstats	38_b_neuroticism.sumstats
32	6_i_crohns_franke_05.sumstats	39_b_psy_adhd.sumstats
33	6_i_crohns_franke_05.sumstats	39_b_psy_alz.sumstats
34	6_i_crohns_franke_05.sumstats	39_b_psy_anor.sumstats
35	6_i_crohns_franke_05.sumstats	39_b_psy_asd.sumstats
36	6_i_crohns_franke_05.sumstats	39_b_psy_bipolar_05.sumstats
37	6_i_crohns_franke_05.sumstats	39_b_psy_bipolar_info9.sumstats
38	6_i_crohns_franke_05.sumstats	39_b_psy_mddprimary_nomhc.sumstats
39	6_i_crohns_franke_05.sumstats	39_b_psy OCD.sumstats
40	6_i_crohns_franke_05.sumstats	39_b_psy_sz_eur_05.sumstats
41	6_i_crohns_franke_05.sumstats	39_b_psy_sz_eur_info9.sumstats
42	6_i_crohns_franke_05.sumstats	39_b_psy_td.sumstats
43	6_i_crohns_franke_05.sumstats	
44	6_i_crohns_franke_05.sumstats	3_b_psy_parkinson.sumstats
45	6_i_crohns_franke_05.sumstats	36_b_anger_temp.sumstats
46	6_i_crohns_franke_05.sumstats	37_b_sub_cigperday.sumstats
47	6_i_crohns_franke_05.sumstats	37_b_sub_evrrsmk.sumstats
48	6_i_crohns_franke_05.sumstats	38_b_neuroticism.sumstats
49	6_i_crohns_franke_all.sumstats	39_b_psy_adhd.sumstats
50	6_i_crohns_franke_all.sumstats	39_b_psy_alz.sumstats
51	6_i_crohns_franke_all.sumstats	39_b_psy_anor.sumstats
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53	6_i_crohns_franke_all.sumstats	
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56	6_i_crohns_franke_all.sumstats	
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3	6_i_crohns_franke_all.sumstats	39_b_psy_bipolar_05.sumstats
4	6_i_crohns_franke_all.sumstats	39_b_psy_bipolar_info9.sumstats
5	6_i_crohns_franke_all.sumstats	39_b_psy_mddprimary_nomhc.sumstats
6	6_i_crohns_franke_all.sumstats	39_b_psy OCD.sumstats
7	6_i_crohns_franke_all.sumstats	39_b_psy_sz_eur_05.sumstats
8	6_i_crohns_franke_all.sumstats	39_b_psy_sz_eur_info9.sumstats
9	6_i_crohns_franke_all.sumstats	39_b_psy_td.sumstats
10	6_i_crohns_franke_all.sumstats	
11	6_i_crohns_liu_05.sumstats	3_b_psy_parkinson.sumstats
12	6_i_crohns_liu_05.sumstats	36_b_anger_temp.sumstats
13	6_i_crohns_liu_05.sumstats	37_b_sub_cigperday.sumstats
14	6_i_crohns_liu_05.sumstats	37_b_sub_evrrsmk.sumstats
15	6_i_crohns_liu_05.sumstats	38_b_neuroticism.sumstats
16	6_i_crohns_liu_05.sumstats	39_b_psy_adhd.sumstats
17	6_i_crohns_liu_05.sumstats	39_b_psy_alz.sumstats
18	6_i_crohns_liu_05.sumstats	39_b_psy_anor.sumstats
19	6_i_crohns_liu_05.sumstats	39_b_psy_asd.sumstats
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21	6_i_crohns_liu_05.sumstats	39_b_psy_bipolar_info9.sumstats
22	6_i_crohns_liu_05.sumstats	39_b_psy_mddprimary_nomhc.sumstats
23	6_i_crohns_liu_05.sumstats	39_b_psy OCD.sumstats
24	6_i_crohns_liu_05.sumstats	39_b_psy_sz_eur_05.sumstats
25	6_i_crohns_liu_05.sumstats	39_b_psy_sz_eur_info9.sumstats
26	6_i_crohns_liu_05.sumstats	39_b_psy_td.sumstats
27	6_i_crohns_liu_05.sumstats	
28	6_i_crohns_liu_05.sumstats	3_b_psy_parkinson.sumstats
29	6_i_crohns_liu_05.sumstats	36_b_anger_temp.sumstats
30	6_i_crohns_liu_05.sumstats	37_b_sub_cigperday.sumstats
31	6_i_crohns_liu_info9.sumstats	37_b_sub_evrrsmk.sumstats
32	6_i_crohns_liu_info9.sumstats	38_b_neuroticism.sumstats
33	6_i_crohns_liu_info9.sumstats	39_b_psy_adhd.sumstats
34	6_i_crohns_liu_info9.sumstats	39_b_psy_alz.sumstats
35	6_i_crohns_liu_info9.sumstats	39_b_psy_anor.sumstats
36	6_i_crohns_liu_info9.sumstats	39_b_psy_asd.sumstats
37	6_i_crohns_liu_info9.sumstats	39_b_psy_bipolar_05.sumstats
38	6_i_crohns_liu_info9.sumstats	39_b_psy_bipolar_info9.sumstats
39	6_i_crohns_liu_info9.sumstats	39_b_psy_mddprimary_nomhc.sumstats
40	6_i_crohns_liu_info9.sumstats	39_b_psy OCD.sumstats
41	6_i_crohns_liu_info9.sumstats	39_b_psy_sz_eur_05.sumstats
42	6_i_crohns_liu_info9.sumstats	39_b_psy_sz_eur_info9.sumstats
43	6_i_crohns_liu_info9.sumstats	39_b_psy_td.sumstats
44	6_i_crohns_liu_info9.sumstats	
45	6_i_crohns_liu_info9.sumstats	3_b_psy_parkinson.sumstats
46	6_i_crohns_liu_info9.sumstats	36_b_anger_temp.sumstats
47	6_i_crohns_liu_info9.sumstats	37_b_sub_cigperday.sumstats
48	6_i_crohns_liu_info9.sumstats	37_b_sub_evrrsmk.sumstats
49	6_i_crohns_liu_info9.sumstats	38_b_neuroticism.sumstats
50	7_i_uc_andersen_05.sumstats	39_b_psy_adhd.sumstats
51	7_i_uc_andersen_05.sumstats	39_b_psy_alz.sumstats
52	7_i_uc_andersen_05.sumstats	
53	7_i_uc_andersen_05.sumstats	3_b_psy_parkinson.sumstats
54	7_i_uc_andersen_05.sumstats	36_b_anger_temp.sumstats
55	7_i_uc_andersen_05.sumstats	37_b_sub_cigperday.sumstats
56	7_i_uc_andersen_05.sumstats	37_b_sub_evrrsmk.sumstats
57	7_i_uc_andersen_05.sumstats	38_b_neuroticism.sumstats
58	7_i_uc_andersen_05.sumstats	39_b_psy_adhd.sumstats
59		39_b_psy_alz.sumstats
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3	7_i_uc_andersen_05.sumstats	39_b_psy_asd.sumstats
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5	7_i_uc_andersen_05.sumstats	39_b_psy_bipolar_info9.sumstats
6	7_i_uc_andersen_05.sumstats	39_b_psy_mddprimary_nomhc.sumstats
7	7_i_uc_andersen_05.sumstats	39_b_psy_ocd.sumstats
8	7_i_uc_andersen_05.sumstats	39_b_psy_sz_eur_05.sumstats
9	7_i_uc_andersen_05.sumstats	39_b_psy_sz_eur_info9.sumstats
10	7_i_uc_andersen_05.sumstats	39_b_psy_td.sumstats
11	7_i_uc_andersen_05.sumstats	39_b_psy_td.sumstats
12	7_i_uc_andersen_05.sumstats	39_b_psy_td.sumstats
13	7_i_uc_andersen_all.sumstats	3_b_psy_parkinson.sumstats
14	7_i_uc_andersen_all.sumstats	36_b_anger_temp.sumstats
15	7_i_uc_andersen_all.sumstats	37_b_sub_cigperday.sumstats
16	7_i_uc_andersen_all.sumstats	37_b_sub_evrrsmk.sumstats
17	7_i_uc_andersen_all.sumstats	37_b_sub_evrrsmk.sumstats
18	7_i_uc_andersen_all.sumstats	38_b_neuroticism.sumstats
19	7_i_uc_andersen_all.sumstats	39_b_psy_adhd.sumstats
20	7_i_uc_andersen_all.sumstats	39_b_psy_alz.sumstats
21	7_i_uc_andersen_all.sumstats	39_b_psy_anor.sumstats
22	7_i_uc_andersen_all.sumstats	39_b_psy_anor.sumstats
23	7_i_uc_andersen_all.sumstats	39_b_psy_asd.sumstats
24	7_i_uc_andersen_all.sumstats	39_b_psy_asd.sumstats
25	7_i_uc_andersen_all.sumstats	39_b_psy_bipolar_05.sumstats
26	7_i_uc_andersen_all.sumstats	39_b_psy_bipolar_info9.sumstats
27	7_i_uc_andersen_all.sumstats	39_b_psy_bipolar_info9.sumstats
28	7_i_uc_andersen_all.sumstats	39_b_psy_mddprimary_nomhc.sumstats
29	7_i_uc_andersen_all.sumstats	39_b_psy_mddprimary_nomhc.sumstats
30	7_i_uc_andersen_all.sumstats	39_b_psy_ocd.sumstats
31	7_i_uc_andersen_all.sumstats	39_b_psy_ocd.sumstats
32	7_i_uc_andersen_all.sumstats	39_b_psy_sz_eur_05.sumstats
33	7_i_uc_liu_05.sumstats	39_b_psy_sz_eur_info9.sumstats
34	7_i_uc_liu_05.sumstats	39_b_psy_sz_eur_info9.sumstats
35	7_i_uc_liu_05.sumstats	39_b_psy_td.sumstats
36	7_i_uc_liu_05.sumstats	39_b_psy_td.sumstats
37	7_i_uc_liu_05.sumstats	3_b_psy_parkinson.sumstats
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39	7_i_uc_liu_05.sumstats	36_b_anger_temp.sumstats
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42	7_i_uc_liu_05.sumstats	37_b_sub_cigperday.sumstats
43	7_i_uc_liu_05.sumstats	37_b_sub_evrrsmk.sumstats
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46	7_i_uc_liu_05.sumstats	38_b_neuroticism.sumstats
47	7_i_uc_liu_05.sumstats	39_b_psy_adhd.sumstats
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51	7_i_uc_liu_05.sumstats	39_b_psy_anor.sumstats
52	7_i_uc_liu_info9.sumstats	39_b_psy_anor.sumstats
53	7_i_uc_liu_info9.sumstats	39_b_psy_asd.sumstats
54	7_i_uc_liu_info9.sumstats	39_b_psy_asd.sumstats
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56	7_i_uc_liu_info9.sumstats	39_b_psy_bipolar_05.sumstats
57	7_i_uc_liu_info9.sumstats	39_b_psy_bipolar_info9.sumstats
58	7_i_uc_liu_info9.sumstats	39_b_psy_bipolar_info9.sumstats
59		39_b_psy_mddprimary_nomhc.sumstats
60		39_b_psy_mddprimary_nomhc.sumstats

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3 7\_i\_uc\_liu\_info9.sumstats  
4 7\_i\_uc\_liu\_info9.sumstats  
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8 7\_i\_uc\_liu\_info9.sumstats  
9 7\_i\_uc\_liu\_info9.sumstats  
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13 7\_i\_uc\_liu\_info9.sumstats

39\_b\_psy\_alz.sumstats  
39\_b\_psy\_anor.sumstats  
39\_b\_psy\_asd.sumstats  
39\_b\_psy\_bipolar\_05.sumstats  
39\_b\_psy\_bipolar\_info9.sumstats  
39\_b\_psy\_mddprimary\_nomhc.sumstats  
39\_b\_psy OCD.sumstats  
39\_b\_psy\_sz\_eur\_05.sumstats  
39\_b\_psy\_sz\_eur\_info9.sumstats  
39\_b\_psy\_td.sumstats

For Peer Review

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Genetic Correlation Coefficient	Estimated Error of Genetic Correlation Coefficient	Genetic Correlation Uncorrected P - Value*	Genetic Correlation P - Value After Benjamini-Hochberg Correction*	Genetic Correlation P - Value After Bonferroni Correction*
0.0307	0.1001	0.7592	0.934095273	1
0.2011	0.1968	0.3069	0.604720118	1
0.5079	0.1877	0.0068	0.058061538	1
0.2835	0.1335	0.0337	0.145122222	1
0.158	0.0775	0.0414	0.164121429	1
0.3597	0.114	0.0016	0.020492308	0.5328
0.0989	0.1586	0.533	0.806768182	1
-0.0389	0.1593	0.8069	0.951981338	1
-0.0614	0.124	0.6206	0.876056962	1
-0.0902	0.1071	0.3997	0.702089529	1
0.0692	0.1583	0.6618	0.89991551	1
-0.0405	0.1658	0.8069	0.951981338	1
0.1949	0.0741	0.0086	0.06174375	1
0.1519	0.0819	0.0636	0.225306383	1
0.1295	0.139	0.3514	0.653721788	1
-0.0446	0.0472	0.3443	0.644111798	1
-0.0151	0.0986	0.8784	0.976448734	1
0.134	0.0824	0.1038	0.3114	1
0.1662	0.0546	0.0023	0.026410345	0.7659
-0.0332	0.0462	0.4727	0.766546602	1
0.1568	0.047	9.00E-04	0.013622727	0.2997
-0.1268	0.098	0.1956	0.44325	1
-0.1252	0.0709	0.0773	0.247508654	1
-0.2522	0.3429	0.462	0.766546602	1
-0.1496	0.0698	0.0322	0.142968	1
-0.1496	0.0698	0.0322	0.142968	1
-0.0698	0.0834	0.4027	0.702089529	1
-0.1623	0.0727	0.0255	0.121307143	1
-0.01	0.0323	0.7559	0.934095273	1
-0.0301	0.0339	0.3741	0.680739344	1
0.0845	0.0653	0.1959	0.44325	1
0.0873	0.0653	0.181	0.439948905	1
0.1098	0.1693	0.5166	0.803868224	1
0.0642	0.1261	0.6109	0.876056962	1
-0.0433	0.0822	0.5986	0.866668696	1
-0.0287	0.0921	0.7554	0.934095273	1
-0.1413	0.0653	0.0306	0.139586301	1
-0.0814	0.1137	0.4742	0.766546602	1
0.0476	0.101	0.6373	0.880584647	1
-0.065	0.0681	0.3396	0.638908475	1
-0.065	0.0681	0.3396	0.638908475	1



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2	-0.0884	0.1165	0.4481	0.749835678	1
3	-0.317	0.114	0.0054	0.0486	1
4	-0.0162	0.0501	0.7467	0.934095273	1
5	-0.0108	0.0468	0.8181	0.952543007	1
6	-0.0465	0.0832	0.576	0.83758952	1
7	-0.0595	0.0437	0.1733	0.433901504	1
8	-0.0595	0.0437	0.1733	0.433901504	1
9	0.0269	0.0943	0.7752	0.935295652	1
10	0.0435	0.072	0.5456	0.8184	1
11	-0.0102	0.0536	0.8497	0.964793878	1
12	-0.0102	0.0536	0.8497	0.964793878	1
13	0.0871	0.0328	0.0078	0.059031818	1
14	0.1146	0.0422	0.0067	0.058061538	1
15	-0.1832	0.0863	0.0339	0.145122222	1
16	-0.0951	0.0631	0.1318	0.365745	1
17	-0.0951	0.0631	0.1318	0.365745	1
18	0.7513	0.3339	0.0244	0.117756522	1
19	-0.1125	0.047	0.0167	0.095881034	1
20	-0.1163	0.0461	0.0116	0.074925	1
21	0.0941	0.0676	0.1635	0.418811538	1
22	-0.0826	0.074	0.2643	0.557037342	1
23	-0.0826	0.074	0.2643	0.557037342	1
24	0.0234	0.0298	0.4314	0.734978571	1
25	0.0287	0.0347	0.4088	0.7090125	1
26	0.2382	0.0567	2.66E-05	0.003116714	0.008855469
27	-0.0867	0.0517	0.0937	0.284563636	1
28	0.1654	0.0929	0.075	0.247277228	1
29	0.1654	0.0929	0.075	0.247277228	1
30	-0.0563	0.0718	0.4326	0.734978571	1
31	0.0051	0.055	0.9256	0.976448734	1
32	0.0995	0.0471	0.0348	0.145122222	1
33	0.1198	0.0473	0.0114	0.074925	1
34	-0.068	0.0845	0.4215	0.727251295	1
35	-0.068	0.0845	0.4215	0.727251295	1
36	0.0709	0.0569	0.2128	0.472416	1
37	-0.0136	0.3777	0.9713	0.9888	1
38	0.0051	0.0539	0.9243	0.976448734	1
39	0.0011	0.0535	0.9839	0.9888	1
40	0.0011	0.0535	0.9839	0.9888	1
41	0.1491	0.0798	0.0617	0.224051087	1
42	0.015	0.0699	0.8297	0.95574433	1
43	0.0577	0.0317	0.0688	0.236837755	1
44	0.0449	0.0348	0.197	0.44325	1
45	0.121	0.065	0.0628	0.224864516	1
46	0.121	0.065	0.0628	0.224864516	1
47	-0.0436	0.0839	0.6033	0.869692208	1
48	0.0197	0.1726	0.909	0.976448734	1
49	0.251	0.1659	0.1302	0.365745	1
50	-0.0168	0.0899	0.8518	0.964793878	1
51	0.0457	0.077	0.5529	0.823768	1
52	0.0457	0.077	0.5529	0.823768	1
53	0.0934	0.0749	0.2124	0.472416	1
54	0.106	0.1393	0.4467	0.749835678	1
55	0.1316	0.1013	0.1943	0.44325	1
56	0.1263	0.4559	0.7817	0.939733213	1
57	0.0388	0.0887	0.6621	0.89991551	1
58	0.0388	0.0887	0.6621	0.89991551	1
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2	0.0388	0.0887	0.6621	0.89991551	1
3	0.0357	0.1345	0.7904	0.943380645	1
4	-0.0054	0.1215	0.9648	0.9888	1
5	0.0349	0.052	0.5028	0.789775472	1
6	0.0396	0.0575	0.491	0.782311005	1
7					
8	-0.0777	0.1073	0.4689	0.766546602	1
9	-0.0063	0.0506	0.9004	0.976448734	1
10	0.2462	0.1049	0.0189	0.104895	1
11	0.0114	0.0861	0.8949	0.976448734	1
12					
13	0.1083	0.0628	0.0844	0.265143396	1
14	0.1329	0.0395	8.00E-04	0.012685714	0.2664
15	0.2008	0.0538	2.00E-04	0.0041625	0.0666
16	-0.0949	0.0896	0.2894	0.583753012	1
17	0.0925	0.0758	0.2222	0.484264706	1
18					
19	0.1663	0.3352	0.6198	0.876056962	1
20	0.0964	0.0539	0.0738	0.245754	1
21	0.1007	0.0507	0.0471	0.184521176	1
22	0.1679	0.0792	0.0341	0.145122222	1
23					
24	0.0274	0.0861	0.75	0.934095273	1
25	0.0423	0.0358	0.2371	0.51269026	1
26	0.0553	0.036	0.1241	0.359350435	1
27	-0.0037	0.071	0.9583	0.9888	1
28	-0.0594	0.054	0.2719	0.559522222	1
29					
30	0.12	0.1093	0.2722	0.559522222	1
31	0.3702	0.0912	4.95E-05	0.003295235	0.016476174
32	0.3069	0.0743	3.58E-05	0.003116714	0.011907414
33	-0.0295	0.0597	0.6211	0.876056962	1
34					
35	0.232	0.0626	2.00E-04	0.0041625	0.0666
36	0.055	0.1177	0.6403	0.881073967	1
37	-0.2954	0.0777	1.00E-04	0.0041625	0.0333
38	0.5026	0.4985	0.3134	0.613895294	1
39	0.0087	0.0554	0.8753	0.976448734	1
40	0.0087	0.0554	0.8753	0.976448734	1
41					
42	0.2114	0.0964	0.0283	0.1308875	1
43	-0.1839	0.0817	0.0244	0.117756522	1
44	-0.0491	0.0372	0.1872	0.44325	1
45	-0.0429	0.0433	0.322	0.627052632	1
46					
47	0.0265	0.0711	0.7099	0.923424609	1
48	-0.0864	0.0581	0.1368	0.376482645	1
49	0.0219	0.105	0.8352	0.95574433	1
50	0.0529	0.0725	0.4656	0.766546602	1
51	0.126	0.0616	0.0409	0.164092771	1
52					
53	0.2475	0.0624	7.23E-05	0.004013594	0.024081561
54	0.1484	0.0598	0.0131	0.07992	1
55	-0.109	0.1031	0.2907	0.583753012	1
56	-0.0222	0.0814	0.7853	0.940665108	1
57	0.0386	0.4744	0.9351	0.982297476	1
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2	0.1128	0.0617	0.0676	0.236837755	1
3	0.105	0.0587	0.0736	0.245754	1
4	0.3312	0.0944	5.00E-04	0.008325	0.1665
5	-0.1378	0.0903	0.1271	0.364864655	1
6	0.0745	0.0421	0.0768	0.247508654	1
7	0.0567	0.0458	0.216	0.476344371	1
8	0.0845	0.0738	0.2519	0.534284713	1
9	0.0386	0.0688	0.5748	0.83758952	1
10	-0.0588	0.1404	0.6755	0.903379518	1
11	0.1384	0.1135	0.2225	0.484264706	1
12	0.1014	0.0784	0.1954	0.44325	1
13	0.0218	0.0746	0.7697	0.934095273	1
14	0.0706	0.0668	0.291	0.583753012	1
15	-0.2064	0.1415	0.1445	0.388052419	1
16	-0.0592	0.0938	0.5281	0.806684862	1
17	0.4764	0.5227	0.3621	0.669885	1
18	0.1931	0.0721	0.0074	0.058671429	1
19	0.1931	0.0721	0.0074	0.058671429	1
20	-0.023	0.123	0.8518	0.964793878	1
21	0.1549	0.1111	0.163	0.418811538	1
22	0.1409	0.0457	0.002	0.024666667	0.666
23	0.1317	0.0488	0.007	0.058275	1
24	0.0848	0.0864	0.3264	0.631925581	1
25	-0.0941	0.0707	0.1831	0.441828261	1
26	-0.0495	0.1509	0.7431	0.934095273	1
27	0.2059	0.1229	0.094	0.284563636	1
28	0.0953	0.0868	0.2719	0.559522222	1
29	-8.00E-04	0.0537	0.9888	0.9888	1
30	0.2325	0.0707	0.001	0.013875	0.333
31	-0.0153	0.1224	0.9006	0.976448734	1
32	-0.0546	0.0895	0.5417	0.816226697	1
33	0.2397	0.3826	0.5309	0.806768182	1
34	0.2446	0.0845	0.0038	0.03954375	1
35	0.2446	0.0845	0.0038	0.03954375	1
36	0.011	0.119	0.9266	0.976448734	1
37	0.0185	0.1173	0.8748	0.976448734	1
38	0.0987	0.0422	0.0193	0.105359016	1
39	0.0876	0.0462	0.058	0.21497	1
40	0.2529	0.0954	0.008	0.0592	1
41	-0.0572	0.0636	0.3682	0.67740663	1
42	-0.0157	0.1369	0.9085	0.976448734	1
43	0.0225	0.0916	0.8058	0.951981338	1
44	0.0973	0.0721	0.1774	0.438776471	1
45	-0.0341	0.1172	0.7714	0.934095273	1
46	0.0459	0.0538	0.393	0.702089529	1
47	0.0069	0.1064	0.9487	0.987240938	1
48	0.0137	0.091	0.88	0.976448734	1
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2	0.0591	0.0619	0.3396	0.638908475	1
3	0.0591	0.0619	0.3396	0.638908475	1
4	0.0816	0.1226	0.5055	0.790288732	1
5	-0.0437	0.0925	0.6366	0.880584647	1
6	0.1464	0.0451	0.0012	0.015984	0.3996
7	0.1433	0.0468	0.0022	0.026164286	0.7326
8	0.1173	0.0759	0.1223	0.357244737	1
9	0.1295	0.0814	0.1114	0.331216071	1
10	-0.0903	0.184	0.6235	0.876056962	1
11	0.0404	0.1281	0.7521	0.934095273	1
12	-0.0878	0.1026	0.3922	0.702089529	1
13	0.0032	0.0693	0.9631	0.9888	1
14	-0.1297	0.0765	0.0898	0.279471028	1
15	0.0161	0.1575	0.9187	0.976448734	1
16	0.0064	0.0911	0.9436	0.985011912	1
17	-0.348	0.9782	0.722	0.926252308	1
18	0.3068	0.0871	4.00E-04	0.0074	0.1332
19	0.3068	0.0871	4.00E-04	0.0074	0.1332
20	0.2019	0.1369	0.1403	0.381190244	1
21	0.4303	0.1727	0.0127	0.07979434	1
22	0.0987	0.0556	0.0759	0.247508654	1
23	0.1403	0.0557	0.0117	0.074925	1
24	0.0153	0.1013	0.8802	0.976448734	1
25	-0.0268	0.0639	0.6743	0.903379518	1
26	-0.1618	0.1116	0.1469	0.388235714	1
27	0.1241	0.0945	0.189	0.44325	1
28	-0.0392	0.0697	0.5735	0.83758952	1
29	0.019	0.0448	0.6718	0.903379518	1
30	0.0055	0.0483	0.9086	0.976448734	1
31	-0.0609	0.0964	0.5276	0.806684862	1
32	-0.0015	0.0726	0.9831	0.9888	1
33	0.4706	0.5616	0.402	0.702089529	1
34	0.1384	0.0599	0.0209	0.108745313	1
35	0.1384	0.0599	0.0209	0.108745313	1
36	-0.0499	0.0849	0.5566	0.823768	1
37	0.0319	0.0924	0.73	0.927824427	1
38	0.09	0.0393	0.0219	0.110495455	1
39	0.0813	0.0389	0.0366	0.148631707	1
40	-0.0015	0.0703	0.9835	0.9888	1
41	-0.0291	0.0593	0.6231	0.876056962	1
42	-0.1618	0.1116	0.1469	0.388235714	1
43	0.1241	0.0945	0.189	0.44325	1
44	-0.0392	0.0697	0.5735	0.83758952	1
45	0.019	0.0448	0.6718	0.903379518	1
46	0.0055	0.0483	0.9086	0.976448734	1
47	-0.0609	0.0964	0.5276	0.806684862	1
48	-0.0015	0.0726	0.9831	0.9888	1
49	0.4706	0.5616	0.402	0.702089529	1
50	0.1384	0.0599	0.0209	0.108745313	1
51	0.1384	0.0599	0.0209	0.108745313	1
52	-0.0499	0.0849	0.5566	0.823768	1
53	0.0319	0.0924	0.73	0.927824427	1
54	0.09	0.0393	0.0219	0.110495455	1
55	0.0813	0.0389	0.0366	0.148631707	1
56	-0.0015	0.0703	0.9835	0.9888	1
57	-0.0291	0.0593	0.6231	0.876056962	1
58	-0.1618	0.1116	0.1469	0.388235714	1
59	0.1241	0.0945	0.189	0.44325	1
60	-0.0392	0.0697	0.5735	0.83758952	1
61	0.019	0.0448	0.6718	0.903379518	1
62	0.0055	0.0483	0.9086	0.976448734	1
63	-0.0609	0.0964	0.5276	0.806684862	1
64	-0.0015	0.0726	0.9831	0.9888	1

1					
2	0.4706	0.5616	0.402	0.702089529	1
3	0.1384	0.0599	0.0209	0.108745313	1
4	0.1484	0.0567	0.0089	0.06174375	1
5	-0.0499	0.0849	0.5566	0.823768	1
6	0.0319	0.0924	0.73	0.927824427	1
7	0.09	0.0393	0.0219	0.110495455	1
8	0.0841	0.0383	0.0282	0.1308875	1
9	-0.0015	0.0703	0.9835	0.9888	1
10	-0.0212	0.0549	0.6991	0.919471765	1
11	-0.1194	0.103	0.2467	0.530007097	1
12	0.1912	0.0837	0.0224	0.111331343	1
13	-0.0209	0.0576	0.7161	0.924268605	1
14	0.0275	0.0402	0.494	0.783342857	1
15	0.0293	0.0456	0.5215	0.806684862	1
16	-0.0885	0.0916	0.3337	0.638908475	1
17	-0.0517	0.0723	0.474	0.766546602	1
18	-0.0261	0.3459	0.9398	0.984130189	1
19	0.2079	0.0504	3.74E-05	0.003116714	0.012466854
20	0.2079	0.0504	3.74E-05	0.003116714	0.012466854
21	-0.0082	0.0731	0.911	0.976448734	1
22	0.0643	0.0838	0.4423	0.747644162	1
23	0.1221	0.0326	2.00E-04	0.0041625	0.0666
24	0.104	0.0361	0.004	0.040363636	1
25	0.032	0.0673	0.6344	0.880584647	1
26	-0.0274	0.058	0.637	0.880584647	1
27	-0.1545	0.1049	0.1408	0.381190244	1
28	0.187	0.0987	0.0581	0.21497	1
29	-0.0593	0.0701	0.3978	0.702089529	1
30	-0.0013	0.0437	0.9757	0.9888	1
31	0.0339	0.0502	0.499	0.787521327	1
32	-0.1218	0.0863	0.1578	0.410526563	1
33	-0.0868	0.0754	0.2491	0.531732692	1
34	0.0579	0.5518	0.9164	0.976448734	1
35	0.1518	0.0581	0.0089	0.06174375	1
36	0.1564	0.0515	0.0024	0.02664	0.7992
37	-0.0625	0.0783	0.4248	0.72916701	1
38	0.0616	0.0887	0.487	0.780308654	1
39	0.1072	0.0402	0.0076	0.058855814	1
40	0.0977	0.0343	0.0045	0.044073529	1
41	0.0159	0.0748	0.8313	0.95574433	1
42	-0.0506	0.0729	0.4874	0.780308654	1
43	-0.1285	0.1234	0.2979	0.590480357	1
44	0.0312	0.1048	0.7656	0.934095273	1
45	-0.0097	0.0789	0.9016	0.976448734	1
46	0.1136	0.0627	0.0697	0.236837755	1
47	-0.0208	0.053	0.6954	0.918921429	1
48	-0.1439	0.1111	0.1954	0.44325	1
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2	0.1855	0.0956	0.0523	0.197907955	1
3	-0.1571	0.66	0.8119	0.951981338	1
4	0.2476	0.0659	2.00E-04	0.0041625	0.0666
5	0.2476	0.0659	2.00E-04	0.0041625	0.0666
6	0.1602	0.1193	0.1792	0.438776471	1
7	0.1602	0.1193	0.1792	0.438776471	1
8	0.2666	0.0951	0.005	0.04625	1
9	0.1072	0.0436	0.0141	0.082373684	1
10	0.0585	0.0424	0.1678	0.423313636	1
11	0.0338	0.0889	0.7041	0.919471765	1
12	0.0338	0.0889	0.7041	0.919471765	1
13	-0.0515	0.0713	0.4707	0.766546602	1
14	-0.1285	0.1234	0.2979	0.590480357	1
15	0.0312	0.1048	0.7656	0.934095273	1
16	-0.0097	0.0789	0.9016	0.976448734	1
17	0.1136	0.0627	0.0697	0.236837755	1
18	-0.0208	0.053	0.6954	0.918921429	1
19	-0.0208	0.053	0.6954	0.918921429	1
20	-0.1439	0.1111	0.1954	0.44325	1
21	0.1855	0.0956	0.0523	0.197907955	1
22	-0.1571	0.66	0.8119	0.951981338	1
23	-0.1571	0.66	0.8119	0.951981338	1
24	0.2476	0.0659	2.00E-04	0.0041625	0.0666
25	0.2172	0.0622	5.00E-04	0.008325	0.1665
26	0.1602	0.1193	0.1792	0.438776471	1
27	0.2666	0.0951	0.005	0.04625	1
28	0.1072	0.0436	0.0141	0.082373684	1
29	0.1072	0.0436	0.0141	0.082373684	1
30	0.0693	0.0411	0.092	0.283666667	1
31	0.0338	0.0889	0.7041	0.919471765	1
32	-0.0241	0.0656	0.7129	0.923718677	1
33	-0.1807	0.1191	0.1291	0.365745	1
34	0.0895	0.1004	0.3728	0.680739344	1
35	0.0895	0.1004	0.3728	0.680739344	1
36	-0.0012	0.0719	0.9866	0.9888	1
37	0.0855	0.0495	0.0837	0.265143396	1
38	0.0053	0.0507	0.9169	0.976448734	1
39	-0.1531	0.1072	0.1535	0.402484252	1
40	0.0837	0.0771	0.2773	0.566508589	1
41	0.0837	0.0771	0.2773	0.566508589	1
42	0.1783	0.5658	0.7527	0.934095273	1
43	0.2294	0.0618	2.00E-04	0.0041625	0.0666
44	0.2294	0.0618	2.00E-04	0.0041625	0.0666
45	0.158	0.0996	0.1126	0.331821239	1
46	0.1763	0.0944	0.0619	0.224051087	1
47	0.1763	0.0944	0.0619	0.224051087	1
48	0.1392	0.0373	2.00E-04	0.0041625	0.0666
49	0.1038	0.0419	0.0132	0.07992	1
50	0.035	0.0891	0.6943	0.918921429	1
51	0.0142	0.0667	0.832	0.95574433	1
52	0.0142	0.0667	0.832	0.95574433	1
53	-0.1701	0.1229	0.1665	0.423240458	1
54	0.1049	0.1197	0.3804	0.688441304	1
55	-0.0188	0.0804	0.8154	0.952543007	1
56	0.1112	0.0528	0.0351	0.145122222	1
57	0.001	0.0544	0.9856	0.9888	1
58	0.001	0.0544	0.9856	0.9888	1
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2	-0.1548	0.1027	0.1315	0.365745	1
3	0.0186	0.0895	0.8351	0.95574433	1
4	0.3518	0.9931	0.7232	0.926252308	1
5	0.1368	0.065	0.0353	0.145122222	1
6	0.1449	0.0613	0.018	0.10159322	1
7	0.12	0.1083	0.2679	0.559522222	1
8	0.1928	0.099	0.0514	0.197907955	1
9	0.111	0.0439	0.0114	0.074925	1
10	0.124	0.0378	0.001	0.013875	0.333
11	0.0272	0.0928	0.7696	0.934095273	1
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For Peer Review

Genetic Covariance	Estimated Error of Genetic Covariance	Phenotype 1 Estimated Heritability	Phenotype 1 Error of Heritability Estimate	Phenotype 1 Genomic Inflation Factor (Lambda GC)	Phenotype 2 Estimated Heritability	Phenotype 2 Error of Heritability Estimate
0.0021	0.0067	0.178	0.0481	1.0802	0.0266	0.003
0.0374	0.0356	0.1641	0.0473	1.0802	0.2114	0.0586
0.0382	0.0135	0.1544	0.044	1.0802	0.0366	0.0094
0.0297	0.0135	0.1535	0.044	1.0802	0.0715	0.0071
0.0195	0.0096	0.1598	0.0461	1.0802	0.0949	0.0073
0.0663	0.0197	0.143	0.0472	1.0802	0.2379	0.017
0.0088	0.0141	0.1594	0.0487	1.0802	0.0492	0.0253
-0.0079	0.0322	0.1573	0.0473	1.0802	0.2609	0.039
-0.0159	0.0313	0.1515	0.0455	1.0802	0.4405	0.0397
-0.0246	0.0285	0.1654	0.0463	1.0802	0.4484	0.0393
0.0107	0.0246	0.1674	0.0466	1.0802	0.1426	0.0263
-0.0088	0.0354	0.1591	0.0484	1.0802	0.293	0.0541
0.0532	0.0188	0.1597	0.0479	1.0802	0.4669	0.0185
0.0424	0.021	0.1654	0.0515	1.0833	0.4715	0.0231
0.0311	0.0332	0.1648	0.0462	1.0802	0.3491	0.0435
-0.0028	0.0029	0.1495	0.0298	1.0466	0.0264	0.0028
-0.0025	0.0162	0.1282	0.0203	1.0466	0.2127	0.0581
0.0096	0.0055	0.1459	0.0269	1.0466	0.0351	0.0094
0.0169	0.0056	0.1458	0.027	1.0466	0.0707	0.0071
-0.004	0.0056	0.1495	0.0293	1.0466	0.0954	0.0077
0.0294	0.0088	0.1483	0.0319	1.0466	0.2377	0.0172
-0.0107	0.0077	0.1496	0.0296	1.0466	0.0477	0.0255
-0.025	0.015	0.1502	0.0293	1.0466	0.2654	0.0389
-0.0505	0.0683	0.1328	0.0269	0.9986	0.302	0.0206
-0.0379	0.0154	0.1461	0.0269	1.0466	0.4392	0.0398
-0.0379	0.0154	0.1461	0.0269	1.0466	0.4392	0.0398
-0.0101	0.012	0.1498	0.029	1.0466	0.1399	0.0264
-0.0341	0.0153	0.1496	0.0296	1.0466	0.2943	0.0524
-0.0026	0.0085	0.1497	0.0298	1.0466	0.4636	0.0186
-0.0079	0.0088	0.1515	0.0314	1.0466	0.4592	0.02
0.0194	0.0156	0.1509	0.03	1.0466	0.3509	0.0441
0.0063	0.0048	0.1954	0.0415	1.1301	0.0267	0.0033
0.0183	0.0278	0.1534	0.0352	1.1238	0.1814	0.0626
0.0049	0.0097	0.1941	0.0415	1.1301	0.0305	0.0084
-0.005	0.0094	0.1942	0.0415	1.1301	0.0698	0.0077
-0.004	0.0121	0.1956	0.042	1.1301	0.0971	0.01
-0.0311	0.0141	0.1999	0.0442	1.1333	0.2427	0.0184
-0.0085	0.012	0.1969	0.042	1.1301	0.0547	0.0204
0.0108	0.0224	0.196	0.042	1.1301	0.2645	0.0394
-0.0191	0.0195	0.1945	0.0414	1.1301	0.4429	0.041
-0.0191	0.0195	0.1945	0.0414	1.1301	0.4429	0.041



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2	-0.0146	0.0189	0.1997	0.038	1.1301	0.136	0.0314
3	-0.0761	0.0256	0.1973	0.0417	1.1301	0.2921	0.0572
4	-0.0048	0.0149	0.1947	0.0414	1.1301	0.4603	0.0197
5	-0.0033	0.0141	0.2019	0.042	1.1301	0.4566	0.0202
6	-0.0123	0.0218	0.2014	0.0416	1.1301	0.3479	0.0461
7	-0.0028	0.0021	0.0266	0.003	1.1459	0.0843	0.0062
8	0.0035	0.0124	0.0816	0.0061	1.2631	0.213	0.0593
9	0.0024	0.004	0.0852	0.0066	1.2664	0.0366	0.0093
10	-8.00E-04	0.0041	0.0851	0.0066	1.2664	0.0708	0.007
11	0.0078	0.0029	0.0839	0.0061	1.2664	0.0955	0.0075
12	0.0161	0.006	0.0828	0.0068	1.2764	0.2379	0.0171
13	-0.0118	0.005	0.0841	0.0062	1.2697	0.0491	0.0253
14	-0.0141	0.0092	0.0842	0.006	1.2697	0.261	0.0391
15	0.0842	0.0371	0.0387	0.0081	1.1333	0.3248	0.0221
16	-0.0217	0.0088	0.0849	0.0065	1.2664	0.4402	0.0396
17	-0.0227	0.0088	0.0854	0.0064	1.2664	0.448	0.0392
18	0.0104	0.0074	0.0847	0.0059	1.2697	0.1436	0.026
19	-0.013	0.0115	0.0845	0.0064	1.2697	0.2929	0.0539
20	0.0046	0.0059	0.0839	0.0062	1.2664	0.4648	0.0186
21	0.0057	0.0069	0.0845	0.0066	1.2731	0.4716	0.0231
22	0.041	0.0097	0.0849	0.0062	1.2697	0.3489	0.0439
23	-0.0039	0.0022	0.0266	0.003	1.1459	0.0742	0.0111
24	0.0198	0.0108	0.0671	0.0093	1.1683	0.213	0.0593
25	-0.0029	0.0037	0.0738	0.0105	1.1715	0.0366	0.0093
26	4.00E-04	0.004	0.0739	0.0105	1.1715	0.0708	0.007
27	0.0083	0.0036	0.073	0.0109	1.1747	0.0955	0.0075
28	0.0157	0.0061	0.0719	0.0121	1.1811	0.2379	0.0171
29	-0.0041	0.0051	0.0733	0.011	1.1747	0.0492	0.0253
30	0.0098	0.0078	0.0728	0.011	1.1747	0.2609	0.0391
31	-0.0015	0.0405	0.0356	0.0096	1.1144	0.3248	0.0221
32	9.00E-04	0.0097	0.0738	0.0105	1.1715	0.4402	0.0396
33	2.00E-04	0.0097	0.0747	0.0106	1.1715	0.4481	0.0392
34	0.0153	0.0082	0.0734	0.0108	1.1779	0.1436	0.026
35	0.0022	0.0101	0.0731	0.0112	1.1779	0.293	0.0539
36	0.0107	0.006	0.0732	0.0109	1.1747	0.4648	0.0186
37	0.0085	0.0066	0.0751	0.0116	1.1811	0.4716	0.0231
38	0.0193	0.0099	0.0729	0.011	1.1779	0.3489	0.0439
39	-0.002	0.0038	0.0262	0.0029	1.1459	0.0796	0.0174
40	0.0025	0.0221	0.0827	0.0177	1.0466	0.2006	0.0577
41	0.0132	0.0079	0.0774	0.0166	1.0496	0.0358	0.0093
42	-0.0012	0.0066	0.0774	0.0166	1.0496	0.0705	0.0071
43	0.004	0.0065	0.0799	0.0175	1.0496	0.0953	0.0079
44	0.0128	0.0103	0.0789	0.018	1.0527	0.2377	0.0178
45	0.0066	0.0083	0.0778	0.0173	1.0496	0.0493	0.0256
46	0.0191	0.015	0.0802	0.0174	1.0496	0.2636	0.0395
47	0.0229	0.0826	0.1075	0.0368	1.0557	0.3055	0.0194
48	0.0071	0.0161	0.076	0.0166	1.0496	0.4384	0.0394
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2	0.0071	0.0161	0.076	0.0166	1.0496	0.4384	0.0394
3	0.0039	0.0145	0.0834	0.0174	1.0527	0.1414	0.0267
4	-8.00E-04	0.0185	0.0804	0.0177	1.0527	0.2898	0.053
5	0.0067	0.0099	0.0799	0.0174	1.0496	0.4627	0.019
6	0.0075	0.0107	0.0785	0.0177	1.0527	0.4589	0.0199
7	0.0075	0.0107	0.0785	0.0177	1.0527	0.4589	0.0199
8	-0.013	0.0178	0.0793	0.0176	1.0527	0.3511	0.0443
9	-3.00E-04	0.0022	0.0266	0.003	1.1459	0.0718	0.0062
10	0.0302	0.0126	0.0707	0.0065	1.1523	0.213	0.0593
11	6.00E-04	0.0044	0.0723	0.0061	1.1587	0.0366	0.0093
12	0.0077	0.0045	0.0722	0.0061	1.1587	0.0708	0.007
13	0.0077	0.0045	0.0722	0.0061	1.1587	0.0708	0.007
14	0.011	0.0034	0.0715	0.0061	1.1587	0.0955	0.0075
15	0.0257	0.0071	0.0688	0.0065	1.1651	0.2379	0.0171
16	-0.0056	0.0051	0.071	0.0064	1.1587	0.0492	0.0253
17	0.0127	0.0103	0.0718	0.0062	1.1587	0.2609	0.0391
18	0.0127	0.0103	0.0718	0.0062	1.1587	0.2609	0.0391
19	0.0228	0.0459	0.058	0.0124	1.0988	0.3248	0.0221
20	0.0172	0.0097	0.0722	0.0061	1.1587	0.4402	0.0396
21	0.0182	0.0093	0.0727	0.006	1.1587	0.4481	0.0392
22	0.017	0.0077	0.0715	0.0061	1.1587	0.1436	0.026
23	0.017	0.0077	0.0715	0.0061	1.1587	0.1436	0.026
24	0.004	0.0124	0.0708	0.0064	1.1587	0.293	0.0539
25	0.0077	0.0065	0.0712	0.0063	1.1587	0.4648	0.0186
26	0.0102	0.0066	0.0715	0.0066	1.1651	0.4716	0.0231
27	-6.00E-04	0.011	0.07	0.0063	1.1619	0.3489	0.0439
28	-0.0034	0.0031	0.0257	0.0029	1.1396	0.1291	0.0255
29	-0.0034	0.0031	0.0257	0.0029	1.1396	0.1291	0.0255
30	0.0193	0.0166	0.1246	0.0238	1.0988	0.2071	0.0605
31	0.0254	0.0054	0.1293	0.0254	1.105	0.0365	0.0094
32	0.0295	0.006	0.1291	0.0254	1.105	0.0714	0.0071
33	-0.0033	0.0066	0.1297	0.0252	1.105	0.0957	0.0069
34	0.0409	0.0096	0.1293	0.0281	1.1082	0.2401	0.0172
35	0.0409	0.0096	0.1293	0.0281	1.1082	0.2401	0.0172
36	0.0046	0.0098	0.1299	0.0239	1.105	0.0537	0.0211
37	-0.0545	0.0133	0.1281	0.0253	1.105	0.2661	0.0366
38	0.071	0.0679	0.0617	0.024	1.0618	0.3235	0.0222
39	0.0021	0.0131	0.1289	0.0255	1.105	0.4405	0.0396
40	0.0021	0.0131	0.1289	0.0255	1.105	0.4405	0.0396
41	0.0021	0.0131	0.1289	0.0255	1.105	0.4405	0.0396
42	0.0285	0.0128	0.1308	0.0261	1.105	0.1387	0.0277
43	-0.0362	0.0149	0.1284	0.0259	1.105	0.3014	0.0545
44	-0.012	0.009	0.1296	0.0254	1.105	0.4603	0.0187
45	-0.0104	0.0102	0.1284	0.0274	1.1082	0.4549	0.0199
46	0.0056	0.0147	0.1289	0.0269	1.105	0.3492	0.0448
47	0.0056	0.0147	0.1289	0.0269	1.105	0.3492	0.0448
48	-0.0033	0.0022	0.0266	0.003	1.1459	0.0557	0.0089
49	0.0024	0.0114	0.0559	0.0102	1.105	0.213	0.0593
50	0.0023	0.0032	0.0531	0.0086	1.1113	0.0366	0.0093
51	0.0077	0.0038	0.053	0.0086	1.1113	0.0708	0.007
52	0.0077	0.0038	0.053	0.0086	1.1113	0.0708	0.007
53	0.0178	0.0048	0.0543	0.0086	1.1144	0.0955	0.0075
54	0.0169	0.0067	0.0543	0.0091	1.1175	0.2379	0.0171
55	-0.0056	0.0052	0.0537	0.0088	1.1113	0.0492	0.0253
56	-0.0026	0.0096	0.054	0.0087	1.1113	0.2609	0.0391
57	-0.0026	0.0096	0.054	0.0087	1.1113	0.2609	0.0391
58	0.0036	0.0438	0.0265	0.0117	1.0679	0.3248	0.0221
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2	0.0172	0.0095	0.0527	0.0086	1.1113	0.4402	0.0396
3	0.0164	0.0092	0.0542	0.0084	1.1113	0.4481	0.0392
4	0.0291	0.008	0.0538	0.0089	1.1113	0.1436	0.026
5	-0.0173	0.0112	0.0537	0.009	1.1113	0.293	0.0539
6	0.0118	0.0066	0.0539	0.0086	1.1113	0.4648	0.0186
7	0.0092	0.0072	0.0554	0.009	1.1175	0.4716	0.0231
8	0.0114	0.0101	0.0523	0.0089	1.1144	0.3489	0.0439
9	0.0039	0.0069	0.0272	0.0031	1.1459	0.3655	0.0662
10	-0.0159	0.0379	0.3432	0.066	1.0436	0.2134	0.0597
11	0.0155	0.0125	0.3561	0.0652	1.0527	0.0352	0.01
12	0.0159	0.0125	0.356	0.0653	1.0527	0.0693	0.0074
13	0.0041	0.0135	0.365	0.0677	1.0557	0.0958	0.0093
14	0.0215	0.0197	0.3852	0.0707	1.0557	0.2412	0.0172
15	-0.027	0.0173	0.3575	0.0654	1.0557	0.048	0.0294
16	-0.0185	0.0291	0.3652	0.0675	1.0557	0.2665	0.0405
17	0.1273	0.1391	0.2957	0.1168	1.0345	0.2414	0.0197
18	0.0766	0.0275	0.3558	0.0643	1.0527	0.442	0.0415
19	0.0766	0.0275	0.3558	0.0643	1.0527	0.442	0.0415
20	-0.0051	0.027	0.3652	0.0665	1.0557	0.1338	0.028
21	0.0517	0.0372	0.3651	0.068	1.0557	0.3046	0.0537
22	0.058	0.0192	0.3661	0.0666	1.0557	0.4634	0.0199
23	0.0558	0.0208	0.3874	0.0696	1.0557	0.4639	0.0206
24	0.0307	0.0316	0.3765	0.0675	1.0557	0.3487	0.0462
25	-0.0137	0.0103	0.0265	0.0027	1.1459	0.8043	0.1344
26	-0.019	0.0578	0.6783	0.1351	1.0345	0.2168	0.0591
27	0.0342	0.0206	0.7777	0.1315	1.0345	0.0355	0.0093
28	0.0225	0.0207	0.777	0.1313	1.0345	0.0718	0.007
29	-2.00E-04	0.0148	0.8065	0.1304	1.0345	0.0953	0.0067
30	0.0957	0.0277	0.7131	0.1453	1.0405	0.2375	0.0173
31	-0.003	0.0241	0.7968	0.1365	1.0345	0.049	0.0254
32	-0.0251	0.041	0.8085	0.1302	1.0345	0.2618	0.0378
33	0.1471	0.2344	1.2409	0.3498	1.0496	0.3033	0.0229
34	0.1429	0.0493	0.776	0.1309	1.0345	0.4401	0.0392
35	0.1429	0.0493	0.776	0.1309	1.0345	0.4401	0.0392
36	0.0037	0.0404	0.8262	0.1308	1.0345	0.1408	0.0273
37	0.0088	0.0557	0.7888	0.1385	1.0375	0.2887	0.0572
38	0.0606	0.0266	0.8102	0.1337	1.0345	0.4647	0.0188
39	0.0519	0.028	0.7613	0.1382	1.0375	0.4603	0.0191
40	0.1334	0.0503	0.7921	0.1376	1.0375	0.3511	0.0444
41	-0.0046	0.0049	0.0263	0.0029	1.1459	0.2479	0.0445
42	-0.0035	0.03	0.2184	0.0434	1.1587	0.2214	0.059
43	0.0021	0.0086	0.2509	0.0458	1.1715	0.0355	0.0092
44	0.013	0.0093	0.251	0.0458	1.1715	0.0706	0.007
45	-0.0053	0.0171	0.2495	0.0437	1.1747	0.0956	0.0085
46	0.0112	0.0133	0.2498	0.0412	1.1779	0.2393	0.017
47	7.00E-04	0.0115	0.251	0.0446	1.1747	0.0476	0.0262
48	0.0035	0.0233	0.251	0.0443	1.1747	0.2646	0.037
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2	0.0195	0.0206	0.2481	0.0454	1.1715	0.4414	0.0395
3	0.0195	0.0206	0.2481	0.0454	1.1715	0.4414	0.0395
4	0.0153	0.0222	0.248	0.0417	1.1747	0.1415	0.0278
5	-0.0119	0.0248	0.2498	0.0443	1.1747	0.2976	0.0526
6	0.0498	0.0166	0.2486	0.0443	1.1747	0.4654	0.0186
7	0.0495	0.017	0.2596	0.0401	1.1747	0.4588	0.0205
8	0.0345	0.0223	0.2487	0.0444	1.1747	0.3476	0.0453
9	0.0118	0.0075	0.0267	0.0029	1.1364	0.3103	0.0494
10	-0.0278	0.0569	0.3092	0.1019	1.0165	0.307	0.0708
11	0.0044	0.0139	0.0381	0.0098	1.0436	0.3098	0.0496
12	-0.013	0.0152	0.0708	0.0085	1.0772	0.3098	0.0496
13	6.00E-04	0.012	0.0968	0.0099	1.2365	0.313	0.0486
14	-0.0336	0.0196	0.2496	0.0182	1.2498	0.2689	0.0528
15	0.0017	0.0161	0.0344	0.0337	1.1019	0.3083	0.05
16	0.002	0.0283	0.3095	0.0449	1.0679	0.314	0.0489
17	-0.0771	0.2187	0.3263	0.0229	8.7405	0.1505	0.1315
18	0.1159	0.0325	0.4605	0.044	1.1396	0.3098	0.0497
19	0.1159	0.0325	0.4605	0.044	1.1396	0.3098	0.0497
20	0.0407	0.0268	0.1284	0.034	1.0679	0.3159	0.0507
21	0.1102	0.0393	0.2094	0.0597	1.0466	0.3134	0.0501
22	0.0375	0.021	0.4646	0.0211	1.5659	0.3105	0.0496
23	0.053	0.0208	0.4702	0.0214	1.5808	0.303	0.0507
24	0.0049	0.0328	0.3539	0.0556	1.105	0.2954	0.0525
25	-0.0031	0.0074	0.0272	0.0029	1.1459	0.4996	0.0713
26	-0.0498	0.0342	0.1924	0.0704	1.0225	0.4921	0.0715
27	0.0163	0.0121	0.0343	0.0101	1.0588	0.4997	0.0712
28	-0.0071	0.0125	0.0656	0.0078	1.0988	0.4996	0.0713
29	0.0042	0.0098	0.0961	0.0079	1.2664	0.5017	0.0738
30	0.0019	0.0167	0.2401	0.0187	1.2731	0.4967	0.0749
31	-0.0094	0.0146	0.0478	0.0253	1.0988	0.4984	0.0727
32	-6.00E-04	0.0266	0.2683	0.0409	1.0833	0.5009	0.0736
33	0.1065	0.1248	0.1893	0.0175	8.7405	0.2705	0.0977
34	0.0659	0.0296	0.4537	0.0409	1.1555	0.4995	0.071
35	0.0659	0.0296	0.4537	0.0409	1.1555	0.4995	0.071
36	-0.0133	0.0226	0.1419	0.031	1.0741	0.5	0.0741
37	0.0124	0.036	0.301	0.0565	1.0588	0.4989	0.0727
38	0.0429	0.0189	0.4554	0.0207	1.6296	0.4997	0.0727
39	0.0395	0.0191	0.4578	0.021	1.6372	0.5155	0.0738
40	-6.00E-04	0.0291	0.3446	0.0476	1.1144	0.5037	0.0722
41	-0.0034	0.007	0.0278	0.003	1.1491	0.5028	0.0673
42	-0.0498	0.0342	0.1924	0.0704	1.0225	0.4921	0.0715
43	0.0163	0.0121	0.0343	0.0101	1.0588	0.4997	0.0712
44	-0.0071	0.0125	0.0656	0.0078	1.0988	0.4996	0.0713
45	0.0042	0.0098	0.0961	0.0079	1.2664	0.5017	0.0738
46	0.0019	0.0167	0.2401	0.0187	1.2731	0.4967	0.0749
47	-0.0094	0.0146	0.0478	0.0253	1.0988	0.4984	0.0727
48	-6.00E-04	0.0266	0.2683	0.0409	1.0833	0.5009	0.0736
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2	0.1065	0.1248	0.1893	0.0175	8.7405	0.2705	0.0977
3	0.0659	0.0296	0.4537	0.0409	1.1555	0.4995	0.071
4	0.0706	0.0283	0.4535	0.042	1.1555	0.4992	0.0671
5	-0.0133	0.0226	0.1419	0.031	1.0741	0.5	0.0741
6	0.0124	0.036	0.301	0.0565	1.0588	0.4989	0.0727
7	0.0429	0.0189	0.4554	0.0207	1.6296	0.4997	0.0727
8	0.041	0.0189	0.4669	0.0228	1.6145	0.5099	0.0734
9	-6.00E-04	0.0291	0.3446	0.0476	1.1144	0.5037	0.0722
10	-0.0024	0.0061	0.026	0.0028	1.1459	0.4874	0.062
11	-0.0365	0.0311	0.21	0.0587	1.0165	0.4445	0.0635
12	0.0253	0.0105	0.0366	0.0094	1.0557	0.4806	0.0621
13	-0.0039	0.0106	0.0713	0.0071	1.0926	0.4808	0.0621
14	0.0059	0.0086	0.095	0.0075	1.2531	0.4877	0.0603
15	0.0098	0.0152	0.2379	0.017	1.2631	0.4712	0.0636
16	-0.0137	0.0137	0.0492	0.0253	1.0957	0.4837	0.0637
17	-0.0184	0.0258	0.2608	0.039	1.0802	0.4848	0.0611
18	-0.0078	0.104	0.3388	0.0236	8.7142	0.2662	0.0846
19	0.0956	0.0237	0.4412	0.0397	1.1491	0.4793	0.0621
20	0.0956	0.0237	0.4412	0.0397	1.1491	0.4793	0.0621
21	-0.0022	0.0195	0.1429	0.0262	1.071	0.496	0.0638
22	0.0242	0.0318	0.2929	0.0543	1.0557	0.4833	0.0607
23	0.0584	0.0155	0.467	0.0185	1.607	0.4887	0.0626
24	0.0492	0.0168	0.4593	0.02	1.6259	0.4862	0.0642
25	0.0132	0.0278	0.3496	0.044	1.1113	0.4832	0.0604
26	-0.0033	0.0069	0.0288	0.0031	1.1523	0.4934	0.0664
27	-0.0481	0.032	0.2142	0.0614	1.0195	0.4517	0.0666
28	0.0236	0.012	0.0332	0.0095	1.0588	0.4808	0.0671
29	-0.0105	0.0123	0.0653	0.007	1.0988	0.4809	0.0671
30	-3.00E-04	0.0094	0.0964	0.0093	1.2697	0.4896	0.0663
31	0.0116	0.017	0.2404	0.0174	1.2731	0.4841	0.0694
32	-0.019	0.0131	0.0499	0.0251	1.0988	0.4877	0.0663
33	-0.03	0.0263	0.2436	0.0397	1.0864	0.4898	0.0662
34	0.0131	0.1238	0.1865	0.0173	8.7405	0.2723	0.0963
35	0.07	0.0273	0.4431	0.0424	1.1555	0.4806	0.0671
36	0.0743	0.0252	0.4524	0.0383	1.1523	0.4988	0.0614
37	-0.0166	0.0208	0.1401	0.0302	1.0741	0.5031	0.0666
38	0.0241	0.0348	0.3112	0.0554	1.0588	0.4901	0.0674
39	0.0508	0.0188	0.4567	0.0204	1.641	0.4906	0.0673
40	0.0479	0.017	0.4707	0.0227	1.6145	0.5115	0.0619
41	0.0067	0.0313	0.361	0.0463	1.1144	0.489	0.0681
42	-0.0037	0.0054	0.0261	0.0029	1.1428	0.207	0.0401
43	-0.029	0.0283	0.2134	0.0586	1.0165	0.2386	0.0358
44	0.0029	0.0096	0.0371	0.0095	1.0557	0.2312	0.0368
45	-0.0013	0.0101	0.072	0.0071	1.0926	0.2315	0.0368
46	0.016	0.0086	0.0957	0.0075	1.2531	0.2066	0.0403
47	-0.0051	0.013	0.2397	0.0167	1.2631	0.2502	0.0411
48	-0.0155	0.0114	0.0506	0.0248	1.0957	0.2305	0.0407
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2	0.0449	0.0235	0.2635	0.0387	1.0802	0.2228	0.04
3	-0.0218	0.0912	0.3378	0.0209	8.7142	0.0572	0.0657
4	0.0793	0.021	0.4418	0.0391	1.1491	0.2321	0.0366
5	0.0793	0.021	0.4418	0.0391	1.1491	0.2321	0.0366
6	0.0287	0.0202	0.1427	0.0264	1.071	0.2246	0.0415
7	0.0704	0.0248	0.303	0.0518	1.0557	0.2299	0.0395
8	0.0704	0.0248	0.303	0.0518	1.0557	0.2299	0.0395
9	0.0334	0.0136	0.4675	0.0184	1.607	0.2073	0.04
10	0.0202	0.0148	0.4597	0.0197	1.6259	0.2606	0.0411
11	0.0098	0.0255	0.3505	0.0446	1.1082	0.2384	0.0394
12	0.0098	0.0255	0.3505	0.0446	1.1082	0.2384	0.0394
13	-0.0039	0.0054	0.0266	0.003	1.1459	0.2137	0.0397
14	-0.029	0.0283	0.2134	0.0586	1.0165	0.2386	0.0358
15	0.0029	0.0096	0.0371	0.0095	1.0557	0.2312	0.0368
16	-0.0013	0.0101	0.072	0.0071	1.0926	0.2315	0.0368
17	0.016	0.0086	0.0957	0.0075	1.2531	0.2066	0.0403
18	0.016	0.0086	0.0957	0.0075	1.2531	0.2066	0.0403
19	-0.0051	0.013	0.2397	0.0167	1.2631	0.2502	0.0411
20	-0.0155	0.0114	0.0506	0.0248	1.0957	0.2305	0.0407
21	0.0449	0.0235	0.2635	0.0387	1.0802	0.2228	0.04
22	-0.0218	0.0912	0.3378	0.0209	8.7142	0.0572	0.0657
23	-0.0218	0.0912	0.3378	0.0209	8.7142	0.0572	0.0657
24	0.0793	0.021	0.4418	0.0391	1.1491	0.2321	0.0366
25	0.0679	0.0201	0.4401	0.036	1.1459	0.2221	0.0354
26	0.0287	0.0202	0.1427	0.0264	1.071	0.2246	0.0415
27	0.0704	0.0248	0.303	0.0518	1.0557	0.2299	0.0395
28	0.0704	0.0248	0.303	0.0518	1.0557	0.2299	0.0395
29	0.0334	0.0136	0.4675	0.0184	1.607	0.2073	0.04
30	0.0231	0.0139	0.4717	0.0219	1.592	0.2356	0.0389
31	0.0098	0.0255	0.3505	0.0446	1.1082	0.2384	0.0394
32	-0.0019	0.0052	0.026	0.0028	1.1459	0.2422	0.0343
33	-0.0382	0.0253	0.2097	0.0586	1.0165	0.2128	0.0324
34	-0.0382	0.0253	0.2097	0.0586	1.0165	0.2128	0.0324
35	0.0083	0.0091	0.0366	0.0094	1.0557	0.234	0.0328
36	-2.00E-04	0.0093	0.0713	0.0071	1.0926	0.2339	0.0328
37	0.0131	0.0076	0.095	0.0074	1.2531	0.2453	0.0347
38	0.0012	0.0119	0.2379	0.017	1.2631	0.2316	0.037
39	-0.0166	0.0106	0.0492	0.0253	1.0957	0.2386	0.0354
40	-0.0166	0.0106	0.0492	0.0253	1.0957	0.2386	0.0354
41	0.0211	0.0196	0.2609	0.039	1.0802	0.2443	0.0348
42	0.0308	0.0942	0.3388	0.0236	8.7142	0.088	0.0583
43	0.0734	0.0199	0.4411	0.0397	1.1491	0.2322	0.0326
44	0.0734	0.0199	0.4411	0.0397	1.1491	0.2322	0.0326
45	0.0296	0.0179	0.1428	0.0262	1.071	0.2451	0.0349
46	0.0296	0.0179	0.1428	0.0262	1.071	0.2451	0.0349
47	0.0466	0.0252	0.2929	0.0543	1.0557	0.2386	0.0347
48	0.0471	0.013	0.4669	0.0185	1.607	0.2454	0.0338
49	0.0338	0.0142	0.4593	0.02	1.6259	0.2303	0.0372
50	0.01	0.0253	0.3496	0.044	1.1113	0.2351	0.0351
51	0.0012	0.0053	0.0288	0.0032	1.1491	0.2321	0.0376
52	0.0012	0.0053	0.0288	0.0032	1.1491	0.2321	0.0376
53	-0.035	0.0255	0.2114	0.0631	1.0195	0.2001	0.0333
54	0.0086	0.0094	0.0305	0.0095	1.0588	0.2184	0.0361
55	-0.0023	0.0096	0.066	0.0074	1.0988	0.2183	0.0361
56	0.0165	0.0078	0.0972	0.008	1.2664	0.2274	0.0365
57	0.0165	0.0078	0.0972	0.008	1.2664	0.2274	0.0365
58	2.00E-04	0.0127	0.2404	0.0178	1.2697	0.229	0.0377
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2	-0.0175	0.0109	0.0568	0.0221	1.0988	0.2254	0.0374
3	0.0044	0.0212	0.2484	0.0397	1.0864	0.2277	0.0365
4	0.0372	0.0975	0.1991	0.0178	8.7317	0.0563	0.0577
5	0.0422	0.0204	0.4355	0.0424	1.1555	0.2182	0.036
6	0.0465	0.02	0.4444	0.0391	1.1523	0.2316	0.0339
7	0.0216	0.0189	0.1414	0.0296	1.0741	0.2297	0.0375
8	0.0507	0.0268	0.3034	0.054	1.0588	0.2279	0.0368
9	0.036	0.0148	0.4614	0.0216	1.6334	0.2283	0.0366
10	0.0425	0.0135	0.4745	0.0195	1.6032	0.2471	0.0346
11	0.0078	0.0263	0.3613	0.0437	1.1113	0.2265	0.0372
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For Peer Review

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4 **Phenotype 2**  
5 **Genomic**  
6 **Inflation Factor**  
7 **(Lambda GC)**  
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For Peer Review



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<b>Original Sequence</b>	<b>Trait1, Trait2</b>	<b>Locus (HG19) Chr:BPStart-BPStop</b>	<b>Number of SNPs Evaluated</b>
1	ADHD, C-Reactive Protein	3:139954597-141339097	781
2	ADHD, C-Reactive Protein	4:127275477-127830293	414
3	ADHD, C-Reactive Protein	7:121933630-124156805	1563
4	ADHD, C-Reactive Protein	11:49866050-54695473	303
5	ADHD, C-Reactive Protein	11:54695473-55082657	32
6	ADHD, C-Reactive Protein	11:123500117-124495528	981
7	ADHD, C-Reactive Protein	13:54682864-55817131	836
8	ADHD, Childhood Ear Infection	3:49316972-51832015	2053
9	ADHD, Childhood Ear Infection	4:91560677-94233299	3242
10	ADHD, Childhood Ear Infection	7:2062398-2772227	1177
11	ADHD, Psoriasis	2:214014282-215573795	2029
12	ADHD, Psoriasis	6:97093511-97842284	1053
13	ADHD, Psoriasis	8:65232872-66489090	1381
14	ADHD, Psoriasis	17:50719055-51826118	1697
15	ADHD, Psoriasis	20:24717724-25344231	1303
16	ADHD, Rheumatoid Arthritis	3:47727212-49316972	916
17	ADHD, Rheumatoid Arthritis	6:23936619-24852275	1685
18	ADHD, Rheumatoid Arthritis	6:137614218-138822629	1821
19	ADHD, Rheumatoid Arthritis	7:2062398-2772227	1103
20	ADHD, Rheumatoid Arthritis	20:42680176-44839056	3183
21	Bipolar Disorder, Celiac Disease	1:200137649-201589975	190
22	Bipolar Disorder, Celiac Disease	2:64625913-65933444	151
23	Bipolar Disorder, Celiac Disease	3:168580960-170964909	245
24	Bipolar Disorder, Celiac Disease	4:3846040-4684116	64
25	Bipolar Disorder, Celiac Disease	4:74592390-77130707	189
26	Bipolar Disorder, Celiac Disease	5:13464832-14757804	164
27	Bipolar Disorder, Celiac Disease	6:55468270-56105313	58
28	Bipolar Disorder, Celiac Disease	6:57599465-61880512	21
29	Bipolar Disorder, Celiac Disease	6:65765742-67329215	164
30	Bipolar Disorder, Celiac Disease	6:137614218-138822629	172
31	Bipolar Disorder, Celiac Disease	7:5854526-6573857	40
32	Bipolar Disorder, Celiac Disease	7:134307596-135591083	143
33	Bipolar Disorder, Celiac Disease	7:139933177-140235210	47
34	Bipolar Disorder, Celiac Disease	7:140235210-141226557	82
35	Bipolar Disorder, Celiac Disease	8:6142797-7153079	144
36	Bipolar Disorder, Celiac Disease	8:75445064-76456542	116
37	Bipolar Disorder, Celiac Disease	9:34642243-36743283	202
38	Bipolar Disorder, Celiac Disease	10:80876749-82414679	130
39	Bipolar Disorder, Celiac Disease	10:102949239-104380410	82
40	Bipolar Disorder, Celiac Disease	10:129154362-130844284	271
41	Bipolar Disorder, Celiac Disease	11:15742552-17578402	157
42	Bipolar Disorder, Celiac Disease	11:94242260-95726041	170



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2	43	Bipolar Disorder, Celiac Disease	12:11754846-12733528	157
3	44	Bipolar Disorder, Celiac Disease	14:55233681-56216880	68
4	45	Bipolar Disorder, Celiac Disease	14:57481262-59448336	201
5	46	Bipolar Disorder, Celiac Disease	14:103012102-105001723	145
6	47	Bipolar Disorder, Celiac Disease	15:59694116-61265836	202
7	48	Bipolar Disorder, Celiac Disease	16:63691589-65938566	257
8	49	Bipolar Disorder, Celiac Disease	17:76263413-77298636	159
9	50	Bipolar Disorder, Celiac Disease	18:36365490-37684367	105
10	51	Bipolar Disorder, Crohn's Disease	2:69139564-70755198	2279
11	52	Bipolar Disorder, Crohn's Disease	3:47727212-49316972	985
12	53	Bipolar Disorder, Crohn's Disease	3:49316972-51832015	2063
13	54	Bipolar Disorder, Crohn's Disease	3:190226607-192343814	4450
14	55	Bipolar Disorder, Crohn's Disease	6:110304247-112345014	2808
15	56	Bipolar Disorder, Crohn's Disease	6:117672972-118963115	1938
16	57	Bipolar Disorder, Crohn's Disease	8:126410917-128659111	4264
17	58	Bipolar Disorder, Crohn's Disease	10:63341695-65794114	4029
18	59	Bipolar Disorder, Crohn's Disease	11:26045753-27020461	1936
19	60	Bipolar Disorder, Crohn's Disease	13:54682864-55817131	1920
20	61	Bipolar Disorder, Crohn's Disease	17:36809344-38877404	2321
21	62	Bipolar Disorder, Crohn's Disease	21:46177105-47492226	3047
22	63	Bipolar Disorder, Psoriasis	1:224940000-226810000	2127
23	64	Bipolar Disorder, Psoriasis	18:14441000-19486000	1344
24	65	Bipolar Disorder, Psoriasis	18:36365000-37684000	1380
25	66	Bipolar Disorder, Ulcerative Colitis	1:200137649-201589975	2781
26	67	Bipolar Disorder, Ulcerative Colitis	1:204681068-206073265	2207
27	68	Bipolar Disorder, Ulcerative Colitis	9:117019801-117921960	1625
28	69	Bipolar Disorder, Ulcerative Colitis	13:57554217-58410626	1294
29	70	Bipolar Disorder, Ulcerative Colitis	17:36809344-38877404	2321
30	71	Neuroticism, Childhood Ear Infection	1:93536459-94506191	1197
31	72	Neuroticism, Childhood Ear Infection	2:175588929-177363636	2522
32	73	Neuroticism, Childhood Ear Infection	3:49316972-51832015	2061
33	74	Neuroticism, Childhood Ear Infection	4:105305294-107501305	3004
34	75	Neuroticism, Childhood Ear Infection	6:21684065-22748307	2354
35	76	Neuroticism, Childhood Ear Infection	7:22507629-23471442	1547
36	77	Neuroticism, Childhood Ear Infection	8:13944992-15991660	5740
37	78	Neuroticism, Childhood Ear Infection	9:34642243-36743283	2711
38	79	Neuroticism, Childhood Ear Infection	10:18537267-19716878	3025
39	80	Neuroticism, Childhood Ear Infection	11:33958739-35502605	3399
40	81	Neuroticism, Childhood Ear Infection	11:62223771-63804569	1600
41	82	Neuroticism, Childhood Ear Infection	14:51493572-53474383	3971
42	83	Neuroticism, Childhood Ear Infection	19:32746520-34262952	3116
43	84	Neuroticism, Childhood Ear Infection	20:9730921-11249536	2973
44	85	Neuroticism, Hypothyroidism	2:161769733-163503551	1528
45	86	Neuroticism, Hypothyroidism	3:38356116-40221298	3156
46	87	Neuroticism, Hypothyroidism	3:51832015-54081390	2524
47	88	Neuroticism, Hypothyroidism	8:7153079-9154694	2808
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2	89	Neuroticism, Hypothyroidism	8:9640787-10463197	2063
3	90	Neuroticism, Hypothyroidism	8:11278998-13491775	4499
4	91	Neuroticism, Hypothyroidism	8:79132861-81956395	3795
5	92	Neuroticism, Hypothyroidism	10:112561493-115328432	3850
6	93	Neuroticism, Hypothyroidism	11:47006137-49866050	4529
7	94	Neuroticism, Hypothyroidism	12:113263518-113986709	1077
8	95	Neuroticism, Hypothyroidism	13:75670143-77410555	3264
9	96	Neuroticism, Hypothyroidism	14:80186579-81579714	2417
10	97	Neuroticism, Hypothyroidism	17:31538425-32912798	3058
11	98	Neuroticism, Hypothyroidism	18:77149991-78017158	2041
12	99	OCD, Type 1 Diabetes	16:27446000-29037000	458
13	100	Schizophrenia, Crohn's Disease	1:1892607-3582736	3295
14	101	Schizophrenia, Crohn's Disease	1:5913893-7247335	2142
15	102	Schizophrenia, Crohn's Disease	1:7247335-9365199	3493
16	103	Schizophrenia, Crohn's Disease	1:30161881-32438685	4269
17	104	Schizophrenia, Crohn's Disease	1:34799758-37549183	2970
18	105	Schizophrenia, Crohn's Disease	1:44969183-46899501	2561
19	106	Schizophrenia, Crohn's Disease	1:46899501-48002576	1672
20	107	Schizophrenia, Crohn's Disease	1:57021728-58865399	3377
21	108	Schizophrenia, Crohn's Disease	1:63455089-65041704	3050
22	109	Schizophrenia, Crohn's Disease	1:66939404-68477895	2940
23	110	Schizophrenia, Crohn's Disease	1:69687616-71372470	2735
24	111	Schizophrenia, Crohn's Disease	1:76728135-79661198	4578
25	112	Schizophrenia, Crohn's Disease	1:83991748-84844495	1213
26	113	Schizophrenia, Crohn's Disease	1:106087842-108409665	3658
27	114	Schizophrenia, Crohn's Disease	1:158027412-159913048	3507
28	115	Schizophrenia, Crohn's Disease	1:178954470-181144121	4193
29	116	Schizophrenia, Crohn's Disease	1:191868930-194107442	3316
30	117	Schizophrenia, Crohn's Disease	1:204681068-206073265	2207
31	118	Schizophrenia, Crohn's Disease	1:219590571-221858231	3649
32	119	Schizophrenia, Crohn's Disease	2:3973779-5708337	3265
33	120	Schizophrenia, Crohn's Disease	2:18647423-19692404	1599
34	121	Schizophrenia, Crohn's Disease	2:19692404-21050490	2694
35	122	Schizophrenia, Crohn's Disease	2:47318772-48213001	1553
36	123	Schizophrenia, Crohn's Disease	2:69139564-70755198	2279
37	124	Schizophrenia, Crohn's Disease	2:75630086-76913661	2557
38	125	Schizophrenia, Crohn's Disease	2:89154526-95326452	618
39	126	Schizophrenia, Crohn's Disease	2:124732250-125840921	1968
40	127	Schizophrenia, Crohn's Disease	2:144519484-146445570	1648
41	128	Schizophrenia, Crohn's Disease	2:150210292-151731462	2151
42	129	Schizophrenia, Crohn's Disease	2:157560635-158533218	655
43	130	Schizophrenia, Crohn's Disease	2:161769733-163503551	1530
44	131	Schizophrenia, Crohn's Disease	2:164466638-165178840	819
45	132	Schizophrenia, Crohn's Disease	2:177363636-178553183	1885
46	133	Schizophrenia, Crohn's Disease	2:182266031-184357608	3155
47	134	Schizophrenia, Crohn's Disease	2:185280173-189882065	6015
48	135	Schizophrenia, Crohn's Disease	2:198078110-199311125	1376
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2	136	Schizophrenia, Crohn's Disease	2:222521176-224859419	3834
3	137	Schizophrenia, Crohn's Disease	2:238760981-239952643	2557
4	138	Schizophrenia, Crohn's Disease	3:2992120-4431647	3496
5	139	Schizophrenia, Crohn's Disease	3:8648561-9543183	1814
6	140	Schizophrenia, Crohn's Disease	3:11019665-13070799	3500
7	141	Schizophrenia, Crohn's Disease	3:21643707-22204244	2042
8	142	Schizophrenia, Crohn's Disease	3:45165153-46657500	2951
9	143	Schizophrenia, Crohn's Disease	3:47727212-49316972	985
10	144	Schizophrenia, Crohn's Disease	3:72529329-74321817	3175
11	145	Schizophrenia, Crohn's Disease	3:77508835-79024541	2017
12	146	Schizophrenia, Crohn's Disease	3:103084960-104581613	3346
13	147	Schizophrenia, Crohn's Disease	3:110513770-112815699	3593
14	148	Schizophrenia, Crohn's Disease	3:115447080-116800153	2374
15	149	Schizophrenia, Crohn's Disease	3:128194861-130244735	2977
16	150	Schizophrenia, Crohn's Disease	3:159477890-161524504	2602
17	151	Schizophrenia, Crohn's Disease	3:161524504-163253205	4691
18	152	Schizophrenia, Crohn's Disease	3:190226607-192343814	4450
19	153	Schizophrenia, Crohn's Disease	4:10240-694715	827
20	154	Schizophrenia, Crohn's Disease	4:4684116-5502388	1855
21	155	Schizophrenia, Crohn's Disease	4:10699152-12323034	3606
22	156	Schizophrenia, Crohn's Disease	4:42213058-43965045	3224
23	157	Schizophrenia, Crohn's Disease	4:43965045-45189157	2613
24	158	Schizophrenia, Crohn's Disease	4:56547644-58935008	4889
25	159	Schizophrenia, Crohn's Disease	4:60741087-62371763	3199
26	160	Schizophrenia, Crohn's Disease	4:84799656-86930609	3316
27	161	Schizophrenia, Crohn's Disease	4:91560677-94233299	3327
28	162	Schizophrenia, Crohn's Disease	4:100678360-103221356	4551
29	163	Schizophrenia, Crohn's Disease	4:111256567-113870102	3751
30	164	Schizophrenia, Crohn's Disease	4:119933512-120392684	1200
31	165	Schizophrenia, Crohn's Disease	4:122657987-124286481	2301
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47	925	Schizophrenia, Ulcerative Colitis	9:122260297-124871322	3147
48	926	Schizophrenia, Ulcerative Colitis	9:130055510-132165470	2221
49	927	Schizophrenia, Ulcerative Colitis	9:133223217-134127888	1580
50	928	Schizophrenia, Ulcerative Colitis	9:137041122-137589364	1016
51	929	Schizophrenia, Ulcerative Colitis	9:137589364-138938978	3239
52	930	Schizophrenia, Ulcerative Colitis	10:7171484-8774665	3748
53	930	Schizophrenia, Ulcerative Colitis	10:7171484-8774665	3748
54	931	Schizophrenia, Ulcerative Colitis	10:10249396-12586797	4655
55	932	Schizophrenia, Ulcerative Colitis	10:23175132-25578596	3441
56	933	Schizophrenia, Ulcerative Colitis	10:29323236-29783692	1224
57	934	Schizophrenia, Ulcerative Colitis	10:29783692-30458838	1569
58	934	Schizophrenia, Ulcerative Colitis	10:29783692-30458838	1569
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2	935	Schizophrenia, Ulcerative Colitis	10:31907519-33707968	3588
3	936	Schizophrenia, Ulcerative Colitis	10:53616629-55103572	3467
4	937	Schizophrenia, Ulcerative Colitis	10:62659679-63341695	702
5	938	Schizophrenia, Ulcerative Colitis	10:108726686-110317705	3254
6	939	Schizophrenia, Ulcerative Colitis	10:112561493-115328432	3874
7	940	Schizophrenia, Ulcerative Colitis	11:15742552-17578402	2642
8	941	Schizophrenia, Ulcerative Colitis	11:27020461-28481593	1706
9	942	Schizophrenia, Ulcerative Colitis	11:32276901-33958739	2707
10	943	Schizophrenia, Ulcerative Colitis	11:33958739-35502605	3407
11	944	Schizophrenia, Ulcerative Colitis	11:63804569-65898631	2218
12	945	Schizophrenia, Ulcerative Colitis	11:65898631-68005825	2423
13	946	Schizophrenia, Ulcerative Colitis	11:108437037-109866116	1682
14	947	Schizophrenia, Ulcerative Colitis	11:112459488-114257728	3083
15	948	Schizophrenia, Ulcerative Colitis	11:121175943-122591910	2079
16	949	Schizophrenia, Ulcerative Colitis	11:126311320-127316679	2113
17	950	Schizophrenia, Ulcerative Colitis	11:128188537-130342575	3456
18	951	Schizophrenia, Ulcerative Colitis	11:134205993-134946452	2202
19	952	Schizophrenia, Ulcerative Colitis	12:1080331-2544786	2391
20	953	Schizophrenia, Ulcerative Colitis	12:6419753-8377536	2469
21	954	Schizophrenia, Ulcerative Colitis	12:18087873-20863943	5318
22	955	Schizophrenia, Ulcerative Colitis	12:23820634-25371083	2911
23	956	Schizophrenia, Ulcerative Colitis	12:30512406-32165592	3783
24	957	Schizophrenia, Ulcerative Colitis	12:32165592-33076989	2502
25	958	Schizophrenia, Ulcerative Colitis	12:51776494-53039004	2427
26	959	Schizophrenia, Ulcerative Colitis	12:57548860-59308666	2179
27	960	Schizophrenia, Ulcerative Colitis	12:61123729-64032461	5702
28	961	Schizophrenia, Ulcerative Colitis	12:67181144-67909729	1252
29	962	Schizophrenia, Ulcerative Colitis	12:73818454-76511314	4109
30	963	Schizophrenia, Ulcerative Colitis	12:109025901-110336719	2027
31	964	Schizophrenia, Ulcerative Colitis	13:38878163-41069263	3727
32	965	Schizophrenia, Ulcerative Colitis	13:41069263-43101027	3145
33	966	Schizophrenia, Ulcerative Colitis	13:49383962-51591091	3343
34	967	Schizophrenia, Ulcerative Colitis	13:65200602-67844453	3837
35	968	Schizophrenia, Ulcerative Colitis	13:67844453-70724516	5744
36	969	Schizophrenia, Ulcerative Colitis	13:71526791-73934089	4096
37	970	Schizophrenia, Ulcerative Colitis	13:85610916-88559882	5699
38	971	Schizophrenia, Ulcerative Colitis	13:98938919-100574095	3098
39	972	Schizophrenia, Ulcerative Colitis	13:112247592-113572488	2379
40	973	Schizophrenia, Ulcerative Colitis	14:26135686-28466533	3690
41	974	Schizophrenia, Ulcerative Colitis	14:46081896-46749130	1277
42	975	Schizophrenia, Ulcerative Colitis	14:46749130-48573586	3589
43	976	Schizophrenia, Ulcerative Colitis	14:65220298-66399555	1808
44	977	Schizophrenia, Ulcerative Colitis	14:86647002-87635341	1623
45	978	Schizophrenia, Ulcerative Colitis	14:98341162-99138532	1872
46	979	Schizophrenia, Ulcerative Colitis	15:31591821-32441811	1299
47	980	Schizophrenia, Ulcerative Colitis	15:32441811-34015425	2681
48	981	Schizophrenia, Ulcerative Colitis	15:42776399-44198049	987
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2	982	Schizophrenia, Ulcerative Colitis	15:51677560-53069096	1875
3	983	Schizophrenia, Ulcerative Colitis	15:55136269-56901773	3541
4	984	Schizophrenia, Ulcerative Colitis	15:88369943-90475551	3238
5	985	Schizophrenia, Ulcerative Colitis	15:96141596-98030910	3234
6	986	Schizophrenia, Ulcerative Colitis	16:14464002-16154060	1539
7	987	Schizophrenia, Ulcerative Colitis	16:27445755-29036613	1528
8	988	Schizophrenia, Ulcerative Colitis	16:31382943-46399473	1030
9	989	Schizophrenia, Ulcerative Colitis	16:60745694-62229849	1875
10	990	Schizophrenia, Ulcerative Colitis	17:7317398-8306425	1553
11	991	Schizophrenia, Ulcerative Colitis	17:8306425-9965921	3150
12	992	Schizophrenia, Ulcerative Colitis	17:34469036-36809344	2504
13	993	Schizophrenia, Ulcerative Colitis	17:36809344-38877404	2322
14	994	Schizophrenia, Ulcerative Colitis	17:51826118-53599432	2827
15	995	Schizophrenia, Ulcerative Colitis	17:55357541-57487512	2674
16	996	Schizophrenia, Ulcerative Colitis	17:76263413-77298636	2548
17	997	Schizophrenia, Ulcerative Colitis	18:55213838-56530220	2988
18	998	Schizophrenia, Ulcerative Colitis	19:18409862-19877471	2049
19	999	Schizophrenia, Ulcerative Colitis	19:28557893-29790947	2873
20	1000	Schizophrenia, Ulcerative Colitis	19:57521335-59118839	3067
21	1001	Schizophrenia, Ulcerative Colitis	20:11249536-12447499	2268
22	1002	Schizophrenia, Ulcerative Colitis	20:12447499-13689864	2530
23	1003	Schizophrenia, Ulcerative Colitis	20:15958359-17487232	3552
24	1004	Schizophrenia, Ulcerative Colitis	20:32813441-34960446	2122
25	1005	Schizophrenia, Ulcerative Colitis	20:52472549-54055266	2763
26	1006	Schizophrenia, Ulcerative Colitis	20:56447959-58406572	3177
27	1007	Schizophrenia, Ulcerative Colitis	21:27271019-29125226	3976
28	1008	Schizophrenia, Ulcerative Colitis	21:29125226-31197025	3842
29	1009	Schizophrenia, Ulcerative Colitis	21:32668642-34376999	3128
30	1010	Schizophrenia, Ulcerative Colitis	22:19912358-22357325	3037
31	1011	Schizophrenia, Ulcerative Colitis	22:39307894-40545797	1830
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	<b>Trait 1 - Estimated Local SNP <math>h^2</math></b> <b>(Standard Error)</b>	<b>Trait 2 - Estimated Local SNP <math>h^2</math></b> <b>(Standard Error)</b>	<b>Local Genetic Correlation</b> <b>(Error)</b>
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6	0.00026 (0.00042)	0.00026 (0.00042)	5e-04 (0.00025)
7	0.00024 (0.00027)	7e-05 (0.00026)	0.00036 (0.00017)
8	0.00033 (0.00044)	0.00041 (0.00044)	0.00055 (0.00026)
9	0.00052 (0.00019)	3e-04 (0.00017)	0.00035 (0.00014)
10	2e-04 (2e-05)	0.00022 (9e-05)	0.00018 (9e-05)
11	3e-05 (0.00035)	-4e-05 (0.00034)	-0.00049 (0.00021)
12	0.00022 (0.00034)	5e-05 (0.00032)	0.00043 (2e-04)
13	0.00077 (0.00045)	0.00028 (0.00024)	0.00043 (2e-04)
14	0.00024 (0.00043)	0.00021 (0.00024)	-0.00052 (0.00019)
15	0.00097 (0.00047)	0.00024 (0.00024)	0.00048 (0.00021)
16	7e-04 (0.00045)	0.00012 (0.00145)	0.00197 (0.00094)
17	0.00028 (0.00031)	-3e-04 (NA)	0.00174 (0.00068)
18	0.00014 (4e-04)	-0.00032 (NA)	0.00177 (0.00085)
19	9e-05 (0.00037)	-0.00031 (NA)	0.00206 (8e-04)
20	4e-05 (0.00032)	-6e-05 (NA)	0.00144 (0.00071)
21	0.00062 (0.00034)	-8e-05 (0.00031)	0.00044 (0.00021)
22	4e-05 (0.00041)	5e-05 (0.00046)	0.00053 (0.00026)
23	1e-04 (0.00042)	0.00049 (0.00049)	0.00062 (0.00028)
24	0.00087 (0.00047)	0.00023 (0.00048)	0.00065 (0.00029)
25	0.00047 (0.00044)	0.00042 (0.00049)	-0.00058 (0.00029)
26	0.00051 (0.00047)	0.00026 (0.00102)	0.00095 (0.00046)
27	0.00037 (0.00041)	0.00021 (0.00086)	0.00083 (0.00041)
28	0.00024 (5e-04)	0.00141 (0.00128)	0.00114 (0.00052)
29	-0.00011 (0.00021)	-4e-05 (0.00039)	0.00048 (0.00023)
30	4e-05 (0.00041)	0.00045 (0.001)	0.00083 (0.00042)
31	-2e-05 (0.00038)	5e-05 (0.00089)	0.00118 (0.00039)
32	0.00019 (0.00025)	0.00054 (0.00046)	0.00055 (0.00027)
33	0.00024 (0.00018)	0.00059 (NA)	0.00042 (0.00021)
34	3e-05 (0.00038)	-4e-05 (0.00086)	9e-04 (0.00038)
35	0.00011 (0.00041)	-7e-05 (0.00092)	0.00108 (0.00041)
36	0.00014 (0.00021)	0.00025 (0.00025)	0.00051 (0.00023)
37	0.00014 (0.00037)	0.00075 (9e-04)	0.00084 (0.00039)
38	0.00035 (0.00026)	6e-05 (0.00024)	5e-04 (0.00026)
39	0.00025 (0.00031)	1e-04 (0.00055)	0.00061 (0.00031)
40	-4e-05 (0.00036)	0.00025 (0.00086)	0.00082 (0.00037)
41	7e-05 (0.00032)	0.00015 (0.00068)	0.00068 (0.00033)
42	-1e-05 (0.00043)	0.00013 (0.00104)	0.00087 (0.00044)
43	8e-05 (0.00035)	0.00135 (0.00094)	0.00099 (0.00039)
44	5e-05 (0.00027)	0.00069 (0.00065)	0.00061 (0.00031)
45	0.00018 (0.00052)	-0.00023 (0.00121)	0.00122 (0.00051)
46	0.00025 (4e-04)	0.00044 (9e-04)	0.001 (0.00041)
47	-2e-04 (0.00037)	-7e-05 (0.00091)	0.00087 (0.00038)
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2	1e-05 (0.00038)	0.00028 (0.00091)	0.00093 (0.00039)
3	0.00019 (0.00027)	0.00023 (0.00047)	0.00057 (0.00028)
4	5e-05 (0.00044)	-0.00011 (0.00101)	0.00093 (0.00043)
5	0.00028 (4e-04)	1e-05 (0.00083)	9e-04 (0.00039)
6	0.00014 (0.00045)	-0.00013 (0.00101)	0.00135 (0.00044)
7	0.00023 (0.00051)	-6e-05 (0.00117)	0.00121 (5e-04)
8	-1e-04 (0.00037)	-0.00016 (0.00086)	0.00075 (0.00038)
9	0.00021 (0.00032)	-2e-05 (0.00058)	8e-04 (0.00032)
10	7e-05 (0.00061)	0.00037 (0.00079)	0.00099 (0.00046)
11	0.00029 (0.00046)	0.00139 (0.00056)	8e-04 (4e-04)
12	0.00012 (6e-04)	0.00289 (0.00096)	0.00109 (0.00051)
13	0.00045 (0.00064)	0.00025 (0.00077)	0.00104 (0.00047)
14	0.00014 (0.00062)	0.00066 (0.00081)	0.00113 (0.00047)
15	0.00015 (0.00062)	0.00035 (0.00078)	0.0011 (0.00046)
16	-1e-05 (0.00061)	-7e-05 (0.00075)	9e-04 (0.00045)
17	0.00028 (0.00063)	0.00147 (0.00088)	-0.00099 (0.00049)
18	1e-04 (0.00061)	0 (0.00075)	0.00098 (0.00045)
19	0.00037 (0.00061)	0.00042 (0.00075)	0.00092 (0.00046)
20	0.00055 (0.00064)	0.00157 (0.00088)	-0.00136 (5e-04)
21	-7e-05 (6e-04)	0.00019 (0.00077)	0.001 (0.00045)
22	0.00016 (0.00062)	0.00041 (0.00127)	0.00244 (0.00122)
23	0.00013 (0.00062)	-5e-05 (0.00504)	0.00266 (0.00135)
24	0.00016 (0.00057)	0.00053 (NA)	0.00225 (0.00113)
25	0.00035 (0.00063)	0.00128 (0.00084)	0.00117 (0.00049)
26	6e-04 (0.00065)	0.00057 (0.00079)	0.00126 (0.00049)
27	0.00032 (0.00063)	7e-04 (0.00079)	0.00138 (0.00048)
28	0.00023 (0.00044)	3e-05 (0.00044)	0.00071 (0.00036)
29	0.00055 (0.00064)	0.00142 (0.00085)	-0.00152 (5e-04)
30	3e-04 (0.00011)	0.00018 (0.00021)	0.00018 (8e-05)
31	3e-04 (0.00012)	-2e-05 (0.00023)	0.00018 (9e-05)
32	0.00066 (0.00014)	0.00026 (0.00024)	0.00021 (0.00011)
33	4e-04 (0.00013)	0.00017 (0.00024)	0.00022 (1e-04)
34	0.00011 (0.00011)	0.00018 (0.00024)	0.00018 (9e-05)
35	0.00028 (0.00012)	0.00015 (0.00024)	2e-04 (9e-05)
36	0.00035 (0.00012)	9e-05 (0.00024)	0.00019 (1e-04)
37	0.00049 (0.00013)	0.00014 (0.00024)	0.00023 (1e-04)
38	0.00026 (0.00012)	8e-05 (0.00024)	0.00019 (9e-05)
39	0.00028 (0.00012)	6e-05 (0.00023)	0.00023 (9e-05)
40	0.00028 (0.00012)	0.00025 (0.00025)	0.00021 (1e-04)
41	2e-04 (0.00012)	0.00021 (0.00024)	0.00019 (9e-05)
42	0.00029 (0.00012)	7e-05 (0.00023)	0.00022 (9e-05)
43	0.00034 (0.00012)	0.00026 (0.00025)	-0.00022 (1e-04)
44	0.00052 (0.00013)	0.00015 (0.00022)	0.00029 (1e-04)
45	0.00024 (0.00012)	8e-05 (0.00022)	-0.00018 (9e-05)
46	0.00042 (0.00013)	2e-05 (0.00021)	0.00019 (9e-05)
47	0.00032 (0.00012)	0.00018 (0.00022)	0.00026 (9e-05)
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2	0.00084 (0.00015)	8e-05 (0.00022)	0.00022 (0.00011)
3	0.00074 (0.00014)	3e-05 (0.00021)	0.00032 (1e-04)
4	0.00034 (0.00012)	6e-05 (0.00022)	-0.00018 (9e-05)
5	0.00033 (0.00012)	3e-05 (0.00021)	0.00022 (9e-05)
6	0.00053 (0.00013)	0.00015 (0.00022)	-0.00025 (1e-04)
7	0.00014 (0.00011)	0.00024 (0.00022)	-0.00019 (8e-05)
8	0.00025 (0.00012)	5e-05 (0.00022)	-0.00019 (9e-05)
9	0.00024 (0.00012)	0.00021 (0.00023)	0.00019 (9e-05)
10	0.00027 (0.00012)	0.00011 (0.00022)	0.00021 (9e-05)
11	0.00037 (0.00013)	0.00015 (0.00022)	0.00021 (9e-05)
12	0.00043 (NA)	0.00111 (0.00064)	0.00186 (0.00082)
13	0.00053 (0.00018)	0.00053 (8e-04)	0.00043 (2e-04)
14	0.00051 (0.00018)	0.00026 (0.00078)	0.00059 (2e-04)
15	0.00048 (0.00018)	0.00033 (0.00078)	0.00054 (2e-04)
16	0.00081 (2e-04)	0.00012 (0.00077)	0.00051 (0.00022)
17	0.00055 (0.00019)	0.00014 (0.00077)	4e-04 (2e-04)
18	0.00011 (0.00016)	0.00038 (0.00079)	0.00036 (0.00016)
19	0.00039 (0.00018)	0.00013 (0.00077)	0.00044 (0.00019)
20	0.00028 (0.00017)	6e-05 (0.00076)	-0.00036 (0.00018)
21	0.00021 (0.00017)	3e-04 (0.00078)	0.00049 (0.00017)
22	0.00034 (0.00017)	0.00383 (0.00105)	-0.00053 (0.00023)
23	0.00034 (0.00017)	0.00017 (0.00077)	-0.00037 (0.00018)
24	0.00025 (0.00017)	3e-05 (0.00076)	0.00045 (0.00017)
25	0.00065 (0.00018)	-6e-05 (0.00063)	0.00062 (2e-04)
26	0.00032 (0.00017)	1e-05 (0.00076)	0.00043 (0.00018)
27	0.00027 (0.00017)	0.00018 (0.00077)	0.00037 (0.00018)
28	0.00049 (0.00018)	0.00019 (0.00077)	0.00042 (2e-04)
29	0.00048 (0.00018)	2e-04 (0.00077)	0.00056 (2e-04)
30	0.00053 (0.00018)	0.00027 (0.00078)	0.00042 (2e-04)
31	0.00024 (0.00017)	0.00026 (0.00078)	0.00035 (0.00018)
32	5e-04 (0.00018)	2e-05 (0.00076)	0.00039 (2e-04)
33	0.00021 (0.00017)	0.00025 (0.00078)	0.00048 (0.00017)
34	0.00025 (0.00017)	0.00033 (0.00078)	0.00038 (0.00018)
35	0.00059 (0.00019)	0.00012 (0.00077)	-0.00045 (2e-04)
36	0.00034 (0.00017)	0.00037 (0.00079)	0.00061 (0.00019)
37	0.00042 (0.00018)	4e-05 (0.00076)	0.00041 (0.00019)
38	0.00023 (0.00014)	2e-04 (0.00042)	0.00029 (0.00015)
39	0.00052 (0.00018)	0.00037 (0.00079)	0.00063 (2e-04)
40	0.00089 (2e-04)	0.00044 (0.00079)	0.00075 (0.00023)
41	0.00019 (0.00016)	-8e-05 (0.00075)	-0.00054 (0.00017)
42	0.00036 (0.00015)	0.00025 (5e-04)	-4e-04 (0.00017)
43	0.00038 (0.00018)	0.00011 (0.00076)	0.00043 (0.00019)
44	0.00017 (0.00013)	3e-05 (0.00037)	0.00037 (0.00014)
45	4e-05 (0.00016)	7e-05 (0.00076)	-0.00032 (0.00015)
46	0.00015 (0.00016)	0.00028 (0.00078)	0.00035 (0.00017)
47	0.00074 (2e-04)	-9e-05 (0.00075)	0.00067 (0.00021)
48	0.00088 (0.00019)	0.00114 (0.00076)	6e-04 (0.00023)
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2	0.00014 (0.00016)	4e-05 (0.00076)	0.00059 (0.00016)
3	0.00014 (0.00016)	0.00016 (0.00077)	-0.00048 (0.00017)
4	0.00023 (0.00017)	0.00031 (0.00078)	0.00036 (0.00018)
5	0.00016 (0.00016)	-1e-04 (0.00075)	-0.00032 (0.00016)
6	0.00041 (0.00018)	0.00027 (0.00078)	0.00041 (0.00019)
7	0.00031 (0.00017)	0.00023 (0.00078)	0.00061 (0.00018)
8	0.00031 (0.00017)	1e-04 (0.00076)	0.00059 (0.00018)
9	0.00034 (0.00014)	0.00139 (0.00056)	0.00066 (0.00018)
10	0.00036 (0.00018)	0.00025 (0.00078)	0.00055 (0.00019)
11	0.00023 (0.00017)	2e-04 (0.00077)	-0.00058 (0.00017)
12	9e-05 (0.00016)	0.00017 (0.00077)	0.00039 (0.00016)
13	0.00031 (0.00017)	6e-05 (0.00076)	0.00084 (0.00018)
14	0.00019 (0.00017)	0.00042 (0.00079)	-0.00036 (0.00017)
15	0.00026 (0.00017)	-4e-05 (0.00075)	0.00056 (0.00017)
16	0.00061 (0.00019)	-2e-05 (0.00075)	5e-04 (2e-04)
17	0.00059 (0.00019)	0.00017 (0.00077)	0.00053 (2e-04)
18	0.00038 (0.00018)	0.00025 (0.00078)	0.00066 (0.00019)
19	0.00022 (0.00014)	0.00029 (0.00048)	0.00032 (0.00015)
20	0.00025 (0.00017)	0.00017 (0.00077)	-0.00036 (0.00018)
21	0.00019 (0.00016)	-7e-05 (0.00075)	5e-04 (0.00017)
22	0.00023 (0.00017)	-8e-05 (0.00075)	0.00041 (0.00017)
23	0.00044 (0.00018)	-1e-05 (0.00075)	0.00041 (0.00019)
24	0.00024 (0.00017)	0.00013 (0.00077)	0.00036 (0.00017)
25	0.00039 (0.00018)	3e-05 (0.00076)	-4e-04 (0.00019)
26	0.00021 (0.00017)	0.00022 (0.00077)	0.00042 (0.00017)
27	0.00059 (0.00019)	0.00013 (0.00077)	0.00047 (2e-04)
28	0.00087 (2e-04)	0.00043 (0.00079)	0.00111 (0.00023)
29	0.00034 (0.00017)	1e-05 (0.00076)	-0.00046 (0.00018)
30	0.00026 (0.00014)	0.00018 (0.00049)	0.00032 (0.00016)
31	0.00045 (0.00018)	0.00119 (0.00086)	0.00068 (0.00021)
32	0.00023 (0.00015)	4e-05 (0.00053)	0.00038 (0.00016)
33	0.00036 (0.00017)	-3e-05 (0.00075)	0.00056 (0.00018)
34	5e-05 (0.00016)	0.00013 (0.00077)	3e-04 (0.00016)
35	5e-05 (0.00016)	-2e-05 (0.00075)	0.00041 (0.00015)
36	0.00022 (0.00017)	-5e-05 (0.00075)	0.00036 (0.00017)
37	0.00029 (0.00017)	-7e-05 (0.00075)	0.00035 (0.00018)
38	0.00026 (0.00017)	6e-05 (0.00076)	-0.00036 (0.00017)
39	0.00029 (0.00017)	-6e-05 (0.00075)	0.00047 (0.00018)
40	1e-04 (0.00016)	-3e-05 (0.00075)	0.00054 (0.00016)
41	0.00012 (0.00016)	-2e-05 (0.00075)	-0.00036 (0.00016)
42	0.00092 (2e-04)	-5e-05 (0.00075)	-0.00092 (0.00023)
43	6e-05 (0.00016)	7e-05 (0.00076)	0.00041 (0.00015)
44	0.00043 (0.00018)	0.00014 (0.00077)	0.00052 (0.00019)
45	0.00081 (2e-04)	0.00039 (0.00079)	7e-04 (0.00022)
46	0.00033 (0.00017)	2e-05 (0.00076)	0.00044 (0.00018)
47	0.00048 (0.00018)	0.00012 (0.00077)	0.00061 (2e-04)
48	0.00041 (0.00018)	6e-05 (0.00076)	0.00037 (0.00019)
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2	0.00036 (0.00017)	0.00221 (0.00094)	-0.00055 (0.00021)
3	0.00029 (0.00017)	0.00026 (0.00078)	0.00037 (0.00018)
4	8e-05 (0.00016)	1e-04 (0.00076)	0.00039 (0.00016)
5	0.00074 (2e-04)	9e-05 (0.00076)	0.00057 (0.00022)
6	0.00043 (0.00016)	0 (0.00055)	0.00036 (0.00018)
7	0.00066 (0.00019)	-8e-05 (0.00075)	0.00068 (0.00021)
8	0.00051 (0.00018)	0.00117 (0.00085)	0.00107 (0.00021)
9	0.00056 (0.00018)	-2e-05 (0.00072)	-4e-04 (2e-04)
10	0.00062 (0.00019)	0.00066 (0.00081)	0.00057 (0.00021)
11	0.00033 (0.00017)	0.00035 (0.00079)	0.00055 (0.00019)
12	0.00019 (0.00016)	-0.00017 (0.00074)	-0.00042 (0.00016)
13	0.00029 (0.00017)	-1e-04 (0.00074)	0.00044 (0.00018)
14	0.00019 (0.00016)	0.00076 (0.00082)	0.00045 (0.00018)
15	0.00028 (0.00017)	-4e-05 (0.00075)	0.00042 (0.00018)
16	0.00026 (0.00017)	0.00244 (0.00095)	-0.00057 (0.00021)
17	0.00023 (0.00017)	0.00051 (8e-04)	0.00041 (0.00018)
18	9e-04 (2e-04)	2e-05 (0.00076)	0.00065 (0.00023)
19	0.00037 (0.00018)	1e-05 (0.00076)	0.00078 (0.00018)
20	6e-04 (0.00019)	-0.00012 (0.00074)	5e-04 (2e-04)
21	0.00015 (0.00016)	0.00016 (0.00076)	4e-04 (0.00017)
22	0.00026 (0.00017)	0.00018 (0.00077)	0.00048 (0.00018)
23	0.00026 (0.00017)	0.00029 (0.00078)	0.00045 (0.00018)
24	0.00035 (0.00017)	3e-05 (0.00076)	0.00038 (0.00018)
25	0.00034 (0.00017)	0.00014 (0.00077)	0.00046 (0.00018)
26	0.00043 (0.00018)	8e-05 (0.00076)	0.00044 (0.00019)
27	0.00027 (0.00017)	-6e-05 (0.00075)	-0.00058 (0.00017)
28	0.00039 (0.00018)	5e-05 (0.00076)	0.00037 (0.00019)
29	0.00054 (0.00019)	2e-04 (0.00077)	0.00052 (2e-04)
30	0.00057 (0.00019)	0.00065 (0.00081)	0.00076 (0.00021)
31	0.00087 (2e-04)	-9e-05 (0.00075)	5e-04 (0.00022)
32	0.00039 (0.00018)	1e-05 (0.00076)	0.00048 (0.00019)
33	0.00053 (0.00018)	-0.00012 (0.00074)	0.00044 (2e-04)
34	0.00022 (0.00017)	3e-05 (0.00076)	0.00034 (0.00017)
35	0.00037 (0.00018)	0.00016 (0.00077)	0.00045 (0.00019)
36	5e-04 (0.00018)	-6e-05 (0.00075)	0.00042 (0.00019)
37	0.00019 (0.00016)	0.00016 (0.00071)	0.00042 (0.00017)
38	0.00086 (2e-04)	9e-05 (0.00076)	0.00063 (0.00022)
39	0.00041 (0.00017)	0.00062 (0.00071)	0.00039 (0.00019)
40	7e-04 (0.00017)	0.00068 (0.00054)	0.00043 (2e-04)
41	0.00069 (0.00019)	-1e-04 (0.00075)	0.00042 (0.00021)
42	0.00022 (0.00017)	7e-05 (0.00076)	0.00044 (0.00017)
43	0.00017 (0.00016)	-7e-05 (0.00075)	0.00062 (0.00016)
44	0.00024 (0.00017)	0.00021 (0.00077)	-0.00042 (0.00018)
45	4e-04 (0.00018)	0.00041 (0.00079)	4e-04 (0.00019)
46	0.00023 (0.00017)	-6e-05 (0.00075)	-0.00038 (0.00017)
47	0.00024 (0.00017)	0.00088 (0.00083)	-0.00064 (0.00018)
48	0.00039 (0.00018)	8e-05 (0.00076)	0.00073 (0.00019)
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2	0.00035 (0.00017)	0.00011 (0.00076)	0.00045 (0.00018)
3	0.00057 (0.00019)	8e-05 (0.00076)	0.00049 (2e-04)
4	0.00027 (0.00017)	0.00037 (0.00079)	0.00038 (0.00018)
5	0.00035 (0.00016)	7e-05 (0.00054)	-0.00035 (0.00017)
6	0.00041 (0.00018)	-1e-05 (0.00075)	0.00045 (0.00019)
7	0.00037 (0.00018)	0.00101 (0.00084)	0.00055 (2e-04)
8	7e-04 (0.00019)	0.00032 (0.00078)	0.00078 (0.00022)
9	0.00028 (0.00017)	-1e-04 (0.00075)	4e-04 (0.00017)
10	0.00044 (0.00018)	1e-04 (0.00074)	0.00042 (0.00019)
11	0.00031 (0.00017)	0.00025 (0.00078)	0.00044 (0.00018)
12	0.00019 (0.00016)	0.00133 (0.00087)	0.00061 (0.00019)
13	0.00071 (0.00019)	-5e-05 (0.00075)	0.00054 (0.00021)
14	0.00057 (0.00019)	0.00086 (0.00083)	-0.00059 (0.00021)
15	0.00039 (0.00018)	4e-05 (0.00076)	0.00038 (0.00019)
16	0.00033 (0.00017)	0.00015 (0.00077)	0.00044 (0.00018)
17	0.00016 (0.00016)	8e-05 (0.00076)	0.00035 (0.00017)
18	0.00038 (0.00018)	0.00018 (0.00077)	0.00039 (0.00019)
19	2e-04 (0.00017)	5e-05 (0.00076)	-0.00044 (0.00017)
20	0.00057 (0.00019)	1e-04 (0.00076)	4e-04 (2e-04)
21	0.00057 (0.00019)	0.00038 (0.00079)	0.00059 (0.00021)
22	0.00021 (0.00017)	0.00157 (0.00089)	0.00039 (0.00019)
23	0.00039 (0.00018)	7e-05 (0.00076)	0.00056 (0.00019)
24	0.00083 (2e-04)	0.00147 (0.00088)	-0.00095 (0.00024)
25	0.00061 (0.00019)	0.00015 (0.00077)	0.00043 (0.00021)
26	0.00035 (0.00012)	2e-05 (NA)	3e-04 (0.00014)
27	0.00048 (0.00018)	-1e-04 (0.00075)	6e-04 (0.00019)
28	0.00019 (0.00016)	0.00015 (0.00077)	0.00036 (0.00017)
29	0.00028 (0.00017)	7e-05 (0.00076)	-0.00037 (0.00018)
30	0.00043 (0.00018)	0.00021 (0.00077)	0.00045 (0.00019)
31	0.00067 (0.00019)	0.00077 (0.00082)	0.00046 (0.00022)
32	0.00054 (0.00019)	0.00015 (0.00077)	0.00058 (2e-04)
33	0.00047 (0.00018)	-7e-05 (0.00075)	4e-04 (0.00019)
34	0.00018 (9e-05)	-2e-05 (NA)	0.00022 (0.00011)
35	0.00024 (0.00017)	0.00123 (0.00086)	0.00041 (0.00019)
36	0.00041 (0.00017)	2e-05 (0.00072)	0.00045 (0.00019)
37	0.00036 (0.00018)	0 (0.00075)	0.00045 (0.00018)
38	0.00074 (2e-04)	0.00033 (0.00078)	0.00075 (0.00022)
39	0.00011 (0.00013)	0.00044 (0.00048)	0.00034 (0.00014)
40	0.00057 (0.00019)	-6e-05 (0.00075)	-0.00051 (2e-04)
41	0.00049 (0.00018)	4e-04 (0.00079)	0.00051 (2e-04)
42	0.00057 (0.00019)	-0.00011 (0.00074)	0.00074 (2e-04)
43	0.00069 (0.00019)	3e-04 (0.00078)	0.00065 (0.00021)
44	0.0013 (0.00022)	0.00038 (0.00079)	6e-04 (0.00026)
45	0.00019 (0.00016)	0.00035 (0.00079)	-0.00052 (0.00017)
46	0.00034 (0.00017)	3e-05 (0.00076)	0.00064 (0.00018)
47	0.00038 (0.00018)	0.00043 (0.00079)	-4e-04 (0.00019)
48	0.00041 (0.00018)	-7e-05 (0.00075)	0.00049 (0.00019)
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2	3e-04 (0.00017)	0.00052 (8e-04)	0.00063 (0.00018)
3	0.00023 (0.00016)	0.00028 (0.00066)	0.00041 (0.00017)
4	0.00072 (2e-04)	0.00046 (8e-04)	-0.00078 (0.00022)
5	0.00033 (0.00017)	0.00035 (0.00079)	6e-04 (0.00019)
6	0.00029 (0.00017)	0 (0.00073)	0.00053 (0.00017)
7	0.00039 (0.00018)	0 (0.00076)	0.00047 (0.00019)
8	0.00016 (0.00016)	0 (0.00075)	0.00039 (0.00016)
9	0.00023 (0.00017)	-0.00014 (0.00074)	0.00039 (0.00017)
10	0.00034 (0.00017)	0.00011 (0.00076)	-0.00044 (0.00018)
11	0.00037 (0.00017)	-0.00011 (7e-04)	0.00042 (0.00018)
12	0.00048 (0.00018)	0.00164 (0.00089)	0.00097 (0.00021)
13	0.00045 (0.00018)	0.00069 (0.00082)	6e-04 (2e-04)
14	0.00023 (0.00017)	6e-05 (0.00076)	-0.00037 (0.00017)
15	0.00016 (0.00016)	-3e-05 (0.00075)	0.00036 (0.00016)
16	0.00037 (0.00018)	0 (0.00076)	0.00041 (0.00018)
17	7e-04 (0.00019)	-0.00012 (0.00074)	0.00044 (0.00021)
18	0.00046 (0.00018)	0.00032 (0.00078)	0.00052 (2e-04)
19	0.00038 (0.00018)	0.00065 (0.00081)	0.00041 (0.00019)
20	0.00046 (0.00018)	0.00016 (0.00077)	0.00038 (0.00019)
21	0.00045 (0.00018)	-0.00014 (0.00074)	0.00048 (0.00019)
22	0.00016 (0.00016)	0.00029 (0.00078)	0.00065 (0.00017)
23	0.00041 (0.00018)	0.00011 (0.00076)	-0.00047 (0.00019)
24	0.00024 (0.00017)	0.00012 (0.00077)	0.00035 (0.00017)
25	0.00033 (0.00017)	0.00048 (8e-04)	-0.00045 (0.00019)
26	0.00039 (0.00018)	1e-04 (0.00076)	0.00038 (0.00019)
27	6e-04 (0.00016)	0.00028 (0.00048)	-0.00038 (0.00019)
28	0.00055 (0.00019)	0.00036 (0.00079)	0.00046 (2e-04)
29	0.00086 (2e-04)	0.00024 (0.00078)	0.00052 (0.00023)
30	0.00063 (0.00019)	0.00065 (0.00081)	0.00081 (0.00021)
31	0.00068 (0.00019)	1e-05 (0.00076)	0.00048 (0.00021)
32	0.00035 (0.00017)	2e-04 (0.00077)	-0.00036 (0.00019)
33	0.00028 (0.00017)	2e-04 (0.00077)	0.00037 (0.00018)
34	0.00045 (0.00018)	6e-05 (0.00076)	0.00038 (0.00019)
35	0.00026 (0.00017)	-3e-05 (0.00075)	0.00064 (0.00017)
36	0.00015 (0.00016)	0.00064 (0.00081)	0.00051 (0.00017)
37	0.00027 (0.00017)	0.00169 (9e-04)	0.00052 (2e-04)
38	0.00031 (0.00017)	0.00012 (0.00075)	0.00035 (0.00018)
39	0.00023 (0.00017)	0.00143 (0.00088)	0.00039 (0.00019)
40	0.00053 (0.00018)	2e-05 (0.00076)	0.00049 (2e-04)
41	0.00066 (0.00019)	0.00157 (0.00089)	-0.00046 (0.00023)
42	0.00067 (0.00019)	0.00053 (8e-04)	0.00068 (0.00022)
43	0.00053 (0.00018)	0.00029 (0.00078)	4e-04 (2e-04)
44	2e-04 (0.00017)	-0.00012 (0.00074)	0.00036 (0.00017)
45	0.00052 (0.00018)	7e-05 (0.00076)	0.00062 (2e-04)
46	0.00029 (0.00017)	5e-04 (8e-04)	0.00056 (0.00018)
47	0.00019 (0.00016)	-3e-05 (0.00075)	0.00038 (0.00017)
48	0.00036 (0.00018)	2e-05 (0.00076)	-4e-04 (0.00018)
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2	0.00055 (0.00019)	1e-04 (0.00076)	0.00045 (2e-04)
3	0.00078 (2e-04)	0 (0.00075)	0.00062 (0.00022)
4	0.00014 (0.00015)	-1e-05 (0.00061)	0.00038 (0.00015)
5	0.00019 (0.00016)	6e-04 (0.00081)	-0.00044 (0.00018)
6	0.00023 (0.00017)	0.00054 (8e-04)	0.00054 (0.00018)
7	8e-05 (0.00013)	7e-05 (0.00052)	0.00033 (0.00014)
8	0.00026 (0.00017)	1e-05 (0.00076)	0.00037 (0.00017)
9	0.00052 (0.00018)	0.00048 (8e-04)	6e-04 (2e-04)
10	0.00023 (0.00017)	0.00029 (0.00078)	0.00064 (0.00018)
11	8e-05 (0.00016)	0.00014 (0.00077)	0.00036 (0.00016)
12	4e-04 (0.00018)	2e-05 (0.00076)	-0.00045 (0.00019)
13	0.00024 (0.00017)	4e-05 (0.00076)	0.00048 (0.00017)
14	0.00027 (0.00017)	0.00038 (0.00079)	0.00048 (0.00018)
15	0.00029 (0.00017)	0.00027 (0.00078)	0.00051 (0.00018)
16	0.00042 (0.00018)	0.00023 (0.00078)	0.00049 (0.00019)
17	5e-04 (0.00018)	0.00028 (0.00078)	0.00042 (2e-04)
18	0.00044 (0.00018)	1e-04 (0.00076)	-0.00045 (0.00019)
19	0.00027 (0.00017)	0.00132 (0.00087)	0.00069 (0.00019)
20	0.00025 (0.00017)	0.00013 (0.00077)	-4e-04 (0.00018)
21	0.00039 (0.00018)	1e-04 (0.00076)	0.00084 (0.00019)
22	0.00025 (0.00017)	0.00019 (0.00077)	9e-04 (0.00018)
23	0.00035 (0.00017)	5e-05 (0.00076)	-0.00038 (0.00018)
24	0.00063 (0.00019)	0.00026 (0.00078)	0.00041 (0.00021)
25	0.00011 (0.00016)	0.00015 (0.00077)	0.00038 (0.00016)
26	0.00025 (0.00017)	4e-05 (0.00076)	0.00043 (0.00017)
27	0.00137 (0.00023)	0.00079 (0.00082)	0.00072 (0.00027)
28	0.00054 (0.00019)	0.00019 (0.00077)	0.00072 (2e-04)
29	0.00049 (0.00017)	0.00096 (0.00119)	0.00068 (0.00027)
30	0.00011 (0.00014)	0.00063 (0.00104)	0.00051 (0.00022)
31	0.00033 (0.00015)	3e-05 (0.00069)	0.00101 (0.00023)
32	0.00087 (2e-04)	0.00017 (0.00141)	0.00113 (0.00032)
33	0.00038 (0.00013)	5e-05 (NA)	0.00047 (0.00022)
34	0.00017 (0.00013)	0.00077 (0.00056)	-0.00042 (2e-04)
35	0.00057 (0.00018)	-0.00021 (0.00137)	0.00085 (0.00029)
36	0.00032 (0.00016)	2e-04 (0.0012)	0.00068 (0.00025)
37	0.00136 (0.00022)	0.00014 (0.00115)	-0.00073 (0.00036)
38	0.00029 (0.00012)	0.00046 (NA)	0.00044 (2e-04)
39	0.00035 (0.00015)	-0.00012 (7e-04)	0.00055 (0.00023)
40	0.00031 (0.00017)	-8e-05 (0.00139)	0.00052 (0.00026)
41	0.00063 (0.00019)	0.00023 (0.00142)	0.00061 (3e-04)
42	0.00013 (0.00015)	0.00195 (0.00146)	0.00054 (0.00025)
43	0.00034 (0.00015)	0.00029 (8e-04)	0.00056 (0.00024)
44	0.00053 (0.00018)	0.00101 (0.00147)	0.00087 (0.00029)
45	0.00064 (0.00018)	-0.00016 (0.00109)	0.0011 (0.00028)
46	4e-04 (0.00016)	0.00026 (0.00091)	0.00053 (0.00025)
47	0.00059 (0.00019)	0.00012 (0.00141)	0.00102 (0.00029)
48	0.00025 (0.00017)	0.00038 (0.00139)	0.00069 (0.00025)
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2	0.00054 (0.00017)	2e-05 (0.0011)	0.00056 (0.00027)
3	0.00028 (0.00011)	0.00025 (NA)	0.00038 (0.00019)
4	0.00035 (0.00016)	-8e-05 (0.00116)	0.00054 (0.00025)
5	0.00052 (0.00018)	5e-05 (0.0014)	0.00066 (0.00028)
6	0.00047 (0.00018)	0.00023 (0.00142)	0.00063 (0.00028)
7	0.00055 (0.00018)	0.00069 (0.00133)	-6e-04 (0.00029)
8	0.00038 (0.00017)	-0.00016 (0.00138)	0.00056 (0.00027)
9	0.00082 (2e-04)	0.00032 (0.00143)	0.00078 (0.00032)
10	9e-05 (0.00013)	0.00042 (0.00091)	0.00055 (2e-04)
11	0.00023 (0.00014)	-5e-05 (0.00056)	0.00078 (0.00021)
12	0.00041 (0.00018)	0.00035 (0.00143)	0.00078 (0.00027)
13	0.00027 (0.00011)	-0.00019 (NA)	0.00037 (0.00018)
14	0.00091 (0.00018)	0.00066 (0.00082)	0.00113 (3e-04)
15	0.00034 (0.00017)	-8e-05 (0.00139)	0.00052 (0.00026)
16	0.00036 (0.00016)	0.00012 (0.00112)	0.00066 (0.00025)
17	0.00041 (0.00015)	0.00034 (0.00086)	-0.00072 (0.00025)
18	0.00066 (0.00016)	0.00035 (0.00017)	0.00056 (0.00026)
19	9e-04 (0.00016)	0.00043 (NA)	-0.00062 (0.00028)
20	0.00022 (0.00012)	0.00021 (NA)	0.00057 (0.00019)
21	0.00085 (0.00018)	-0.00013 (0.00057)	0.00093 (0.00029)
22	0.00023 (0.00014)	0 (0.00074)	0.00046 (0.00022)
23	0.00032 (0.00017)	0.00018 (0.00141)	0.00079 (0.00026)
24	0.00026 (0.00016)	-0.00011 (0.00112)	0.00063 (0.00024)
25	0.00073 (0.00018)	0.00159 (0.00113)	0.00114 (3e-04)
26	0.00037 (0.00015)	0.00034 (0.00073)	0.00078 (0.00024)
27	0.00035 (0.00014)	-9e-05 (NA)	5e-04 (0.00022)
28	0.00066 (0.00019)	4e-05 (0.0013)	0.00071 (0.00029)
29	0.00029 (0.00015)	3e-05 (0.001)	0.00049 (0.00024)
30	0.00053 (0.00018)	0.00025 (0.00142)	6e-04 (0.00029)
31	0.00053 (0.00018)	-2e-05 (0.00139)	0.00087 (0.00028)
32	0.00023 (0.00014)	0 (0.00089)	0.00058 (0.00022)
33	2e-04 (0.00012)	-2e-04 (NA)	0.00051 (0.00019)
34	0.00035 (0.00015)	0.00027 (0.00098)	0.00071 (0.00024)
35	0.00048 (0.00018)	0.00051 (0.00144)	0.00061 (0.00028)
36	0.00039 (0.00015)	0.00022 (0.00058)	0.00059 (0.00023)
37	0.00021 (0.00014)	0.00046 (0.00095)	0.00063 (0.00022)
38	2e-04 (0.00013)	-0.00015 (0.00038)	0.00045 (2e-04)
39	0.00028 (0.00013)	2e-05 (NA)	-0.00042 (2e-04)
40	0.00039 (0.00015)	-5e-05 (0.00061)	0.00063 (0.00023)
41	0.00046 (0.00017)	-0.00021 (0.00117)	0.00052 (0.00026)
42	0.00037 (0.00014)	-0.00011 (0.00023)	0.00064 (0.00022)
43	0.00028 (0.00012)	0.00166 (NA)	0.00075 (0.00022)
44	0.00035 (0.00014)	-0.00014 (4e-04)	-0.00056 (0.00022)
45	0.00029 (0.00015)	-1e-05 (0.00098)	0.00051 (0.00023)
46	0.00041 (0.00013)	0 (NA)	0.00044 (0.00022)
47	0.00067 (0.00017)	-0.00012 (0.00084)	0.00056 (0.00028)
48	0.00021 (0.00015)	0.00173 (0.00136)	0.00076 (0.00025)
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2	0.00047 (0.00018)	2e-05 (0.00134)	6e-04 (0.00028)
3	0.00088 (2e-04)	0.00044 (0.00144)	0.00082 (0.00032)
4	0.00071 (0.00017)	0.00296 (0.00113)	0.00067 (3e-04)
5	0.00025 (0.00017)	2e-05 (0.0014)	0.00053 (0.00025)
6	0.00034 (0.00014)	-0.00022 (0.00038)	0.00071 (0.00022)
7	0.00022 (0.00015)	-0.00016 (0.00108)	0.00054 (0.00023)
8	0.00044 (0.00016)	-9e-05 (0.00091)	6e-04 (0.00025)
9	0.00036 (0.00014)	7e-05 (0.00046)	0.00047 (0.00023)
10	0.00043 (0.00016)	0.00016 (0.00084)	0.00051 (0.00025)
11	0.00039 (0.00017)	-1e-04 (0.00139)	-0.00055 (0.00027)
12	0.00049 (0.00014)	0.00051 (NA)	0.00064 (0.00024)
13	0.00021 (0.00015)	-1e-04 (0.00098)	0.00061 (0.00022)
14	0.00036 (0.00017)	7e-05 (0.0014)	0.00077 (0.00027)
15	0.00018 (0.00015)	-0.00013 (0.00118)	0.00081 (0.00023)
16	0.00033 (0.00013)	0.00024 (NA)	0.00064 (0.00021)
17	3e-04 (0.00017)	0.00022 (0.0014)	0.00059 (0.00026)
18	0.00018 (0.00013)	-0.00018 (0.00023)	0.00066 (0.00019)
19	0.00043 (0.00018)	8e-05 (0.0014)	0.00064 (0.00027)
20	0.00018 (0.00013)	-2e-04 (0.00046)	4e-04 (2e-04)
21	0.00012 (0.00014)	0.00022 (9e-04)	0.00042 (0.00021)
22	0.00026 (0.00017)	0.00021 (0.00142)	0.00083 (0.00025)
23	0.00069 (0.00016)	0.00032 (0.00055)	0.00092 (0.00027)
24	0.00023 (0.00011)	0.00014 (NA)	-0.00038 (0.00018)
25	0.00054 (0.00018)	-5e-05 (0.00128)	0.00072 (0.00028)
26	0.00043 (0.00016)	-0.00011 (0.00101)	0.00053 (0.00025)
27	0.00031 (0.00017)	-0.00012 (0.00138)	0.00073 (0.00026)
28	0.00034 (0.00015)	-2e-05 (0.00083)	0.00085 (0.00023)
29	0.00052 (0.00017)	-0.00018 (0.00106)	-0.00073 (0.00027)
30	0.00043 (0.00018)	-1e-04 (0.00139)	0.00077 (0.00027)
31	0.00053 (0.00017)	4e-05 (0.00116)	0.00065 (0.00027)
32	0.00035 (0.00015)	4e-05 (0.00092)	0.00081 (0.00024)
33	0.00018 (0.00016)	-0.00012 (0.00128)	-6e-04 (0.00024)
34	0.00018 (8e-05)	0.00071 (NA)	0.00032 (0.00015)
35	7e-04 (0.00018)	-0.00013 (0.00102)	0.00058 (0.00028)
36	0.00026 (0.00013)	3e-05 (NA)	0.00044 (2e-04)
37	0.00055 (0.00014)	-4e-05 (NA)	0.00057 (0.00023)
38	0.00018 (7e-05)	0.00039 (NA)	0.00029 (0.00013)
39	0.00025 (0.00017)	-0.00022 (0.00136)	0.00118 (0.00025)
40	0.00034 (0.00014)	0.00021 (0.00064)	0.00062 (0.00023)
41	0.00029 (0.00013)	1e-04 (NA)	0.00045 (2e-04)
42	3e-04 (0.00013)	0.00014 (NA)	0.00047 (2e-04)
43	0.00032 (0.00015)	-0.00011 (0.00071)	0.00046 (0.00023)
44	5e-04 (0.00016)	2e-05 (0.00065)	0.00103 (0.00025)
45	0.00024 (0.00014)	9e-05 (0.00066)	0.00046 (0.00021)
46	0.00018 (0.00014)	0.00024 (0.00081)	0.00082 (0.00021)
47	0.00018 (0.00013)	0.00032 (0.00046)	0.00052 (2e-04)
48	0.00063 (0.00019)	0.00035 (0.00143)	0.00059 (3e-04)
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2	0.00027 (0.00012)	-0.00011 (NA)	-0.00047 (0.00019)
3	0.00063 (0.00019)	-5e-05 (0.00139)	0.00069 (0.00029)
4	0.00054 (0.00013)	0.00035 (NA)	0.00045 (0.00022)
5	0.00041 (0.00018)	1e-04 (0.00141)	0.00068 (0.00027)
6	0.00015 (0.00013)	-3e-05 (0.00054)	0.00044 (2e-04)
7	0.00035 (0.00017)	5e-04 (0.00127)	0.00065 (0.00026)
8	7e-04 (0.00018)	0.00017 (0.00111)	-0.00091 (0.00029)
9	0.00047 (0.00015)	0.00047 (0.00059)	0.00054 (0.00025)
10	0.00022 (0.00015)	2e-05 (0.00117)	0.00059 (0.00024)
11	0.00036 (0.00017)	0.00016 (0.00125)	0.00066 (0.00026)
12	0.00032 (0.00015)	-8e-05 (0.00095)	0.00047 (0.00024)
13	0.00046 (0.00018)	-0.00023 (0.00137)	0.00078 (0.00027)
14	0.00036 (0.00016)	-0.00018 (0.00105)	-0.00057 (0.00025)
15	0.00045 (0.00018)	0.00049 (0.00144)	0.00056 (0.00028)
16	0.00044 (0.00013)	0.00019 (NA)	0.00049 (0.00022)
17	0.00061 (0.00018)	0.00014 (0.00135)	0.00067 (0.00029)
18	0.00061 (0.00019)	0.00021 (0.00142)	0.00153 (0.00029)
19	0.00046 (0.00011)	0.00066 (NA)	0.00056 (2e-04)
20	0.00011 (0.00012)	0.00027 (0.00031)	0.00053 (0.00019)
21	0.00018 (0.00013)	8e-05 (0.00048)	0.00046 (2e-04)
22	0.00037 (0.00017)	-5e-05 (0.00139)	0.00053 (0.00027)
23	0.00028 (0.00014)	0.00016 (0.00069)	0.00048 (0.00022)
24	0.00038 (0.00017)	0.00016 (0.00141)	0.00076 (0.00027)
25	0.00051 (0.00016)	-0.00013 (0.00085)	0.00051 (0.00026)
26	0.00045 (0.00018)	0.00048 (0.00144)	0.00065 (0.00028)
27	4e-04 (0.00017)	-5e-05 (0.00139)	-0.00095 (0.00027)
28	0.00034 (0.00016)	0.00033 (0.00124)	0.00062 (0.00025)
29	0.00034 (9e-05)	7e-05 (NA)	0.00037 (0.00017)
30	2e-04 (0.00016)	0.00035 (0.00143)	0.00065 (0.00025)
31	0.00025 (0.00017)	0 (0.0014)	0.00062 (0.00025)
32	0.00074 (0.00016)	1e-04 (3e-04)	0.0011 (0.00027)
33	0.00031 (0.00017)	-7e-05 (0.00139)	0.00055 (0.00026)
34	0.00041 (0.00018)	4e-04 (0.00143)	0.00092 (0.00027)
35	0.00037 (0.00017)	-3e-05 (0.00129)	0.00064 (0.00026)
36	0.00097 (2e-04)	0.00032 (0.00115)	0.00174 (0.00032)
37	0.00027 (0.00017)	0.00052 (0.00144)	0.00085 (0.00026)
38	0.00042 (0.00017)	0.00018 (0.00133)	0.00057 (0.00027)
39	0.00031 (0.00013)	4e-05 (NA)	0.00045 (2e-04)
40	0.00033 (0.00013)	-0.00014 (NA)	0.00061 (0.00021)
41	0.00013 (0.00012)	0.00032 (0.00051)	0.00039 (0.00019)
42	0.00048 (0.00017)	8e-05 (0.00108)	0.00081 (0.00026)
43	6e-05 (0.00015)	-0.00015 (0.00138)	0.00056 (0.00022)
44	5e-04 (0.00018)	0.00069 (0.00146)	0.00069 (0.00029)
45	0.00042 (0.00014)	-0.00017 (NA)	0.00079 (0.00023)
46	5e-04 (0.00017)	-9e-05 (0.00115)	0.00062 (0.00027)
47	4e-04 (0.00014)	-3e-05 (4e-04)	0.00052 (0.00023)
48	0.00043 (0.00018)	-0.00011 (0.00138)	0.00076 (0.00027)
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2	0.00021 (0.00014)	-0.00012 (0.00069)	0.00056 (0.00021)
3	0.00064 (0.00018)	0.00169 (0.00128)	0.00097 (3e-04)
4	0.00032 (0.00016)	-9e-05 (0.00104)	0.00087 (0.00024)
5	0.00056 (0.00018)	-0.00011 (0.00138)	0.00073 (0.00029)
6	0.00038 (0.00017)	7e-05 (0.0014)	-0.00067 (0.00027)
7	0.00032 (0.00013)	6e-05 (NA)	0.00042 (2e-04)
8	3e-04 (0.00016)	0.00045 (0.00112)	0.00049 (0.00024)
9	0.00083 (0.00019)	4e-05 (0.00127)	0.00064 (0.00031)
10	0.00042 (0.00017)	-0.00014 (0.00126)	0.00076 (0.00026)
11	0.00027 (0.00014)	-1e-05 (0.00054)	0.00051 (0.00022)
12	0.00021 (0.00014)	2e-05 (0.00089)	0.00064 (0.00022)
13	1e-04 (0.00012)	2e-05 (0.00024)	0.00055 (0.00018)
14	0.00067 (0.00019)	-3e-05 (0.00139)	0.00059 (3e-04)
15	3e-04 (0.00011)	0.00029 (NA)	0.00041 (0.00019)
16	0.00058 (0.00017)	0.00018 (0.00106)	0.00063 (0.00028)
17	0.00055 (0.00018)	-0.00022 (0.00137)	-0.00056 (0.00028)
18	0.00127 (0.00022)	0.00088 (0.00148)	0.00077 (0.00036)
19	0.00041 (0.00018)	1e-05 (0.0014)	-0.00056 (0.00027)
20	0.00012 (0.00016)	3e-05 (0.0014)	6e-04 (0.00024)
21	0.00018 (0.00011)	0.00038 (NA)	0.00064 (0.00018)
22	0.00025 (0.00016)	5e-05 (0.00121)	0.00053 (0.00024)
23	0.00046 (0.00016)	-8e-05 (0.00076)	0.00053 (0.00025)
24	9e-05 (0.00015)	0 (0.00125)	0.00061 (0.00022)
25	7e-04 (0.00018)	-6e-05 (0.00109)	0.00061 (0.00029)
26	0.00021 (0.00015)	-7e-05 (0.00096)	0.00072 (0.00022)
27	0.00045 (0.00017)	-8e-05 (0.00131)	0.00071 (0.00027)
28	4e-04 (0.00014)	0.00021 (NA)	0.00078 (0.00023)
29	0.00015 (0.00016)	6e-05 (0.0014)	0.00051 (0.00024)
30	0.00037 (0.00016)	5e-04 (0.00113)	6e-04 (0.00025)
31	0.00037 (0.00013)	0.00071 (NA)	0.00057 (0.00022)
32	0.00035 (0.00016)	-4e-05 (0.00104)	0.00059 (0.00025)
33	0.00035 (0.00014)	-1e-05 (0.00038)	0.00057 (0.00022)
34	0.00013 (9e-05)	0.00047 (NA)	0.00033 (0.00015)
35	0.00069 (0.00018)	0.00045 (0.00107)	0.00058 (0.00029)
36	0.00041 (0.00015)	0.00029 (0.00063)	8e-04 (0.00024)
37	0.00034 (0.00017)	0.00101 (0.00149)	7e-04 (0.00027)
38	0.00026 (0.00013)	-1e-04 (4e-04)	0.00045 (0.00021)
39	0.00066 (0.00019)	0 (0.0014)	0.00078 (3e-04)
40	0.00054 (0.00016)	-5e-05 (0.00083)	0.00108 (0.00026)
41	0.00032 (0.00012)	0.00074 (NA)	0.00044 (0.00021)
42	0.00039 (0.00017)	0.00014 (0.00141)	0.00068 (0.00027)
43	0.00022 (0.00016)	-4e-05 (0.00139)	0.00056 (0.00025)
44	0.00045 (0.00018)	-3e-05 (0.00139)	0.00066 (0.00028)
45	6e-04 (0.00018)	5e-05 (0.00119)	0.00089 (0.00028)
46	0.00062 (0.00016)	0.00041 (0.00034)	0.00079 (0.00026)
47	0.00078 (0.00019)	-0.00014 (0.00129)	0.001 (3e-04)
48	0.00056 (0.00017)	-8e-05 (0.00093)	0.00058 (0.00027)
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2	0.00084 (2e-04)	-0.00011 (0.00138)	0.00088 (0.00032)
3	0.00014 (0.00014)	0.00029 (0.00083)	0.00044 (0.00021)
4	5e-04 (0.00013)	-0.00024 (NA)	0.00042 (0.00021)
5	0.00025 (0.00017)	-0.00015 (0.00138)	-6e-04 (0.00025)
6	0.00017 (0.00012)	4e-05 (NA)	4e-04 (0.00019)
7	0.00043 (0.00016)	0.00039 (0.00096)	0.00053 (0.00025)
8	0.00054 (0.00018)	-1e-04 (0.00139)	0.00068 (0.00028)
9	0.00023 (0.00017)	7e-05 (0.0014)	0.00081 (0.00025)
10	0.00025 (0.00017)	1e-04 (0.0014)	7e-04 (0.00025)
11	0.00037 (0.00017)	-1e-05 (0.00139)	0.00057 (0.00027)
12	0.00037 (0.00017)	0.00058 (0.00128)	0.00087 (0.00026)
13	0.00019 (0.00014)	-8e-05 (8e-04)	0.00051 (0.00021)
14	0.00014 (0.00013)	-0.00018 (0.00044)	0.00042 (0.00019)
15	0.00033 (0.00015)	0.00024 (0.00074)	0.00054 (0.00023)
16	0.00069 (0.00017)	0.00194 (0.00117)	-0.00071 (3e-04)
17	0.00036 (0.00014)	6e-05 (NA)	0.00052 (0.00022)
18	0.00065 (0.00016)	0.00183 (0.00078)	0.00072 (0.00028)
19	0.00035 (0.00011)	0.00023 (NA)	0.00045 (0.00019)
20	0.00029 (0.00015)	-0.00016 (0.00084)	5e-04 (0.00023)
21	0.00053 (0.00014)	7e-05 (NA)	0.00099 (0.00023)
22	0.00024 (0.00014)	9e-05 (7e-04)	0.00048 (0.00022)
23	0.00037 (0.00017)	0.00057 (0.00145)	0.00059 (0.00027)
24	7e-04 (0.00019)	-1e-04 (0.00139)	7e-04 (3e-04)
25	0.00047 (0.00018)	-2e-04 (0.00138)	0.00075 (0.00028)
26	7e-04 (0.00015)	-3e-05 (NA)	0.00072 (0.00026)
27	0.00029 (0.00012)	0.00013 (NA)	0.00053 (2e-04)
28	0.00058 (0.00017)	-0.00021 (0.00097)	-0.00075 (0.00027)
29	0.00036 (0.00013)	0.00061 (NA)	0.00048 (0.00022)
30	0.00022 (0.00013)	0.00018 (0.00023)	0.00059 (2e-04)
31	0.00075 (0.00019)	-8e-05 (0.00137)	0.00083 (0.00031)
32	0.00054 (0.00017)	0.00138 (0.00125)	0.00061 (0.00028)
33	0.00019 (0.00012)	1e-05 (NA)	0.00055 (0.00018)
34	0.00035 (0.00017)	-3e-05 (0.00139)	0.00081 (0.00026)
35	0.00027 (0.00017)	-0.00021 (0.00137)	0.00061 (0.00025)
36	8e-05 (0.00011)	-0.00012 (NA)	0.00054 (0.00017)
37	0.00034 (0.00017)	-0.00011 (0.00138)	0.00083 (0.00026)
38	0.00045 (0.00016)	2e-05 (0.00097)	0.00077 (0.00025)
39	0.00045 (0.00015)	0.00039 (6e-04)	0.00059 (0.00024)
40	0.00043 (0.00017)	-6e-05 (0.00113)	0.00054 (0.00026)
41	0.00026 (0.00013)	2e-05 (0.00041)	0.00084 (0.00021)
42	0.00028 (0.00017)	-1e-05 (0.00139)	0.00053 (0.00025)
43	0.00062 (0.00018)	-1e-05 (0.00117)	0.00062 (0.00028)
44	0.00016 (0.00014)	-0.00016 (0.00087)	0.00047 (0.00021)
45	3e-04 (0.00017)	-8e-05 (0.00139)	0.00057 (0.00026)
46	0.00063 (0.00019)	7e-05 (0.00134)	0.00076 (0.00029)
47	0.00036 (0.00013)	-2e-05 (NA)	0.00072 (0.00021)
48	0.00086 (0.00018)	0.00093 (0.00085)	0.00152 (3e-04)
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2	0.00141 (2e-04)	0.00036 (0.00061)	0.00071 (0.00035)
3	0.00051 (0.00018)	0.00031 (0.00078)	-0.00078 (2e-04)
4	0.00064 (0.00019)	0.00022 (0.00077)	0.00045 (0.00021)
5	0.00016 (0.00016)	0.00051 (8e-04)	0.00047 (0.00017)
6	0.00079 (2e-04)	0.00027 (0.00078)	0.00079 (0.00022)
7	0.00082 (2e-04)	0.00034 (0.00078)	-0.00065 (0.00022)
8	4e-04 (0.00017)	0.00031 (0.00078)	0.00113 (0.00019)
9	5e-04 (0.00018)	0.00028 (0.00078)	-0.00045 (2e-04)
10	0.00047 (0.00018)	0.00019 (0.00077)	-0.00063 (0.00019)
11	0.00038 (0.00017)	0.00041 (0.00079)	-0.00039 (0.00019)
12	0.00048 (0.00018)	0.00031 (0.00078)	0.00048 (0.00019)
13	0.00023 (0.00016)	0.00016 (0.00077)	0.00048 (0.00017)
14	0.00028 (0.00017)	1e-04 (0.00076)	-0.00034 (0.00017)
15	0.00025 (0.00017)	0.00032 (0.00078)	0.00039 (0.00018)
16	0.00079 (2e-04)	0.00026 (0.00078)	0.00053 (0.00022)
17	0.00086 (2e-04)	0.00026 (0.00078)	-0.00054 (0.00022)
18	4e-04 (0.00018)	0.00045 (0.00079)	-4e-04 (0.00019)
19	9e-04 (2e-04)	9e-05 (0.00076)	0.00083 (0.00022)
20	0.00025 (0.00017)	0.00142 (0.00087)	-0.00039 (0.00019)
21	0.00034 (0.00017)	0.00046 (0.00079)	4e-04 (0.00018)
22	0.00081 (2e-04)	0.00015 (0.00077)	0.00074 (0.00022)
23	0.00034 (0.00017)	0.00019 (0.00077)	0.00047 (0.00018)
24	0.00021 (0.00016)	0.00059 (0.00079)	0.00037 (0.00017)
25	0.00048 (0.00018)	4e-04 (0.00079)	0.00051 (2e-04)
26	0.00039 (0.00017)	0.00019 (0.00077)	0.00041 (0.00019)
27	4e-04 (0.00017)	0.00015 (0.00077)	0.00047 (0.00018)
28	0.00036 (0.00017)	8e-05 (0.00076)	0.00036 (0.00018)
29	4e-05 (0.00015)	0.00021 (0.00077)	4e-04 (0.00015)
30	3e-04 (0.00017)	0.00323 (0.00099)	-8e-04 (0.00022)
31	0.00133 (0.00022)	1e-04 (0.00076)	0.00058 (0.00025)
32	0.00042 (0.00018)	-0.00013 (0.00074)	0.00041 (0.00018)
33	0.00084 (2e-04)	1e-04 (0.00076)	0.00048 (0.00022)
34	0.00022 (0.00015)	0.00073 (0.00069)	0.00052 (0.00017)
35	0.00052 (0.00018)	0.00038 (0.00079)	0.00055 (2e-04)
36	0.00051 (0.00018)	-4e-05 (0.00075)	-0.00082 (0.00019)
37	0.00046 (0.00018)	0.00012 (0.00076)	-0.00045 (0.00019)
38	0.00061 (0.00019)	0.00033 (0.00078)	0.00042 (2e-04)
39	0.00033 (0.00017)	2e-05 (0.00075)	0.00043 (0.00018)
40	0.00022 (0.00016)	0.00048 (0.00079)	-0.00041 (0.00017)
41	0.00041 (0.00018)	0.00097 (0.00083)	7e-04 (2e-04)
42	0.00047 (0.00018)	0.00037 (0.00079)	-0.00075 (0.00019)
43	0.00021 (0.00013)	-5e-05 (4e-04)	0.00036 (0.00014)
44	0.00058 (0.00018)	8e-05 (0.00076)	0.00047 (2e-04)
45	0.00036 (0.00017)	0.00046 (0.00079)	-0.00045 (0.00019)
46	0.00052 (0.00018)	2e-04 (0.00077)	-0.00064 (2e-04)
47	0.00047 (0.00018)	0.00069 (0.00081)	-0.00083 (2e-04)
48	3e-04 (0.00017)	9e-05 (0.00076)	0.00037 (0.00018)

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2	0.00052 (0.00016)	0.00059 (6e-04)	0.00059 (0.00019)
3	4e-04 (0.00013)	0.00014 (1e-04)	0.00031 (0.00015)
4	6e-04 (0.00019)	7e-05 (0.00076)	-0.00063 (2e-04)
5	0.00031 (0.00017)	0.00034 (0.00078)	0.00048 (0.00018)
6	0.00054 (0.00018)	0.00028 (0.00078)	0.00043 (2e-04)
7	0.00045 (0.00018)	0.00054 (8e-04)	0.00051 (0.00019)
8	0.00022 (0.00016)	-2e-05 (0.00075)	-0.00034 (0.00017)
9	0.00034 (0.00017)	8e-05 (0.00076)	-0.00038 (0.00018)
10	0.00045 (0.00018)	-7e-05 (0.00075)	0.00037 (0.00019)
11	0.00042 (0.00018)	0.00014 (0.00077)	-0.00047 (0.00019)
12	0.00036 (0.00017)	0.00024 (0.00077)	-0.00043 (0.00018)
13	0.00067 (0.00019)	0.00011 (0.00076)	0.00048 (0.00021)
14	0.00034 (0.00017)	0.00083 (0.00082)	-0.00041 (0.00019)
15	0.00041 (0.00018)	0.00028 (0.00078)	0.00054 (0.00019)
16	0.00032 (0.00017)	0.00022 (0.00077)	0.00042 (0.00018)
17	4e-04 (0.00017)	0.00042 (0.00079)	0.00043 (0.00019)
18	0.00023 (0.00016)	1e-04 (0.00076)	-4e-04 (0.00017)
19	1e-04 (0.00016)	0.00048 (0.00079)	0.00043 (0.00016)
20	0.00103 (0.00021)	-0.00013 (0.00074)	-0.00059 (0.00023)
21	4e-04 (0.00017)	1e-04 (0.00076)	0.00059 (0.00018)
22	0.00035 (0.00017)	0.00015 (0.00077)	0.00038 (0.00018)
23	0.00057 (0.00018)	0.00029 (0.00078)	0.00048 (2e-04)
24	0.00035 (0.00017)	0.00014 (0.00077)	0.00052 (0.00018)
25	0.00034 (0.00016)	0.00027 (0.00064)	-5e-04 (0.00017)
26	0.00023 (0.00016)	0.00033 (0.00078)	-0.00056 (0.00017)
27	0.00025 (0.00017)	0.00036 (0.00078)	-0.00046 (0.00018)
28	9e-04 (2e-04)	0.00037 (0.00078)	0.00045 (0.00023)
29	0.00016 (0.00016)	5e-04 (8e-04)	-0.00039 (0.00017)
30	0.00042 (0.00018)	1e-05 (0.00075)	0.00048 (0.00019)
31	0.00032 (0.00017)	-3e-05 (0.00074)	-0.00036 (0.00017)
32	0.00015 (0.00016)	0.00069 (0.00081)	0.00036 (0.00017)
33	0.00067 (0.00019)	0.00045 (0.00079)	0.00046 (0.00021)
34	0.00028 (0.00017)	-8e-05 (0.00074)	0.00045 (0.00017)
35	0.00014 (0.00014)	-5e-05 (0.00058)	0.00028 (0.00014)
36	0.00051 (0.00018)	0.00015 (0.00077)	0.00067 (0.00019)
37	0.00027 (0.00017)	3e-05 (0.00076)	0.00036 (0.00017)
38	0.00024 (0.00017)	0.00045 (0.00079)	-0.00035 (0.00018)
39	0.00019 (0.00016)	5e-05 (0.00076)	-5e-04 (0.00016)
40	0.00031 (0.00017)	-0.00013 (0.00074)	0.00044 (0.00017)
41	4e-04 (0.00017)	0.00088 (0.00083)	0.00056 (0.00019)
42	0.00045 (0.00018)	-0.00019 (0.00074)	-0.00037 (0.00019)
43	0.00037 (0.00017)	0.00015 (0.00077)	0.00039 (0.00018)
44	1e-04 (0.00016)	0.00021 (0.00077)	-0.00034 (0.00016)
45	0.00088 (2e-04)	9e-05 (0.00076)	0.00045 (0.00022)
46	0.00036 (0.00017)	0.00045 (0.00079)	0.00044 (0.00019)
47	0.00064 (0.00019)	0.00069 (0.00081)	-0.00082 (0.00021)
48	0.00029 (0.00017)	0.00047 (0.00079)	0.00068 (0.00018)
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2	0.00037 (0.00017)	0.00033 (0.00078)	-0.00042 (0.00019)
3	0.00053 (0.00018)	6e-05 (0.00076)	-0.00057 (0.00019)
4	0.00048 (0.00018)	7e-05 (0.00076)	0.00074 (0.00019)
5	1e-04 (0.00016)	0 (0.00075)	-0.00035 (0.00016)
6	0.00049 (0.00018)	0.00082 (0.00082)	0.00058 (2e-04)
7	0.00065 (0.00019)	0.00043 (0.00079)	0.00043 (0.00021)
8	0.00055 (0.00018)	0.00097 (0.00083)	0.00081 (0.00021)
9	0.00084 (2e-04)	-3e-05 (0.00075)	5e-04 (0.00022)
10	0.00039 (0.00017)	0.00031 (0.00078)	0.00041 (0.00019)
11	0.00012 (0.00016)	0.00085 (0.00082)	0.00034 (0.00017)
12	0.00034 (0.00017)	0.00065 (0.00081)	0.00046 (0.00019)
13	0.00021 (0.00016)	0.00024 (0.00077)	-0.00035 (0.00017)
14	0.00033 (0.00017)	0.00022 (0.00077)	5e-04 (0.00018)
15	0.00038 (0.00017)	-2e-05 (0.00075)	4e-04 (0.00018)
16	0.00041 (0.00018)	-3e-05 (0.00075)	-0.00048 (0.00018)
17	3e-04 (0.00017)	0.00017 (0.00077)	0.00054 (0.00018)
18	0.00032 (0.00014)	-5e-05 (0.00041)	-0.00031 (0.00015)
19	7e-04 (0.00019)	0.00059 (8e-04)	0.00061 (0.00021)
20	7e-04 (0.00019)	3e-04 (0.00078)	0.00043 (0.00021)
21	0.00014 (0.00016)	0.00013 (0.00076)	0.00038 (0.00016)
22	0.00056 (0.00018)	0.00044 (0.00079)	0.00058 (2e-04)
23	4e-04 (0.00017)	3e-04 (0.00078)	-0.00037 (0.00019)
24	0.00014 (0.00016)	-2e-04 (0.00074)	-0.00032 (0.00016)
25	2e-04 (0.00016)	0.00037 (0.00078)	0.00036 (0.00017)
26	0.00025 (0.00017)	1e-04 (0.00076)	-0.00042 (0.00017)
27	0.00084 (2e-04)	-7e-05 (0.00075)	0.00051 (0.00022)
28	0.00056 (0.00018)	5e-04 (8e-04)	-0.00041 (2e-04)
29	9e-04 (2e-04)	-3e-05 (0.00075)	-5e-04 (0.00022)
30	0.00018 (0.00016)	0.00016 (0.00077)	-0.00052 (0.00017)
31	0.00054 (0.00018)	1e-05 (0.00075)	-0.00043 (2e-04)
32	0.00113 (0.00021)	3e-04 (0.00078)	-0.00061 (0.00024)
33	5e-04 (0.00018)	0.00035 (0.00078)	-0.00039 (2e-04)
34	0.00063 (0.00019)	0.00032 (0.00078)	0.00054 (0.00021)
35	0.00031 (0.00017)	0.00041 (0.00079)	0.00042 (0.00018)
36	0.00047 (0.00015)	0.00013 (0.00048)	-0.00047 (0.00017)
37	0.00019 (0.00016)	6e-04 (8e-04)	0.00051 (0.00017)
38	0.00112 (0.00021)	-1e-05 (0.00075)	-0.00059 (0.00024)
39	0.00014 (0.00016)	-6e-05 (0.00075)	-0.00041 (0.00016)
40	7e-05 (0.00015)	0.00057 (0.00077)	0.00035 (0.00016)
41	3e-04 (0.00017)	0.00032 (0.00078)	0.00035 (0.00018)
42	0.00037 (0.00017)	0.00013 (0.00076)	-0.00036 (0.00018)
43	0.00033 (0.00017)	0.00011 (0.00076)	-0.00041 (0.00018)
44	0.00043 (0.00018)	2e-04 (0.00077)	-4e-04 (0.00019)
45	0.00055 (0.00018)	9e-05 (0.00076)	-0.00054 (2e-04)
46	0.00017 (0.00016)	-0.00019 (0.00074)	0.00049 (0.00016)
47	3e-04 (0.00017)	0.00037 (0.00078)	0.00039 (0.00018)
48	0.00049 (0.00018)	3e-04 (0.00078)	0.00042 (0.00019)
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2	5e-04 (0.00016)	0.00014 (0.00051)	5e-04 (0.00018)
3	0.00071 (0.00019)	-5e-05 (0.00075)	0.00047 (0.00021)
4	0.00047 (0.00018)	0.00018 (0.00077)	-0.00042 (0.00019)
5	4e-04 (0.00017)	0.00063 (0.00081)	0.00057 (0.00019)
6	2e-04 (0.00016)	0.00032 (0.00078)	-4e-04 (0.00017)
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8	0.00046 (0.00018)	-6e-05 (0.00075)	-0.00065 (0.00019)
9	0.00047 (0.00018)	-5e-05 (0.00075)	-4e-04 (0.00019)
10	0.00015 (0.00016)	5e-05 (0.00076)	-0.00043 (0.00016)
11	3e-04 (0.00017)	4e-05 (0.00076)	-5e-04 (0.00017)
12	0.00039 (0.00017)	1e-04 (0.00076)	-0.00046 (0.00018)
13	0.00039 (0.00017)	-8e-05 (0.00075)	-0.00036 (0.00018)
14	0.00055 (0.00018)	0.00014 (0.00077)	-0.00043 (2e-04)
15	0.00025 (0.00017)	0.00026 (0.00078)	0.00059 (0.00017)
16	0.00038 (0.00017)	-3e-05 (0.00075)	0.00039 (0.00018)
17	0.00043 (0.00018)	5e-05 (0.00076)	0.00037 (0.00019)
18	0.00041 (0.00018)	4e-05 (0.00076)	-0.00061 (0.00018)
19	0.00059 (0.00019)	0.00054 (8e-04)	-0.00047 (0.00021)
20	0.00022 (0.00016)	-2e-05 (0.00075)	-0.00038 (0.00017)
21	0.00039 (0.00017)	4e-05 (0.00076)	0.00054 (0.00018)
22	0.00057 (0.00016)	0.00045 (5e-04)	-0.00039 (0.00018)
23	0.00051 (0.00018)	-5e-05 (0.00074)	0.00043 (0.00019)
24	0.00046 (0.00018)	0.00067 (0.00081)	0.00082 (2e-04)
25	0.00035 (0.00017)	0.00023 (0.00077)	0.00051 (0.00018)
26	0.00039 (0.00017)	-1e-05 (0.00075)	0.00045 (0.00018)
27	0.00012 (0.00016)	2e-04 (0.00077)	0.00037 (0.00016)
28	2e-04 (0.00016)	-1e-05 (0.00075)	-0.00038 (0.00017)
29	0.00031 (0.00017)	0.00029 (0.00078)	-0.00051 (0.00018)
30	0.00084 (2e-04)	0.00037 (0.00078)	0.00056 (0.00022)
31	0.00039 (0.00017)	-9e-05 (0.00075)	0.00041 (0.00018)
32	0.00017 (0.00016)	0.00059 (8e-04)	-0.00037 (0.00017)
33	0.00046 (0.00018)	-1e-05 (0.00075)	0.00054 (0.00019)
34	0.00047 (0.00018)	-7e-05 (0.00075)	-0.00038 (0.00019)
35	6e-04 (0.00019)	1e-04 (0.00076)	0.00048 (2e-04)
36	0.00041 (0.00018)	1e-05 (0.00075)	0.00057 (0.00018)
37	0.00017 (0.00016)	8e-05 (0.00076)	0.00064 (0.00016)
38	0.00059 (0.00019)	0.00065 (0.00081)	6e-04 (0.00021)
39	0.00037 (0.00017)	-6e-05 (0.00075)	-4e-04 (0.00018)
40	0.00031 (0.00017)	-0.00014 (0.00074)	0.00037 (0.00017)
41	0.00023 (0.00016)	1e-05 (0.00075)	-0.00033 (0.00017)
42	0.00038 (0.00017)	0.00018 (0.00077)	0.00059 (0.00018)
43	0.00079 (2e-04)	0.00032 (0.00078)	0.00049 (0.00022)
44	0.00014 (0.00016)	1e-04 (0.00076)	-0.00048 (0.00016)
45	0.00019 (0.00016)	-4e-05 (0.00075)	4e-04 (0.00016)
46	0.00052 (0.00018)	9e-05 (0.00076)	4e-04 (0.00019)
47	0.00029 (0.00017)	0.00022 (0.00077)	-0.00065 (0.00018)
48	3e-04 (0.00017)	0.00034 (0.00078)	0.00036 (0.00018)
49	0.00047 (0.00018)	-2e-05 (0.00075)	0.00068 (0.00019)
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2	4e-04 (0.00018)	-2e-05 (0.00075)	0.00046 (0.00018)
3	0.00033 (0.00017)	0.00037 (0.00078)	0.00048 (0.00018)
4	0.00027 (0.00017)	0.00018 (0.00077)	4e-04 (0.00017)
5	0.00026 (0.00017)	0.00032 (0.00078)	0.00041 (0.00018)
6	0.00052 (0.00018)	0.00048 (0.00079)	0.00058 (2e-04)
7	0.00025 (0.00017)	0.00027 (0.00078)	0.00049 (0.00017)
8	0.00036 (0.00017)	0.00023 (0.00077)	0.00055 (0.00018)
9	7e-04 (0.00019)	0.00057 (8e-04)	0.00099 (0.00021)
10	0.00028 (0.00017)	0.00018 (0.00077)	-0.00054 (0.00018)
11	0.00086 (2e-04)	0.00125 (0.00085)	0.00055 (0.00023)
12	0.00036 (0.00017)	2e-04 (0.00077)	-0.00046 (0.00018)
13	0.00014 (0.00016)	0.00043 (0.00079)	-0.00035 (0.00017)
14	0.00031 (0.00017)	-9e-05 (0.00075)	0.00043 (0.00017)
15	0.00065 (0.00019)	-4e-05 (0.00074)	-0.00066 (2e-04)
16	0.00081 (2e-04)	3e-05 (0.00074)	0.00047 (0.00021)
17	0.00021 (0.00017)	0.00044 (0.00078)	0.00038 (0.00017)
18	0.00033 (0.00017)	0.00038 (0.00077)	0.00047 (0.00018)
19	0.00065 (0.00018)	8e-05 (0.00066)	0.00057 (2e-04)
20	0.00016 (0.00016)	0 (0.00074)	0.00034 (0.00016)
21	0.00018 (0.00014)	1e-04 (0.00055)	-0.00029 (0.00015)
22	0.00109 (0.00021)	0.00031 (0.00077)	6e-04 (0.00023)
23	0.00032 (0.00017)	-9e-05 (0.00073)	0.00037 (0.00018)
24	0.00075 (2e-04)	-0.00013 (0.00073)	0.00042 (0.00021)
25	0.00019 (0.00016)	0.00026 (0.00076)	0.00053 (0.00017)
26	0.00063 (0.00019)	0.00016 (0.00075)	4e-04 (2e-04)
27	0.00038 (0.00018)	0.00019 (0.00076)	5e-04 (0.00018)
28	0.00033 (0.00014)	-3e-05 (0.00048)	0.00042 (0.00015)
29	0.00037 (0.00018)	0.00013 (0.00075)	0.00068 (0.00018)
30	0.00022 (0.00017)	9e-05 (0.00075)	0.00039 (0.00017)
31	0.00059 (0.00019)	0.00128 (0.00084)	0.00066 (0.00021)
32	0.00024 (0.00017)	0.00023 (0.00076)	0.00037 (0.00017)
33	0.00068 (0.00019)	3e-05 (0.00074)	0.00049 (2e-04)
34	0.00038 (0.00018)	7e-05 (0.00075)	0.00046 (0.00018)
35	0.00041 (0.00018)	2e-04 (0.00076)	0.00038 (0.00019)
36	0.00039 (0.00018)	-0.00011 (0.00073)	0.00045 (0.00018)
37	0.00037 (0.00018)	5e-05 (0.00075)	0.00047 (0.00018)
38	7e-04 (0.00019)	0.00036 (0.00077)	0.00042 (0.00021)
39	0.00102 (2e-04)	0.00023 (7e-04)	0.00068 (0.00023)
40	0.00034 (0.00017)	-6e-05 (0.00074)	4e-04 (0.00018)
41	0.00039 (0.00018)	-1e-05 (0.00074)	0.00037 (0.00018)
42	0.00039 (0.00018)	-0.00018 (0.00073)	0.00061 (0.00018)
43	0.00089 (2e-04)	0.00086 (0.00081)	0.00066 (0.00023)
44	0.00133 (0.00022)	0.00185 (0.00088)	0.00074 (0.00026)
45	0.00047 (0.00018)	0.00011 (0.00075)	0.00037 (0.00019)
46	2e-04 (0.00017)	8e-05 (0.00075)	0.00044 (0.00017)
47	0.00016 (0.00016)	0.00058 (0.00079)	0.00061 (0.00017)
48	0.00041 (0.00018)	-3e-05 (0.00074)	0.00058 (0.00018)
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2	0.00091 (2e-04)	0.00055 (0.00078)	0.00054 (0.00023)
3	0.00061 (0.00019)	7e-05 (0.00075)	0.00054 (2e-04)
4	0.00051 (0.00018)	0.00015 (0.00075)	0.00041 (0.00019)
5	5e-04 (0.00018)	0.00013 (0.00075)	-0.00052 (0.00019)
6	3e-04 (0.00017)	0.00011 (0.00075)	0.00039 (0.00018)
7			
8	0.00056 (0.00019)	3e-05 (0.00074)	0.00063 (2e-04)
9	0.00062 (0.00019)	-1e-05 (0.00074)	0.00051 (2e-04)
10	0.00017 (0.00016)	0.00016 (0.00075)	0.00036 (0.00017)
11	0.00045 (0.00018)	4e-05 (0.00074)	0.00038 (0.00019)
12			
13	0.00019 (0.00017)	0.00068 (0.00079)	-0.00037 (0.00018)
14	0.00041 (0.00018)	-0.00017 (0.00073)	0.00037 (0.00018)
15	4e-04 (0.00018)	6e-05 (0.00075)	0.00038 (0.00018)
16	0.00046 (0.00018)	-5e-05 (0.00074)	0.00045 (0.00019)
17			
18	0.00108 (0.00021)	0.00035 (0.00077)	0.00046 (0.00023)
19	0.00026 (0.00017)	-0.00013 (0.00073)	0.00037 (0.00017)
20	0.00022 (0.00017)	0.00014 (0.00075)	0.00049 (0.00017)
21	0.00021 (0.00014)	8e-05 (5e-04)	0.00036 (0.00014)
22	0.00033 (0.00017)	0.00014 (0.00075)	0.00048 (0.00018)
23	0.00024 (0.00017)	0.00018 (0.00076)	0.00035 (0.00017)
24	0.00029 (0.00017)	0.00016 (0.00075)	0.00075 (0.00018)
25			
26	0.00087 (2e-04)	0.00026 (0.00076)	0.00062 (0.00022)
27	0.00023 (0.00015)	0.00039 (0.00061)	0.00047 (0.00016)
28	2e-04 (0.00017)	8e-05 (0.00075)	0.00039 (0.00017)
29			
30	0.00034 (0.00017)	-0.00015 (0.00073)	-0.00046 (0.00018)
31	0.00041 (0.00018)	-0.00012 (0.00073)	4e-04 (0.00018)
32	0.00036 (0.00018)	0.00018 (0.00076)	0.00039 (0.00018)
33	0.00028 (0.00017)	0.00012 (0.00075)	0.00039 (0.00017)
34	0.00025 (0.00017)	0.00031 (0.00077)	0.00038 (0.00018)
35			
36	0.00037 (0.00018)	0.00055 (0.00078)	4e-04 (0.00019)
37	0.00031 (0.00017)	0.00053 (0.00078)	0.00037 (0.00018)
38	0.00023 (0.00017)	0.00051 (0.00078)	0.00035 (0.00018)
39	0.00027 (0.00017)	1e-05 (0.00074)	4e-04 (0.00017)
40	0.00054 (0.00018)	-4e-05 (0.00074)	7e-04 (0.00019)
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42	0.00057 (0.00019)	0.00015 (0.00075)	0.00064 (2e-04)
43	0.00056 (0.00019)	0.00028 (0.00076)	0.00047 (2e-04)
44	0.00043 (0.00018)	2e-05 (0.00074)	0.00038 (0.00019)
45	5e-04 (0.00018)	-0.00013 (0.00073)	0.00043 (0.00019)
46	0.00044 (0.00018)	8e-04 (8e-04)	-0.00044 (2e-04)
47			
48	6e-05 (0.00016)	-1e-04 (0.00073)	0.00033 (0.00015)
49	0.00043 (0.00018)	-0.00017 (0.00073)	0.00054 (0.00018)
50	0.00027 (0.00017)	-3e-05 (0.00074)	0.00041 (0.00017)
51	0.00025 (0.00017)	0.00014 (0.00075)	0.00038 (0.00017)
52	0.00035 (0.00017)	-9e-05 (0.00073)	0.00057 (0.00018)
53	0.00044 (0.00018)	-1e-04 (0.00073)	4e-04 (0.00018)
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55	0.00048 (0.00018)	4e-05 (0.00074)	0.00053 (0.00019)
56	0.00041 (0.00018)	-4e-05 (0.00074)	4e-04 (0.00018)
57	0.00028 (0.00017)	-0.00015 (0.00073)	0.00034 (0.00017)
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2	0.00021 (0.00017)	0.00048 (0.00078)	0.00035 (0.00017)
3	0.00029 (0.00014)	0.00022 (0.00049)	3e-04 (0.00015)
4	9e-04 (2e-04)	1e-05 (0.00074)	0.00046 (0.00022)
5	5e-04 (0.00018)	0.00025 (0.00076)	0.00046 (0.00019)
6	0.00029 (0.00017)	0.00027 (0.00076)	0.00048 (0.00018)
7	0.00021 (0.00017)	-6e-05 (0.00074)	0.00051 (0.00017)
8	0.00033 (0.00017)	0.00047 (0.00076)	4e-04 (0.00018)
9	0.00018 (0.00016)	0.00023 (0.00076)	0.00036 (0.00017)
10	0.00036 (0.00017)	-1e-05 (0.00074)	0.00046 (0.00018)
11	0.00026 (0.00017)	9e-05 (0.00075)	0.00036 (0.00017)
12	0.00037 (0.00018)	-0.00013 (0.00073)	0.00039 (0.00018)
13	0.00016 (0.00016)	-4e-05 (0.00074)	0.00049 (0.00016)
14	0.00026 (0.00017)	-2e-05 (0.00074)	0.00055 (0.00017)
15	0.00028 (0.00017)	-3e-05 (0.00074)	-0.00036 (0.00017)
16	0.00035 (0.00017)	1e-05 (0.00074)	0.00062 (0.00018)
17	8e-05 (0.00016)	0.00012 (0.00075)	0.00031 (0.00016)
18	0.00029 (0.00017)	5e-05 (0.00075)	4e-04 (0.00017)
19	0.00054 (0.00019)	9e-05 (0.00075)	5e-04 (2e-04)
20	0.00057 (0.00019)	0.00035 (0.00077)	0.00044 (2e-04)
21	0.00053 (0.00018)	-6e-05 (0.00074)	0.00051 (0.00019)
22	0.00031 (0.00017)	-9e-05 (0.00073)	0.00047 (0.00017)
23	0.00065 (0.00019)	5e-05 (0.00075)	-0.00046 (2e-04)
24	0.00035 (0.00017)	9e-05 (0.00075)	0.00038 (0.00018)
25	0.00057 (0.00019)	3e-05 (0.00074)	0.00045 (2e-04)
26	0.00045 (0.00018)	0.00075 (8e-04)	0.00054 (2e-04)
27	0.00045 (0.00018)	-9e-05 (0.00073)	0.00054 (0.00019)
28	0.00023 (0.00015)	0.00033 (6e-04)	0.00034 (0.00016)
29	0.00042 (0.00018)	-0.00013 (0.00073)	0.00044 (0.00018)
30	0.00031 (0.00017)	2e-05 (0.00074)	4e-04 (0.00018)
31	0.00016 (0.00012)	9e-05 (0.00041)	0.00032 (0.00013)
32	0.00094 (2e-04)	0.00011 (0.00066)	0.00045 (0.00022)
33	7e-04 (0.00017)	0.00013 (0.00053)	5e-04 (0.00019)
34	0.00039 (0.00018)	0.00011 (0.00075)	0.00038 (0.00018)
35	0.00037 (0.00017)	0.00038 (0.00076)	0.00038 (0.00018)
36	0.00032 (0.00014)	6e-05 (0.00049)	3e-04 (0.00015)
37	0.00019 (0.00016)	-0.00014 (0.00073)	0.00034 (0.00016)
38	0.00019 (0.00016)	7e-04 (0.00079)	0.00045 (0.00018)
39	0.00071 (0.00019)	0.00018 (0.00076)	0.00041 (0.00021)
40	0.00057 (0.00019)	0.00034 (0.00077)	0.00049 (2e-04)
41	0.00039 (0.00018)	9e-05 (0.00075)	0.00041 (0.00018)
42	0.00011 (0.00016)	-5e-05 (0.00074)	0.00035 (0.00016)
43	0.00016 (0.00016)	-0.00013 (0.00073)	0.00035 (0.00016)
44	1e-04 (0.00016)	-1e-04 (0.00073)	0.00031 (0.00016)
45	0.00025 (0.00017)	7e-05 (0.00075)	0.00051 (0.00017)
46	0.00036 (0.00018)	8e-05 (0.00075)	0.00038 (0.00018)
47	0.00017 (0.00016)	0.00027 (0.00076)	5e-04 (0.00017)
48	0.00032 (0.00017)	0.00012 (0.00075)	0.00047 (0.00018)
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2	0.00057 (0.00019)	0.00076 (8e-04)	0.00073 (0.00021)
3	0.00025 (0.00017)	-6e-05 (0.00074)	0.00037 (0.00017)
4	0.00032 (0.00013)	9e-05 (0.00039)	0.00033 (0.00015)
5	0.00019 (0.00016)	-0.00016 (0.00073)	0.00036 (0.00016)
6	0.00065 (0.00019)	0.00035 (0.00077)	0.00042 (0.00021)
7	0.00067 (0.00019)	6e-04 (0.00079)	0.00059 (0.00021)
8	0.00054 (0.00019)	2e-04 (0.00076)	0.00054 (2e-04)
9	0.00016 (0.00016)	-7e-05 (0.00074)	0.00033 (0.00016)
10	0.00016 (0.00016)	-7e-05 (0.00074)	0.00033 (0.00016)
11	2e-04 (0.00017)	0.00026 (0.00076)	0.00041 (0.00017)
12	0.00063 (0.00019)	0.00024 (0.00076)	0.00082 (2e-04)
13	0.00033 (0.00017)	0.00026 (0.00076)	0.00074 (0.00018)
14	0.00074 (2e-04)	-4e-05 (0.00074)	0.00042 (0.00021)
15	0.00079 (2e-04)	-5e-05 (0.00074)	0.00062 (0.00021)
16	0.00033 (0.00017)	0.00017 (0.00076)	0.00043 (0.00018)
17	0.00057 (0.00019)	8e-05 (0.00075)	0.00051 (2e-04)
18	0.00015 (0.00016)	3e-05 (0.00074)	0.00035 (0.00016)
19	0.00081 (2e-04)	1e-05 (0.00074)	0.00066 (0.00021)
20	0.0013 (0.00022)	1e-05 (0.00074)	0.00068 (0.00024)
21	0.00031 (0.00017)	9e-05 (0.00075)	0.00043 (0.00018)
22	0.00032 (0.00017)	0.00011 (0.00075)	0.00037 (0.00018)
23	0.00037 (0.00018)	2e-05 (0.00074)	0.00045 (0.00018)
24	4e-04 (0.00018)	0.00029 (0.00076)	0.00047 (0.00019)
25	0.00014 (0.00016)	5e-05 (0.00075)	0.00037 (0.00016)
26	0.00032 (0.00017)	9e-05 (0.00075)	0.00035 (0.00018)
27	0.00033 (0.00017)	0.0011 (0.00083)	0.00063 (0.00019)
28	3e-04 (0.00017)	9e-05 (0.00075)	0.00038 (0.00018)
29	0.00049 (0.00017)	4e-05 (0.00062)	0.00043 (0.00018)
30	0.00045 (0.00018)	-8e-05 (0.00073)	7e-04 (0.00019)
31	0.00051 (0.00018)	7e-05 (0.00075)	0.00056 (0.00019)
32	0.00046 (0.00018)	0.00061 (0.00079)	0.00043 (2e-04)
33	0.00048 (0.00018)	-1e-05 (0.00074)	0.00039 (0.00019)
34	0.00064 (0.00019)	0.00014 (0.00075)	0.00044 (2e-04)
35	7e-04 (0.00019)	0.00029 (0.00076)	0.00042 (0.00021)
36	0.00034 (0.00017)	-4e-05 (0.00074)	0.00038 (0.00018)
37	0.00046 (0.00018)	-4e-05 (0.00074)	0.00037 (0.00019)
38	3e-04 (0.00017)	-0.00015 (0.00073)	-0.00035 (0.00017)
39	8e-05 (0.00016)	5e-04 (0.00078)	-0.00041 (0.00016)
40	0.00056 (0.00019)	-0.00013 (0.00073)	0.00043 (0.00019)
41	0.00012 (0.00016)	0.00018 (0.00076)	0.00037 (0.00016)
42	8e-05 (0.00012)	0.00013 (0.00041)	0.00024 (0.00012)
43	0.00044 (0.00018)	0.00015 (0.00075)	-0.00038 (0.00019)
44	0.00054 (0.00019)	4e-05 (0.00074)	4e-04 (0.00019)
45	0.00047 (0.00018)	-5e-05 (0.00074)	0.00038 (0.00019)
46	5e-04 (0.00018)	0.00037 (0.00077)	0.00048 (2e-04)
47	0.00027 (0.00017)	0.00013 (0.00075)	0.00037 (0.00018)
48	0.00021 (0.00017)	-0.00014 (0.00073)	0.00036 (0.00017)
49	6e-04 (0.00016)	0.00036 (0.00055)	4e-04 (0.00018)
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2	0.00055 (0.00019)	2e-05 (0.00074)	0.00074 (0.00019)
3	0.00086 (2e-04)	0.00012 (0.00075)	0.00049 (0.00022)
4	7e-04 (0.00019)	0.00035 (0.00077)	0.00046 (0.00021)
5	2e-04 (0.00017)	-3e-05 (0.00074)	0.00039 (0.00017)
6	0.00036 (0.00018)	1e-05 (0.00074)	0.00047 (0.00018)
7	0.00027 (0.00017)	0.00074 (8e-04)	4e-04 (0.00018)
8	0.00031 (0.00017)	-1e-05 (0.00073)	4e-04 (0.00017)
9	0.00031 (0.00017)	-1e-05 (0.00073)	4e-04 (0.00017)
10	0.00023 (0.00017)	0 (0.00074)	4e-04 (0.00017)
11	0.00042 (0.00018)	0.00015 (0.00075)	0.00051 (0.00019)
12	0.00019 (0.00016)	0 (0.00074)	0.00046 (0.00017)
13	0.00053 (0.00018)	0.00043 (0.00078)	-0.00042 (2e-04)
14	0.00066 (0.00019)	0.00142 (0.00085)	-0.00063 (0.00022)
15	0.00043 (0.00018)	0.00013 (0.00075)	0.00057 (0.00019)
16	0.00053 (0.00018)	0.00013 (0.00075)	0.00062 (0.00019)
17	0.00029 (0.00017)	0.00063 (0.00079)	0.00037 (0.00018)
18	0.00027 (0.00017)	0.00025 (0.00076)	0.00044 (0.00018)
19	0.00079 (2e-04)	-3e-05 (0.00074)	0.00052 (0.00021)
20	0.00013 (0.00016)	-6e-05 (0.00074)	-0.00061 (0.00016)
21	0.00013 (0.00016)	-6e-05 (0.00074)	-0.00061 (0.00016)
22	0.00023 (0.00017)	0.00014 (0.00075)	5e-04 (0.00017)
23	0.00013 (0.00016)	5e-05 (0.00074)	0.00033 (0.00016)
24	0.00027 (0.00017)	-5e-05 (0.00074)	0.00035 (0.00017)
25	0.00029 (0.00017)	0.00038 (0.00077)	0.00044 (0.00018)
26	0.00029 (0.00017)	0.00048 (0.00078)	0.00045 (0.00018)
27	0.00033 (0.00017)	0.00035 (0.00077)	4e-04 (0.00018)
28	4e-04 (0.00018)	0 (0.00074)	0.00078 (0.00018)
29	0.00021 (0.00017)	5e-05 (0.00075)	0.00037 (0.00017)
30	0.00032 (0.00017)	-0.00012 (0.00073)	0.00037 (0.00018)
31	0.00028 (0.00017)	-1e-05 (0.00074)	0.00039 (0.00017)
32	0.00063 (0.00019)	0.00042 (0.00077)	0.00061 (0.00021)
33	0.00087 (2e-04)	0.00047 (0.00078)	-0.00047 (0.00022)
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p-Value	BH-Corrected p-v	Genes Contained in this Locus
0.04812	0.999893375	CLSTN2, CLSTN2-AS1, PXYLP1, RPL23AP41, SLC25A36, SPSB4
0.031827	0.999893375	HSPA4L, INTU, SLC25A31
0.03824	0.999893375	AASS, ASB15, CADPS2, FEZF1, FEZF1-AS1, HYAL4, HYALP1, IC
0.010941	0.999893375	GTF2IP11, OR4A18P, OR4A19P, OR4A1P, OR4A2P, OR4A3P,
0.038635	0.999893375	OR4A5, OR4A6P
0.019169	0.999893375	GRAMD1B, OR10D1P, OR10D3, OR10D4P, OR10D5P, OR10G
0.033016	0.999893375	LINC02335, MIR5007
0.033586	0.99986	ACTBP13, AMIGO3, AMT, APEH, BSN, BSN-AS1, BSN-AS2, C3
0.0079213	0.99986	ATOH1, CCSER1, GRID2, HMGB3P15, KRT19P6, LNCPRESS2,
0.020986	0.99986	AMZ1, BRAT1, CHST12, EIF3B, GNA12, GRIFIN, IMMMP1LP3, IC
0.036411	0.99992	ABCA12, ATIC, BARD1, ENSAP3, FN1, RPL10P6, RPL5P8, SNO
0.010652	0.99992	KLHL32, MMS22L
0.036141	0.99992	ADHFE1, ARMC1, C8orf46, CRH, DNAJC5B, LINC00967, LINC0
0.0097382	0.99992	CA10, LINC00483, LINC02071, LINC02072, LINC02073, LUC7
0.044348	0.99992	ABHD12, ACSS1, APMAP, CST7, ENTPD6, PYGB, RNU6-1257F
0.037034	0.99993	ARIH2, ARIH2OS, ATRIP, C3orf62, C3orf84, CAMP, CCDC36, C
0.044411	0.99993	ACOT13, ALDH5A1, C6orf229, C6orf62, DCDC2, GMNN, GPLI
0.02578	0.99993	ARFGEF3, CCDC28A, ECT2L, GVQW2, HEBP2, LINC02528, LIN
0.026685	0.99993	AMZ1, BRAT1, CHST12, EIF3B, GNA12, GRIFIN, IMMMP1LP3, IC
0.043591	0.99993	ADA, EIF4EBP2P1, FITM2, GDAP1L1, GTSF1L, HNF4A, HNF4A
0.039181	0.998476984	ASCL5, CACNA1S, CAMSAP2, CSRP1, DDX59, FAM58BP, GPR
0.040851	0.998476984	ACTR2, CEP68, KRT18P33, LINC01800, LINC02245, LINC0257
0.029039	0.998476984	ACTRT3, CLDN11, EGFEM1P, EIF5A2, GPR160, KLF7P1, KRT1:
0.039393	0.998476984	ALG1L7P, ENPP7P9, FAM86EP, LYAR, NSG1, OR4D12P, OR7E
0.049373	0.998476984	ART3, BTC, CCDC158, CCNI, CDKL2, CXCL10, CXCL11, CXCL9,
0.0024856	0.998476984	ANKH, CCT6P2, DNAH5, EEF1A1P13, FAM105A, NENFP3, OT
0.042349	0.998476984	BMP5, COL21A1, HMGCLL1, NPM1P36
0.042358	0.998476984	GAPDHP15, GAPDHP41, GUSBP4, KHDRBS2, LINC00680, MT
0.018671	0.998476984	ADH5P4, NUFIP1P, RNU7-66P, SLC25A51P1
0.0080746	0.998476984	ARFGEF3, CCDC28A, ECT2L, GVQW2, HEBP2, LINC02528, LIN
0.023948	0.998476984	AIMP2, ANKRD61, CCZ1, CYTH3, DAGLB, EIF2AK1, FAM220A
0.033614	0.998476984	AGBL3, AKR1B1, AKR1B10, AKR1B15, BPGM, C7orf49, CALD:
0.049602	0.998476984	JHDM1D-AS1, KDM7A, PARP12, RNU6-797P, TBXAS1
0.046893	0.998476984	ADCK2, BRAF, CCT4P1, DENND2A, MKRN1, MRPS33, NDUFB
0.027681	0.998476984	AGPAT5, ANGPT2, DEFA1, DEFA10P, DEFA11P, DEFA1B, DEF
0.037726	0.998476984	HNF4G, LINC01109, LINC01111, RNU2-54P
0.047647	0.998476984	ARHGFE39, ATP8B5P, C9orf131, CA9, CCDC107, CCIN, CCL1S
0.011982	0.998476984	NRG3, NRG3-AS1, RNU6-441P, RPA2P2, WARS2P1
0.045235	0.998476984	CALHM1, CALHM2, CALHM3, CFAP43, CFAP58, CFAP58-AS1,
0.01627	0.998476984	C10orf143, CTAGE7P, EBF3, GLRX3, MGMT, MIR4297, PPIAP
0.014114	0.998476984	ABCC8, AKR1B1P3, C11orf58, KCNJ11, MIR6073, NCR3LG1, I
0.022409	0.998476984	AMOTL1, ANKRD49, BUD13P1, C11orf97, CWC15, ENDOD1,

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2	0.018227	0.998476984 APOLD1, BCL2L14, BORCS5, CDKN1B, CREBL2, DUSP16, ETV6
3	0.042545	0.998476984 ABI1P1, ATG14, CHMP4BP1, FBXO34, KTN1, KTN1-AS1, LINC
4	0.032159	0.998476984 ACTR10, ARID4A, C14orf37, CCDC198, DAAM1, DACT1, GPR
5	0.02232	0.998476984 ADSSL1, AHNAK2, AKT1, APOPT1, ASPG, BAG5, C14orf180, C
6	0.0022577	0.998476984 ANXA2, CYCSP38, FOXB1, ICE2, MESTP2, NMNAT1P5, RNA59
7	0.015229	0.998476984 CDH11, LINC00922, LINC02126, LINC02165, PPIAP48
8	0.045219	0.998476984 AANAT, CYCSP40, CYGB, JMJD6, LINC00868, LINC02080, ME
9	0.011384	0.998476984 CELF4, FHOD3, KIAA1328, MIR4318, RPL12P40, TPGS2
10	0.031534	0.999553009 AAK1, ADD2, ANTXR1, ANXA4, ASPRV1, B3GALNT1P1, BRD7
11	0.048462	0.999553009 ARIH2, ARIH2OS, ATRIP, C3orf62, C3orf84, CAMP, CCDC36, C
12	0.032595	0.999553009 ACTBP13, AMIGO3, AMT, APEH, BSN, BSN-AS1, BSN-AS2, C3
13	0.027956	0.999553009 CCDC50, CCT6P4, CLDN1, CLDN16, FGF12, FGF12-AS1, GCNT
14	0.015886	0.999553009 AMD1, BRD7P4, CDK19, CNN2P9, DDO, FAM229B, FCF1P5, F
15	0.017201	0.999553009 ASF1A, CEP85L, FAM184A, MCM9, NUS1, PLN, SELENOKP3, I
16	0.043502	0.999553009 CASC11, CASC19, CASC21, CASC8, CCAT2, FAM84B, LINC008
17	0.043919	0.999553009 ANXA2P3, CYP2C61P, DBF4P1, JMJD1C, JMJD1C-AS1, LINC01
18	0.031382	0.999553009 ANO3, FIBIN, MUC15, SLC5A12
19	0.046224	0.999553009 LINC02335, MIR5007
20	0.0071212	0.999553009 AATF, ACACA, ARHGAP23, C17orf78, C17orf98, CISD3, CWC
21	0.026767	0.999553009 C21orf58, DIP2A, DIP2A-IT1, DSTNP1, LSS, MCM3AP, MCM3
22	0.045096	0.998728131 ACBD3, ACBD3-AS1, CDKN2AIPNLP1, DNAH14, ENAH, EPHX1
23	0.048589	0.998728131 ANKRD30B, BNIP3P3, CXADRP3, FGF7P1, GRAMD4P7, GTF2I
24	0.046138	0.998728131 CELF4, FHOD3, KIAA1328, MIR4318, RPL12P40, TPGS2
25	0.018132	0.999171053 ASCL5, CACNA1S, CAMSAP2, CSRP1, DDX59, FAM58BP, GPR
26	0.0092378	0.999171053 BLACAT1, C1orf186, CDK18, CNTN2, CTSE, DSTYK, ELK4, KLH
27	0.0038799	0.999171053 ASTN2, RN7SKP125, RN7SKP128, RNU6-1082P, RPL10P3, RP
28	0.047776	0.999171053 LINC00374, LINC02338, PCDH17, RNA5SP30
29	0.0025346	0.999171053 AATF, ACACA, ARHGAP23, C17orf78, C17orf98, CISD3, CWC
30	0.032837	0.998859982 ABCA4, ABCD3, ARHGAP29, BCAR3, CHCHD2P5, DNNTIP2, FI
31	0.044686	0.998859982 DNAJC19P5, EVX2, EXTL2P1, FUCA1P1, HAGLR, HAGLROS, H
32	0.047898	0.998859982 ACTBP13, AMIGO3, AMT, APEH, BSN, BSN-AS1, BSN-AS2, C3
33	0.029125	0.998859982 ACTR6P1, AIMP1, ARHGEF38, ARHGEF38-IT1, ATP5EP1, DKK
34	0.039104	0.998859982 CASC15, HDGFL1, NBAT1, PRL, RN7SKP240
35	0.03237	0.998859982 AK3P3, EEF1A1P6, FAM126A, GPNMB, IGF2BP3, IL6, KLHL7,
36	0.047052	0.998859982 EIF4EP5, MIR383, PPM1AP1, RNU6-397P, RNU7-153P, SGCZ
37	0.025721	0.998859982 ARHGEF39, ATP8B5P, C9orf131, CA9, CCDC107, CCIN, CCL19
38	0.037703	0.998859982 AIFM1P1, ARL5B, CACNB2, HMGN1P20, MALRD1, NSUN6, R
39	0.013423	0.998859982 ABTB2, APIP, CAPRIN1, CAT, CD44, CD44-AS1, CIR1P3, EHF, I
40	0.030162	0.998859982 AHNAK, ASRGL1, ATL3, B3GAT3, BSCL2, C11orf95, C11orf98,
41	0.041875	0.998859982 COX5AP2, DDHD1, ERO1A, FERMT2, FRMD6, FRMD6-AS1, FI
42	0.01523	0.998859982 AKR1B1P7, CEBPA, CEBPA-AS1, CEBPG, CEP89, CHCHD2P3, C
43	0.021725	0.998859982 ANKEF1, C20orf187, FAT1P1, HIGD1AP15, JAG1, LINC01752,
44	0.0038739	0.99996 DPP4, EIF3EP2, FAP, GCA, GCG, IFIH1, KCNH7, RNA5SP109, F
45	0.043035	0.99996 ACVR2B, ACVR2B-AS1, CCR8, CSRNP1, CX3CR1, DDTP1, DSTI
46	0.043694	0.99996 ABHD14A, ABHD14A-ACY1, ABHD14B, ACTR8, ACY1, ALAS1,
47	0.0055521	0.99996 ALG1L13P, CLDN23, DEFB103A, DEFB103B, DEFB104A, DEFB
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2	0.039543	0.99996 LINC00599, MIR124-1, MIR597, MSRA, TNKS
3	0.0022306	0.99996 ALG1L11P, ALG1L12P, BLK, C8orf49, CTSB, DEFB108D, DEFB108E
4	0.045231	0.99996 CHMP4C, CKS1BP7, FABP12, FABP4, FABP5, FABP9, FTH1P1, FTH1P2
5	0.015441	0.99996 ABLIM1, ADRB1, AFAP1L2, ATRNL1, AURKAPS2, CASP7, CCD1
6	0.011609	0.99996 ACP2, AGBL2, ARFGAP2, C11orf49, C1QTNF4, CBX3P8, CELF1
7	0.028814	0.99996 DYNLL1P4, LHX5, LHX5-AS1, LINC01234, MIR6762, PLBD2, R
8	0.034337	0.99996 ACOD1, BTF3P11, CLN5, DHX9P1, FAM204CP, FBXL3, KCTD1
9	0.038727	0.99996 BHLHB9P1, CEP128, DIO2, DIO2-AS1, DYNLL1P1, DYNLL1P2,
10	0.018517	0.99996 ARGFXP2, C17orf75, CDK5R1, COPRS, LRRC37B, MIR193A, M
11	0.02215	0.99996 BDP1P, GALR1, LINC01029, RNA5SP461
12	0.024311	0.99994 APOBR, ATP2A1, ATP2A1-AS1, ATXN2L, CD19, CDC37P1, CD
13	0.038023	0.305818795 ACTRT2, ARHGEF16, CALML6, CFAP74, FAAP20, FAM213B, G
14	0.0028992	0.084139231 ACOT7, CAMTA1, CAMTA1-DT, CHD5, DNAJC11, ESPN, GPR1
15	0.0061915	0.134387301 CA6, CAMTA1, CAMTA1-IT1, ENO1, ENO1-AS1, ENO1-IT1, EF
16	0.021369	0.231223082 ADGRB2, BSDC1, CCDC28B, COL16A1, DCDC2B, EIF3I, FABP3
17	0.046761	0.334035329 ADPRHL2, AGO1, AGO3, AGO4, C1orf216, CLSPN, COL8A2, C
18	0.030733	0.287669696 AKR1A1, ATPAF1, CCDC163, CCDC17, CYP4B1, CYP4Z2P, DM
19	0.019812	0.225112188 ATP6V0E1P4, CMPK1, CYP4A11, CYP4A22, CYP4A22-AS1, CY
20	0.040328	0.308938027 DAB1, DAB1-AS1, HNRNPA1P6, JUN, LINC01135, MYSM1, OI
21	0.0045846	0.110881826 CACHD1, CFL1P3, DLEU2L, EFCAB7, ITGB3BP, JAK1, LINC013
22	0.020732	0.227917377 ARL5AP3, C1orf141, COX6B1P7, CTBP2P8, DEPDC1, DIRAS3,
23	0.046446	0.333191008 ANKRD13C, CASP3P1, CTH, HHLA3, LINC01788, LRRC40, LRR
24	0.0097833	0.170606029 ACTG1P21, ADGRL4, ADH5P2, AK5, DNAJB4, FUBP1, GIPC2,
25	0.001825	0.064556206 CTBS, DNASE2B, GNG5, LINC01555, LPAR3, PRKACB, RPF1, S
26	0.016655	0.198569824 LINC01661, MIR7852, MTATP6P14, MTCO1P14, NBP4, NBP
27	0.038198	0.305818795 ACKR1, AIM2, APCS, CADM3, CADM3-AS1, CD1A, CD1B, CD1
28	0.032099	0.295064414 ABL2, ACBD6, AXDND1, CEP350, COX5BP8, EIF4A1P11, FAM
29	0.0042845	0.10826356 B3GALT2, CDC73, GLRX2, LINC01031, LINC01032, MIR1278,
30	0.038664	0.305818795 BLACAT1, C1orf186, CDK18, CNTN2, CTSE, DSTYK, ELK4, KLH
31	0.043691	0.320211528 AURKAPS1, BPNT1, C1orf115, DUSP10, EPRS, HDAC1P2, HLX
32	0.04769	0.335017303 LINC01248, LINC01249, LINC01304, NPM1P48, RNU6-649P,
33	0.0060889	0.133876723 LINC01376, LINC01808, MIR4757, OSR1
34	0.03159	0.292500443 APOB, CISD1P1, GDF7, HS1BP3, HS1BP3-IT1, LAPTM4A, LDA
35	0.02815	0.27547948 BCYRN1, EPCAM, FBXO11, KCNK12, MIR559, MSH2, MSH6, I
36	0.0011509	0.050412331 AAK1, ADD2, ANTXR1, ANXA4, ASPRV1, B3GALNT1P1, BRD7
37	0.029294	0.281788307 GCFC2, LRRTM4, MRPL19, RN7SKP164, RN7SKP203, RNA5SF
38	0.049328	0.336569749 ABCD1P5, ACTR3BP2, ANKRD20A8P, CHEK2P3, CNN2P11, CI
39	0.0019861	0.06751684 CNTNAP5, LINC01889, RNA5SP102, RNU6-259P
40	0.0011374	0.050412331 LINC01412, LINC01966, RNU7-2P, RPL17P12, RPL6P5, TEX41
41	0.0012833	0.054315673 FABP5P10, LINC01817, LINC01818, LINC01920, MIR4773-1,
42	0.015842	0.198569824 ACVR1, ACVR1C, CCDC148, CCDC148-AS1, HNRNPDL2, PKP
43	0.020326	0.227893497 DPP4, EIF3EP2, FAP, GCA, GCG, IFIH1, KCNH7, RNA5SP109, F
44	0.0082643	0.158993863 COBLL1, GRB14, RNA5SP110, RNA5SP111, SCN3A, SLC38A11
45	0.037659	0.305818795 AGPS, API5P2, CYCTP, FKBP7, NFE2L2, OSBPL6, PDE11A, PJV
46	0.036447	0.305818795 CACYBPP2, DNAJC10, DUSP19, FRZB, KRT8P10, LIN28AP1, N
47	0.0017597	0.064556206 ANKAR, ASNSD1, C2orf88, CALCRL, COL3A1, COL5A2, DIRC1,
48	0.0094976	0.170606029 LINC01923, PLCL1, RNU7-147P, SATB2
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2	0.00025462	0.024167575	ACSL3, AP1S3, ATG12P2, CCDC195, CUL3, DOCK10, FAM124
3	0.0038115	0.099274915	HDAC4, LINC01940, MIR2467, MIR4269, MIR4440, MIR4441
4	0.043912	0.320444034	CNTN4, CNTN4-AS1, CRBN, IL5RA, LRRN1, MRPS10P2, PNPT
5	0.048812	0.336569749	CAV3, LHFPL4, OR7E122P, OXTR, PGAM1P4, RAD18, SETD5,
6	0.030205	0.285681927	ACTG1P12, ATG7, CAND2, CHCHD4P4, CRIP1P1, CYCSP12, F
7			
8	0.00080379	0.043897305	ZNF385D, ZNF385D-AS2
9	0.0010838	0.050412331	CCR1, CCR2, CCR3, CCR5, CCR9, CCRL2, CXCR6, FAM240A, FI
10	0.00018351	0.021850987	ARIH2, ARIH2OS, ATRIP, C3orf62, C3orf84, CAMP, CCDC36, C
11	0.0032406	0.087968817	AKR1B1P2, CCDC75P1, CNTN3, EBLN2, FTH1P23, GXYLT2, LA
12	0.000794	0.043897305	LINC02077, MRPS17P3, RN7SKP61, RN7SL647P, RN7SL751P,
13	0.016041	0.198569824	MIR548AB, NDUFA4P2, RAP1BP2, RNU1-43P, TUBBP11
14	2.68E-06	0.001132363	ABHD10, ATG3, ATP6V0CP2, BTLA, C3orf52, CCDC80, CD200
15	0.039829	0.308341473	BZW1P2, GAP43, LINC00903, LSAMP, LSAMP-AS1, RN7SL58:
16	0.0011613	0.050412331	ACAD9, ALG1L2, CNBP, COL6A4P2, COPG1, DNAJB8, DNAJB8
17	0.015085	0.198569824	ARL14, B3GALNT1, B3GAT3P1, BRD7P2, C3orf80, EEF1GP4, I
18	0.010328	0.170606029	LINC01192, RPS6P4, TOMM22P6
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20	0.00040767	0.028757721	CCDC50, CCT6P4, CLDN1, CLDN16, FGF12, FGF12-AS1, GCNT
21	0.03744	0.305818795	ABCA11P, ATP5I, BNIP3P41, MFSD7, MIR571, MYL5, PDE6B,
22	0.043433	0.320211528	CYTL1, LDHAP1, LINC01396, MSX1, RN7SKP113, RN7SKP275
23	0.0025793	0.078440318	HS3ST1, LINC02270, LINC02360, LINC02498, MIR572, RNA5:
24	0.01683	0.199253077	ATP8A1, CCNL2P1, GRXCR1, LINC02383, NDUFB4P12, RN7SK
25	0.030755	0.287669696	GNPDA2, GUF1, KCTD8, LINC02475, PRDX4P1, YIPF7
26	0.037753	0.305818795	GLDCP1, HOPX, IGFBP7, IGFBP7-AS1, LINC02380, LINC02494
27	0.033221	0.298111323	ADGRL3, ADGRL3-AS1, LINC02271, LINC02496, MIR548AG1,
28	0.01481	0.198569824	ARHGAP24, C4orf36, MAPK10, MIR4451, MIR4452, PTPN13,
29	0.022528	0.236893814	ATOH1, CCSER1, GRID2, HMGB3P15, KRT19P6, LNCPRESS2,
30	1.39E-06	0.000783915	ACTR3BP4, BANK1, BDH2, CENPE, CISD2, EMCN, KRT8P46, L
31	0.010436	0.170606029	ALPK1, ANK2, AP1AR, CAMK2D, CCDC34P1, FAM241A, LARP
32	0.042025	0.317426213	LINC02502, LTV1P1, MAD2L1
33	0.0010109	0.050412331	BBS12, CETN4P, FGF2, IL21-AS1, LINC01091, LINC02435, NU
34	0.013212	0.18955861	RNU6-224P
35	0.001994	0.06751684	ANXA10, BTF3L4P4, CBR4, CLCN3, DDX60, DDX60L, NEK1, P/
36	0.049893	0.336569749	ADAM20P2, ADAM29, ASB5, CEP44, FBXO8, GLRA3, GPM6A
37	0.0066922	0.141623683	HSP90AA4P, LINC01060, LINC01262, LINC02508, RNU7-192F
38	0.033984	0.301752874	C5orf38, IRX2
39	0.047645	0.335017303	HMGB3P3, LINC01018, LINC02102, LINC02145, LINC02196, I
40	0.03794	0.305818795	BASP1, BASP1-AS1, DCAF13P2, FTH1P10, LINC02111, LINC0:
41	0.0080363	0.156384551	CDH9, PURPL, RNU6-738P
42	0.00070595	0.041212874	AK4P2, ANKRD55, C1GALT1P2, C5orf67, DDX4, HMGN1P17,
43	0.023773	0.244016373	ANKDD1B, ANKRD31, ARHGEF28, COL4A3BP, ENC1, FAM16:
44	5.59E-05	0.011607208	BRD8, CDC23, CDC25C, CTNNA1, EGR1, ETF1, FAM13B, FAM
45	0.0079846	0.156384551	C5orf46, DPYSL3, EEF1GP2, FBXO38, HMGN1P16, HTR4, JAK
46	0.0066087	0.141623683	CIR1P1, CNOT8, FAM114A2, FAXDC2, GALNT10, GEMIN5, GI
47	0.0018018	0.064556206	GABRA1, GABRA6, GABRB2, GABRG2, GLRXP3, LINC01202, F
48	0.016228	0.198569824	C5orf58, DOCK2, FAM196B, FOXI1, GABRP, KCNIP1, KCNMB
49	0.0017006	0.064556206	CD83, GFOD1, GFOD1-AS1, LINC01108, MCUR1, MRPL35P1,
50	0.047463	0.335017303	CAP2, DDX18P3, DEK, FAM8A1, KDM1B, KIF13A, MIR548A1,
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2	0.0090308	0.165220416	BOLA2P3, CASC15, CDKAL1, E2F3, E2F3-IT1, ID4, KRT18P38,
3	0.041491	0.314996695	CASC15, HDGFL1, NBAT1, PRL, RN7SKP240
4	0.013828	0.195090033	RNU6-1060P, SPTLC1P2
5	0.0079474	0.156384551	ABCC10, ATP6V0CP3, BICRAL, C6orf132, C6orf226, CCND3, C
6	0.040035	0.308341473	ADGRB3
7			
8	0.0010814	0.050412331	CD109, CGAS, COL12A1, COX7A2, EEF1A1, FILIP1, HMGB1P3
9	3.90E-07	<b>0.000330414</b>	BACH2, CASC6, MAP3K7, MIR4464, MIR4643, MTATP6P25, I
10	0.044604	0.322711846	
11	0.0076663	0.156374047	AMD1, BRD7P4, CDK19, CNN2P9, DDO, FAM229B, FCF1P5, F
12	0.0032735	0.087968817	ASF1A, CEP85L, FAM184A, MCM9, NUS1, PLN, SELENOKP3, I
13			
14	0.010581	0.170606029	AHI1, ALDH8A1, CHCHD2P4, COX5BP2, FAM8A6P, GAPDHP7
15	0.012205	0.183068735	ADAT2, ADGRG6, AIG1, FUCA2, HIVEP2, HYMAI, LINC01277,
16	0.011313	0.176444771	ACAT2, AIRN, AMZ2P2, C6orf99, CACYBPP3, DYNLT1, EZR, E
17	0.015604	0.198569824	KRT8P44, PACRG, PRKN
18			
19	0.0058301	0.129873149	AFDN, AFDN-DT, CCR6, FGFR1OP, GPR31, KIF25, KIF25-AS1,
20	0.021579	0.231223082	FAM120B, MIR4644, OR4F7P, PDCD2, PSMB1, RPL23AP47, T
21	0.0044202	0.110049979	AMZ1, BRAT1, CHST12, EIF3B, GNA12, GRIFIN, IMMMP1LP3, I
22	2.35E-05	<b>0.005672276</b>	AP5Z1, FOXK1, MIR4656, MMD2, PAPOLB, RADIL, RBAK, RBA
23	0.013036	0.18955861	CCNB2P1, GLCCI1, ICA1, NXPH1, RNU6-534P, UMAD1
24	0.015564	0.198569824	MIR3146, RPL21P75, TMEM196, TWISTNB
25			
26	0.0068879	0.142348266	ABCB5, ASS1P11, CDCA7L, DNAH11, EEF1A1P27, ITGB8, LINC
27	0.012489	0.184065904	ANLN, AOA, AOA-IT1, EEPD1, ELMO1, ELMO1-AS1, KIAA
28	0.037838	0.305818795	C7orf25, GLI3, HECW1, HECW1-IT1, HMGN2P30, LINC01448
29	0.011261	0.176444771	ADCY1, CCM2, CICP20, ELK1P1, GTF2IP13, H2AFV, IGFBP1, I
30	0.022433	0.236893814	CICP17, COBL, DDC, DDC-AS1, DDX43P2, FIGNL1, GNL2P1, G
31			
32	0.00084807	<b>0.044868203</b>	ABHD11, ABHD11-AS1, BAZ1B, BCL7B, BUD23, CASTOR2, CC
33	0.045559	0.328218668	ADAM22, CDK14, CFAP69, CLDN12, DBF4, DPY19L2P4, EEF1
34	0.0097591	0.170606029	ARF1P1, ASB4, ATP5F1P2, BET1, CASD1, COL1A2, DYNC111, C
35	0.00028883	<b>0.024490092</b>	ACHE, ACTL6B, AGFG2, AP1S1, C7orf61, EPHB4, EPO, FBXO2
36	0.026492	0.263829153	DOCK4, DOCK4-AS1, EIF3IP1, IFRD1, IMMMP2L, LRRN3, LSMEI
37	0.010173	0.170606029	ARHGEF34P, ARHGEF35, ARHGEF5, CASP2, CLCN1, CTAGE15
38	0.025578	0.256234047	DPP6, PAXIP1, PAXIP1-AS2
39	0.048133	0.336569749	ESYT2, LINC00689, LINC01022, MIR5707, MIR595, NCAPG2,
40	0.016311	0.198569824	C8orf74, LINC00529, MIR1322, MIR4286, MIR598, PINX1, PF
41	0.029119	0.281705526	ALG1L11P, ALG1L12P, BLK, C8orf49, CTSB, DEFB108D, DEFB
42	0.01136	0.176444771	CDCA2, DOCK5, GNRH1, KCTD9, MIR6841, MIR6876, NEFL, N
43	0.0047846	0.114089124	ADRA1A, CCDC25, CHRNA2, CLU, COX6B1P4, ELP3, EPHX2, E
44	0.038192	0.305818795	RNA5SP267, TOX
45	0.032955	0.298111323	CSMD3, MIR2053, RNU4-37P, RPL30P16
46	0.043612	0.320211528	AARD, COLEC10, CYCSP23, EIF3H, ENPP2, EXT1, LINC00536,
47	0.0096456	0.170606029	KNOP1P5, LINC00861, RFPL4AP5, RNU6-442P, SOD1P3
48	0.00016678	<b>0.021719888</b>	CASC11, CASC19, CASC21, CASC8, CCAT2, FAM84B, LINC008
49	0.017643	0.207427771	MTCO1P49, MTND2P7, ST13P6, ST3GAL1, ZFAT
50	0.040068	0.308341473	LINC02055, RNU6-144P, ZYXP1
51	0.027584	0.271509953	COL22A1, FAM135B
52	0.00053527	<b>0.034854312</b>	C9orf66, CBWD1, DDX11L5, DMRT1, DMRT2, DMRT3, DOCK
53	0.00010099	<b>0.017097607</b>	DMAC1, KDM4C, PPIAP33, PTPRD, RPL4P5
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2	0.015061	0.198569824 ATP5HP3, CDCA4P1, CER1, FREM1, JKAMPP1, LINC00583, LI
3	0.014792	0.198569824 BNC2, C9orf92, CCDC171, CLCN3P1, FREM1, FTH1P12, HMG
4	0.036612	0.305818795 ME2P1, MIR873, MIR876
5	0.036552	0.305818795 HMGB3P23, LINC01243, MTATP6P30, MTCO3P30
6	0.015548	0.198569824 ASPN, AUH, BEND3P2, CENPP, DIRAS2, ECM2, HSPE1P22, IA
7	0.0053955	0.123440291 ALOX15P2, ANKRD19P, BARX1, BARX1-AS1, BICD2, C9orf129
8	0.00028931	<b>0.024490092</b> AAED1, C9orf3, CDC14B, EIF4BP3, ERCC6L2, FANCC, FBP1, FI
9	0.022214	0.236530201 ANKRD18CP, ANKS6, ANP32B, CCDC180, CORO2A, CTSV, FAI
10	0.027177	0.269068193 DEC1, TNC, TNFSF8
11	0.016011	0.198569824 ASTN2, ASTN2-AS1, LINC00474, PAPP A, PAPP A-AS1, PAPP A-
12	0.0010176	0.050412331 ASTN2, RN7SKP125, RN7SKP128, RNU6-1082P, RPL10P3, RP
13	0.010167	0.170606029 ADGRD2, ARPC5L, CRB2, DENND1A, GPR21, KRT18P67, LHX2
14	0.0050257	0.118173751 ABL1, AIF1L, ASS1, EIF4A1P3, EXOSC2, FAM78A, FIBCD1, FUI
15	0.043383	0.320211528 ABO, ADAMTS13, ADAMTSL2, ARF4P1, BRD3, BRD3OS, CACF
16	0.016372	0.198569824 ABCA2, AGPAT2, ATP6V1G1P3, C8G, C9orf116, C9orf139, C9
17	0.036811	0.305818795 ARRDC1, ARRDC1-AS1, CACNA1B, EHMT1, FAM157B, MIR6C
18	0.038565	0.305818795 ADARB2, ADARB2-AS1, LINC00700, MIR6072, RNU6-576P, R
19	0.0090759	0.165220416 ABI1, APBB1IP, FAM238A, FAM238B, GAD2, GPN3P1, GPR15
20	0.049025	0.336569749 ACBD5, ANKRD26, ARMC4, ARMC4P1, BAMBI, C10orf126, F
21	0.0042784	0.10826356 AK3P5, ARHGAP12, C1DP1, CCDC7, EPC1, HMGB1P7, ITGB1,
22	0.039974	0.308341473 ATP6V1G1P4, CCNY, CREM, FZD8, GJD4, MIR4683, MTND4P
23	0.0025946	0.078440318 GAPDHP21, MTRNR2L5, PCDH15, ZWINT
24	6.17E-05	<b>0.011607208</b> ANXA2P3, CYP2C61P, DBF4P1, JMJD1C, JMJD1C-AS1, LINC01
25	0.03837	0.305818795 ABCC2, ARL5AP2, CHUK, CNNM1, COX15, CPN1, CRTAC1, CL
26	0.037077	0.305818795 BLOC1S2, CWF19L1, HIF1AN, NDUFB8, OLMALINC, PHBP9, P
27	0.0018303	0.064556206 LINC01435, PTGES3P5, RNA5SP325, RNA5SP326, SORCS1
28	0.032245	0.295064414 ADD3, ADD3-AS1, BTF3P15, MAPKAPK5P1, MXI1, PHB2P1, R
29	0.038279	0.305818795 CSNK2A3, DKK3, GALNT18, LINC02547, MICAL2, MICALCL, M
30	0.020649	0.227917377 ARNTL, BTBD10, CALCA, CALCB, CALCP, CENPUP1, COPB1, C
31	0.035615	0.305818795 ABCC8, AKR1B1P3, C11orf58, KCNJ11, MIR6073, NCR3LG1, I
32	0.0037547	0.099274915 BBOX1, BBOX1-AS1, BDNF, BDNF-AS, CBX3P1, CCDC34, HSP9
33	0.035406	0.305818795 C11orf74, COMMD9, FJX1, KRT18P14, LDLRAD3, MIR3973, F
34	0.041385	0.314996695 CNTF, GLYAT, LPXN, OR5B21, ZFP91, ZFP91-CNTF
35	0.028371	0.276046569 ARRB1, CHRDL2, CYCSP27, DGAT2, EMSY, GPD5, GUCY2EP,
36	0.014941	0.198569824
37	0.013515	0.192276429 OSBPL9P2, OSBPL9P3, TUBB4BP4
38	0.00059692	<b>0.036209038</b> C11orf65, C11orf87, CYCSP29, DDX10, EXPH5, KDELC2, RNAI
39	0.015588	0.198569824 C11orf71, NNMT, NXPE1, NXPE2, NXPE2P1, NXPE4, RBM7, F
40	0.010541	0.170606029 ATP5F1P5, BSX, CLMP, CRTAM, GLULP3, GRAMD1B, HSPA8,
41	0.010279	0.170606029 ACRV1, CCDC15, CDON, CHEK1, DCPS, DDX25, EI24, ESAM, F
42	0.0001936	<b>0.021850987</b> DCPS, GSEC, KIRREL3, KIRREL3-AS1, KIRREL3-AS2, KIRREL3-A
43	0.0024112	0.078440318 NTM, NTM-AS1, NTM-IT, OPCML, OPCML-IT2, RNU6ATAC12
44	0.021004	0.229417884 ADIPOR2, CACNA1C, CACNA1C-AS4, CACNA1C-IT1, CACNA1C
45	0.0028569	0.084139231 CACNA1C, CACNA1C-AS1, CACNA1C-AS2, CACNA1C-AS3, CB
46	0.00047778	<b>0.032355262</b> CCND2, CCND2-AS1, CRACR2A, FGF23, HSPA8P5, OTUD4P1,
47	0.035722	0.305818795 APOLD1, ARHGDI B, ART4, ATF7IP, C12orf60, DDX47, EMP1,
48	0.0084159	0.160091221 EEF1A1P16, LINC02378, LMO3, MGST1, MIR3974, PSMC1P8
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1	0.00059885	<b>0.036209038</b>	ABCD2, C12orf40, CNTN1, KIF21A, LINC02471, LINC02555, L
2	0.013153	0.18955861	CNTN1, PDZRN4
3	0.00038519	<b>0.028353333</b>	AQP2, AQP5, AQP6, ASIC1, ATF1, BCDIN3D, BCDIN3D-AS1, B
4	0.0013196	0.054489824	AGAP2, AGAP2-AS1, ARHGEF25, ATP23, AVIL, B4GALNT1, C
5	0.0024872	0.078440318	
6	0.011715	0.1803045	CCDC60, CIT, HSPB8, LINC02423, LINC02439, LINC02440, L
7	0.019015	0.217516182	GLT1D1, LINC00507, LINC00508, LINC02368, LINC02369, L
8	0.020244	0.227893497	ADGRD1, ADGRD1-AS1, LINC01257, LINC02370, LINC02414,
9	0.016573	0.198569824	GAPDHP69, HMGB1, KATNAL1, LINC00297, LINC00365, LINC
10	0.018999	0.217516182	DCLK1, LINC00445, MAB21L1, NBEA, PHBP13, SCAND3P1
11	6.61E-06	<b>0.001864332</b>	AKAP11, CALM2P3, CHCHD2P11, DGKH, DNAJC15, EPSTI1, F
12	0.0029322	0.084139231	CCDC122, DGKZP1, DNAJC15, ENOX1, ENOX1-AS1, ENOX1-A
13	0.03328	0.298111323	ESD, FKBP1AP3, GNG5P5, HTR2A, HTR2A-AS1, LRCH1
14	0.02953	0.282453616	DIAPH3, DIAPH3-AS1, DIAPH3-AS2, EIF4A1P6, LINC00378, LI
15	0.025093	0.25287172	LINC00358, LINC00376, LINC00395, LINC00448, LINC00459,
16	0.038804	0.305818795	BCRP9, HNRNPA3P5, LINC00364, LINC01052, MIR4704, MIR
17	0.0086868	0.161612664	BORA, DACH1, DIS3, FABP5P1, H3F3BP1, KLF12, KLF5, LINC0
18	0.034043	0.301752874	FAM155A, FAM155A-IT1, MIR1267, PPIAP24, SNORD31B
19	0.049849	0.336569749	ARHGEF7, LINC00354, LINC00404, LINC01070, LINC02337, S
20	0.01115	0.176444771	NRXN3
21	0.00012991	<b>0.01999433</b>	BHLHB9P1, CEP128, DIO2, DIO2-AS1, DYNLL1P1, DYNLL1P2,
22	0.012503	0.184065904	ASB2, BTBD7, CCDC197, COX8C, DDX24, FAM181A, FAM181
23	0.044448	0.322711846	BDKRB1, BDKRB2, C14orf132, CKS1BP1, TUNAR
24	0.016612	0.198569824	AK7, ATG2B, BDKRB1, GSKIP, LINC00618, LINC01550, LINC0
25	0.042186	0.317426213	ANKRD63, BMF, BMF-AS1, BUB1B, BUB1B-PAK6, C15orf52, (
26	0.042628	0.319332761	ACTBP7, ADAL, ATP5HP1, CATSPER2, CATSPER2P1, CCNDBP
27	0.023887	0.244016373	ARPP19, BCL2L10, CERNA1, EEF1A1P22, EEF1B2P1, FAM214
28	0.020502	0.227917377	C15orf65, CCPG1, CD24P2, CNOT6LP1, DNAAF4, DNAAF4-CC
29	0.00016289	<b>0.021719888</b>	ANKDD1A, APH1B, CA12, CSNK1G1, DAPK2, FAM96A, FBXL2
30	0.023682	0.244016373	ADAMTS7P4, AGBL1, AGBL1-AS1, AKAP13, ALPK3, CSPG4P1:
31	0.0492	0.336569749	BLM, CRT3, CRT3-AS1, FES, FURIN, HDCC3, HSPE1P3, IQG
32	0.038837	0.305818795	ALDH1A3, ASB7, CHSY1, LRRK1, PCSK6, PCSK6-AS1, SELENO
33	0.049899	0.336569749	ENPP7P14, LINC01570, LINC02164, MIR8065, RBFOX1, SNRF
34	0.00023521	<b>0.024167575</b>	ABAT, C16orf72, CARHSP1, GRIN2A, LINC01177, LINC01195,
35	0.0029929	0.084449662	ATF7IP2, CIITA, CLEC16A, DEXI, EMP2, HNRNPCP4, LINC012
36	0.0086778	0.161612664	APOBR, ATP2A1, ATP2A1-AS1, ATXN2L, CD19, CDC37P1, CD
37	0.048487	0.336569749	ABCD1P3, ABHD17AP7, ABHD17AP8, ABHD17AP9, ACTR3BP
38	0.039679	0.308341473	ACTG1P16, ADAM3B, ADCY7, BRD7, C16orf78, C16orf97, CB
39	0.014278	0.198136508	DNAH9, MAP2K4, MIR744, RN7SL601P, RNU11-2P, RPL21P1
40	0.04329	0.320211528	AATF, ACACA, ARHGAP23, C17orf78, C17orf98, CISD3, CWC
41	0.0017544	0.064556206	ACBD4, ADAM11, ARHGAP27, ARL4D, ASB16, ASB16-AS1, A
42	0.047681	0.335017303	AKAP1, ANKFN1, C17orf67, COIL, DGKE, GARSP1, MIR3614,
43	0.029862	0.284024528	APPBP2, BCAS3, C17orf64, C17orf82, CA4, CLTC, DHX40, DH
44	0.0016697	0.064556206	BRIP1, EFCAB3, INTS2, MARCH10, MED13, METTL2A, MIR63
45	0.002356	0.078209961	AANAT, CYCSP40, CYGB, JMJD6, LINC00868, LINC02080, ME
46	0.023926	0.244016373	BOD1P1, DLGAP1, DLGAP1-AS1, DLGAP1-AS2, DLGAP1-AS3,
47	0.031617	0.292500443	ARHGAP28, L3MBTL4, L3MBTL4-AS1, LAMA1, LINC00668, LI

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2	0.024516	0.248536455	B4GALT6, DSC1, DSC2, DSC3, DSCAS, DSG1, DSG1-AS1, DSG2
3	0.0044959	0.110312445	C18orf54, CCDC68, DCC, DYNAP, LINC01630, LINC01917, LIN
4	0.011935	0.182035631	ATP5G1P6, HMSD, LINC00305, LINC01538, LINC01924, RPL1
5	0.012219	0.183068735	C18orf63, CNDP1, CNDP2, CYB5A, FAM69C, FAUP1, FBXO15
6	0.0025424	0.078440318	ACTL9, ADAMTS10, ANGPTL4, BOLA3P2, ELOCP29, HNRNPM
7	0.015358	0.198569824	BNIP3P34, BNIP3P35, BNIP3P36, BNIP3P37, BNIP3P38, BNIP
8	0.032417	0.295064414	CCNE1, PPIAP58, RPL9P32, TAF9P3, URI1, ZNF536
9	0.0032483	0.087968817	AP2S1, ARHGAP35, CALM3, CCDC8, DACT3, DACT3-AS1, FKR
10	0.00025695	<b>0.024167575</b>	A1BG, A1BG-AS1, C19orf18, CENPBD1P1, CHMP2A, ERVK3-1
11	0.021517	0.231223082	C20orf96, CSNK2A1, DEFB125, DEFB126, DEFB127, DEFB128
12	0.01635	0.198569824	ACTG1P3, ANGPT4, C20orf202, FAM110A, FKBP1A, MIR6869
13	0.0057404	0.129579963	ADRA1D, AP5S1, CDS2, FTLF3, LINC00658, LINC01433, MAV
14	0.0078718	0.156384551	GAPDHP2, ISM1, ISM1-AS1, LINC01722, LINC01723, SPTLC3,
15	0.0051214	0.118774386	DYNLT3P1, KIF16B, MACROD2, OTOR, PCSK2, PPIAP17, RNU
16	0.01039	0.170606029	CFAP61, CRNKL1, EIF4E2P1, INSM1, LLPHP1, MRPS11P1, NA
17	0.034369	0.303055818	GSTM3P1, KIZ, KIZ-AS1, LINC00237, LINC01427, LINC01432,
18	0.017802	0.207853697	CHD6, PTPRT, RNU6-1018P
19	0.00035438	<b>0.027271152</b>	BTFL3L4P1, BTG3, BTG3-AS1, C21orf91, C21orf91-OT1, CHOC
20	0.023713	0.244016373	LINC00317, LINC01425, LINC01687, NCAM2
21	6.49E-06	<b>0.001864332</b>	C21orf59, EVA1C, EXOSC3P1, FBXW11P1, HMGN1P2, HUNK,
22	2.92E-07	<b>0.000330414</b>	C21orf58, DIP2A, DIP2A-IT1, DSTNP1, LSS, MCM3AP, MCM3
23	0.038419	0.305818795	BCRP7, C22orf39, CA15P1, CA15P2, CDC45, CLDN5, CLTCL1,
24	0.049089	0.336569749	ABHD17AP4, ABHD17AP5, AIFM3, ARVCF, ASH2LP3, BCRP2,
25	0.018813	0.217516182	ASH2LP1, ASH2LP2, ASLP1, BCR, BCRP4, BCRP8, CES5AP1, DI
26	0.013977	0.195562488	APOL1, APOL2, APOL3, APOL4, APOL5, APOL6, C1QTNF6, CA
27	0.0068946	0.142348266	ACO2, ATP5L2, C22orf46, CCDC134, CENPM, CHADL, COX6B
28	0.0003302	<b>0.02662041</b>	A4GALT, ARFGAP3, BIK, EFCAB6, EFCAB6-AS1, GOLGA2P4, LI
29	0.011986	0.174496479	ACTRT2, ARHGEF16, CALML6, CFAP74, FAAP20, FAM213B, C
30	0.017217	0.2113386	ALPL, CAMK2N1, CDA, CROCCP5, DDOST, ECE1, EIF4G3, FAM
31	8.60E-06	<b>0.0029149</b>	ACTG1P20, ARID1A, AUNIP, C1orf232, CATSPER4, CD164L2,
32	0.00044706	<b>0.037441635</b>	ADGRB2, BSDC1, CCDC28B, COL16A1, DCDC2B, EIF3I, FABP3
33	0.028533	0.271604667	ATP6V0E1P4, CMPK1, CYP4A11, CYP4A22, CYP4A22-AS1, CY
34	0.038192	0.288988871	FGGY, HOOK1, LINC01135, LINC01358, MIR4711, PHBP3
35	0.0029831	0.088655639	C1orf87, CYP2J2, LINC01748, NFIA, NFIA-AS1, NFIA-AS2, PA1
36	0.0068125	0.1314929	ACADM, ASB17, CRYZ, DLSTP1, ERICH3, ERICH3-AS1, FPGT-T
37	0.039854	0.292688746	DPYD, FRRS1, HMGB3P10, LINC01708, LINC01776, LINC0193
38	0.031814	0.271604667	AGL, BCAS2P2, BRI3P1, CDC14A, DBT, GPR88, LINC01349, LF
39	0.017807	0.213936582	CDK4P1, FTLF17, LINC01676, LINC01677, SEPT2P1
40	0.045171	0.312982057	LINC01661, MIR7852, MTATP6P14, MTCO1P14, NBP4, NBP
41	0.03929	0.292688746	AKR7A2P1, CAPZA1, CTTNBP2NL, DDX20, FAM19A3, FAM21
42	0.028091	0.270375875	ARHGEF11, BCAN, C1orf61, CCT3, CD5L, CRABP2, CYCSP52, I
43	0.018101	0.213938083	ATP1B1, BLZF1, C1orf112, CCDC181, F5, GORAB, HAUS4P1, I
44	0.0027628	0.0835747	CACNA1E, EIF1P3, GLUL, LINC00272, LINC01344, LINC01686
45	8.94E-05	<b>0.013774684</b>	APOBEC4, ARPC5, C1orf21, COLGALT2, DHX9, HMGN1P4, KF
46	0.032242	0.271604667	EEF1A1P14, LINC01724, RNU6-983P
47	0.00049493	<b>0.037441635</b>	ASCL5, CACNA1S, CAMSAP2, CSRP1, DDX59, FAM58BP, GPR
48	0.0063082	0.1281874	ANGEL2, FLVCR1, FLVCR1-AS1, KRT18P12, LINC00538, PROX
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2	0.040725	0.292688746	CHRM3, CHRM3-AS1, CHRM3-AS2, MIPEPP2
3	0.047743	0.319670522	BECN2, CFL1P4, CHML, EXO1, KMO, MAP1LC3C, OPN3, RPL2
4	0.031216	0.271604667	ADSS, C1orf100, CATSPERE, COX20, CYCSP5, DESI2, DNAJC1
5	0.020299	0.224015	LINC01248, LINC01249, LINC01304, NPM1P48, RNU6-649P,
6	0.025029	0.255416422	FAM49A, GEN1, KCNS3, LINC01866, MSGN1, NT5C1B, NT5C
7	0.036395	0.284115806	ADCY3, ADGRF3, ASXL2, C2orf70, CDKN2AIPNLP2, CENPA, C
8	0.036208	0.283964593	CAMKMT, EPAS1, LINC01121, LINC01820, LINC01833, PREPL
9	0.014049	0.191927468	LINC01122, LINC01793, RNA5SP94, RNU6-508P
10	0.0072021	0.13420715	ANTXR1, APLF, ARHGAP25, BMP10, C1D, CNRIP1, FBXO48, C
11	0.00017793	0.02152953	C2orf40, C2orf49, FHL2, GPR45, LINC01918, NCK2, TGFBRAP
12	0.0043658	0.109448211	ACOXL, ACOXL-AS1, ACTR3, ANAPC1, BCL2L11, BUB1, CBWD
13	0.041662	0.296798765	AMER3, ANKRD30BL, ARHGAP42P1, ARHGEF4, C2orf27A, C2
14	0.00019874	0.022444371	LINC01412, LINC01966, RNU7-2P, RPL17P12, RPL6P5, TEX41
15	0.045266	0.312982057	BAZ2B, CD302, ITGB6, KRT18P46, LINC01806, LY75, LY75-CD
16	0.0087865	0.153912	DNAJC19P5, EVX2, EXTL2P1, FUCA1P1, HAGLR, HAGLROS, H
17	0.003705	0.101230161	C2orf88, CAVIN2, DNAJB1P1, GLS, HIBCH, HMGB1P27, HNR1
18	0.031727	0.271604667	ANKRD44, ANKRD44-IT1, ATP5G2P3, BOLL, C2orf66, CCDC15
19	0.024654	0.2531144	LINC01923, PLCL1, RNU7-147P, SATB2
20	0.0031001	0.0905443	AAMP, ARPC2, CATIP, CATIP-AS1, CATIP-AS2, CXCR1, CXCR2,
21	0.0013007	0.052461567	DNER, LINC01807, PID1, RN7SKP283, RNU6-624P, RPL7L1P1
22	0.033153	0.271604667	HDAC4, LINC01940, MIR2467, MIR4269, MIR4440, MIR4441
23	0.0026719	0.08335404	GRM7, GRM7-AS1, LMCD1, LMCD1-AS1, RNU4ATAC17P, SSI
24	0.0078636	0.141712111	CAV3, LHFPL4, OR7E122P, OXTR, PGAM1P4, RAD18, SETD5,
25	0.00013623	0.017751817	CDYLP1, DAZL, LINC00690, MIR3714, OXNAD1, PDCL3P3, PL
26	0.0009433	0.047738751	ZNF385D, ZNF385D-AS2
27	0.021438	0.229847924	CCR4, CMTM6, CMTM7, CMTM8, CNOT10, CNOT10-AS1, CR
28	0.016416	0.20871597	ACVR2B, ACVR2B-AS1, CCR8, CSRNP1, CX3CR1, DDTP1, DSTI
29	0.036181	0.283964593	APPL1, ARF4, ARF4-AS1, ARHGEF3, ARHGEF3-AS1, ASB14, C
30	0.036868	0.285179872	ABHD6, ACOX2, C3orf67, C3orf67-AS1, DNASE1L3, FAM107A
31	0.0023024	0.079086084	CADPS, FEZF2, KRT8P35, LINC00698, PTPRG-AS1, RN7SL863I
32	0.0096052	0.159521655	ARL6, CDV3P1, CRYBG3, EPHA6, GABRR3, HNRNPKP4, MIR8
33	0.0072887	0.13420715	ATP6V1A, BOC, CD200R1, CD200R1L, CFAP44, CFAP44-AS1,
34	0.0036993	0.101230161	ADCY5, CASR, CCDC58, CD86, CSTA, DIRC2, DTX3L, EIF4BP8,
35	0.032685	0.271604667	ABTB1, C3orf22, C3orf56, CCDC37-AS1, CFAP100, CHCHD6, C
36	0.011273	0.172971135	ACAD9, ALG1L2, CNBP, COL6A4P2, COPG1, DNAJB8, DNAJB8
37	0.0047242	0.109448211	ASTE1, ATP2C1, BCL2L12P1, COL6A4P2, COL6A5, COL6A6, C
38	0.0235	0.245734568	CLRN1, CLRN1-AS1, EIF2A, ERICH6, ERICH6-AS1, GPR171, GP
39	0.038989	0.292244982	LINC01192, LINC01323, LINC01324, MIR1263, RNU7-82P, SI
40	0.0070694	0.13420715	ATP5G1P4, BZW1P1, ECT2, FNDC3B, GHSR, LINC02068, NCE
41	0.04739	0.318841722	ASS1P7, LINC00501, LINC00578, LINC01208, LINC01209, LIN
42	0.0040236	0.1032724	CEP19, DLG1, FBXO45, LINC00885, LINC01063, MELTF, MELT
43	0.00051875	0.037441635	CPLX1, CTBP1, CTBP1-AS, CTBP1-AS2, DGKQ, FGFR1, GAK, I
44	0.012344	0.177209627	ELOCP33, FAM114A1, KLB, KLHL5, KRT18P25, LIAS, MIR5591
45	0.031255	0.271604667	ATP8A1, CCNL2P1, GRXCR1, LINC02383, NDUFB4P12, RN7SK
46	0.0405	0.292688746	GNPDA2, GUF1, KCTD8, LINC02475, PRDX4P1, YIPF7
47	0.040659	0.292688746	DPP3P1, EFTUD1P2, EPHA5, EPHA5-AS1, LINC02232, MIR12
48	0.0025409	0.081212917	ABCG2, CHCHD2P7, DMP1, DSPP, FAM13A, FAM13A-AS1, G
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2	0.028886	0.271604667	BMPR1B, BMPR1B-AS1, HPGDS, PDHA2, PDLIM5, RNU6-105
3	0.011593	0.173792407	ACTR3BP4, BANK1, BDH2, CENPE, CISD2, EMCN, KRT8P46, L
4	0.026896	0.264904174	CXXC4, CXXC4-AS1, DDX3P3, LINC02428, LINC02503, RN7SL3
5	0.035226	0.278845065	ADAD1, ANXA5, BBS7, CCNA2, EXOSC9, IL2, IL21, IL21-AS1, K
6	0.0012843	0.052461567	AARSP1, ELL2P2, LINC01256, LINC02377, RN7SL205P, RPL7A
7	0.017466	0.2113386	LINC00498, LINC00499, LINC00500, LINC00616, LINC02172,
8	0.016431	0.20871597	AKIRIN2P1, ASS1P8, ATP5LP4, DCLK2, IQCM, LINC02355, LIN
9	0.03805	0.288988871	AK4P6, ARFIP1, FAM160A1, FAM160A1-DT, FBXW7, FBXW7-
10	0.038384	0.288988871	APELA, CPE, FAM218A, FAM218BP, GK3P, HADHAP1, KLHL2,
11	0.039861	0.292688746	AGA, LINC01098, LINC01099, LINC02509, NEIL3, RN7SKP136
12	0.0078032	0.141712111	AGGF1P1, CLUHP4, DBET, DUX4, DUX4L1, DUX4L2, DUX4L3,
13	0.0058065	0.122952638	IRX1, LINC01017, LINC01019, LINC02063, LINC02162
14	0.0038543	0.1032724	ADAMTS16, ALG3P1, ICE1, LINC01020, LINC02114, LINC0211
15	0.00042425	0.037441635	LINC02112, LINC02199, LINC02226, MIR4458, MIR4458HG, I
16	0.0023343	0.079086084	BASP1, BASP1-AS1, DCAF13P2, FTH1P10, LINC02111, LINC02
17	0.021697	0.230193425	BTG4P1, C5orf17, CDH10, LINC02211, LINC02228, LINC0223
18	0.00065843	0.041967035	LINC02064, LINC02103, LINC02109, LSP1P3, RNU6-909P, SU
19	0.018593	0.21426219	C5orf42, C8orf59P2, EGFLAM, EGFLAM-AS1, EGFLAM-AS2, E
20	0.043609	0.306529651	C6, C7, CARD6, MROH2B, OXCT1, OXCT1-AS1, PLCXD3, PRKA
21	0.043983	0.307881	AK4P2, ANKRD55, C1GALT1P2, C5orf67, DDX4, HMGN1P17,
22	0.001183	0.051384667	AGGF1, ALDH7A1P1, BIN2P2, CRHBP, F2R, F2RL1, F2RL2, HM
23	0.00067372	0.041967035	CETN3, LINC01339, LINC02161, MEF2C, MEF2C-AS1, MIR366
24	0.032714	0.271604667	RAB9BP1
25	0.0095762	0.159521655	FER, GJA1P1, KRT18P42, LINC01023, LINC01848, MAN2A1, M
26	0.03462	0.277895531	KCNN2, LINC01957, MCC, RN7SKP89, RNU4ATAC13P, TSSK1
27	0.004557	0.109448211	C5orf58, DOCK2, FAM196B, FOXI1, GABRP, KCNIP1, KCNMB
28	0.00027655	0.029279731	FOXC1, FOXCUT, GMDS, GMDS-AS1, HMGN2P28, RN7SL352
29	0.0057667	0.122952638	C6orf201, ECI2, FAM217A, FAM50B, GLRX3P2, LINC02533, P
30	0.0046032	0.109448211	CD83, GFOD1, GFOD1-AS1, LINC01108, MCUR1, MRPL35P1,
31	0.017394	0.2113386	CAP2, DDX18P3, DEK, FAM8A1, KDM1B, KIF13A, MIR548A1,
32	0.00069367	0.041967035	ACOT13, ALDH5A1, C6orf229, C6orf62, DCDC2, GMNN, GPLI
33	0.011289	0.172971135	AARS2, C6orf223, CAPN11, CDC5L, HSP90AB1, LINC02537, N
34	0.033594	0.273597288	GAPDHP15, GAPDHP41, GUSBP4, KHDRBS2, LINC00680, MT
35	0.042251	0.299469431	CD109, CGAS, COL12A1, COX7A2, EEF1A1, FILIP1, HMGB1P3
36	0.030609	0.271604667	DOPEY1, IBTK, LAP3P1, LINC02542, RNU6-130P, TPBG, UBE3
37	0.013728	0.189066927	
38	0.031393	0.271604667	
39	1.92E-06	0.000815195	ATG5, BEND3, C6orf203, CD24, CRYBG1, LINC02526, LINC02
40	0.0068308	0.1314929	CALHM4, CALHM5, CALHM6, CBX3P9, COL10A1, DCBLD1, D
41	0.026358	0.264203858	FAM184A, MAN1A1, MIR548B, RNU6-194P
42	0.020317	0.224015	COX6A1P3, GJA1, HMGB3P18, RNA5SP215, RNU2-8P, RNU4
43	0.040776	0.292688746	ABRACL, ATP5F1P6, CCRL1P1, CITED2, ECT2L, HECA, LINC01
44	4.05E-05	0.008567829	ARID1B, GTF2H5, HSPE1P26, LDHAL6FP, MIR3692, MIR4466
45	0.030584	0.271604667	KRT8P44, PACRG, PRKN
46	0.0001066	0.015048367	AFDN, AFDN-DT, CCR6, FGFR1OP, GPR31, KIF25, KIF25-AS1,
47	0.010633	0.171545733	C6orf120, DLL1, ERMARD, FAM120B, LINC00242, LINC00574
48	0.047431	0.318841722	AMZ1, CARD11, CYP3A54P, GNA12, RN7SKP130, SDK1
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2	0.015209	0.202866504 MTND4P3, RNA5SP231
3	0.019347	0.21849212 AUTS2, CALN1, GALNT17, MIR3914-1, MIR3914-2, MTCO1P
4	0.041699	0.296798765 ABCF2P2, CALN1, FKBP6, GTF2IP4, GTF2IRD2P1, MIR4650-2,
5	0.012509	0.178069294 ADAM22, CDK14, CFAP69, CLDN12, DBF4, DPY19L2P4, EEF1
6	0.02456	0.2531144 AKAP9, ANKIB1, CDK14, CYP51A1, CYP51A1-AS1, ERVW-1, F
7	0.012007	0.174496479 AASS, ASB15, CADPS2, FEZF1, FEZF1-AS1, HYAL4, HYALP1, IC
8	0.0017458	0.065719671 ARF5, CALU, CICP14, FAM71F1, FAM71F2, FSCN3, GCC1, GR
9	0.028039	0.270375875 CHCHD3, COX5BP3, EXOC4, LRGUK, MIR3654, MIR6133, RNI
10	0.011587	0.173792407 CNTNAP2, DUTP3, MIR548F4, RANP2
11	0.010825	0.172866426 ABCB8, ABCF2, AGAP3, AOC1, ASB10, ASIC3, ATG9B, BET1P1
12	0.048199	0.321453173 ACTR3B, ATP5F1P3, CCT8L1P, FABP5P3, KMT2C, LINC01003,
13	0.0045211	0.109448211 CSMD1
14	0.021742	0.230193425 CSMD1, RNA5SP251
15	0.046252	0.318499545 ALG1L13P, CLDN23, DEFB103A, DEFB103B, DEFB104A, DEFB
16	0.026897	0.264904174 RNU6-1151P, RNU6-526P, TNKS
17	0.020343	0.224015 LINC00599, MIR124-1, MIR597, MSRA, TNKS
18	2.07E-07	<b>0.000175363</b> ALG1L11P, ALG1L12P, BLK, C8orf49, CTSB, DEFB108D, DEFB
19	0.00605	0.12652716 KCTD9P6, WRN
20	0.0048457	0.109448211 ATP6V1H, LYPLA1, MRPL15, RGS20, RNU105C, RNU6-1331P,
21	0.020365	0.224015 ANKRD46, COX6C, DUXAP2, FBXO43, GAPDHP62, GRHL2, M
22	0.046927	0.318841722 ADI1P2, ATP6V1C1, AZIN1, AZIN1-AS1, BAALC, BAALC-AS1, E
23	0.029946	0.271604667 ANGPT1, EIF3E, EMC2, NRBF2P4, PGAM1P13, RNA5SP275, F
24	0.0047309	0.109448211 KHDRBS3, LINC01591, MAPRE1P1, MIR30B, MIR30D, RNU1-
25	0.047205	0.318841722 ADCK5, ARHGAP39, BOP1, C8orf33, C8orf82, COMM5, CPS
26	0.019116	0.217332242 DMAC1, KDM4C, PPIAP33, PTPRD, RPL4P5
27	0.00042019	<b>0.037441635</b> CLIC4P1, DMRTA1, ELAVL2, LINC01239, NOP56P2, SUMO2P
28	0.014606	0.197740889 ABHD17B, ANKRD20A1, ANKRD20A3, APBA1, AQP7P3, ATP5
29	0.029642	0.271604667 RPS20P24, RPS27AP15, TMC1
30	0.0088828	0.153912 DDX10P2, MTCO3P40, RNA5SP287, RNU6-1035P, RPS20P25
31	0.013593	0.188742148 C9orf64, FRMD3, GKAP1, HNRNPK, IDNK, KIF27, MIR7-1, RA
32	5.14E-05	<b>0.009674999</b> NTRK2, SLC28A3, UBE2V1P10
33	0.032322	0.271604667 ANKRD18CP, ANKS6, ANP32B, CCDC180, CORO2A, CTSV, FAI
34	0.0007919	<b>0.044715953</b> ARL2BPP7, CYLC2, GRIN3A, LINC00587, LINC01492, MTND3F
35	0.013075	0.18305 AKAP2, C9orf152, EPB41L4B, MIR3927, MTND2P11, MUSK, I
36	4.90E-08	<b>8.29E-05</b> AIFM1P1, ARL5B, CACNB2, HMGN1P20, MALRD1, NSUN6, R
37	0.00099366	<b>0.047738751</b> MIR548F1, NEFMP1, PCDH15, RNU6-687P
38	0.033189	0.271604667 ANK3, ARL4AP1, CABCO1, CDK1, LINC00845, RHOBTB1, R
39	0.029494	0.271604667 ACTA2, ACTA2-AS1, ANKRD22, FAS, KRT8P38, LIPF, LIPJ, LIPK
40	0.0039624	0.1032724
41	0.043273	0.305435258 ANO9, AP2A2, B4GALNT4, BET1L, CD151, CDHR5, CEND1, C
42	0.0021621	0.076304113 APBB1, ARFIP2, DCHS1, DNHD1, GVINP1, GVINP2, HPX, ILK,
43	0.012816	0.1809192 ADM, AMPD3, CTR9, DENND5A, EIF4G2, IPO7, KRT8P41, LY
44	0.015895	0.20871597 CSR3, E2F8, GLTPP1, GTF2H1, HIGD1AP5, HPS5, IGSF22, KC
45	0.00046434	<b>0.037441635</b> BBOX1, BBOX1-AS1, BDNF, BDNF-AS, CBX3P1, CCDC34, HSP
46	0.021407	0.229847924 ARAP1, ARAP1-AS1, ARAP1-AS2, ARHGEF17, ART2BP, ART2F
47	0.024199	0.251491448 AAMDC, ACER3, ALG8, AQP11, B3GNT6, CAPN5, CLNS1A, FT
48	0.0047979	0.109448211 LINC02553, RNA5SP347
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2	0.0072639	0.13420715	ARHGAP20, FDX1, HNRNPA1P60, LINC02550, RDX, RNA5SP3
3	0.0010427	<b>0.047738751</b>	ABCG4, ARCNI, ATP5L, BCL9L, C2CD2L, CBL, CCDC153, CCDC
4	0.00031571	<b>0.031459573</b>	BLID, BMPR1APS2, MIR100, MIR100HG, MIR125B1, MIRLET
5	0.011021	0.172866426	NTM, NTM-AS1, NTM-IT, OPCML, OPCML-IT2, RNU6ATAC12
6	0.012052	0.174496479	AK4P3, AMN1, BICD1, CAPRIN2, DDX11, DDX11-AS1, DENNE
7	0.040064	0.292688746	CNTN1, PDZRN4
8	0.046607	0.318841722	ADCY6, ANP32D, ARF3, ASB8, C12orf54, CACNB3, CCDC184,
9	0.040272	0.292688746	AQP2, AQP5, AQP6, ASIC1, ATF1, BCDIN3D, BCDIN3D-AS1, B
10	0.0039845	0.1032724	AAAS, AMHR2, ATF7, ATP5G2, C12orf10, CALCOCO1, CBX5, I
11	0.018172	0.213938083	LINC02448, RNU4-20P, RNU6-279P, RNU6-871P, SLC16A7
12	0.0034748	0.099457563	CDK17, CFAP54, EEF1A1P33, ELK3, LINC02452, LTA4H, NEDD
13	0.0025059	0.081212917	ASCL1, DRAM1, HELLPAR, HSPE1P4, IGF1, LINC00485, LINC0
14	0.047166	0.318841722	C12orf42, C12orf73, CHST11, EID3, GLT8D2, HCFC2, HSP90B
15	0.034942	0.277895531	
16	0.021122	0.229363256	ELOCP32, FBXO21, KSR2, NOS1, RFC5, TESC, TESC-AS1, VSIG
17	0.048902	0.324862698	CCDC60, CIT, HSPB8, LINC02423, LINC02439, LINC02440, LINC
18	0.032898	0.271604667	ABCB9, ARL6IP4, ATP6V0A2, B3GNT4, BCL7A, C12orf65, CCC
19	0.038353	0.288988871	AACS, BRI3BP, DHX37, LINC00939, LINC02347, LINC02350, L
20	0.011334	0.172971135	GLT1D1, LINC00507, LINC00508, LINC02368, LINC02369, LINC
21	0.00053046	<b>0.037441635</b>	ANKRD26P3, CASC4P1, CENPIP1, CRYL1, CYCSP32, ESRRAP1,
22	0.028656	0.271604667	ANKRD20A19P, C1QTNF9, C1QTNF9-AS1, C1QTNF9B, CYCSP
23	0.032402	0.271604667	GAMTP2, LINC00457, LINC02343, NBEA, RFC3, RNU5A-4P, V
24	0.0062551	0.1281874	CAB39L, CDADC1, COX7CP1, CYSLTR2, FNDC3A, ITM2B, LINC
25	0.034007	0.274323133	LINC00458, LINC00558, MIR1297, RPL13AP25, ZNF646P1
26	0.001245	0.052461567	DIAPH3, DIAPH3-AS1, DIAPH3-AS2, EIF4A1P6, LINC00378, LI
27	0.008645	0.153912	LINC00358, LINC00376, LINC00395, LINC00448, LINC00459,
28	0.00058769	<b>0.039821874</b>	DACH1, LINC00348, MTCL1P1, RABEPKP1
29	0.033761	0.273641789	ATP6V1G1P7, BIVM, BIVM-ERCC5, CCDC168, ERCC5, FGF14,
30	0.018913	0.216477176	ARHGEF7, LINC00354, LINC00404, LINC01070, LINC02337, S
31	0.008904	0.153912	BAZ1A, BRMS1L, DNAJC8P1, DPRXP3, FAM177A1, IGBP1P1,
32	0.016747	0.209657412	CTAGE5, FBXO33, GEMIN2, KRT8P1, LINC00639, PNN, PPIAP
33	0.010973	0.172866426	FKBP1BP1, LRFN5
34	0.027754	0.270202736	ATP5C1P1, BMP4, LINC02331, MIR5580, RPS3AP46
35	0.044591	0.310852486	C14orf39, CCDC175, DHRS7, GNRHR2P1, GPR135, JKAMP, LINC
36	0.00083759	<b>0.045770241</b>	EIF1AXP2, FUT8, FUT8-AS1, LINC02290, LINC02324, MIR470
37	0.010087	0.164301712	ACTN1, ACTN1-AS1, ADAM20, ADAM20P1, ADAM21, ADAM
38	0.032169	0.271604667	LINC02305, MTCYBP27, MTND4P33, MTND5P35, RNU6ATAC
39	0.0093589	0.159521655	BCL11B, BEGAIN, CCDC85C, CCNK, CYP46A1, DEGS2, DLK1, E
40	3.11E-05	<b>0.007532976</b>	AMN, ANKRD9, CDC42BPB, CINP, DIO3, DIO3OS, DYNC1H1,
41	0.030914	0.271604667	ADAM6, ATP5G1P1, BRF1, BTBD6, CDCA4, CLBA1, CRIP1, CR
42	0.011803	0.174496479	ATP10A, GABRA5, GABRB3, GABRG3, GABRG3-AS1, LINC009
43	0.023384	0.245734568	ARHGAP11A, AVEN, CHRM5, FMN1, GOLGA8N, GOLGA8O, C
44	0.01651	0.20871597	ANKRD63, BMF, BMF-AS1, BUB1B, BUB1B-PAK6, C15orf52, C
45	0.0016948	0.0652498	LINC01491, MYEF2, RN7SKP101, RN7SKP139, RNU6-1014P, I
46	0.0021315	0.076304113	ARPP19, BCL2L10, CERN1, EEF1A1P22, EEF1B2P1, FAM214
47	0.00098555	<b>0.047738751</b>	ADAM10, ALDH1A2, BNIP2, CCNB2, FAM81A, GCNT3, GTF2A/
48	0.030769	0.271604667	ANKDD1A, APH1B, CA12, CSNK1G1, DAPK2, FAM96A, FBXL2
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2	0.0050837	0.113312997	BLM, CRT3, CRT3-AS1, FES, FURIN, HDDC3, HSPE1P3, IQG
3	0.034902	0.277895531	ABCC6, MIR3179-2, MIR3180-2, MIR3670-2, MIR6511A2, M
4	0.049705	0.328907305	ABCC6P1, MIR3179-3, MIR3179-4, MIR3180-3, MIR3670-3, I
5	0.01603	0.20871597	C16orf82, EEF1A1P38, HMGN2P3, HS3ST4, HSPE1P16, IL21R
6	0.032483	0.271604667	CDH8, RN7SKP76, RNU6-21P, RPS27AP16
7	0.036611	0.284490982	RPS15AP34, UBE2FP2
8	0.016248	0.20871597	CLEC18B, FA2H, GLG1, HCCAT5, HSPE1P7, LINC01568, MLKL
9	0.001183	0.051384667	RPS3P7, WWOX
10	0.0056723	0.122952638	LINC01228, LINC01229, MAF, MAFTRR, RNA5SP431, WWOX
11	0.033132	0.271604667	CDH13, RN7SL134P
12	0.00094741	0.047738751	ATP2C2, ATP2C2-AS1, COTL1, CRISPLD2, FAM92B, KIAA0513
13	0.017102	0.2113386	C16orf95, FBXO31, JPH3, LINC02181, MAP1LC3B, ZCCHC14
14	0.030726	0.271604667	ABR, C17orf97, DBIL5P, DOC2B, FAM57A, GEMIN4, GLOD4, I
15	0.018488	0.21426219	ARRB2, ATP6V0CP1, C17orf107, C1QBP, CAMTA2, CHRNE, C
16	0.016832	0.209657412	AATF, ACACA, ARHGAP23, C17orf78, C17orf98, CISD3, CWC
17	0.018186	0.213938083	AARSD1, ALCY, AOC2, AOC3, AOC4P, ATP5LP7, ATP6V0A1, B
18	0.010051	0.164301712	ACBD4, ADAM11, ARHGAP27, ARL4D, ASB16, ASB16-AS1, A
19	0.018405	0.21426219	C17orf47, CCDC182, CUEDC1, DYNLL2, EPX, GPD1, HSF5, LI
20	0.026889	0.264904174	APPBP2, BCAS3, C17orf64, C17orf82, CA4, CLTC, DHX40, DH
21	2.28E-05	0.006427318	BRIP1, EFCAB3, INTS2, MARCH10, MED13, METTL2A, MIR63
22	0.026041	0.262580083	ADCYAP1, BOLA2P1, CETN1, CLUL1, COLEC12, ENOSF1, IL9R
23	0.030348	0.271604667	AFG3L2, ANKRD20A5P, ANKRD62, C18orf15, CCDC58P3, CEF
24	0.020793	0.227247368	C18orf54, CCDC68, DCC, DYNAP, LINC01630, LINC01917, LIN
25	0.0068046	0.1314929	CBLN2, HNRNPA1P11, MIR548AV, NETO1, RNA5SP460
26	0.0046968	0.109448211	BDP1P, GALR1, LINC01029, RNA5SP461
27	0.0066072	0.1314929	ACTL9, ADAMTS10, ANGPTL4, BOLA3P2, ELOCP29, HNRNPM
28	0.0054429	0.1197438	ACP5, ASNA1, BEST2, CACNA1A, CALR, CCDC151, CCDC159,
29	0.029901	0.271604667	AP1M1, CIB3, CYP4F10P, CYP4F11, CYP4F12, CYP4F2, CYP4F
30	0.0035227	0.099457563	CCNE1, PPIAP58, RPL9P32, TAF9P3, URI1, ZNF536
31	0.0063564	0.1281874	ANKRD27, DPY19L3, LINC01533, LINC01782, LINC01791, LIN
32	0.031586	0.271604667	AKR1B1P7, CEBPA, CEBPA-AS1, CEBPG, CEP89, CHCHD2P3, C
33	0.0027063	0.08335404	CEACAM16, CEACAM19, CEACAM20, CEACAM22P, IGSF23, I
34	0.0020971	0.076304113	BAX, BBC3, BCAT2, BICRA, BICRA-AS1, BSPH1, C19orf73, C5
35	0.016045	0.20871597	AURKC, DUXA, EDDM13, GALP, LINC01864, MIMT1, NLRP11
36	0.001037	0.047738751	C20orf96, CSNK2A1, DEFB125, DEFB126, DEFB127, DEFB128
37	0.001573	0.061968884	ADRA1D, AP5S1, CDS2, FTL3, LINC00658, LINC01433, MAV
38	0.0024036	0.079837224	ACTR5, ADIG, ARHGAP40, ATG3P1, DHX35, FAM83D, LINC01
39	0.014708	0.197740889	LINC00317, LINC01425, LINC01687, NCAM2
40	0.03785	0.288988871	LINC00308, LINC01687, MAPK6PS2, MIR6130, MSANTD2P1,
41	6.93E-05	0.011747551	EEF1A1P1, LINC01684, LINC01689, TUBAP
42	0.037174	0.2862398	ATP5O, BTF3P6, C21orf62, C21orf62-AS1, CRYZL1, DNAJC28,
43	0.029217	0.271604667	CLDN14, DPRXP5, DSCR3, DSCR9, DYRK1A, HLCS, HLCS-IT1, H
44	0.025491	0.258573377	BACE2, BACE2-IT1, DSCAM, DSCAM-IT1, FAM3B, LINC00323,
45	0.027187	0.26621259	ABCG1, C2CD2, CBS, CRYAA, ERVH48-1, FRGCA, LINC00111,
46	0.0095029	0.159521655	ABHD17AP4, ABHD17AP5, AIFM3, ARVCF, ASH2LP3, BCRP2,
47	0.00072437	0.042313199	ADORA2A, ADORA2A-AS1, ARL5AP4, BCRP1, BCRP3, C22orf
48	4.15E-07	0.000234551	ADSL, ATF4, CACNA1I, ENTHD1, FAM83F, GRAP2, MGAT3, N
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2	0.040518	0.292688746	ACO2, ATP5L2, C22orf46, CCDC134, CENPM, CHADL, COX6B
3	7.15E-05	<b>0.015584873</b>	ACOT7, CAMTA1, CAMTA1-DT, CHD5, DNAJC11, ESPN, GPR1
4	0.030092	0.335876382	AK4, COX6CP13, DNAJC6, INSL5, LEPR, LEPROT, MIER1, MIR:
5	0.0057637	0.1517048	ACTBP12, BRDT, BTBD8, C1orf146, CCDC18, CCDC18-AS1, CC
6	0.00026744	<b>0.02824835</b>	ADAMTSL4, ADAMTSL4-AS1, ANP32E, ANXA9, APH1A, ARNT
7	0.0032385	0.127103022	ADAM15, ARHGEF2, ASH1L, ASH1L-AS1, ASH1L-IT1, BGLAP,
8	1.83E-09	<b>3.09E-06</b>	ADAMTS4, APOA2, ARHGAP30, ATF6, ATP1A2, ATP1A4, B4G
9	0.019822	0.286880992	ABL2, ACBD6, AXDND1, CEP350, COX5BP8, EIF4A1P11, FAM
10	0.00095862	0.068767508	C1orf21, C1orf27, EDEM3, FAM129A, FTH1P25, HMCN1, IVN
11	0.037578	0.374971235	ERVMER61-1, FDPSP1, LINC01036, LINC01037, PLA2G4A, RN
12	0.013829	0.247344842	B3GALT2, CDC73, GLRX2, LINC01031, LINC01032, MIR1278,
13	0.0049158	0.140808508	ATP6V1G3, C1orf53, CRB1, DENND1B, EEF1A1P32, FAM204I
14	0.049729	0.42036215	ADAM17, ASAP2, C2orf48, CPSF3, CYS1, EIF1P7, GRHL1, HM
15	0.024838	0.315610677	APOB, CISD1P1, GDF7, HS1BP3, HS1BP3-IT1, LAPTM4A, LDA
16	0.015423	0.263281515	LINC01822, LINC01830, LINC01884, NUTF2P8, RN7SKP27, RI
17	0.014454	0.254450625	ABHD1, AGBL5, AGBL5-AS1, AGBL5-IT1, ATRAID, BABAM2, C
18	0.036191	0.366244251	CTBP2P5, ELOBP3, FOXN2, FSHR, GTF2A1L, LHCGR, MIR548E
19	0.00018662	<b>0.0242606</b>	LINC01122, LINC01793, RNA5SP94, RNU6-508P
20	0.038906	0.38227407	ACTR2, CEP68, KRT18P33, LINC01800, LINC02245, LINC0257
21	0.028415	0.331538912	AAK1, ADD2, ANTXR1, ANXA4, ASPRV1, B3GALNT1P1, BRD7
22	0.00065065	0.052361833	ACTG2, ALMS1, ALMS1-IT1, ALMS1P1, AUP1, BOLA3, BOLA3
23	0.0094487	0.199603788	LINC01851, LRRTM4
24	0.030712	0.337220844	FAM183DP, IL18R1, IL18RAP, IL1R1, IL1R2, IL1RL1, IL1RL2, LI
25	0.0093698	0.199603788	AMMECR1L, GPR17, IWS1, LIMS2, MAP3K2, MIR4783, MYO
26	0.027763	0.331144789	AHCYP4, MRPS18BP2, NXPH2, RN7SKP286, RN7SL283P, YY1
27	0.010582	0.218092439	BAZ2B, BTF3L4P2, DAPL1, GSTM3P2, MIR6888, OR7E28P, OI
28	0.049328	0.42036215	CSRNP3, GALNT3, MAPRE1P3, RN7SKP152, SCN1A, SCN2A, S
29	0.0094078	0.199603788	AGPS, API5P2, CYCTP, FKBP7, NFE2L2, OSBPL6, PDE11A, PJV
30	0.00022333	<b>0.026959121</b>	C2orf88, CAVIN2, DNAJB1P1, GLS, HIBCH, HMGB1P27, HNR
31	0.020151	0.286880992	ALS2CR12, AOX1, AOX2P, AOX3P, BICD1P1, BZW1, C2CD6, C
32	0.025932	0.322243235	AGFG1, C2orf83, CCL20, COL4A3, COL4A4, DAW1, IRS1, MFF
33	0.02952	0.335876382	ARL4C, DNAJB3, HJURP, HSPE1P9, LINC01891, MROH2A, MS
34	0.001802	0.096027848	EFHB, HSPA8P18, KAT2B, KCNH8, MIR4791, PP2D1, RAB5A,
35	0.0054768	0.150576274	ACVR2B, ACVR2B-AS1, CCR8, CSRNP1, CX3CR1, DDTP1, DSTI
36	2.07E-05	<b>0.011551488</b>	C3orf14, FHIT, MIR548BB, PPIAP70, PPIAP71, PTPRG, PTPRG
37	0.017198	0.282180777	BBX, C3orf85, CCDC54, CD47, CIP2A, DPPA2, DPPA4, DUBR,
38	0.042239	0.398792793	ACTRT3, CLDN11, EGFEM1P, EIF5A2, GPR160, KLF7P1, KRT1:
39	0.014875	0.259162371	CPLX1, CTBP1, CTBP1-AS, CTBP1-AS2, DGKQ, FGFR1, GAK, I
40	0.019668	0.286880992	ADD1, ADRA2C, DOK7, GRK4, HGFAC, HTT, HTT-AS, LINC009
41	0.00036688	<b>0.034445956</b>	ALG1L3P, CLNK, DEFB108F, DEFB130D, DEFB131A, DRD5, EN
42	0.00010126	<b>0.015584873</b>	ANAPC4, ATP5LP3, CCDC149, DHX15, HNRNPA1P65, LGI2, LI
43	0.0081571	0.199603788	RPS3AP17
44	0.017967	0.286880992	LINC02497, LINC02501, MTCYBP43, PCDH7
45	0.016246	0.272391188	ELOCP33, FAM114A1, KLB, KLHL5, KRT18P25, LIAS, MIR5591
46	0.0010615	0.0717574	COX7B2, GABRA2, GABRA4, GABRB1, GABRG1, RAC1P2, RN:
47	2.86E-05	<b>0.011551488</b>	ADAMTS3, AFM, AFP, ALB, ANKRD17, AREG, COX18, CXCL1,
48	0.036011	0.366244251	ANXA3, BMP2K, CCNG2, CNOT6L, CXCL13, FRAS1, HIGD1AP:
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2	0.0013985	0.081498793 BMP3, COX5BP1, MTCYBP44, NPM1P41, PRKG2, RASGEF1B,
3	0.040248	0.390914483 AFF1, C4orf36, GAPDHP60, HSD17B11, HSD17B13, KLHL8, N
4	0.0016719	0.0941837 ATOH1, CCSER1, GRID2, HMGB3P15, KRT19P6, LNCPRESS2,
5	0.0073153	0.187316015 ADH7, C4orf17, DAPP1, DDIT4L, DNAJB14, DYNLL1P6, EMCN
6	0.028838	0.331538912 CXXC4, CXXC4-AS1, DDX3P3, LINC02428, LINC02503, RN7SL
7		
8	0.0089317	0.199603788 BBS12, CETN4P, FGF2, IL21-AS1, LINC01091, LINC02435, NU
9	0.042911	0.402807433 ANKRD50, LINC02516, TECRP2
10	0.034308	0.360127453 ELF2, FTH1P24, MGARP, NAA15, NDUFC1, NOCT, PPP1R14B
11	0.045436	0.404141263 CLGN, ELMOD2, H3F3AP6, MAML3, MGAT4D, MGST2, NDUI
12	0.012239	0.235044432 C4orf45, FABP5P12, FNIP2, LINC02233, LINC02477, MIR368
13		
14	0.019755	0.286880992 RNA5SP170, RNA5SP171, SPOCK3, TLL1
15	0.018959	0.286880992 AADAT, APOBEC3AP1, CLCN3, HPF1, HSP90AA6P, LINC0161
16	0.028728	0.331538912
17		
18	0.0038469	0.13088374 AGGF1P1, CLUHP4, DBET, DUX4, DUX4L1, DUX4L2, DUX4L3,
19	0.018174	0.286880992 CAPSL, IL7R, LMBRD2, MIR580, NADK2, NADK2-AS1, PRLR, R
20	0.023541	0.306163 C5orf42, C8orf59P2, EGFLAM, EGFLAM-AS1, EGFLAM-AS2, E
21	0.018751	0.286880992 C6, C7, CARD6, MROH2B, OXCT1, OXCT1-AS1, PLCXD3, PRKA
22	0.0090242	0.199603788 AK4P2, ANKRD55, C1GALT1P2, C5orf67, DDX4, HMGN1P17,
23	0.01013	0.211354321 CAB39P1, DEPDC1B, ELOVL7, ERCC8, GNL3LP1, KRT8P31, LIP
24		
25	0.0013173	0.080262929 ACTBP2, AP3B1, ARSB, ATP6V1G1P6, BHMT, BHMT2, DMGD
26	0.038281	0.37833269 CHD1, CSNK1A1P3, CTBP2P4, DDX18P4, KRT8P32, LINC0134
27	0.017143	0.282180777 FER, GJA1P1, KRT18P42, LINC01023, LINC01848, MAN2A1, M
28	0.0038723	0.13088374 APC, CBX3P3, DCP2, EPB41L4A, EPB41L4A-AS1, EPB41L4A-A
29		
30	0.0033187	0.127103022 RNU6-718P
31	0.0013161	0.080262929 ARGFXP1, CEP120, CSNK1G3, HMGB3P17, KRT18P16, KRT8P
32	0.0093679	0.199603788 ABLIM3, ADRB2, AFAP1L1, ARHGEF37, ARSI, CAMK2A, CARN
33	0.045328	0.404141263 ANXA6, ATOX1, CCDC69, CLMAT3, DCTN4, FAT2, G3BP1, GLI
34	0.020158	0.286880992 CNN3P1, F13A1, LY86, LY86-AS1, MIR5683, MIR7853, NRN1,
35		
36	0.0089398	0.199603788 CAP2, DDX18P3, DEK, FAM8A1, KDM1B, KIF13A, MIR548A1,
37	0.041065	0.396570571 DHFRP5, EEF1B2P5, FKBP1C, KHDRBS2, LGSN, PTP4A1, RPL7
38	0.035336	0.361926303 FILIP1, IMPG1, LINC02540, MYO6, RN7SKP163, RNA5SP209,
39	0.027386	0.330588143 ATF1P1, COPS5P1, EPHA7, LINC02531, RPL5P19
40		
41	0.0081904	0.199603788 COX6A1P3, GJA1, HMGB3P18, RNA5SP215, RNU2-8P, RNU4
42	0.049085	0.42036215 ADGB, EPM2A, FBXO30, FUNDC2P3, GRM1, RAB32, RNA5SP
43	0.00053503	<b>0.045210035</b> CAHM, PACRG, PACRG-AS1, PACRG-AS2, PACRG-AS3, QKI, R
44	0.037719	0.374971235 C6orf118, PDE10A, RNA5SP226
45	0.046006	0.404948646 FAM120B, MIR4644, OR4F7P, PDCD2, PSMB1, RPL23AP47, T
46		
47	0.0022921	0.104693216 ALG1L5P, C1GALT1, C7orf26, CCZ1B, COL28A1, FAM86LP, M
48	0.011561	0.23259631 SCIN, TAS2R2P, THSD7A, TMEM106B, VWDE
49	0.0043585	0.135302607 C7orf71, CBX3, CREB5, EIF4HP1, EVX1, EVX1-AS, HIBADH, HI
50	0.043743	0.402807433 AEBP1, BLVRA, CAMK2B, COA1, DBNL, DDX56, GCK, HECW1,
51	0.030941	0.33735671 CCNJP1, CCT6A, CHCHD2, CICP11, CICP12, CICP8, FKBP9P1, (
52	0.033548	0.35435075 AKAP9, ANKIB1, CDK14, CYP51A1, CYP51A1-AS1, ERVW-1, F
53		
54	0.044182	0.402807433 DOCK4, DOCK4-AS1, EIF3IP1, IFRD1, IMMP2L, LRRN3, LSMEI
55	0.01912	0.286880992 C7orf77, EEF1GP1, GPR37, GRM8, POT1, POT1-AS1, RNU6-1
56	9.72E-05	<b>0.015584873</b> ARF5, CALU, CICP14, FAM71F1, FAM71F2, FSCN3, GCC1, GR
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58	0.00017796	<b>0.0242606</b> AHCYL2, ATP6V1F, CCDC136, CEP41, CPA1, CPA2, CPA4, CPA
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2	0.023551	0.306163	CHRM2, FAM180A, LUZP6, MTPN, NUP205, PSMC1P3, RNU6
3	0.0034901	0.128223239	DPP6, PAXIP1, PAXIP1-AS2
4	0.00010144	0.015584873	CSMD1
5	0.02635	0.325047445	AGPAT5, ANGPT2, DEFA1, DEFA10P, DEFA11P, DEFA1B, DEF
6	0.004143	0.135302607	ALG1L13P, CLDN23, DEFB103A, DEFB103B, DEFB104A, DEFB
7	0.037504	0.374971235	LINC00599, MIR124-1, MIR597, MSRA, TNKS
8	9.49E-05	0.015584873	ALG1L11P, ALG1L12P, BLK, C8orf49, CTSB, DEFB108D, DEFB
9	0.021775	0.299184959	CNOT7, FGF20, MICU3, MRPL49P2, MSR1, MTMR7, RN7SL4
10	0.026798	0.328178406	ATP6V1B2, LINC02153, LZTS1, LZTS1-AS1, RNA5SP257, RNU6
11	0.044571	0.402807433	ATP6V1H, LYPLA1, MRPL15, RGS20, RNU105C, RNU6-1331P,
12	0.01369	0.247344842	CERNA3, CHCHD7, LINC00968, LYN, MOS, NPM1P21, PENK,
13	0.041969	0.398792793	C8orf89, FAM213AP2, HAUS1P3, KCNB2, RDH10, RDH10-AS
14	0.0056297	0.151018937	COL14A1, DEPTOR, DSCC1, MRPL13, MTBP, NCAPGP1, RN7S
15	0.027824	0.331144789	KHDRBS3, LINC01591, MAPRE1P1, MIR30B, MIR30D, RNU1-
16	0.008311	0.199603788	CLIC4P1, DMRTA1, ELAVL2, LINC01239, NOP56P2, SUMO2P:
17	0.0022245	0.104427917	IZUMO3, RMRPP5, RN7SKP120
18	0.042231	0.398792793	DNAJB5P1, GCNT1, LYPLA2P3, PCA3, PCSK5, PPIAP87, PRUN
19	0.0044834	0.135302607	NTRK2, SLC28A3, UBE2V1P10
20	0.041444	0.397956591	AAED1, C9orf3, CDC14B, EIF4BP3, ERCC6L2, FANCC, FBP1, FI
21	0.018958	0.286880992	HMG2P32, KLF4, LINC01505, LINC01509, MIR8081, PPIAP8
22	0.0038248	0.13088374	DAB2IP, GGTA1P, GSN, HMGB1P37, LHX6, MIR4478, MORN:
23	0.047058	0.407836	AK8, BARHL1, CEL, CELP, CFAP77, DDX31, EEF1A1P5, GBGT1
24	0.044426	0.402807433	LINC00701, PFKP, PITRM1, PITRM1-AS1
25	0.033317	0.354124088	ABI1, APBB1P, FAM238A, FAM238B, GAD2, GPN3P1, GPR15
26	0.015073	0.259932347	MIR548F1, NEFMP1, PCDH15, RNU6-687P
27	0.018426	0.286880992	ANXA2P3, CYP2C61P, DBF4P1, JMJD1C, JMJD1C-AS1, LINC01
28	0.044876	0.403406596	ACTR1A, ARL3, AS3MT, BORCS7, BORCS7-ASMT, BTRC, C10c
29	0.022667	0.305205952	CALHM1, CALHM2, CALHM3, CFAP43, CFAP58, CFAP58-AS1,
30	0.0018203	0.096027848	ATRNL1, CCDC172, GFRA1, NTAN1P1, SNRPGP6
31	0.028785	0.331538912	BBOX1, BBOX1-AS1, BDNF, BDNF-AS, CBX3P1, CCDC34, HSP:
32	0.011703	0.232683176	AMBRA1, ARHGAP1, ATG13, C11orf49, C11orf94, CHRM4, C
33	0.045683	0.404210838	AHNAK, ASRGL1, ATL3, B3GAT3, BSCL2, C11orf95, C11orf98,
34	0.0090757	0.199603788	AP5B1, ARL2, ARL2-SNX15, ATG2A, BAD, BATF2, C11orf84, C
35	0.020321	0.286880992	ACTN3, ACY3, AIP, ALDH3B2, ALG1L8P, ANKRD13D, B4GAT1
36	0.0055241	0.150576274	DDI1, LINC02552, MIR7641-1, PDGFD
37	0.0032025	0.127103022	ARHGAP20, FDX1, HNRNPA1P60, LINC02550, RDX, RNA5SP3
38	0.013388	0.247344842	IGSF9B, JAM3, MIR4697, MIR4697HG, NCAPD3, OPCML, OP
39	0.0091289	0.199603788	BICD1, DNM1L, FGD4, PKP2, RNU6-494P, YARS2
40	0.02803	0.331263636	AK6P1, ALG10, DUX4L27, RNA5SP357, RNU6-400P, RNU6-47
41	0.049747	0.42036215	ABCD2, C12orf40, CNTN1, KIF21A, LINC02471, LINC02555, L
42	0.047645	0.410816582	AAAS, AMHR2, ATF7, ATP5G2, C12orf10, CALCOCO1, CBX5, I
43	0.023025	0.306163	AGAP2, AGAP2-AS1, ARHGEF25, ATP23, AVIL, B4GALNT1, CI
44	0.031821	0.340363861	CNOT2, FAHD2P1, KCNMB4, LINC01481, MYRFL, PTPRB, PTP
45	0.0058348	0.1517048	LINC02444, LINC02445, RNU6-1012P, TRHDE
46	0.0021063	0.1017042	CCDC59, LINC02426, METTL25, PPFIA2, RNU6-977P, RPL6P2
47	0.030729	0.337220844	AMER2, ANKRD20A10P, ATP12A, ATP8A2, CENPJ, ELOBP1, II
48	0.030209	0.335876382	AKAP11, CALM2P3, CHCHD2P11, DGKH, DNAJC15, EPST1, F
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2	0.0046343	0.137096879	CTAGE16P, DNAJA1P1, HMGN2P39, POLR3KP1, RNY4P29, R
3	0.022755	0.305205952	BCRP9, HNRNPA3P5, LINC00364, LINC01052, MIR4704, MIR
4	0.027028	0.328613813	BORA, DACH1, DIS3, FABP5P1, H3F3BP1, KLF12, KLF5, LINC0
5	0.002688	0.11648	GYG1P2, RNU6-67P, SLITRK1, UBE2D3P4, VENTXP2
6	0.018231	0.286880992	RPL7P45
7			
8	0.00052398	<b>0.045210035</b>	ARHGEF7, LINC00354, LINC00404, LINC01070, LINC02337, S
9	0.034877	0.361350854	ATP4B, CDC16, CHAMP1, CLCP2, GAS6, GAS6-AS1, GAS6-AS2
10	0.0074634	0.18825591	ABHD4, AJUBA, ARL6IP1P1, C14orf93, DAD1, HAUS4, LINC02
11	0.0044794	0.135302607	LINC02315, LRFN5
12	0.013018	0.24719573	FKBP1BP1, LRFN5
13	0.044511	0.402807433	AKAP5, CHURC1, CHURC1-FNTB, ESR2, FNTB, GPX2, HSPA2,
14	0.030056	0.335876382	EIF1AXP2, FUT8, FUT8-AS1, LINC02290, LINC02324, MIR470
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16	0.00076908	0.059079327	ACTN1, ACTN1-AS1, ADAM20, ADAM20P1, ADAM21, ADAM
17	0.031262	0.338671667	ANGEL1, CIPC, CYCSP1, ESRRB, IRF2BPL, LINC01629, LINC02
18	0.046996	0.407836	FLRT2, LINC00911, LINC02329, RNU6-976P
19			
20	0.00097658	0.068767508	ASB2, BTBD7, CCDC197, COX8C, DDX24, FAM181A, FAM181
21	0.02327	0.306163	BCL11B, BEGAIN, CCDC85C, CCNK, CYP46A1, DEGS2, DLK1, E
22	0.024542	0.315610677	ARHGAP11A, AVEN, CHRM5, FMN1, GOLGA8N, GOLGA8O, C
23			
24	0.0033358	0.127103022	ANKRD63, BMF, BMF-AS1, BUB1B, BUB1B-PAK6, C15orf52, C
25	0.031668	0.340363861	ACTBP7, ADAL, ATP5HP1, CATSPER2, CATSPER2P1, CCNDBP
26	0.024721	0.315610677	UNC13C
27	3.42E-05	<b>0.011551488</b>	ANP32BP1, ARID3B, C15orf39, C15orf59, C15orf59-AS1, CCE
28	0.0051626	0.145413233	BLM, CRTC3, CRTC3-AS1, FES, FURIN, HDCC3, HSPE1P3, IQG
29	0.013383	0.247344842	ASB9P1, C15orf32, CHD2, DUXAP6, ENO1P2, FAM174B, HMO
30	0.02054	0.286880992	LINC00924, LINC01197, NR2F2-AS1, RNU2-3P
31	0.020457	0.286880992	ARRDC4, FAM149B1P1, LINC00923, LINC02157, LINC02251,
32	0.0043001	0.135302607	CPPED1, MIR4718, SHISA9
33	0.011364	0.23138747	ERCC4, LINC02130, LINC02185, LINC02186, MIR193B, MIR19
34	0.022406	0.305205952	CHP2, COG7, DCTN5, EARS2, ERN2, GGA2, HS3ST2, NDUFAB
35	0.030206	0.335876382	ADGRG1, ADGRG5, AMFR, ARL2BP, BBS2, CCDC102A, CCL17
36	0.0043979	0.135302607	AARS, CHTF8, CLEC18A, CLEC18C, COG4, COG8, CYB5B, DDX
37	0.043398	0.402807433	CDH13, RN7SL134P
38	0.016279	0.272391188	ACSF3, AFG3L1P, ANKRD11, CDH15, CDK10, CENPBD1, CHM
39	0.0018751	0.096027848	CDRT15, CDRT15P1, COX10, COX10-AS1, HS3ST3B1, LINC02C
40			
41	9.46E-05	<b>0.015584873</b>	ASIC2, CCL1, CCL11, CCL13, CCL2, CCL7, CCL8, LINC01989, RI
42	0.0035798	0.128720468	BTBD17, C17orf80, CDC42EP4, COG1, CPSF4L, DNAI2, FAM1
43	0.025842	0.322243235	ARHGAP28, L3MBTL4, L3MBTL4-AS1, LAMA1, LINC00668, LI
44	0.035066	0.361350854	AKR1B1P6, ANKRD12, APCDD1, CCDC58P1, GACAT2, KRT18F
45	0.046847	0.407836	ALPK2, ATP8B1, HMGN1P30, LINC01897, LINC01926, MALT1
46	0.0013298	0.080262929	AP1M1, CIB3, CYP4F10P, CYP4F11, CYP4F12, CYP4F2, CYP4F
47	0.025738	0.322243235	ARMC6, ATP13A1, BNIP3P10, BNIP3P9, BORCS8, BORCS8-M
48			
49	0.0026552	0.11648	C19orf12, LINC00906, LINC01532, MAN1A2P1, PLEKHF1, PO
50	0.013904	0.247344842	CEACAM16, CEACAM19, CEACAM20, CEACAM22P, IGSF23, I
51	0.039158	0.382526127	AP2S1, ARHGAP35, CALM3, CCDC8, DACT3, DACT3-AS1, FKR
52	0.00024703	<b>0.027832047</b>	ANKEF1, C20orf187, FAT1P1, HIGD1AP15, JAG1, LINC01752,
53	0.044133	0.402807433	DYNLT3P1, KIF16B, MACROD2, OTOR, PCSK2, PPIAP17, RNU
54			
55	0.00032101	<b>0.031912171</b>	ADA, EIF4EBP2P1, FITM2, GDAP1L1, GTSF1L, HNF4A, HNF4A
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2	0.011917	0.233725057	ANKRD60, BMP7, BMP7-AS1, C20orf85, CASS4, CTCFL, FAM:
3	0.0088069	0.199603788	ADRM1, ARF4P2, C20orf166-AS1, CABLES2, COL9A3, DIDO1,
4	0.02088	0.289239344	BTF3L4P1, BTG3, BTG3-AS1, C21orf91, C21orf91-OT1, CHOC
5	0.019745	0.286880992	C1QBPP1, FDPSP6, KRT18P2, LINC00320, LINC01683, LINC02
6	0.0033844	0.127103022	AATBC, AGPAT3, AIRE, C21orf2, C21orf33, CSTB, DNMT3L, H
7	0.0047051	0.137096879	C21orf58, DIP2A, DIP2A-IT1, DSTNP1, LSS, MCM3AP, MCM3
8	0.002779	0.11741275	BCRP7, C22orf39, CA15P1, CA15P2, CDC45, CLDN5, CLTCL1,
9	3.39E-06	<b>0.002864973</b>	ABHD17AP4, ABHD17AP5, AIFM3, ARVCF, ASH2LP3, BCRP2,
10	0.0020611	0.1017042	LINC01422, LINC01638, LINC02554, MN1, RNU6-1066P
11	0.018076	0.286880992	ADSL, ATF4, CACNA1I, ENTHD1, FAM83F, GRAP2, MGAT3, M
12	0.012032	0.233725057	ANP32BP2, ARHGAP8, EFCAB6, HMGN2P9, KIAA1644, KRT1:
13	0.034647	0.361350854	CELSR1, CERK, GRAMD4, LINC01644, TBC1D22A, TBC1D22A-
14	0.013641	0.247344842	FAM19A5, LINC00898, LINC01310, MIR3201, MIR4535
15	0.0010523	0.11639375	AHDC1, ATP1F1, CHMP1AP1, DNAJC8, EPB41, EYA3, FAM76A
16	0.027257	0.366808718	ADGRB2, BSDC1, CCDC28B, COL16A1, DCDC2B, EIF3I, FABP3
17	0.027643	0.366808718	AGBL4, BEND5, CYP46A4P, PPP1R8P1, RNU4-61P, RNU6-72E
18	0.0096698	0.249156536	ACADM, ASB17, CRYZ, DLSTP1, ERICH3, ERICH3-AS1, FPGT-T
19	0.0034323	0.163636915	CTBS, DNASE2B, GNG5, LINC01555, LPAR3, PRKACB, RPF1, S
20	0.038708	0.387767124	ACTBP12, BRDT, BTBD8, C1orf146, CCDC18, CCDC18-AS1, CC
21	0.049685	0.409321599	ABCA4, ABCD3, ARHGAP29, BCAR3, CHCHD2P5, DNTTIP2, FI
22	0.010468	0.257336	DPYD, DPYD-AS1, DPYD-AS2, DPYD-IT1, EEF1A1P11, LINC017
23	0.03735	0.384504777	LINC01661, MIR7852, MTATP6P14, MTCO1P14, NBPFF4, NBP
24	0.045592	0.400170813	CASQ2, CNOT7P2, ELOCP20, HNRNPA1P43, LINC01765, NGF
25	0.0017884	0.136124561	ALDH9A1, FAM78B, LMX1A, LRRC52, MGST3, MIR3658, MIR
26	0.048391	0.409321599	ANKRD45, BANF1P4, CACYBP, CENPL, DARS2, GAS5, GAS5-A
27	0.0067158	0.21452546	ERVMER61-1, FDPSP1, LINC01036, LINC01037, PLA2G4A, RN
28	0.0064925	0.211784533	CLPTM1LP1, GAPDHP75, LINC01035, LINC01701, RNA5SP73
29	0.00019343	<b>0.040934624</b>	EEF1A1P14, LINC01724, RNU6-983P
30	0.022167	0.360853183	ATP6V1G3, C1orf53, CRB1, DENND1B, EEF1A1P32, FAM204I
31	0.0020397	0.138128484	ASCL5, CACNA1S, CAMSAP2, CSRP1, DDX59, FAM58BP, GPR
32	0.034619	0.378128819	AURKAPS1, BPNT1, C1orf115, DUSP10, EPRS, HDAC1P2, HLX
33	0.017348	0.310620947	ACTBP11, AIDA, AKR1B1P1, BROX, CAPN2, CAPN8, CCDC185
34	0.011905	0.275592946	ACBD3, ACBD3-AS1, CDKN2AIPNLP1, DNAH14, ENAH, EPHX1
35	0.043519	0.399557005	CMPK2, LINC00298, LINC00299, LINC01871, NRIR, RN7SKP1
36	0.012822	0.285626921	CAMKMT, EPAS1, LINC01121, LINC01820, LINC01833, PREPL
37	0.0092029	0.247309678	CRYGGP, KNOP1P3, LINC01867, NRXN1, ZNF863P
38	0.044345	0.399557005	BTF3P5, CCDC85A, CCDC88A, CFAP36, CLHC1, EFEMP1, EML
39	0.0023453	0.14635985	ACTG1P22, EIF3FP3, FANCL, LINC01795, VRK2
40	0.025411	0.366808718	AAK1, ADD2, ANTXR1, ANXA4, ASPRV1, B3GALNT1P1, BRD7
41	0.041199	0.399557005	ADD2, ANKRD53, ATP6V1B1, ATP6V1B1-AS1, CD207, CLEC4E
42	0.00075742	0.098639389	ACOXL, ACOXL-AS1, ACTR3, ANAPC1, BCL2L11, BUB1, CBWD
43	0.0038662	0.163636915	LINC01412, LINC01966, RNU7-2P, RPL17P12, RPL6P5, TEX41
44	0.0050929	0.199034233	ALS2CR12, AOX1, AOX2P, AOX3P, BICD1P1, BZW1, C2CD6, C
45	0.049823	0.409321599	ERBB4, IKZF2, LINC01878, LINC01953, MIR4438, MIR4776-1,
46	0.0097352	0.249156536	AGXT, ANKMY1, ANO7, AQP12A, AQP12B, BOK, BOK-AS1, C:
47	0.00038723	0.059598217	ATG4B, BOK, CICIP10, D2HGDH, DTYMK, GAL3ST2, ING5, LIN
48	0.0016268	0.131151067	ACTG1P12, ATG7, CAND2, CHCHD4P4, CRIP1P1, CYCSP12, F:
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2	0.016837	0.310620947 LINC01985, MTND4LP9, RBMS3, RBMS3-AS1, RBMS3-AS2, R
3	0.0070493	0.216990271 CMTM8, CNN2P6, GADL1, GPD1L, KRT18P15, MIR466, NIFK
4	0.033509	0.37353334 ACVR2B, ACVR2B-AS1, CCR8, CSRNP1, CX3CR1, DDTP1, DSTI
5	0.0072247	0.218418163 ABHD5, ACKR2, ANO10, CCDC13, CCDC13-AS1, CDCP1, CLEC
6	0.029157	0.366808718 CACNA2D3, CACNA2D3-AS1, ESRG, LINC02017, LINC02030, I
7	0.0013392	0.11639375 ABHD6, ACOX2, C3orf67, C3orf67-AS1, DNASE1L3, FAM107/
8	0.010893	0.263454986 FRMD4B, MDFIC2, MITF, RBM43P1, RN7SL418P, SAMMSON
9	0.030766	0.366808718 AGGF1P3, ALG1L6P, CLUHP10, CNTN3, DUX4L26, ENPP7P2,
10	0.045474	0.400170813 BBX, C3orf85, CCDC54, CD47, CIP2A, DPPA2, DPPA4, DUBR,
11	0.035176	0.381749795 BZW1P2, GAP43, LINC00903, LSAMP, LSAMP-AS1, RN7SL58:
12	0.042638	0.399557005 CLSTN2, CLSTN2-AS1, PXYLP1, RPL23AP41, SLC25A36, SPSB4
13	0.036804	0.384504777 C3orf58, GAPDHP47, PBX2P1, RNA5SP144, SLC9A9, SLC9A9-
14	0.016894	0.310620947 ACTG1P23, EI24P1, MIR4789, NAALADL2, NAALADL2-AS1, N
15	0.047977	0.409321599 ACTL6A, CCDC39, CCDC39-AS1, DNAJC19, FAUP2, FLYWCH1I
16	0.031528	0.367091103 ACAP2, ACAP2-IT1, APOD, KIF3AP1, LINC00969, LINC01983,
17	0.003801	0.163636915 ADD1, ADRA2C, DOK7, GRK4, HGFAC, HTT, HTT-AS, LINC009
18	0.013305	0.292064205 RPS3AP17
19	0.007809	0.227942017 AASDH, ARL9, CEP135, CLOCK, EXOC1, EXOC1L, KIAA1211, N
20	0.043276	0.399557005 GLDCP1, HOPX, IGFBP7, IGFBP7-AS1, LINC02380, LINC02494
21	2.19E-05	0.019114817 ART3, BTC, CCDC158, CCNI, CDKL2, CXCL10, CXCL11, CXCL9,
22	0.0044795	0.180566512 ACTR3BP4, BANK1, BDH2, CENPE, CISD2, EMCN, KRT8P46, L
23	0.003294	0.163636915 RNU6-224P
24	0.019488	0.333264485 LINC00498, LINC00499, LINC00500, LINC00616, LINC02172,
25	0.0088935	0.246831074 ELF2, FTH1P24, MGARP, NAA15, NDUFC1, NOCT, PPP1R14B
26	0.029666	0.366808718 APELA, CPE, FAM218A, FAM218BP, GK3P, HADHAP1, KLHL2,
27	0.03103	0.367091103 RNA5SP170, RNA5SP171, SPOCK3, TLL1
28	0.023935	0.366398455 LINC02112, LINC02199, LINC02226, MIR4458, MIR4458HG, I
29	0.029833	0.366808718 ANKRD33B, ANKRD33B-AS1, CCT5, CMBL, CTNND2, DAP, FA
30	0.032122	0.367449635 BTG4P1, C5orf17, CDH10, LINC02211, LINC02228, LINC0223
31	0.042462	0.399557005 CAPSL, IL7R, LMBRD2, MIR580, NADK2, NADK2-AS1, PRLR, R
32	0.045619	0.400170813 C6, C7, CARD6, MROH2B, OXCT1, OXCT1-AS1, PLCXD3, PRKA
33	0.019024	0.329685837 ADAMTS6, CENPK, CWC27, FAM159B, MRPL49P1, NLN, PPM
34	0.00029874	0.056196313 LINC02115, LINC02163, NUDT12, PDZPH1P, RN7SL255P, RNI
35	0.0013011	0.11639375 LINC01950, PSMC1P5, RNA5SP189
36	0.01743	0.310620947 FER, GJA1P1, KRT18P42, LINC01023, LINC01848, MAN2A1, M
37	0.042421	0.399557005 AK3P4, ATG12, CCDC112, CCT5P1, CDO1, CTNNA1P1, FEM1(
38	0.021996	0.360853183 HMGB1P22, HMGB1P29, LINC01170, LINC02240, RN7SKP11
39	0.024485	0.366808718 ALDH7A1, BOLA3P3, C5orf63, GRAMD2B, HSPE1P10, LINC02
40	0.028273	0.366808718 C5orf46, DPYSL3, EEF1GP2, FBXO38, HMGN1P16, HTR4, JAK
41	0.0033569	0.163636915 CIR1P1, CNOT8, FAM114A2, FAXDC2, GALNT10, GEMIN5, GI
42	0.016695	0.310620947 ADAM19, APOOP1, C5orf52, CLINT1, CYFIP2, EBF1, FAM71B
43	0.029817	0.366808718 LINC01938, LINC02143, LSM1P2, RN7SKP60, RNU6-168P, RN
44	0.001375	0.11639375 EFCAB9, FBXW11, FGF18, KLF3P1, LINC01944, MIR3912, MII
45	0.030052	0.366808718 ADTRP, C6orf52, ELOVL2, ELOVL2-AS1, ERVFRD-1, GCM2, GC
46	0.0052551	0.199034233 CD83, GFOD1, GFOD1-AS1, LINC01108, MCUR1, MRPL35P1,
47	0.030649	0.366808718 CAP2, DDX18P3, DEK, FAM8A1, KDM1B, KIF13A, MIR548A1,
48	0.049082	0.409321599 FTH1P5, IL17A, LINCMD1, MIR133B, MIR206, PKHD1, RN7SL
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2	0.04362	0.399557005 CLNS1AP1, ELOVL5, ERHP2, FAM83B, GCLC, GFRAL, HCRTR2
3	0.044852	0.399654926 BMP5, COL21A1, HMGCLL1, NPM1P36
4	0.037609	0.384504777 EYS, GCNT1P4, HNRNPDP2, PHF3, PTP4A1, RPL9P18
5	0.018587	0.32778949 ADH5P4, NUFIP1P, RNU7-66P, SLC25A51P1
6	0.0065049	0.211784533 DUTP5, HTR1E, KRT18P64, LINC02535, MTHFD2P2, NDUFA5
7	0.0020206	0.138128484 ATG5, BEND3, C6orf203, CD24, CRYBG1, LINC02526, LINC02
8	0.029021	0.366808718 FAM184A, MAN1A1, MIR548B, RNU6-194P
9	0.032493	0.369198987 EYA4, FTH1P26, HMGA1P7, HMGB1P13, HSPE1P21, LINC00E
10	0.011259	0.266083167 ARFGEF3, CCDC28A, ECT2L, GVQW2, HEBP2, LINC02528, LIN
11	0.036511	0.384504777 ESR1, FBXO5, HSPD1P16, MTRF1L, MYCT1, NANOGP11, RGS
12	0.02887	0.366808718 AP5Z1, FOXK1, MIR4656, MMD2, PAPOLB, RADIL, RBAK, RBA
13	0.0024147	0.14635985 HSPA8P8, NDUFA4, NPM1P11, PHF14, RPL23AP52
14	0.0013562	0.11639375 ANLN, AOA, AOA-IT1, EEPD1, ELMO1, ELMO1-AS1, KIAAC
15	0.03762	0.384504777 C1P22, LINC00265, POU6F2, POU6F2-AS1, POU6F2-AS2, RA
16	0.00053318	0.075222812 C7orf25, GLI3, HECW1, HECW1-IT1, HMGN2P30, LINC01448
17	0.047534	0.409321599 HAUS6P1, HAUS6P3, HPVC1, LINC01446, RAC1P9, RN7SKP2:
18	0.022951	0.364042028 CALM1P2, CDC42P2, EGFR, EGFR-AS1, ELDR, FKBP9P1, LANC
19	0.0097833	0.249156536 ARF1P1, ASB4, ATP5F1P2, BET1, CASD1, COL1A2, DYNC111, (
20	0.029214	0.366808718 ACHE, ACTL6B, AGFG2, AP1S1, C7orf61, EPHB4, EPO, FBXO2
21	0.008498	0.240231057 DPP6, PAXIP1, PAXIP1-AS2
22	0.0070043	0.216990271 RN7SKP159, RPL23AP54
23	0.024239	0.366398455 LINC00599, MIR124-1, MIR597, MSRA, TNKS
24	0.035942	0.384504777 BNIP3L, CDCA2, DPYSL2, EBF2, PNMA2, PPP2R2A, RNA5SP2!
25	0.02142	0.360853183 BUD31P1, DUSP26, FUT10, LINC01288, MAK16, MTND1P6, I
26	0.0057285	0.202048969 ADGRA2, ADRB3, ASH2L, BAG4, BRF2, C8orf86, DDHD2, EIF4
27	0.0036304	0.163636915 ARFGEF1, C8orf34, C8orf34-AS1, C8orf44, C8orf44-SGK3, C8
28	0.030686	0.366808718 HNRNPA1P4
29	0.01602	0.310453875 C8orf87, C8orf88, IRF5P1, LINC00535, LRRC69, MIR4661, MI
30	0.022018	0.360853183 CCNE2, CDH17, DPY19L4, ESRP1, FAM92A, FSBP, GEM, INTS
31	0.014744	0.293924718 NUDCD1, TMEM74, TRHR, TRMT10BP1
32	0.038311	0.386074542 EEF1A1P37, LINC01608, LINC01609, LINC02237, MTCO1P47
33	0.0077249	0.227942017 CSMD3, MIR2053, RNU4-37P, RPL30P16
34	0.037701	0.384504777 DMAC1, KDM4C, PPIAP33, PTPRD, RPL4P5
35	0.038291	0.386074542 KCTD10P1, LINGO2
36	0.048822	0.409321599 DNAJB5P1, GCNT1, LYPLA2P3, PCA3, PCSK5, PPIAP87, PRUN
37	0.035709	0.384504777 ATP5J2P3, CEP78, FOXB2, GNA14, GNA14-AS1, GNAQ, MTN
38	0.010488	0.257336 ASTN2, RN7SKP125, RN7SKP128, RNU6-1082P, RPL10P3, RP
39	0.047305	0.409321599 ADGRD2, ARPC5L, CRB2, DENND1A, GPR21, KRT18P67, LHX2
40	0.014757	0.293924718 ABL1, AIF1L, ASS1, EIF4A1P3, EXOSC2, FAM78A, FIBCD1, FUI
41	0.024144	0.366398455 ABO, ADAMTS13, ADAMTSL2, ARF4P1, BRD3, BRD3OS, CAC
42	0.026995	0.366808718 ANAPC2, CYSRT1, DPH7, DPP7, ENTPD2, ENTPD8, EXD3, FAM
43	0.02847	0.366808718 ARRDC1, ARRDC1-AS1, CACNA1B, EHMT1, FAM157B, MIR6C
44	0.046774	0.408187536 ATP5C1, CHCHD3P1, COX6CP17, GATA3, GATA3-AS1, ITIH2,
45	0.002783	0.16213861 CAMK1D, CDC123, CELF2, CELF2-AS1, CELF2-AS2, CUX2P1, C
46	0.037162	0.384504777 ARHGAP21, C10orf67, ENKUR, GPR158, GPR158-AS1, KIAA1
47	0.0032646	0.163636915 CKS1BP2, MIR604, MIR938, PTCHD3P1, RNU6-908P, SVIL, SV
48	0.0090504	0.24713431 CCND3P1, DNM1P17, EEF1A1P39, GOLGA2P6, JCAD, MAP3K
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2	0.00036275	0.059598217 AK3P5, ARHGAP12, C1DP1, CCDC7, EPC1, HMGB1P7, ITGB1,
3	0.027703	0.366808718 MIR548F1, NEFMP1, PCDH15, RNU6-687P
4	0.023659	0.366398455 ADO, ALDH7A1P4, EGR2, JMJD1C, NRBF2, RNU6-543P, TATC
5	0.02798	0.366808718 ADD3, ADD3-AS1, BTF3P15, MAPKAPK5P1, MXI1, PHB2P1, R
6	0.040047	0.398821006 ABLIM1, ADRB1, AFAP1L2, ATRNL1, AURKAPS2, CASP7, CCD
7		
8	0.0053085	0.199034233 ABCC8, AKR1B1P3, C11orf58, KCNJ11, MIR6073, NCR3LG1, I
9	0.0064107	0.211784533 BBOX1, BBOX1-AS1, BDNF, BDNF-AS, CBX3P1, CCDC34, HSP
10	0.041225	0.399557005 C11orf91, CCDC73, CD59, CSTF3, CSTF3-AS1, DEPDC7, EIF3M
11	0.016137	0.310453875 ABTB2, APIP, CAPRIN1, CAT, CD44, CD44-AS1, CIR1P3, EHF, I
12		
13	5.60E-05	<b>0.023701154</b> AP5B1, ARL2, ARL2-SNX15, ATG2A, BAD, BATF2, C11orf84, C
14	4.05E-05	<b>0.022849292</b> ACTN3, ACY3, AIP, ALDH3B2, ALG1L8P, ANKRD13D, B4GAT1
15	0.044208	0.399557005 C11orf65, C11orf87, CYCSP29, DDX10, EXPH5, KDELC2, RNA
16	0.0032172	0.163636915 ANKK1, ATF4P4, CLDN25, DRD2, HTR3A, HTR3B, LRRC37A13
17	0.017227	0.310620947 BLID, BMPR1APS2, MIR100, MIR100HG, MIR125B1, MIRLET
18	0.0098603	0.249156536 DCPS, GSEC, KIRREL3, KIRREL3-AS1, KIRREL3-AS2, KIRREL3-A
19	0.032068	0.367449635 APLP2, ARHGAP32, BARX2, C11orf45, DDX18P5, ELOBP2, ET
20	0.0018493	0.136124561 ACAD8, B3GAT1, GLB1L2, GLB1L3, NCAPD3, THYN1, VPS26B
21	0.0055444	0.199716366 ADIPOR2, CACNA1C, CACNA1C-AS4, CACNA1C-IT1, CACNA1C
22		
23	0.01451	0.293924718 ACRBP, ACSM4, ALG1L10P, APOBEC1, ATN1, C12orf57, C1R,
24	0.036309	0.384504777 AEBP2, CAPZA3, EEF1A1P4, LINC02398, LINC02468, MEF2B
25	0.013456	0.292064205 BCAT1, C12orf77, CASC1, CENPUP2, ETRF1, KNOP1P1, KRA
26	0.011316	0.266083167 AK4P3, AMN1, BICD1, CAPRIN2, DDX11, DDX11-AS1, DENNE
27	0.023223	0.364042028 BICD1, DNMT1L, FGD4, PKP2, RNU6-494P, YARS2
28	0.049364	0.409321599 ACVR1B, ACVRL1, ANKRD33, ARL2BPP2, ATG101, BTBD10P1
29	0.0011146	0.11639375 AGAP2, AGAP2-AS1, ARHGEF25, ATP23, AVIL, B4GALNT1, CI
30	0.030328	0.366808718 AVPR1A, DPY19L2, DUX4L52, FAM19A2, GAPDHP44, HNRNF
31	0.015741	0.309878058 CAND1, DYRK2, GGTA2P, LINC02408, LINC02420, LINC02421
32	0.00015028	<b>0.037998176</b> ATXN7L3B, BBS10, CAPS2, CCNG2P1, GLIPR1, GLIPR1L1, GLII
33	0.0035586	0.163636915 ACACB, ALKBH2, ANKRD13A, ATP2A2, C12orf76, FAM222A,
34	0.027772	0.366808718 ANKRD26P2, AZU1P1, CDKN2AIPNLP3, COG6, CYCSP34, ELF
35	0.040796	0.399557005 AKAP11, CALM2P3, CHCHD2P11, DGKH, DNAJC15, EPST11, F
36	0.030353	0.366808718 ARL11, C13orf42, CAB39L, CTAGE10P, DLEU1, DLEU1-AS1, D
37	0.043801	0.399557005 BCRP9, HNRNPA3P5, LINC00364, LINC01052, MIR4704, MIR
38	0.031516	0.367091103 ATXN8OS, ELL2P3, HNRNPA1P18, KLHL1, LINC00383, LINC0C
39	0.048489	0.409321599 BORA, DACH1, DIS3, FABP5P1, H3F3BP1, KLF12, KLF5, LINC0
40	0.04475	0.399654926 DDX6P2, LIN28AP2, LINC00397, LINC00430, LINC00433, MIR
41	0.012648	0.28550752 ASNBP3, CCR12P, CFL1P8, CLYBL, CLYBL-AS1, CLYBL-AS2, DO
42	0.027228	0.366808718 ADPRHL1, ATP11A, ATP11A-AS1, ATP11AUN, CUL4A, DCUN1
43	0.021775	0.360853183 BNIP3P1, CYB5AP5, LINC00645, LINC02293, LINC02294, LINC
44	0.049755	0.409321599 LINC00871, RPL10L
45	0.044187	0.399557005 LINC00648, MDGA2, MIR548Y, RNU6-297P, RPA2P1, RPL13A
46	0.042232	0.399557005 EIF1AXP2, FUT8, FUT8-AS1, LINC02290, LINC02324, MIR470
47	0.041439	0.399557005 LINC01148, LINC02296, LINC02330
48	0.013837	0.292825513 C14orf177, RN7SL714P, RPL3P4
49	0.032886	0.37117332 CHRNA7, DNMT1P31, DNMT1P32, GOLGA8K, OTUD7A, RN7SL
50	0.031657	0.367091103 ARHGAP11A, AVEN, CHRM5, FMN1, GOLGA8N, GOLGA8O, C
51	0.02833	0.366808718 ACTBP7, ADAL, ATP5HP1, CATSPER2, CATSPER2P1, CCNDBP
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2	0.00015711	0.037998176	ARPP19, BCL2L10, CERNA1, EEF1A1P22, EEF1B2P1, FAM214
3	0.024812	0.366808718	C15orf65, CCPG1, CD24P2, CNOT6LP1, DAAAF4, DAAAF4-CC
4	0.027156	0.366808718	ABHD2, ACAN, AEN, ANPEP, AP3S2, ARPIN, C15orf38-AP3S2
5	0.019084	0.329685837	ARRDC4, FAM149B1P1, LINC00923, LINC02157, LINC02251,
6	0.0085138	0.240231057	ABCC1, ABCC6, ABCC6P2, BFAR, C16orf45, FOPNL, MARF1, M
7	0.026967	0.366808718	APOBR, ATP2A1, ATP2A1-AS1, ATXN2L, CD19, CDC37P1, CD
8	0.023015	0.364042028	ABCD1P3, ABHD17AP7, ABHD17AP8, ABHD17AP9, ACTR3BP
9	0.017424	0.310620947	CDH8, RN7SKP76, RNU6-21P, RPS27AP16
10	0.0062851	0.211784533	ACAP1, ALOX12B, ALOX15B, ALOXE3, ATP1B2, AURKB, BORO
11	0.0054079	0.199034233	ARHGEF15, CCDC42, CFAP52, DHRS7C, GAS7, GLP2R, GSG1L
12	0.033757	0.37353334	AP2B1, C17orf102, C17orf50, CCL14, CCL15, CCL15-CCL14, C
13	0.0043142	0.178144893	AATF, ACACA, ARHGAP23, C17orf78, C17orf98, CISD3, CWC
14	0.0024206	0.14635985	C17orf112, CA10, LINC01982, LINC02089, MTCO1P40
15	0.0013734	0.11639375	AKAP1, ANKFN1, C17orf67, COIL, DGKE, GARSP1, MIR3614,
16	0.044285	0.399557005	AANAT, CYCSP40, CYGB, JMJD6, LINC00868, LINC02080, ME
17	0.012046	0.275592946	LINC01415, LINC01416, LINC01539, LINC01905, MIR4529, R
18	0.014131	0.293924718	ARMC6, ATP13A1, BNIP3P10, BNIP3P9, BORCS8, BORCS8-M
19	0.00015272	0.037998176	C19orf12, LINC00906, LINC01532, MAN1A2P1, PLEKHF1, PO
20	0.0037699	0.163636915	A1BG, A1BG-AS1, C19orf18, CENPBD1P1, CHMP2A, ERVK3-1
21	0.043016	0.399557005	BTBD3, LINC00687, PA2G4P2, PGAM3P, RN7SKP111, RPS11I
22	0.044369	0.399557005	GAPDHP2, ISM1, ISM1-AS1, LINC01722, LINC01723, SPTLC3,
23	0.014361	0.293924718	DYNLT3P1, KIF16B, MACROD2, OTOR, PCSK2, PPIAP17, RNU
24	0.013768	0.292825513	ACSS2, ACTL10, AHCY, ASIP, BPIFA1, BPIFA2, BPIFA3, BPIFA4
25	0.029299	0.366808718	BCAS1, LINC01524, MRPS33P4, PPIAP10, RN7SKP184, RNU7
26	2.26E-05	0.019114817	ANKRD60, BMP7, BMP7-AS1, C20orf85, CASS4, CTCFL, FAM:
27	0.029484	0.366808718	CCT8, EIF4A1P1, HSPD1P7, LINC00113, LINC00161, LINC003
28	0.034046	0.374284922	BACH1, BACH1-AS1, BACH1-IT1, BACH1-IT2, BACH1-IT3, CLD
29	0.022845	0.364042028	ATP5O, BTF3P6, C21orf62, C21orf62-AS1, CRYZL1, DNAJC28,
30	0.0028731	0.16213861	ABHD17AP4, ABHD17AP5, AIFM3, ARVCF, ASH2LP3, BCRP2,
31	0.033751	0.37353334	ADSL, ATF4, CACNA1I, ENTHD1, FAM83F, GRAP2, MGAT3, M
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ALUB, LMOD2, LYPLA1P1, NDUFA5, PTPRZ1, RNF133, RNF148, RNU6-11P, RNU6-296P, RNU7-154P, RPS26P31, S  
OR4A49P, OR4A4P, OR4A7P, OR4A8, OR4C12, OR4C13, OR4C45, OR4C46, OR4C48P, OR4C49P, OR4C50P, OR4  
i4, OR10G5P, OR10G6, OR10G7, OR10G8, OR10G9, OR10N1P, OR10S1, OR4D5, OR6M1, OR6M2P, OR6M3P, C

lorf18, CACNA2D2, CAMKV, CDHR4, CISH, COX6CP14, CYB561D2, DAG1, DCAF1, DOCK3, FAM212A, GMPPB, G  
MTND1P19, PMPCAP1, RNA5SP164, SMARCAD1

QCE, LFNG, MAD1L1, MIR4648, MIR6836, MRM2, NUDT1, SNX8, TTYH3

RA70I, SPAG16, VWC2L, VWC2L-IT1

O1299, MTFR1, PDE7A, PPIAP86, RRS1, RRS1-AS1, TRIM55

L3, MBTD1, MIR8059, NME1, NME1-NME2, NME2, RPL5P33, RPL7P48, SPAG9, TOB1, TOB1-AS1, UTP18, WFIK  
, VSX1

CCDC51, CCDC71, CDC25A, CELSR3, CELSR3-AS1, COL7A1, DALRD3, DHX30, FBXW12, FCF1P2, IMPDH2, IP6K2,  
D1, HNRNPA1P58, KAAG1, KIAA0319, KRT8P43, MRS2, NRSN1, RIPOR2, RNU6-391P, TDP2

IC02539, MARCKSL1P2, MIR3145, NHSL1, PBOV1, PERP, RPSAP42, SMIM28, TNFAIP3

QCE, LFNG, MAD1L1, MIR4648, MIR6836, MRM2, NUDT1, SNX8, TTYH3

-AS1, IFT52, JPH2, KCNK15, KCNK15-AS1, L3MBTL1, LINC01260, LINC01620, LINC01728, MIR3646, MYBL2, OSI  
25, IGFN1, INAVA, KIF14, KIF21B, LAD1, LINC00862, MROH3P, NR5A2, PHLDA3, PKP1, RNU6-704P, RPL34P6, R  
'6, RAB1A, RN7SL211P, RN7SL341P, RN7SL635P, RNU6-548P, SERTAD2, SLC1A4, SPRED2, VTRNA2-2P

8P43, KRT8P13, LINC01997, LINC02082, LRRC31, LRRC34, LRRIQ4, MECOM, MIR6828, MYNN, PHC3, PRKCI, RN  
:162P, OR7E163P, OR7E43P, OR7E99P, OTOP1, RPS7P15, STX18, STX18-AS1, STX18-IT1, TMEM128, UNC93B4,  
FAM47E, FAM47E-STBD1, G3BP2, HSPE1P23, LINC02483, LINC02562, MIR4450, MIR548AH, NAAA, NUP54, OI  
ULIN, TRIO

RNR2L9, POM121L14P, PRIM2, RBBP4P3, RBBP4P4

IC02539, MARCKSL1P2, MIR3145, NHSL1, PBOV1, PERP, RPSAP42, SMIM28, TNFAIP3

, GRID2IP, KDELR2, OCM, PMS2, RAC1, RN7SL556P, RN7SL851P, RNU6-218P, RPSAP73, RSPH10B, SNORA80D,  
1, CNOT4, MIR6509, NUP205, SDHDP2, SLC35B4, STRA8, TMEM140, TUBB3P2, WDR91

2, NDUFB2-AS1, PPP1R2P6, RAB19, RN7SL771P, RNA5SP247, RNA5SP248, RNU1-58P, RNU4-74P, RNU6-85P, S  
A3, DEFA4, DEFA5, DEFA6, DEFA7P, DEFA8P, DEFA9P, DEFB1, DEFT1P, DEFT1P2, MCPH1, MCPH1-AS1, MIR465

), CCL21, CCL27, CD72, CLTA, CREB3, DNAJB5, FAM166B, FAM205A, FAM205BP, FAM205C, FAM214B, FAM22:

, CNNM2, COL17A1, GSTO1, GSTO2, INA, ITPRIP, MARCKSL1P1, MIR1307, MIR4482, MIR609, MIR936, NEURL1  
'32

VUCB2, OR7E14P, OTOG, PIK3C2A, PLEKHA7, RN7SKP90, RN7SL188P, RNU6-593P, RPS13, SDHCP4, SNORD14A  
FUT4, GPR83, IZUMO1R, KDM4D, KDM4E, KDM4F, MIR548L, MRE11, PIWIL4, SESN3, SRSF8, ST13P11

5, GPR19, LOH12CR2, LRP6, MANSC1, MIR1244-4, RNU6-318P, RNU6-545P, RPL21P136, RPL23AP66  
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 48 HNRNPH1P3, IL31RA, IL6ST, LINC01948, MIR5687, PLPP1, PSMC1P4, RNA5SP183, RNA5SP184, RNA5SP185, R  
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 53 RNU6-164P  
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54 X40P1, FAM106DP, HEATR6, HMGN1P28, KRT18P61, LINC01476, LINC01999, MIR21, MIR4729, MIR4737, NDU  
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 29 CNG2, CARD10, CDC42EP1, CSF2RB, CSF2RBP1, CYTH4, EIF3D, ELFN2, FOXRED2, IFT27, IL2RB, KCTD17, LGALS  
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 10 -AS1, GATB, LINC02273, LINC02486, LRBA, MIR3140, MIR4453, PRSS48, RN7SKP35, RN7SL446P, RNA5SP168, F  
 11 , LINC01179, MIR578, MSMO1, NACA3P, NOL8P1, RNU4-87P, RNU6-284P, RNU6-668P, SCGB1D5P, SMIM31, T  
 12 i, RNA5SP172, RNA5SP173, RNU1-45P, VEGFC  
 13 DUX4L4, DUX4L5, DUX4L6, DUX4L7, DUX4L8, DUX4L9, FRG1, FRG1-DT, FRG2, LINC01596, MLLT10P2, RARRES  
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 16 21, MTCO1P30, MTCO1P31, MTCO2P30, RN7SKP73  
 17 MIR4636, MTCYBP37, MTND6P2, SEMA5A, SEMA5A-AS1, SNHG18, SNORD123, TAS2R1  
 18 2217, LINC02218, LINC02223, RN7SKP133, RNA5SP180, RNU6-1003P, RPL36AP21  
 19 9, MSNP1, PRDM9, RNU4-43P, RNU6-374P  
 20 CLG2P4, UBL5P1  
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 22 :GFLAM-AS3, EGFLAM-AS4, GDNF, GDNF-AS1, KCTD9P5, KRT18P31, LIFR, LIFR-AS1, LINC02107, LINC02110, LIN  
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 25 \GB1P35, HMGN2P4, IQGAP2, PDCD5P2, PDE8B, RN7SL208P, RNA5SP186, RNU6ATAC36P, RPL7P23, RPS2P24,  
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 29 MIR548F3, PGAM5P1, PJA2, RN7SKP230, RNU6-47P, SLC25A46, TMEM232  
 30 B, YTHDC2  
 31 1, KRT18P41, LCP2, LINC01187, LINC01366, MIR378E, RANBP17, RN7SL623P, RNU6-477P, SPDL1  
 32 P  
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 34 PPF4B, PXDC1, RNA5SP202, TDGF1P4  
 35 NOL7, PHACTR1, RANBP9, RN7SKP204, RNF182, RNU1-11P, RNU6-793P, RNU7-133P, RPS4XP7, SIRT5, TBC1D  
 36 MIR548A1HG, NHLRC1, NUP153, RNA5SP204, RNF144B, RNU6-190P, RNU6-263P, RPL7P26, SUMO2P13, TPM  
 37 D1, HNRNPA1P58, KAAG1, KIAA0319, KRT8P43, MRS2, NRSN1, RIPOR2, RNU6-391P, TDP2  
 38 MIR4642, MIR4647, MIR586, MRPL14, MYMX, NFKBIE, NUDT19P4, RBM22P4, RN7SL811P, RUNX2, SLC29A1, SI  
 39 RNR2L9, POM121L14P, PRIM2, RBBP4P3, RBBP4P4  
 40 i9, MIR4463, MTO1, RN7SL827P, RNU6-975P, RPS27P15, SLC17A5, TMEM30A, TXNP7  
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 46 532, MIR587, PDSS2, PRDM1, QRSL1, RN7SL47P, RNA5SP211, RNU6-117P, RNU6-1299P, RNU6-344P, RNU6-5  
 47 SE, FAM162B, GOPC, GPRC6A, KPNA5, KRT18P22, NEPNP, NIP7P3, NT5DC1, RAP1BP3, RFX6, RN7SKP18, RN7SI  
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 50 , RNU6-786P, SERAC1, SNX9, SYNJ2, SYNJ2-IT1, TMEM242, ZDHHC14  
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 52 LINC01558, LINC02487, LINC02538, TCP10, TCP10L2, TTLL2, UNC93A  
 53 i, LINC01624, LINC02519, PHF10, RPL12P23, TCTE3, WDR27  
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25, MTCO2P25, RN7SKP75, RNU6-229P, RNU6-832P  
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 NA5SP303, UBE2V2P1  
  
 RNU2-72P, TMEM26, TMEM26-AS1  
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 2 50, RPS17P15, RPSAP50, TFAMP2, ZC3H12C  
 3 84, CD3D, CD3E, CD3G, CXCR5, DDX6, DPAGT1, DSCAML1, FOXR1, FXYD2, FXYD6, FXYD6-FXYD2, H2AFX, HINF  
 4 7A2, RNU4ATAC10P, RNU4ATAC5P, RNU6-256P, RNU6-592P, RPS4XP12, SC5D, SORL1, TECTA  
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 6 5B, DENND5B-AS1, ETFBKMT, H3F3C, IPO8, KIAA1551, LINC00941, LINC02387, LINC02422, MREGP1, PPIAP44  
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 9 CCDC65, CCNT1, COL2A1, DDN, DDN-AS1, DDX23, ENDOU, FKBP11, H1FNT, HDAC7, KANSL2, LALBA, LINC023  
 10 HIN2, C1QL4, CELA1, CERS5, COX14, CSRNP2, DAZAP2, DDN-AS1, DHH, DIP2B, DNAJC22, FAIM2, FAM186A, FAM  
 11 CISTR, COPZ1, CSAD, DCD, EIF4A1P4, EIF4B, ESPL1, GLYCAM1, GPR84, GTSF1, HIGD1AP1, HNRNPA1, HOTAIR, I  
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 14 01, RN7SKP11, RN7SL88P, RNU4-24P, YPEL5P3  
 15 2456, NENFP2, NUP37, PAH, PARPBP, PMCH, RN7SL793P, RNU6-1183P, WASHC3  
 16 1, LINC02385, LINC02401, MIR3652, MIR3922, NFYB, NT5DC3, RNA5SP370, RPL18AP3, SLC41A2, STAB2, TDG,  
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 19 10, WSB2  
 20 LINC02460, MIR1178, PEBP1, PRKAB1, RN7SKP197, RN7SL508P, RNA5SP374, RPL17P37, RPS2P5, SRRM4, SUDS3  
 21 LINC150P1, CCDC62, CCDC92, CDK2AP1, CLIP1, CLIP1-AS1, DDX55, DENR, DHX37, DIABLO, DNAH10, DNAH10OS,  
 22 LINC02359, LINC02467, THRIL, TMEM132B  
 23 LINC02393, LINC02441, MIR3612, MIR4419B, NLRP9P1, SLC15A4, TMEM132C, TMEM132D, TMEM132D-AS1, TM  
 24 , FAM58DP, GJA3, GJB2, GJB6, GTF2IP3, IFT88, KRR1P1, LINC00350, LINC00421, LINC00556, LINC01072, MIR44  
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 28 LINC00441, LINC00444, LINC00462, LINC00562, LINC01077, LPAR6, MED4, MED4-AS1, MLNR, NAP1L4P3, NUDT15  
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 31 NC00434, RN7SL375P, RNA5SP31, RNU7-88P, RNY3P5, RNY4P28, TARDBPP2, TDRD3  
 32 LINC01074, LINC01075, OR7E156P, PPP1R2P10, RAC1P8, RNU6-81P, RPL32P28, SQSTM1P1  
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 35 FGF14-AS1, FGF14-AS2, FGF14-IT1, KDELC1, LINC00283, LINC00555, LINC01309, METTL21C, METTL21EP, SLC  
 36 OX1, SOX1-OT, TEX29  
 37 INSM2, KIAA0391, KRT18P6, MRPL57P8, NFKBIA, NUTF2P2, PPP2R3C, PSMA6, QRSL1P3, RALGAPA1, RPL23AP  
 38 4, RPL7AP2, SEC23A, SEC23A-AS1, TRAPPC6B, YTHDF2P1  
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 42 3HYPDH, LINC02322, LRRC9, MIR5586, MNAT1, PCNX4, PPM1A, PRKCH, PSMA3P, RBM8B, RNU6-398P, RPL17P  
 43 8, MIR625, PTBP1P, RPL21P7, RPL21P8, YBX1P1  
 44 121P1, BANF1P1, BLZF2P, CCDC177, COX16, DCAF5, DDX18P1, ERH, EXD2, GALNT16, GTF3AP2, HMGN1P3, KRT  
 45 28P  
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 47 EML1, EVL, HHIPL1, LINC00523, LINC00524, LINC02285, LINC02314, MEG3, MEG8, MEG9, MIR1185-1, MIR118  
 48 HSP90AA1, LINC00239, LINC02320, LINC02323, MIR1247, MIR4309, MOK, PPP2R5C, RCOR1, RN7SL472P, RN7  
 49 IP2, ELK2AP, ELK2BP, FAM30A, GPR132, HOMER2P2, IGHA1, IGHA2, IGHD, IGHD1-1, IGHD1-14, IGHD1-20, IGF  
 50 29, LINC02248, LINC02250, LINC02346, MIR4715, PWAR1, RNA5SP390, RNA5SP391, SNHG14, SNORD109B, SI  
 51 5REM1, HNRNPA1P71, LINC02256, RN7SL286P, RN7SL539P, RYR3, SCG5, TMCO5B  
 52 C15orf53, C15orf54, C15orf56, DISP2, EIF2AK4, FSIP1, GPR176, H3F3AP1, INAFM2, KNSTRN, PAK6, PHGR1, PLC  
 53 SEMA6D, SLC24A5  
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 55 A, GNB5, LEO1, LYSMD2, MAPK6, MIR1266, MYO5A, MYO5C, ONECUT1, RNU6-90P, RPSAP55, SCG3, TMOD2,  
 56 12, HMGB1P51, HSP90AB4P, LDHAL6B, LIPC, LIPC-AS1, MINDY2, MIR2116, MYO1E, PIGHP1, RN7SKP95, RNA5S  
 57 2, GAPDHP61, HERC1, KBTBD13, LINC02568, MIR1272, MIR422A, MTFMT, OAZ2, PCLAF, PIF1, PLEKHO2, PPIB,  
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1 AP1, LINC01585, MAN2A2, PRC1, PRC1-AS1, RCCD1, RN7SL363P, SLCO3A1, SV2B, UNC45A, VPS33B, VPS33B-C  
 2 IR6511A3, MIR6770-2, NOMO3, NPIPA7, PKD1P1, XYLT1  
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 4 MIR3670-4, MIR6511A4, MIR6770-3, NOMO2, NPIPA8, PKD1P5, RPL7P47  
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 14 , KLHL36, LINC02139, LINC02176, TLDC1, USP10, ZDHHC7  
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 16 LINC02091, MIR3183, MRM3, NXN, RFLNB, RPH3AL, RPS4XP17, SCGB1C2, TIMM22, VPS53  
 17 XCL16, DERL2, DHX33, ENO3, GLTPD2, GP1BA, INCA1, KIF1C, MED11, MINK1, MIR6864, MIR6865, MIS12, NLR  
 18 25, DDX52, DUSP14, EPOP, GPR179, HMGB1P24, HNF1B, LASP1, LHX1, MIR2909, MIR378J, MIR4726, MIR4727  
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 20 , ECN1, BRCA1, C17orf113, CAVIN1, CCR10, CNP, CNTD1, CNTNAP1, COA3, COASY, DHX58, DNAJC7, EZH1, FKBF  
 21 TXN7L3, BRCA1, C17orf105, C17orf53, C1QL1, CCDC103, CCDC43, CD300LG, CRHR1, DBF4B, DCAKD, DHX8, DN  
 22 PO, MIR142, MIR301A, MIR454, MIR4736, MKS1, MPO, MRPS23, MSI2, MSX2P1, MTMR4, OR4D1, OR4D2, PPI  
 23 X40P1, FAM106DP, HEATR6, HMGN1P28, KRT18P61, LINC01476, LINC01999, MIR21, MIR4729, MIR4737, NDU  
 24 3, MRC2, NACA2, POLRMT1, PRELID3BP3, RN7SL800P, RNU6-446P, RNU7-52P, RPS23P7, TANC2, TBC1D3P2,  
 25 P4, LINC01925, LINC02564, MIR8078, RN7SKP146, RNU1-109P, ROCK1P1, THOC1, TUBB8P12, TYMS, TYMSOS,  
 26 , 192, CEP76, CIDEA, CYP4F35P, EIF4A2P1, FAM210A, FEM1AP2, FRG2LP, IMPA2, LDLRAD4, LDLRAD4-AS1, LINC  
 27 JC01919, LINC01929, MAP1LC3P, MBD2, MIR4528, POLI, RAB27B, RNA5SP459, RPL29P32, RPS8P3, RPSAP57, F  
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 32 1, LINC01862, MARCH2, MBD3L1, MIR4999, MUC16, MYO1F, OR1M1, OR1M4P, OR2Z1, OR7D1P, OR7D2, OR7  
 33 CNN1, DAND5, DHPS, DNASE2, ECSIT, ELAVL3, ELOF1, EPOR, FARSA, FARSA-AS1, FBXW9, GADD45GIP1, GAPDI  
 34 24P, CYP4F3, CYP4F36P, CYP4F9P, EPS15L1, FAM32A, HSH2D, KLF2, LINC00661, LINC00905, LINC01764, LINC  
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 37 IC01834, LINC01837, NUDT19, PDCD5, RGS9BP, RN7SL789P, RNA5SP471, RNA5SP472, RNU6-967P, RPS12P31,  
 38 CHST8, FAAP24, GPATCH1, KCTD15, KIAA0355, LRP3, LSM14A, PEPD, RHPN2, RN7SKP22, RN7SL150P, RPL21P1  
 39 MIR4531, NDUFA3P1, PVR, RNU6-902P, ZNF112, ZNF155, ZNF180, ZNF221, ZNF222, ZNF223, ZNF224, ZNF225,  
 40 AR1, C5AR2, CA11, CABP5, CARD8, CARD8-AS1, CCDC114, CCDC9, CGB1, CGB2, CGB3, CGB5, CGB7, CGB8, CRX,  
 41 , NLRP13, NLRP4, NLRP5, NLRP8, NLRP9, OR5AH1P, PEG3, RFPL4A, RFPL4AL1, RFPL4AP1, RN7SKP109, RPL7AP  
 42 , DEFB129, DEFB132, NRSN2, NRSN2-AS1, RBCK1, SCRT2, SOX12, SRXN1, TBC1D20, TCF15, TRIB3, ZCCHC3  
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 44 L734, MIR548O2, NPM1P19, PPP1R16B, RALGAPB, RN7SKP173, RN7SL116P, RN7SL680P, RPS3P2, SLC32A1, SN  
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 47 RNU2-55P, RNU4-45P, ZNF299P  
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 50 , DONSON, GART, IFNAR1, IFNAR2, IFNGR2, IL10RB, IL10RB-AS1, ITSN1, KCNE2, LINC00310, LINC00649, LINC0  
 51 CNJ6, KCNJ6-AS1, MRPL20P1, PIGP, RIPPLY3, RN7SL678P, RNA5SP491, RNU6-696P, SIM2, TTC3, TTC3-AS1  
 52 , MIR3197, MX2, PLAC4, YRDCP3  
 53 LINC00112, LINC00479, LINC01668, LINC01671, MIR5692B, MIR6814, MRPL51P2, MX1, MX2, NDUFV3, PDE9A  
 54 BCRP5, BCRP6, BMP6P1, CCDC116, CCDC188, CCDC74BP1, COMT, CRKL, DGCR6L, DGCR8, E2F6P2, E2F6P3, FA  
 55 15, CABIN1, CHCHD10, CRIP1P4, DDT, DDTL, DERL3, GGT1, GGT5, GGTLC4P, GSTT2, GSTT2B, GSTTP1, GUCD1, I  
 56 GAT3-AS1, MIEF1, MKL1, RN7SKP210, RPL3, RPL7P52, RPS19BP1, SGSM3, SNORD43, SNORD83A, SNORD83B,  
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 2 L53, HES2, HES3, ICMT, KCNAB2, KLHL21, LINC00337, LINC01672, MIR4252, NOL9, NPHP4, PHF13, PLEKHG5, R  
 3 101-1, MIR3117, MIR3671, MRPS21P1, PDE4B, RN7SL854P, RNU2-15P, RNU4-88P, RPS29P7, SGIP1, TCTEX1D1  
 4 CNJP2, DR1, EPHX4, EVI5, FAM69A, FNBP1L, GAPDHP46, GFI1, GLMN, HMGB3P9, KIAA1107, LPCAT2BP, MTF2,  
 5 ; BNIPL, BOLA1, C1orf54, C1orf56, CA14, CDC42SE1, CERS2, CGN, CIART, CTSK, CTSS, CTXND2, CYCSP51, ECM1  
 6 CCT3, CKS1B, CLK2, DAP3, DAP3P1, DCST1, DCST1-AS1, DCST2, DPM3, EFNA1, EFNA3, EFNA4, FAM189B, FDPS  
 7 iALT3, CASQ1, CD244, CD48, CD84, CFAP126, COPA, DCAF8, DEDD, DUSP12, F11R, FCER1G, FCGR2A, FCGR2B,  
 8 163A, FAM20B, HNRNPA1P54, IER5, KIAA1614, KIAA1614-AS1, LHX4, MEF2AP1, MIR3121, MR1, NPHS2, OVA/  
 9 NS1ABP, LINC01350, LINC01633, MCRIP2P2, OCLM, PACERR, PDC, PRG4, PTGS2, RNA5SP72, RNF2, RNU6-1240  
 10 J7SKP156, RPS3AP9, SLC4A1APP2  
 11 MIR4426, RGS1, RGS13, RGS18, RGS2, RGS21, RN7SKP126, RPL23AP22, SCARNA18B, TROVE2, UCHL5, ZNF101  
 12 BP, LHX9, LINC01221, LINC01222, MIR181A1, MIR181A1HG, MIR181B1, MRPS21P3, NEK7, PEBP1P3, PRR13P1  
 13 GB1P25, IAH1, ID2, ID2-AS1, ITGB1BP1, KIDINS220, KLF11, LINC01814, MBOAT2, MIR4261, RN7SL66P, RNU4-  
 14 H, LINC00954, MATN3, PUM2, RHOB, RN7SL140P, RNA5SP86, RNU6-961P, RNU7-113P, SDC1, SLC7A15P, TTC  
 15 N7SL117P, RNA5SP87, TDRD15  
 16 C2orf16, CAD, CCDC121, CGREF1, DNAJC5G, DPYSL5, EIF2B4, EMILIN1, FNDC4, FOSL2, FTH1P3, GCKR, GPN1, G  
 17 3A, NRXN1, PPP1R21, RN7SKP224, RNU4-49P, RNU6-282P, RNU6-439P, RPL7P13, STON1, STON1-GTF2A1L, TP  
 18 '6, RAB1A, RN7SL211P, RN7SL341P, RN7SL635P, RNU6-548P, SERTAD2, SLC1A4, SPRED2, VTRNA2-2P  
 19 P6, C2orf42, FAM136A, GFPT1, GMCL1, LINC01816, MIR1285-2, MXD1, NFU1, PCBP1, PCBP1-AS1, PCYOX1, RN  
 20 i-AS1, C2orf78, C2orf81, CCDC142, CCT7, DCTN1, DCTN1-AS1, DGUOK, DGUOK-AS1, DOK1, DOX1, DUSP11, EG  
 21 INC01127, MAP4K4, MIR4772, SDR42E1P5, SLC9A2, SLC9A4  
 22 7B, POLR2D, PROC, RNU4-48P, RNU6-395P, RNY4P7, SAP130, SFT2D3, WDR33  
 23 P2  
 24 R7E89P, OR7E90P, PKP4, PKP4-AS1, RNU2-21P, RNU6-580P, TANC1, WDSUB1  
 25 SCN3A, SCN7A, SCN9A, TTC21B, TTC21B-AS1, XIRP2, XIRP2-AS1  
 26 K, PLEKHA3, PRKRA, RBM45, RNU5E-9P, RNU6-629P, TTC30A, TTC30B, TTN, TTN-AS1  
 27 NPCP2, INPP1, MFSD6, MSTN, MYO1B, NAB1, NABP1, NEMP2, RN7SKP179, RNU6-1045P, RNU6-959P, STAT1, S  
 28 C2orf69, CASP10, CASP8, CFLAR, CFLAR-AS1, CLK1, FAM126B, FTCDNL1, HNRNPA1P35, IMPDH1P10, KCTD18, L  
 29 ;, MIR5702, MIR5703, RHBDD1, RNA5SP121, SLC19A3, SNRPGP8, SPHKAP, TDGF1P2, TM4SF20  
 30 iL3P1, RPL17P11, SH3BP4, SPP2, TRPM8, UGT1A1, UGT1A10, UGT1A11P, UGT1A12P, UGT1A13P, UGT1A2P, U  
 31 RNU4-85P, RPL39P18, SAP18P3  
 32 NP4, EEF1A1P24, EIF1B-AS1, EXOG, GORASP1, HNRNPA1P21, MIR6822, MOBP, MYRIP, NFU1P1, RN7SL411P, R  
 33 i-AS1, RNU2-10P, RPL10AP6  
 34 DZIP3, GUCA1C, H3F3AP3, HHLA2, HNRNPA1P17, IFT57, LINC00488, LINC00635, LINC00636, LINC00882, LINC  
 35 8P43, KRT8P13, LINC01997, LINC02082, LRRC31, LRRC34, LRRIQ4, MECOM, MIR6828, MYNN, PHC3, PRKCI, RN  
 36 DUA, MAEA, NKX1-1, PCGF3, RNF212, SLC26A1, SPON2, TMED11P, TMEM175, UVSSA  
 37 55, LINC02171, LRPAP1, MFSD10, MSANTD1, NOP14, NOP14-AS1, RGS12, RNU6-204P  
 38 JPP7P11, FAM86MP, MIR3138, MIR548I2, OR7E35P, OR7E83P, OR7E85P, OR7E86P, RAF1P1, RNA5SP153, RNA  
 39 INC02473, MIR573, PI4K2B, RN7SL16P, RNU7-126P, SEPSECS, SEPSECS-AS1, SOD3, ZCCHC4  
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 54 L, N4BP2, PABPC1P1, PDS5A, RFC1, RHOH, RN7SL558P, RNA5SP159, RNU6-1112P, RNU6-32P, RNU6-887P, RN  
 55 7SKP199, RNU6-412P, RNU6-931P, THAP12P9  
 56 CXCL1P1, CXCL2, CXCL3, CXCL5, CXCL6, CXCL8, EPGN, EREG, HMGA1P2, HNRNPA1P55, HNRNPA1P67, LINC02  
 57 13, HMGB1P44, HNRNPA1P56, LINC01088, LINC01094, MINOS1P4, MIR5096, MRPL1, PAQR3, RN7SL127P, RN  
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## RNU5A-2P

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 I, H2AFZ, LAMTOR3, LINC01216, MTPP, TRMT10A  
 89P, RNU6-351P, RNU6-635P, TACR3, TET2, TET2-AS1  
 DT6, PPIAP76, RPL21P50, SPATA5, SPRY1

P3, RAB33B, RN7SL311P, RN7SL382P, RNU6-1074P, RNU6-1214P, RNU6-506P, RNU6-531P, SETD7  
 FB4P9, RN7SKP237, RN7SKP253, RN7SL152P, RNF150, RNY1P14, RPL14P3, SCOC, SCOC-AS1, SETD7, TBC1D9, T  
 8-1, MIR3688-2, RAPGEF2, RNU6-128P, RPS14P7

2, LINC02275, LINC02382, LINC02512, MFAP3L, PTGES3P3

DUX4L4, DUX4L5, DUX4L6, DUX4L7, DUX4L8, DUX4L9, FRG1, FRG1-DT, FRG2, LINC01596, MLLT10P2, RARRES  
 ANBP3L, RNU6-1305P, RNU7-130P, SKP2, SPEF2, UGT3A1, UGT3A2

EGFLAM-AS3, EGFLAM-AS4, GDNF, GDNF-AS1, KCTD9P5, KRT18P31, LIFR, LIFR-AS1, LINC02107, LINC02110, LIN  
 A1, PTGER4, RNU7-161P, RPL37, SNORD72, TTC33

HNRNPH1P3, IL31RA, IL6ST, LINC01948, MIR5687, PLPP1, PSMC1P4, RNA5SP183, RNA5SP184, RNA5SP185, R  
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PH, HMGB1P21, HOMER1, JMY, LHFPL2, OTP, RNU6-183P, RNY3P1, SCAMP1, SCAMP1-AS1, TBCA  
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'33, LINC02201, PPIC, PRDM6, RN7SL689P, RN7SL711P, SNX2, SNX24

AN, CD74, CDX1, CSF1R, CSNK1A1, GRPEL2, GRPEL2-AS1, HMGXB3, HTR4, IL17B, MIR143, MIR145, MIR378A, M  
 RA1, GM2A, GPX3, IRGM, LINC01470, LINC01933, MIR6499, MYOZ3, NMUR2, RBM22, RN7SKP232, RNA5SP19

, PKMP5, RN7SL221P, SNAPC5P1

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 AP34, SPTLC1P3

RNU1-34P, RNU6-1016P, RNU6-1338P, RNU6-155P, RNU6-248P, RNU6-261P, RNU6-84P, RPL26P20, SENP6, L

-35P, RNU4-76P, RNU6-1286P, RNU6-214P, RPL23AP48, SLC25A5P7, TBC1D32

222, RNU1-33P, RNU6-906P, SHPRH

N7SL366P

FBP, WBP1LP8

LIOS, MIR3683, OR7E136P, OR7E39P, OR7E59P, PMS2CL, RPA3, RSPH10B2, SPDYE20P, UMAD1, UNC93B2, ZDF

VGB3P20, HNRNPA1P73, HNRNPA2B1, HOTAIRM1, HOTTIP, HOXA-AS2, HOXA-AS3, HOXA1, HOXA10, HOXA1C  
 , HECW1-IT1, LINC00957, LUARIS, MIR4649, MIR6837, MIR6838, MRPS24, MYL7, NPC1L1, NUDCD3, OGDH, PG

GUSBP10, GUSBP12, MIR4283-1, MRPS17, MTCO3P10, MTCO3P4, MTCYBP29, MTCYBP5, MTND1P4, MTND2P  
 ZD1, GATAD1, KRIT1, LRRD1, MIR1285-1, MTERF1, NIPA2P1, PEX1, PTP4A1P3, TMBIM7P

V1, MTCYBP24, MTND5P8, MTND6P24, NPM1P14, RN7SKP187, RNA5SP237, RPL3P8, ZNF277

02P, SSU72P8

M8, HILPDA, IMP3P2, IMPDH1, LEP, LRRC4, METTL2B, MIR129-1, MIR592, MIR593, OPN1SW, PAX4, PRELID3B  
 AS, CYCSP20, FLNC, FLNC-AS1, IRF5, KCP, KLHDC10, MIR182, MIR183, MIR96, NRF1, ODCP, RN7SL306P, RNA5S



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 2 5-1154P, RNU6-223P, SLC13A4, STMP1  
 3  
 4  
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 6 A3, DEFA4, DEFA5, DEFA6, DEFA7P, DEFA8P, DEFA9P, DEFB1, DEFT1P, DEFT1P2, MCPH1, MCPH1-AS1, MIR461  
 7 104B, DEFB105A, DEFB105B, DEFB106A, DEFB106B, DEFB107A, DEFB107B, DEFB108A, DEFB108C, DEFB109B,  
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 9 108E, DEFB109A, DEFB109D, DEFB130A, DEFB130B, DEFB131C, DEFB131D, DEFB131E, DEFB134, DEFB135, DE  
 10 74P, VPS37A, ZDHHC2  
 11 6-892P, RPL30P9, SLC18A1, TMEM97P2  
 12 , RNU6ATAC32P, RPS27AP13, TCEA1, TDGF1P5  
 13 PLAG1, RN7SL323P, RN7SL798P, RNU6-13P, RPL37P6, RPS20, SDR16C5, SDR16C6P, SEPT10P1, SNORD54  
 14 1, RNA5SP271, RNU6-285P, RPL7, SBSPON, STAU2, STAU2-AS1, TERF1, UBE2W, VENTXP6  
 15 iKP153, RN7SL396P, RNA5SP277, SNTB1, TAF2  
 16 35P, RPL23AP56, ZFAT, ZFAT-AS1  
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 18 2  
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 21 E2, RBM22P5, RFK, RPSAP9  
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 23 BP2, HABP4, HSD17B3, HSD17B3-AS1, LINC00092, LINC00476, MFSD14B, MIR2278, MIR23B, MIR24-1, MIR271  
 24 38, RAD23B, RN7SKP77, RNA5SP292, RNU6-492P, ZNF462  
 25 5, NDUFA8, RBM18, RN7SL187P, STOM, TTLL11, TTLL11-IT1  
 26 , GFI1B, GTF3C4, GTF3C5, MIR548AW, MIR6877, NTNG2, OBP2B, RALGDS, RNU5D-2P, RNU7-21P, SETX, SPAC  
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 28 58, HIRAP1, HSPA8P3, LINC00836, MYO3A, PDSS1, RNA5SP306, RNA5SP307, RNU6-632P, RNU6-946P  
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 31 1515, MIR1296, MRPL35P2, MYL6P3, NEK4P3, PRELID1P3, REEP3, RPL17P35, RPL7AP50  
 32 orf76, C10orf95, CNNM2, CUEDC2, CYP17A1, CYP17A1-AS1, DPCD, ELOVL3, FBXL15, FBXW4, FGF8, GBF1, HPS6  
 33 , CNNM2, COL17A1, GSTO1, GSTO2, INA, ITPRIP, MARCKSL1P1, MIR1307, MIR4482, MIR609, MIR936, NEURL1  
 34  
 35 90AA2P, KIF18A, LGR4, LIN7C, LINC00678, METTL15, MIR610, MIR8068, MIR8087, RN7SKP158, RNA5SP339  
 36 HST1, CKAP5, CREB3L1, CRY2, DGKZ, F2, HARB1, LARGE2, LINC02489, LRP4, LRP4-AS1, MAPK8IP1, MDK, MIR3  
 37 , CCND2P1, CHRM1, EEF1G, EML3, GANAB, GNG3, HNRNPUL2, HNRNPUL2-BSCL2, HRASLS2, HRASLS5, IMMP1  
 38 APN1, CATSPERZ, CCDC85B, CCDC88B, CDC42BPG, CDC42EP2, CDCA5, CFL1, COX8A, CTSW, DNAJC4, DPF2, EF  
 39 , BANF1, BBS1, BRD9P1, BRMS1, C11orf68, C11orf72, C11orf80, C11orf86, C1QBPP2, CABP2, CABP4, CARN1S,  
 40  
 41 50, RPS17P15, RPSAP50, TFAMP2, ZC3H12C  
 42 CML-IT1, PTP4A2P2, SPATA19  
 43  
 44 72P, SYT10, TUBB8P4, ZNF970P  
 45 RRK2, MUC19, RNU6-713P, RPL30P13, SLC2A13  
 46 CISTR, COPZ1, CSAD, DCD, EIF4A1P4, EIF4B, ESPL1, GLYCAM1, GPR84, GTSF1, HIGD1AP1, HNRNPA1, HOTAIR, I  
 47 OK4, CTDSP2, CYP27B1, DTX3, EEF1AKMT3, KIF5A, LINC02388, LINC02403, LRIG3, MARCH9, METTL1, MIR26A2  
 48 'RR, RNU4-65P  
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 50 5, TMTC2  
 51 RX1P1, LINC00463, LINC01053, LINC01076, LSP1P1, MTMR6, NUP58, PABPC3, PSPC1P2, RNF17, RNU6-78P, RN  
 52 ABP3P2, FAM216B, FHP1, KARSP1, KBTBD6, KBTBD7, LINC00428, LINC01050, LINC02341, MAPK6PS3, MIR316  
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## PP40P2

548X2, NPM1P22, PCDH9, PCDH9-AS1, PCDH9-AS2, PCDH9-AS3, PCDH9-AS4, RNU7-87P, RPSAP53, STARP1, TF  
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## OX1, SOX1-OT, TEX29

2, GRK1, LINC00452, LINC00454, LINC00552, LINC00565, LINC01054, MIR4502, MIR548AR, RASA3, RASA3-IT1,  
 2332, LRP10, MIR4707, MMP14, MRPL52, OR10G1P, OR10G2, OR4E1, OR4E2, OR6E1P, OR6J1, OXA1L, PRMT5,

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 8, MIR625, PTBP1P, RPL21P7, RPL21P8, YBX1P1

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 288, LINC02289, LRRC74A, RN7SKP17, RN7SL356P, RPSAP3, TMEM63C, VASH1, VASH1-AS1, ZDHHC22

1A-AS1, GON7, IFI27, IFI27L1, IFI27L2, MIR4506, MOAP1, OTUB2, PPP4R4, PRIMA1, RNU6-1258P, SERPINA10, S  
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C15orf53, C15orf54, C15orf56, DISP2, EIF2AK4, FSIP1, GPR176, H3F3AP1, INAFM2, KNSTRN, PAK6, PHGR1, PLC  
 1, CKMT1A, CKMT1B, ELL3, EPB42, FDPSP4, FRMD5, GAPDHP55, HYPK, KRT8P50, LCMT2, MAP1A, MFAP1, MIF

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 AP1, LINC01585, MAN2A2, PRC1, PRC1-AS1, RCCD1, RN7SL363P, SLCO3A1, SV2B, UNC45A, VPS33B, VPS33B-C  
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33BHG, MIR365A, MKL2, PARN, RPS26P52, SHISA9, TMF1P1, TVP23CP2

1, NPIP5, PALB2, PLK1, PRKCB, RN7SKP23, SCNN1B, SCNN1G, SMG1P1, SUB1P4, UBF1, USP31

, CCL22, CESSA, CETP, CIAPIN1, COQ9, CPNE2, CX3CL1, DOK4, DPPA2P4, FAM192A, GNAO1, HERPUD1, HMGB  
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P1A, CPNE7, DBNDD1, DEF8, DPEP1, FAM157C, FANCA, GAS8, GAS8-AS1, LINC00304, LINC02138, LINC02166,  
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 24P, CYP4F3, CYP4F36P, CYP4F9P, EPS15L1, FAM32A, HSH2D, KLF2, LINC00661, LINC00905, LINC01764, LINC  
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1-131P, RNU6-27P, RPLPOP1, SNRPB2

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 BCRP5, BCRP6, BMP6P1, CCDC116, CCDC188, CCDC74BP1, COMT, CRKL, DGCR6L, DGCR8, E2F6P2, E2F6P3, FA  
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 AMD13, SPATA1, SSX2IP, TTLL7, UOX  
 CNJP2, DR1, EPHX4, EVI5, FAM69A, FNBP1L, GAPDHP46, GFI1, GLMN, HMGB3P9, KIAA1107, LPCAT2BP, MTF2,  
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 787, NDUFS5P2, PTBP2, RN7SKP270, RN7SL831P, RNU1-130P, RPL26P9, RPL7P9, SEC63P1, UBE2WP1  
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 ; NHLH2, RN7SL420P, SYCP1, TSHB, TSPAN2, VANGL1  
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 25, IGFN1, INAVA, KIF14, KIF21B, LAD1, LINC00862, MROH3P, NR5A2, PHLDA3, PKP1, RNU6-704P, RPL34P6, R  
 I, HLX-AS1, IARS2, LINC01352, LINC01655, MARC1, MARC2, MARK1, MIR194-1, MIR215, MIR664A, MORF4L1P  
 I, CICIP13, CICIP5, CNIH3, CNIH4, DEGS1, DISP1, DNAH14, FAM177B, FBXO28, GTF2IP20, HHIPL2, MIA3, MIR32C  
 L, H3F3A, ITPKB, ITPKB-AS1, ITPKB-IT1, LBR, LEFTY1, LEFTY2, LIN9, LINC01703, MIR6741, MIXL1, NDUFA3P3, P  
 12, RNF144A, RNF144A-AS1, RNU6ATAC37P, RSAD2  
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 6, LINC01813, MIR216A, MIR216B, MIR217, MIR217HG, MTIF2, PNPT1, PPP4R3B, PRORS1P, RN7SKP208, RN  
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 F, CYP26B1, DYSF, ELOCP21, EMX1, EXOC6B, FIGLA, HMGN2P21, LINC01143, MCEE, MPHOSPH10, NAGK, OR7E  
 2, CDK8P2, CHCHD5, CKAP2L, DDX11L2, EEF1E1P1, FAM138B, FBLN7, FOXD4L1, HMGN2P23, IGKV10R2-108,  
 ., ZEB2, ZEB2-AS1  
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1 BMS3-AS3, RPS12P5, TGFBR2  
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 3 P7, OSBPL10, OSBPL10-AS1, RNA5SP127, RPL21P40, RPSAP11, STT3B, THRAP3P1, ZNF587P1, ZNF860  
 4 NP4, EEF1A1P24, EIF1B-AS1, EXOG, GORASP1, HNRNPA1P21, MIR6822, MOBP, MYRIP, NFU1P1, RN7SL411P, R  
 5 :3B, CYP8B1, EI24P3, EXOSC7, FAM198A, HHATL, HHATL-AS1, HIGD1A, HNRNPA1P22, KIAA1143, KIF15, KLHL4  
 6 LRTM1, RPS15P5  
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 8 A, FAM3D, FAM3D-AS1, FHIT, FLNB, FLNB-AS1, HTD2, KCTD6, PDHB, P XK, RPP14  
 9 J, UQCRHP4  
 10 FAM86DP, FRG2C, HNRNPA3P6, LINC00960, LINC02018, LSP1P2, MIR1324, MIR4444-2, MYLKP1, NIPA2P2, OR  
 11 DZIP3, GUCA1C, H3F3AP3, HHLA2, HNRNPA1P17, IFT57, LINC00488, LINC00635, LINC00636, LINC00882, LINC  
 12 2P, RN7SL815P, TUSC7  
 13 I, TRIM42, ZBTB38  
 14 -AS1, SLC9A9-AS2, ST13P15  
 15 I AALADL2-AS2, RNU4-91P, RNU6-1233P, RNU6-1317P, UBE2V1P2  
 16 P1, FXR1, GAPDHP36, GNB4, LINC02053, MFN1, MRPL47, MTHFD2P7, NDUFB5, PEX5L, PEX5L-AS1, PEX5L-AS2,  
 17 MIR3137, MIR570, MIR6829, MUC20, MUC20P1, MUC4, PPP1R2, RN7SL36P, RN7SL73P, RNU2-11P, RNU6-25I  
 18 55, LINC02171, LRPAP1, MFSD10, MSANTD1, NOP14, NOP14-AS1, RGS12, RNU6-204P  
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 22 ARPL22P1, NMU, PAICS, PDCL2, PPAT, RN7SKP30, RNA5SP161, RNU6-197P, RNU6-276P, RNU6-652P, RPL7AP3  
 23 I, NOA1, POLR2B, REST, RN7SL357P, RN7SL492P, RNU6-998P, RPL17P20, RPS26P24, SPINK2, SRIP1, THEGL, UB  
 24 FAM47E, FAM47E-STBD1, G3BP2, HSPE1P23, LINC02483, LINC02562, MIR4450, MIR548AH, NAAA, NUP54, OI  
 25 INC01217, LINC01218, LRRC37A15P, MANBA, MIR1255A, MIR8066, MTND5P5, NFKB1, PABPC1P7, PPP3CA, RI  
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 28 LINC02510, LINC02511, PCDH18, RPS23P2, SERF1AP1, SLC7A11, SLC7A11-AS1, STMN1P2  
 29 P3, RAB33B, RN7SL311P, RN7SL382P, RNU6-1074P, RNU6-1214P, RNU6-506P, RNU6-531P, SETD7  
 30 , LINC01179, MIR578, MSMO1, NACA3P, NOL8P1, RNU4-87P, RNU6-284P, RNU6-668P, SCGB1D5P, SMIM31, T  
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 32  
 33 MIR4636, MTCYBP37, MTND6P2, SEMA5A, SEMA5A-AS1, SNHG18, SNORD123, TAS2R1  
 34 M173B, LINC01513, LINC02112, LINC02212, LINC02213, LINC02221, MARCH6, MIR6131, RNA5SP177, RNU6-4  
 35 9, MSNP1, PRDM9, RNU4-43P, RNU6-374P  
 36 IANBP3L, RNU6-1305P, RNU7-130P, SKP2, SPEF2, UGT3A1, UGT3A2  
 37 I A1, PTGER4, RNU7-161P, RPL37, SNORD72, TTC33  
 38 IVD1, RGS7BP, RN7SL169P, RNF180, RNU6-294P, RNU6-540P, RPEP1, SGTB, SREK1IP1, TRAPPC13, TRIM23  
 39 U1-140P, RNU6-334P  
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 43 MIR548F3, PGAM5P1, PJA2, RN7SKP230, RNU6-47P, SLC25A46, TMEM232  
 44 C, HMGN1P15, PGGT1B, RNU2-49P, TICAM2, TMED7, TMED7-TICAM2, TRIM36, TRIM36-IT1  
 45 .7, ZNF608  
 46 I039, LMNB1, LMNB1-DT, MARCH3, MEGF10, MRPS5P3, PHAX, RNU6-290P, RNU6-752P, RPSAP37, SELENOTP:  
 47 I MIP2, JAKMIP2-AS1, MARCOL, PGBD4P3, SCGB3A2, SPINK1, SPINK13, SPINK14, SPINK5, SPINK6, SPINK7, SPIN  
 48 RIA1, HAND1, HNRNPA3P7, KIF4B, LARP1, LINC01861, MFAP3, MIR1294, MIR1303, MIR3141, MIR378H, MRPL  
 49 , FNDC9, HAVCR1, HAVCR2, ITK, LINC02227, LSM11, MARK2P11, MED7, NIPAL4, PPP1R2P3, RNU2-48P, RNU6-  
 50 I U6-209P  
 51 R5003, NEURL1B, NPM1, RANBP17, RN7SL339P, RPL10P8, RPSAP71, SH3PXD2B, SMIM23, SNORA70J, STK10, T  
 52 CNT2, GCNT6, MAK, NEDD9, PAK1IP1, RNA5SP203, RNU1-64P, SMIM13, SYCP2L, THAP12P5, TMEM14B, TMEN  
 53 NOL7, PHACTR1, RANBP9, RN7SKP204, RNF182, RNU1-11P, RNU6-793P, RNU7-133P, RPS4XP7, SIRT5, TBC1D  
 54 MIR548A1HG, NHLRC1, NUP153, RNA5SP204, RNF144B, RNU6-190P, RNU6-263P, RPL7P26, SUMO2P13, TPM  
 55 .580P, RPS17P5, TFAP2B, TFAP2D  
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 2 , HMGCLL1, KLHL31, KRASP1, LINC01564, LRRC1, MLIP, MLIP-AS1, MLIP-IT1, NANOGP3, RN7SKP256, RNU6-10  
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 7 .P9, NT5E, PKMP3, RN7SL643P, RNU4-12P, RNU4-72P, RPL7P27, RPL7P29, SMIM11P1, SNHG5, SNORD50B, SN  
 8 532, MIR587, PDSS2, PRDM1, QRSL1, RN7SL47P, RNA5SP211, RNU6-117P, RNU6-1299P, RNU6-344P, RNU6-5  
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 10 326, LINC01312, MTCYBP4, RN7SL408P, RPL23AP46, RPS12, RPS29P32, SGK1, SLC18B1, SLC2A12, SNORA33, S  
 11 IC02539, MARCKSL1P2, MIR3145, NHSL1, PBOV1, PERP, RPSAP42, SMIM28, TNFAIP3  
 12 .17, RNA5SP223, SYNE1, SYNE1-AS1, TUBB4BP7, VIP  
 13 AK-RBAKDN, RBAKDN, RNF216P1, RNU6-215P, SLC29A4, SPDYE19P, TNRC18, WIPI2, ZNF890P  
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 16 895, MIR1200, NPM1P18, RNU6-565P, RPS10P14, RPS17P13  
 17 .LA, RNU6-719P, RWDD4P2, SNORA20B, YAE1D1  
 18 , MIR3943, MRPL32, PSMA2, TCP1P1  
 19 18, RNF138P2, RNU1-14P, RNU2-29P  
 20 .L2, LINC01445, RNU6-1125P, RNU6-389P, RPL31P35, SEC61G, SLC25A5P3, TUBBP6, VOPP1, VSTM2A, VSTM2  
 21 GRPEL2P3, HINT1P2, PDK4, PEG10, PON1, PON2, PON3, PPP1R9A, RN7SKP129, RNU4-16P, RNU6-1328P, RNU  
 22 4, GATS, GIGYF1, GNB2, IRS3P, LRCH4, MEPCE, MIR4653, MIR6840, MIR6875, MOGAT3, MOSPD3, MUC12, M  
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 28 58, SDAD1P1  
 29 MTND2P32, RANP9, RN7SL457P, RN7SL621P, RNF122, RNU6-528P, RPL10AP3, RPL10P18, SNORD13, TTI2, UN  
 30 IEBP1, ERLIN2, FGFR1, GOT1L1, LETM2, LINC01605, LSM1, NSD3, PLEKHA2, PLPBP, PLPP5, RAB11FIP1, RN7SL7  
 31 .orf46, COPS5, CPA6, CSPP1, LINC01592, LINC01603, MCMDC2, MYBL1, NDUFS5P6, PPP1R42, PREX2, PTTG3P,  
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 34 IR8084, MRPS16P1, NECAB1, OTUD6B, OTUD6B-AS1, PIP4P2, PRR13P7, RN7SKP231, RNA5SP274, RUNX1T1, S  
 35 8, LINC00535, MIR378D2, MYL12AP1, NDUFAF6, PDP1, PSMA2P2, RAD54B, RBM12B, RBM12B-AS1, RPL34P18  
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 37 , NDUFB9P3, SERPINA15P  
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 43 E2, RBM22P5, RFK, RPSAP9  
 44 D2P8, NUTF2P3, PSAT1, RFC5P1, RN7SKP59, RNU6-1303P, VPS13A, VPS13A-AS1  
 45 L35AP22, SNORA70C, TLR4  
 46 2, MIR181A2, MIR181A2HG, MIR181B2, MIR600, MIR600HG, MIR601, MIR7150, MRRF, NEK6, NR5A1, NR6A1,  
 47 BP3, GPR107, HMCN2, LAMC3, MED27, MIR6856, NCS1, NTNG2, NUP214, PLPP7, POMT1, PRDM12, PRRC2B, I  
 48 FID1, DBH, DBH-AS1, FAM163B, LCN1P1, LCN1P2, MED22, MYMK, REXO4, RPL7A, SARDH, SLC2A6, SNORD24, S  
 49 A166A, GRIN1, LRRC26, MAN1B1, MAN1B1-AS1, MIR3621, MIR7114, MRPL41, NDOR1, NELFB, NOXA1, NPDC1  
 50 )2, RNU6-785P, SETP5, TUBBP5, ZMYND19  
 51 ITIH5, KIN, KRT8P37, LINC00708, PRPF38AP1, RNA5SP299, RNU6-535P, SFMBT2, TAF3  
 52 )HTKD1, ECHDC3, LINC00710, MIR4480, MIR548AK, NUDT5, PROSER2, PROSER2-AS1, RN7SL198P, RNU6-1095  
 53 217, LINC01516, MIR1254-2, MIR603, NUP35P1, OTUD1, PRTFDC1, PTF1A, RN7SKP220, RN7SKP241, RNA5SP3  
 54 /IL-AS1  
 55 8, MIR7162, MTPAP, NIFKP1, RN7SL241P, RNU6-598P  
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ITGB1-DT, KIF5B, MTND4LP11, NRP1, PPIAP31, RN7SL398P, RN7SL825P, RN7SL847P, RNU6-1244P, RNU7-22F  
 N1P1, ZNF365  
 N7SKP278, RNU4-5P, RNU5B-6P, RNU6-839P, RPL21P91, SMNDC1, SNRPGP12, XIAPP1, XPNPEP1  
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 , BANF1, BBS1, BRD9P1, BRMS1, C11orf68, C11orf72, C11orf80, C11orf86, C1QBPP2, CABP2, CABP4, CARN1S1,  
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 P, MIR4301, MTRF1LP1, NCAM1, NCAM1-AS1, RNU6-1107P, RNU7-187P, RPL23AP62, RPS29P19, TMPRSS5, T  
 7A2, RNU4ATAC10P, RNU4ATAC5P, RNU6-256P, RNU6-592P, RPS4XP12, SC5D, SORL1, TECTA  
 S3, MIR3167, ST3GAL4  
 S1, FLI1, KCNJ1, KCNJ5, LINC00167, LINC02098, MIR6090, NFRKB, PRDM10, RN7SL778P, RNU6-874P, RNU6-87  
 C-IT2, CACNA1C-IT3, CACNA2D4, DCP1B, ERC1, FBXL14, HTR1DP1, LINC00940, LINC00942, LRTM2, MIR3649, R  
 C1RL, C1RL-AS1, C1S, C3AR1, CD163, CD163L1, CD27, CD27-AS1, CD4, CDCA3, CHD4, CLEC4A, CLEC4C, CLSTN  
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 , C12orf80, EIF4B, FIGNL2, GRASP, KRT1, KRT125P, KRT126P, KRT127P, KRT128P, KRT18, KRT2, KRT3, KRT4, KF  
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 L, LINC02442, MRPL40P1, NTAN1P3  
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2 A, GNB5, LEO1, LYSMD2, MAPK6, MIR1266, MYO5A, MYO5C, ONECUT1, RNU6-90P, RPSAP55, SCG3, TMOD2,  
3 CPG1, HMGB1P33, MIR628, MNS1, NEDD4, PIGB, PIGBOS1, PRTG, PYGO1, RAB27A, RFX7, RN7SL568P, RNU6-1  
4 , CIB1, DET1, FANCI, GABARAPL3, GDPGP1, GOLGA2P8, HAPLN3, HMGB1P8, IDH2, IDH2-DT, IQGAP1, ISG20, K  
5 LINC02253, LINC02254, MIR1469, NR2F2, NR2F2-AS1, PGAM1P12, RN7SKP181, RN7SKP254, RN7SL677P, RNA  
6 MIR1972-1, MIR3179-1, MIR3180-1, MIR3180-4, MIR3670-1, MIR484, MIR6506, MIR6511A1, MIR6511B2, MIR  
7 C37P2, CLN3, EIF3C, EIF3CL, GAPDHP35, GSG1L, GTF3C1, IL21R, IL21R-AS1, IL27, KIAA0556, LAT, MIR4517, MIF  
8 '3, AGGF1P4, AGGF1P5, AGGF1P6, AGGF1P7, AGGF1P8, AGGF1P9, AHSP, ARHGAP23P1, ARMC5, BCAP31P1, B  
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11 CS6, CD68, CHD3, CHRN1, CNTROB, CTC1, CYB5D1, DNAH2, EFN3, EIF4A1, FGF11, FXR2, GUCY2D, HES7, KCN  
12 2, KRBA2, MFSD6L, MYH10, NDEL1, NPM1P45, NTN1, ODF4, PIK3R5, PIK3R6, PPIAP52, RCVRN, RNF222, RNU7  
13 :CL16, CCL18, CCL23, CCL3, CCL3L3, CCL4, CCL4L2, CCL5, CCT6B, DHRS11, E2F3P1, FNDC8, GAS2L2, GGNBP2, H  
14 25, DDX52, DUSP14, EPOP, GPR179, HMGB1P24, HNF1B, LASP1, LHX1, MIR2909, MIR378J, MIR4726, MIR4727  
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17 MMD, MSI2, NOG, PCTP, RNU6-1158P, RNU6-1249P, RPL39P33, SCPEP1, SMIM36, TMEM100, TRIM25  
18 TTL23, MFSD11, MGAT5B, MIR636, MIR6516, MXRA7, PRCD, PRPSAP1, QRIC2, RHBDF2, RNU4-47P, RNU6-22  
19 PL21P126, TCF4, TCF4-AS1, TCF4-AS2  
20 EF2B, CERS1, CILP2, COMP, COPE, CRLF1, CRT1, DDX49, ELL, FKBP8, GATAD2A, GDF1, GMIP, HAPLN4, HOME  
21 P4, RN7SL340P, RNA5SP470, UQCRFS1, VSTM2B  
22 L, FKBP1AP1, HNRNPDL4, LETM1P2, LINC02560, MIR4754, MIR6806, MIR6807, MZF1, MZF1-AS1, RN7SL525P  
23 P1  
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26 , TASP1  
27 1-131P, RNU6-27P, RPLP0P1, SNRPB2  
28 IP, BPIFB1, BPIFB2, BPIFB3, BPIFB4, BPIFB5P, BPIFB6, BPIFB9P, C20orf144, CBFA2T2, CDC42P1, CDK5RAP1, CHI  
29 -14P, RPL36P1, SUMO1P1, TSHZ2, ZNF217  
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31 209A, FAM209B, GCNT7, HMGB1P1, LINC01716, LINC01742, MIR4325, MIR4532, MTND1P9, MTRNR2L3, NKIL  
32 14, LINC01673, LINC01695, LINC01697, LTN1, MAP3K7CL, N6AMT1, NCSTNP1, RPL10P1, RPL23P2, RWDD2B, T  
33 ON17, CLDN8, GAPDHP14, GRIK1, GRIK1-AS1, KRTAP11-1, KRTAP13-1, KRTAP13-2, KRTAP13-3, KRTAP13-4, KRT  
34 , DONSON, GART, IFNAR1, IFNAR2, IFNGR2, IL10RB, IL10RB-AS1, ITS1, KCNE2, LINC00310, LINC00649, LINC0  
35 BCRP5, BCRP6, BMP6P1, CCDC116, CCDC188, CCDC74BP1, COMT, CRKL, DGCR6L, DGCR8, E2F6P2, E2F6P3, FA  
36 1GAT3-AS1, MIEF1, MKL1, RN7SKP210, RPL3, RPL7P52, RPS19BP1, SGSM3, SNORD43, SNORD83A, SNORD83B,  
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9 SLC13A1, SPAM1, TAS2R16, TMEM229A, WASL  
10 4C7P, OR4R2P, OR4R3P, TRIM51DP

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23 KN2

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25 KLHDC8B, LAMB2, MAP4, MIR1226, MIR191, MIR2115, MIR425, MIR4271, MIR4443, MIR4793, MIR6823

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35 ZBTB49

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47 SLC37A3, TMEM178B

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49 S9A, MIR4659B, MIR8055, RPL23AP96, RPS3AP30, SNRPCP6, XKR5

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9 RPL7P44

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17 3, RN7SL451P, RNU1-7P, RNU6-304P, RNU6-991P, RPL23AP19, RPL7P11, RPL7P7, SLC2A5, SLC2A7, SLC45.  
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20 1398, LRRC41, LURAP1, MAST2, MKNK1, MKNK1-AS1, MMACHC, MOB3C, MRPS17P1, MUTYH, NASP, NE  
21 3, LINC01389, LINC01738, MTND1P34, PDZK1IP1, RPL21P24, STIL, TAL1, TRABD2B

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48 NF138P1, RNU6-299P, RNU6ATAC2P, RPL17P22, RPL26P19, SKIV2L2, SLC38A9  
49 A2, POC5, POLK, RN7SL814P, RNU6-1330P, RNU6-658P, RNU6-680P, RNU7-175P, RNU7-196P, RPL27AP5  
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52 22, RN7SL655P, RN7SL803P, SAP30L, SAP30L-AS1  
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1 S1P3  
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5 1BP, MEA1, MIR6780B, MRPL2, MRPS10, MRPS18A, PEX6, POLH, POLH-AS1, POLR1C, PPP2R5D, PRPH2, F  
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10 NCBP1, NUTM2G, PTCSC2, RNU6-798P, RNU6-918P, SEPT7P7, TBC1D2, TCEA1P1, TDRD7, TMOD1, TRIM1  
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53 JFB8P2, PPM1D, PTRH2, RN7SL448P, RN7SL606P, RNFT1, RNU4-13P, RNU6-450P, RNU6-623P, RPL12P38  
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 30 2, MB, MFNG, MIR6819, MPST, MRPS16P3, MTATP6P20, MTCO1P20, MTCO2P20, MTCO3P20, MTCYBP3  
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 34 CZ, PRKCZ-AS1, RER1, SKI, TMEM52, TNFRSF14, TNFRSF14-AS1, TTC34  
 35 IK1-AS, PPP1R11P1, RAP1GAP, RNU7-200P, RPS15AP6, RPS4XP4, SH2D5, USP48  
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 50 L, KIRREL1-IT1, KRT8P45, LRRC71, MEF2D, MIR765, MIR9-1, MRPL24, MRPS21P2, NAXE, NES, NTRK1, PEA  
 51 L, NME7, RN7SL269P, RN7SL333P, SCYL3, SELE, SELL, SELP, SIGLEC30P, SLC19A2  
 52 DM1, TEDDM2P, YPEL5P1, ZNF648  
 53 1L, SMG7, SMG7-AS1, TSEN15  
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 56 PS10P7, TMEM9, TNNI1, TNNT2, ZNF281  
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8 <3, KIF3C, LINC01381, MIR1301, NCOA1, NDUFB4P4, OTOF, POMC, PPIL1P1, PTGES3P2, PTRHD1, RAB10,  
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21 , PLCL1, RFTN2, RNU6-1029P, SF3B1  
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32 0, SUSP5, TMPPE, TRIM71

33 RNU4-56P, RNU6-1227P, RPL18AP7, RPSA, SCN10A, SCN11A, SCN5A, SLC25A38, SNORA6, SNORA62, TTC  
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38 R5H5P, POU5F1P7, RCC2P5, RIOX2, RNU6-1094P, RPL18AP8

39 JSF3, VPS26AP1

40 DIA5, SEC22A, SEMA5B, WDR5B

41 P210P1, PLXNA1, PODXL2, RCC2P4, RNA5SP138, RNA5SP139, RNU2-37P, RNU6-1047P, RNU6-823P, RUV  
42 AS1, HMCES, IFT122, ISY1, ISY1-RAB43, KIAA1257, LINC01565, LINC02014, LINC02021, MARK2P17, MARK  
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45 , SIAH2-AS1, SNRPCP3, TSC22D2  
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50 RNU4-89P, RNU6-1279P, RNU6-42P, RNU6-646P, RNU6-910P, RNU7-18P, RPS29P3, RPSAP69, SDHAP1, S  
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56 6-191P, RPS23P3, TECRL

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5 3, TRPC3, TUBB4BP5  
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10 RNA5SP169, RNU6-1282P, RPS3A, SH3D19, SNORD73A, SNORD73B, TIGD4, TMEM154, ZBTB8OSP1  
11 TMEM192, TRIM60, TRIM60P14, TRIM61, TRIM75P  
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14 2P4, RNA5SP174, RNA5SP175, RNU1-51P, RPL23AP84, TUBB7P  
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39 LC35B2, SPATS1, SUPT3H, TCTE1, TMEM151B, TMEM63B, VEGFA  
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46 27P, RPL21P65, RPS24P12, RTN4IP1  
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48 KP51, RNA5SP214, RNU6-253P, ROS1, RPS29P13, RSPH4A, RWDD1, TRAPPC3L, TSPYL1, TSPYL4, VGLL2, Z  
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5 STEAP2, STEAP2-AS1, STEAP4, TEX47, TVP23CP1, ZNF804B  
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8 SLC13A1, SPAM1, TAS2R16, TMEM229A, WASL  
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12 MAP5, IQCA1L, KCNH2, KMT2C, MIR3907, MIR671, NOS3, NUB1, PRKAG2, PRKAG2-AS1, RHEB, RN7SL76P,  
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24 RN7SL563P, RN7SL685P, RNF19A, RNU4-83P, RNU6-1092P, RNU6ATAC41P, RNU7-67P, RPS20P23, RPS26  
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29 MIR6850, MIR6893, MIR7112, MIR939, MROH1, PPP1R16A, RECQL4, RN7SL395P, RPL8, SCRT1, SCX, SLC  
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39 NCBP1, NUTM2G, PTCSC2, RNU6-798P, RNU6-918P, SEPT7P7, TBC1D2, TCEA1P1, TDRD7, TMOD1, TRIM1  
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47 4, STAMBPL1  
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49 1, LMNTD2, LRRC56, MIR210, MIR210HG, MIR6743, MUC2, MUC5AC, MUC6, NLRP6, ODF3, OR4F2P, PAI  
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10 V186B, FMNL3, GALNT6, GPD1, HIGD1AP9, HIGD1C, HNRNPA3P10, KCNH3, KMT2D, LARP4, LETMD1, LIN  
11 HOXC-AS1, HOXC-AS2, HOXC-AS3, HOXC10, HOXC11, HOXC12, HOXC13, HOXC13-AS, HOXC4, HOXC5, HO  
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16 TTC41P, TXNRD1  
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21 EIF2B1, GTF2H3, HCAR1, HCAR2, HCAR3, HIP1R, IL31, KMT5A, KNTC1, LRRC43, MIR3908, MIR4304, MIR  
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24 MEM132D-AS2  
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26 I5F19, TPTE2P6  
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28 I, OGFOD1P1, PCNPP5, POLR2KP2, PPP1R26P1, PSME2P2, RAD17P2, RB1, RCBTB2, RN7SL700P, RNU6-60  
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35 10A2, TEX30, TPP2  
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21 ID1P1, DUSP3, EFTUD2, ETV4, FAM171A2, FAM187A, FAM215A, FMNL1, FZD2, G6PC3, GFAP, GJC1, GPA  
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23 JFB8P2, PPM1D, PTRH2, RN7SL448P, RN7SL606P, RNFT1, RNU4-13P, RNU6-450P, RNU6-623P, RPL12P38  
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28 RSL24D1P9, SNORA37, SNRPGP2, STARD6, VN1R76P  
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32 'D4, OR7E16P, OR7E25P, OR7G1, OR7G15P, OR7G2, OR7G3, PRAM1, RAB11B, RAB11B-AS1, RPL23AP78,  
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41 69, SIGLEC31P, SLC25A36P1, SMIM17, TRAPPC2B, USP29, VN1R1, VN1R107P, VN2R17P, ZFP28, ZIM2, ZII  
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8 FCGR2C, FCGR3A, FCGR3B, FCRLA, FCRLB, HSPA6, HSPA7, IGSF8, IGSF9, ITLN1, ITLN2, KCNJ10, KCNJ9, KLI  
9 AL, QSOX1, RN7SL230P, RNU5F-2P, RPSAP16, SETP10, SOAT1, STX6, TDRD5, TOR1AIP1, TOR1AIP2, TOR3A  
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57 U6-1187P, SERBP1P5  
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38 JBE2V1P15  
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46 HHC4, ZNF12, ZNF316, ZNF853  
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50 5AM2, POLD2, POLM, POLR2J4, RASA4CP, RNA5SP230, RNU6-1097P, RNU6-575P, RNU7-35P, SPDYE1, ST  
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9 FB136, DLC1, ENPP7P12, ENPP7P6, FAM167A, FAM167A-AS1, FAM66A, FAM66D, FAM86B1, FAM86B2, I  
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50 IL1A, IL1B, IL1F10, IL1RN, IL36A, IL36B, IL36G, IL36RN, IL37, LINC01961, MERTK, MIR1302-3, MIR4435-2,  
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22 I1, SRP72, THEGL, TMEM165  
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25 I2CP3  
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28 DAPH, PARM1, PPEF2, RCHY1, RNU2-16P, RNU6-1000P, RNU6-145P, RPL7P17, SCARB2, SDAD1, SEPT11, S  
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35 .29P, ROPN1L, ROPN1L-AS1, RPL30P7  
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49 K9, STK32A, STK32A-AS1  
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, RPS4XP10, TMEM67, TP53INP1, VIRMA, ZNF317P1

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5 USP401, SPATA8, SPATA8-AS1  
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7 R4721, MIR6862-1, MIR6862-2, NFATC2IP, NPIPB6, NPIPB7, NPIPB8, NPIPB9, NUPR1, RABEP2, RNU6-124  
8 CAP31P2, BCLAF1P2, BMS1P8, C16orf58, C1QL1P1, C2orf69P1, C2orf69P2, C2orf69P3, C2orf69P4, CCNY1  
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11 JAB3, KCTD11, KDM6B, LINC00324, LINC02581, MIR4314, MIR4521, MIR6883, MPDU1, NAA38, NEURL4,  
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14 EATR9, LIG3, LINC02001, LRRC37A9P, LYZL6, MMP28, MRM1, MYO19, NLE1, PEX12, PIGW, RAD51D, RAS  
15 LOC7, MIR4734, MLLT6, MRPL45, PCGF2, PIP4K2B, PSMB3, RNA5SP440, RNU6-489P, RNU6-866P, RPL23, RPS  
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19 27P, RNU6-24P, RNU6-97P, RNY4P36, RPL7P49, SCARNA16, SEC14L1, SEPT9, SNHG16, SNHG20, SNORD1,  
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21 R3, ISYNA1, KLHL26, KXD1, LINC00663, LPAR2, MAU2, MEF2B, MIR640, NCAN, NDUFA13, NR2C2AP, PBX  
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28 MP4B, DYNLRB1, E2F1, EFCAB8, EIF2S2, FDX1P1, GGT7, GSS, HMGB3P1, ITCH, ITCH-AS1, ITCH-IT1, MAP1  
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90P, RNU6-484P, RNU7-75P, RPS4XP6, SLC1A3, WDR70

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9 01-IT1, ZNF800

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11 IXC6, HOXC8, HOXC9, IGFBP6, ITGA5, ITGB7, LACRT, LINC01154, LINC02381, MAP3K12, MFSD5, MIR148E

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45 323A, MIR323B, MIR329-1, MIR329-2, MIR337, MIR342, MIR345, MIR369, MIR370, MIR376A1, MIR376A

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SGSM1, SLC2A11, SMARCB1, SNRPD3, SPECC1L, SPECC1L-ADORA2A, SUSD2, TMEM211, UPB1, VPREB3, :

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2 IR378I, MIR4766, MIR6889, MKL1, NAGA, NDUFA6, NDUFA6-AS1, NFAM1, OGFRP1, OLA1P1, PHF5A, PM  
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5 AP2, RPL5, SETSIP, SNORA66, SNORD21, TGFBR3, TMED5  
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7 I2BD, HIST2H2BE, HIST2H2BF, HIST2H3A, HIST2H3C, HIST2H3D, HIST2H4A, HIST2H4B, HORMAD1, LINC0  
8 MNA, MEX3A, MIR4258, MIR555, MIR6738, MIR92B, MSTO1, MSTO2P, MTX1, MTX1P1, MUC1, PAQR6, I  
9 HDC9, LINC01133, LY9, MIR4654, MIR5187, MIR556, MPZ, NCSTN, NDUFS2, NECTIN4, NHLH1, NIT1, NOS  
10 A, VDAC1P4, XPR1  
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20 ST4, PLB1, PPM1G, PREB, PRR30, RBKS, RNU6-986P, RPL23AP34, SLC30A3, SLC4A1AP, SLC5A6, SNRPGP7,  
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25 -IT1, TIA1  
26 LBX2, LBX2-AS1, LINC01291, LINC01293, LOXL3, M1AP, MIR5000, MOB1A, MOGS, MRPL53, MTHFD2, NA  
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37 .P16, MTND4P23, MTND4P29, MTND5P25, MTND5P31, NDUFB3, NIF3L1, ORC2, PPIL3, RN7SL717P, RNA:  
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42 21A, WDR48, XIRP1, XYLB  
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44 08P, TRAT1  
45 A14, TERC  
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56 TAC5P  
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32 P, RNU6-732P, RPL29P14, RPL7P1, RPS14, RPS20P4, SH3TC2, SH3TC2-DT, SLC26A2, SLC6A7, TCOF1, TIGD  
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49 ZF1-AS1, KIAA0087, MIR148A, MIR196B, NFE2L3, NHP2P2, PPIAP80, PSMC1P2, RNU6-979P, RPL35P4, RI  
50 K17A, TMED4, TUBG1P, UBE2D4, URGCP, URGCP-MRPS24, YKT6, ZMIZ2  
51 G1P4, PSPH, PSPHP1, RBM22P3, RNU6-1052P, RNU6-1126P, RNU6-1335P, RNU7-157P, SEPT14, SEPT14P  
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56 D1-IT1, ZNF800  
57 TPI1P2, TSPAN33, UBE2H, ZC3HC1  
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7 M90A11P, FAM90A12P, FAM90A13P, FAM90A14P, FAM90A15P, FAM90A16P, FAM90A17P, FAM90A18P  
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9 FAM90A25P, FAM90A2P, FDFT1, GATA4, KIAA1456, LINC00208, LINC00681, LONRF1, MIR3926-1, MIR39  
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34 , MIR3158-1, MIR3158-2, MIR608, MRPL43, NFKB2, NOLC1, NPM3, PAX2, PDZD7, PFN1P11, PITX3, POLL,  
35 I3PXD2A-AS1, SLK, ST13P13, STN1, TAF5, USMG5  
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38 , TP53I11, TSPAN18, ZNF408  
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42 . EIF1AD, ENPP7P7, FAM86C2P, FOSL1, FTLP6, GAL3ST3, GPR152, GRK2, GSTP1, KDM2A, KLC2, LRFN4, MI  
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51 TSPAN31  
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21 323A, MIR323B, MIR329-1, MIR329-2, MIR337, MIR342, MIR345, MIR369, MIR370, MIR376A1, MIR376A  
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38 , RPS27P26, RPS2P45, SF3B3, SMG1P7, SNORD111, SNORD111B, SNTB2, ST3GAL2, TANGO6, TERF2, TME  
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40 PG7, SPIRE2, TCF25, TUBB3, TUBB8P7, URAHP, VPS9D1, VPS9D1-AS1, ZNF276, ZNF778  
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46 RPS4XP19, THEMIS3P, TOMM20P3, TWSG1, TXNDC2, VAPA, ZNF415P1  
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48 CA1, ZNF861P  
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3 .1, SLCO4A1-AS1, TCFL5  
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9 PI4KAP1, PPP1R26P2, PPP1R26P3, PPP1R26P4, PRODH, RIMBP3, RN7SKP131, RN7SL168P, RTL10, SEPT5  
10 ), IGLV4-69, IGLV5-48, IGLV5-52, IGLV6-57, IGLV8-61, IGLV9-49, IGLVI-56, IGLVI-63, IGLVI-68, IGLVI-70, IG  
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17 NU6-949P, RNU6ATAC27P, RPA2, RPEP3, SCARNA1, SESN2, SMPDL3B, SNHG12, SNHG3, SNORA16A, SNC  
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23 AP2, RPL5, SETSIP, SNORA66, SNORD21, TGFBR3, TMED5  
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38 SNORA36B, XRCC6P3, ZC3H11B  
39 NU6-1319P, RNU6-791P, SNRPEP10, SUS4, TAF1A, TAF1A-AS1, TLR5, TP53BP2, WDR26  
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47 -IT1, TIA1  
48 PR, TEX261, VAX2, ZNF638  
49 MIR4435-2HG, MIR4771-2, MIR4782, NDUFB4P6, NT5DC4, PAX8, PAX8-AS1, PGM5P4, PGM5P4-AS1, PO  
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57 IMP4, TMEM40, TSEN2, VGLL4  
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4 21A, WDR48, XIRP1, XYLB  
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10 IC93B3  
11 )8P, TRAT1  
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24 SHROOM3, SNX5P1, SOWAHB, STBD1, THAP6, TXNP6, USO1  
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RIG2P, RN7SKP54, RN7SL416P, RN7SL549P, RN7SL750P, RPS29P15, SAP25, SERPINE1, SLC12A9, SLC12A9

, SNHG6, SNORD87, SULF1, TCF24, VCP1P1

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MEM210, TOR4A, TPRN, TUBB4B, UAP1L1, ZMYND19

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7 , TRUB1, UBE2V1P5, VTI1A, VWA2  
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13 R137, HIGD1AP10, KAT5, KCNK4, KCNK7, KRT8P26, LTBP3, MACROD1, MAJIN, MALAT1, MAP3K11, MAP4  
14 . EIF1AD, ENPP7P7, FAM86C2P, FOSL1, FTLP6, GAL3ST3, GPR152, GRK2, GSTP1, KDM2A, KLC2, LRFN4, M  
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23 iAPDH, GAPDHP31, GCSHP4, GDF3, GNB3, GPR162, HSPD1P12, IFFO1, ING4, LAG3, LINC00937, LINC0244  
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30 77, KRT78, KRT79, KRT8, KRT80, KRT81, KRT82, KRT83, KRT84, KRT85, KRT86, KRT87P, KRT89P, KRT90P, I  
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32 TMEM5, TMEM5-AS1, USP15  
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38 , SUGT1P3, TPTE2P5, WBP4  
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40 2B, RNASEH2B-AS1, RNU6-65P, RNY1P6, RNY4P30, RNY4P9, RPL18P10, RPL34P26, RPL5P31, RPS4XP16, S  
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45 L1P12, RPS26P47, RPS6P23, TM9SF2, UBAC2, UBAC2-AS1, ZIC2, ZIC5  
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57 , RPS3AP47, SERF2, SERINC4, SPCS2P1, STRC, STRCP1, TGM5, TGM7, TMEM62, TP53BP1, TTBK2, TUBGCI  
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4 , MIR5094, MIR6766, MIR7-2, MIR9-3, MIR9-3HG, MRPL15P1, MRPL46, MRPS11, NDUFA3P4, NGRN, PEX  
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7 KDC1, PKD1P6, PLA2G10, RN7SL274P, RNU6-213P, RNU7-125P, RPL15P20, RPL17P40, RRN3  
8 .1P, RNU6-159P, RNY1P10, SBK1, SGF29, SH2B1, SPNS1, SULT1A1, SULT1A2, TPRKBP2, TUFM, XPO6  
9 L3, CLUHP11, CLUHP3, COX6A2, DUX4L45, DUX4L46, DUX4L47, ENPP7P13, FGFR3P5, FRG2DP, FRG2GP, F  
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11 NLGN2, PER1, PFAS, PLSCR3, POLR2A, RANGRF, SAT2, SCARNA21, SENP3, SENP3-EIF4A1, SHBG, SLC25A3  
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14 SL10B, RDM1, RFFL, RN7SL301P, RNA5SP439, RNU6-1192P, RNU6-840P, SLC35G3, SLFN11, SLFN12, SLFN  
15 .20P35, SNORA21, SNORA21B, SOCS7, SRCIN1, SYNRG, TADA2A, TBC1D3, TBC1D3C, TBC1D3D, TBC1D3E,  
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18 A, SNORD1B, SNORD1C, SPHK1, SRSF2, ST6GALNAC1, ST6GALNAC2, UBALD2, UBE2O  
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21 4, PHF5CP, REX1BD, RFXANK, RN7SL155P, RN7SL70P, RNU6-1028P, SLC25A42, SSBP4, SUGP1, SUGP2, TM  
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23 RIM28, UBE2M, VN2R19P, ZBTB45, ZIK1, ZNF132, ZNF134, ZNF135, ZNF154, ZNF211, ZNF256, ZNF274, ZI  
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28 LC3A, MAPRE1, MIR4755, MIR644A, NCOA6, NECAB3, PIGPP3, PIGU, PUDPP3, PXMP4, RALY, RALY-AS1, I  
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31 L39P, RPL39P39, RPS4XP3, RTFDC1, SPO11, TFAP2C, VAPB, ZBP1  
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34 .2, RPS5P3, SLC5A3, SMIM11A, SON, SYNJ1, TMEM50B, USF1P1  
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25 .XNB1, PRKAR2A, PRKAR2A-AS1, QARS, QRICH1, RN7SL182P, RN7SL321P, RN7SL664P, RNU7-128P, SHISA  
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51 )R2S2, PGAM1P2, PHF24, PIGO, RECK, RGP1, RMRP, RN7SL22P, RN7SL338P, RNF38, RNU4-53P, RPL36AP  
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5 l, RPL13P6, RPL21P12, RPL21P13, RPS26P49, RPS2P4, RPSAP5, SIVA1, SNORA28, TDRD9, TMEM179, TNF,  
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24 TBC1D3K, TBC1D3L, YWHAEP7  
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35 TBC1D3K, TBC1D3L, YWHAEP7  
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!2, RTN3, SCGB1A1, SCGB1D2, SCGB1D4, SCGB2A2, SLC22A10, SLC22A24, SLC22A25, SLC22A6, SLC22A8,  
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56 N7SL504P, RNU6-856P, RNU6ATAC16P, RPL29, RRP9, SELENOK, SEMA3G, SERBP1P3, SFMBT1, SMIM4, SI  
57 ; FAM90A19P, FAM90A20P, FAM90A21P, FAM90A22P, FAM90A23P, FAM90A24P, FAM90A3P, FAM90A4  
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21 38, TMA16P2, TMEM69, TOE1, TSPAN1, UQCRH, UROD, ZSWIM5

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.XNB1, PRKAR2A, PRKAR2A-AS1, QARS, QRICH1, RN7SL182P, RN7SL321P, RN7SL664P, RNU7-128P, SHISA

343, RAB7A, RHO, RN7SL698P, RN7SL752P, RNY3P13, RPL32P3, RPN1, RPS15AP16, RPS27P12, SNORA7B,

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5 49, SLC22A7, SRF, TAF8, TBCC, TJAP1, TRERF1, TTBK1, UBR2, XPO5, YIPF3, ZNF318  
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35 -AS1, SPDYE3, SRRT, STAG3, STAG3L5P, STAG3L5P-PVRIG2P-PILRB, TFR2, TRIM56, TRIP6, TSC22D4, UFSP  
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38 11P, OR2R1P, OR6B1, OR6V1, OR6W1P, OR9A2, OR9P1P, PAICSP5, PAICSP6, PGBD4P1, PIP, PPIAP83, PRS  
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4 P1, POU6F1, PRKAG1, PRPF40B, PRPH, RACGAP1, RHEBL1, RN7SL519P, RNU6-1093P, RNU6-1273P, RNU6-1  
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32 P4, UBR1, WDR76, ZSCAN29  
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37 WDR73, ZNF592, ZSCAN2  
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49 TBC1D3K, TBC1D3L, YWHAEP7  
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51 LINC01976, LINC02210, LINC02210-CRHR1, LRRC37A4P, LSM12, MAP3K14, MAP3K14-AS1, MAPK8IP1P2, MA  
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53 S1, TBX4, TUBD1, USP32, VMP1, WFDC21P, YPEL2  
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29 3-12, IGLV3-13, IGLV3-15, IGLV3-16, IGLV3-17, IGLV3-19, IGLV3-2, IGLV3-21, IGLV3-22, IGLV3-24, IGLV3-  
30 P38, SSTR3, TEX33, TMPRSS6, TST, TXN2  
31 IM1, POLDIP3, POLR3H, RANGAP1, RBX1, RN7SKP80, RNU12, RNU6-375P, RNU6-379P, RNU6-476P, RNU6-  
32 48P, RNU7-29P, RPL12P13, RPS6KA1, SELENON, SFN, SH3BGL3, SLC30A2, SLC9A1, SNRPEP7, SNRPP2, S  
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43 343, RAB7A, RHO, RN7SL698P, RN7SL752P, RNY3P13, RPL32P3, RPN1, RPS15AP16, RPS27P12, SNORA7B,  
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50 7-AS1, WDR53, ZDHHC19  
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30 :NF252P-AS1, ZNF34, ZNF517, ZNF7

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49 :1, RNU6-1025P, RNU6-447P, RPLP2, SCGB1C1, SCT, SIGIRR, SIRT3, SLC25A22, SNORA52, TALDO1, TMEM

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525, SCN2B, SCN4B, SETP16, SLC37A4, SMIM35, TMEM25, TMPRSS13, TMPRSS4, TRAPPC4, TREH, TREHP

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1, RILPL2, RNA5SP375, RNU6-927P, RPL21P1, RPL27P12, RSRC2, SBNO1, SCARB1, SNORA9B, SNRNP35, T

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21, SNORD115-22, SNORD115-23, SNORD115-24, SNORD115-25, SNORD115-26, SNORD115-27, SNORD115-28,

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19 TBC1D3K, TBC1D3L, YWHAEP7  
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21 01976, LINC02210, LINC02210-CRHR1, LRRC37A4P, LSM12, MAP3K14, MAP3K14-AS1, MAPK8IP1P2, MA  
22 , SUPT4H1, TEX14, TRIM37, TSPOAP1, TSPOAP1-AS1, VEZF1  
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27 P1, TERF1P2, TUBB6, ZNF519  
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33 LP2, PLPPR2, PPIAP20, PRDX2, PRKCSH, RAB3D, RAD23A, RGL3, RN7SL833P, RNA5SP464, RNA5SP465, RN  
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41 NF547, ZNF548, ZNF582, ZNF582-AS1, ZNF583, ZNF667, ZNF667-AS1, ZNF71, ZNF749, ZNF772, ZNF773,  
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55 LVIV-53, IGLVIV-59, IGLVIV-64, IGLVIV-65, IGLVIV-66-1, IGLVV-58, IGLVV-66, KLHL22, KRT18P5, LINC0089  
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1 IM1, POLDIP3, POLR3H, RANGAP1, RBX1, RN7SKP80, RNU12, RNU6-375P, RNU6-379P, RNU6-476P, RNU6-

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6 0869, LINC01138, LYSMD1, MCL1, MINDY1, MIR4257, MIR6077, MIR6878, MLLT11, MRPS21, MTMR11, P  
7 PBXIP1, PKLR, PMF1, PMF1-BGLAP, PMVK, POU5F1P4, PYGO2, RAB25, RIT1, RNU6-106P, RNU6-1297P, R  
8 1AP, NR1I3, OLFML2B, PCP4L1, PEA15, PEX19, PFDN2, PIGM, PPIAP37, PPOX, RN7SL466P, RNA5SP61, RN

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26 AT8, NAT8B, NECAP1P2, NOTO, PCGF1, POLE4, PRADC1, RNA5SP97, RNU6-111P, RNU6-542P, RPSAP28, R

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37 5SP115, RNU1-133P, RNU6-1206P, RNU6-312P, RNU6-31P, RNU6-762P, RNU7-45P, RNY4P34, RPL17P10,

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39 !2, RTN3, SCGB1A1, SCGB1D2, SCGB1D4, SCGB2A2, SLC22A10, SLC22A24, SLC22A25, SLC22A6, SLC22A8,  
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41 IR3163, MIR6752, MIR6860, MRPL11, NDUFV1, NPAS4, NUDT8, OR7E11P, OR7E145P, OR7E1P, PACS1, P  
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25 P4, UBR1, WDR76, ZSCAN29

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36 RPS24P17, RSPRY1, SLC12A3

37 :D6, UTP4, VAC14, VAC14-AS1, VPS4A, WWP2

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50 A6SF2, TMEM161A, TMEM59L, TSSK6, UBA52, UPF1, YJEFN3, ZNF101, ZNF14, ZNF253, ZNF506

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LR1B, PSD4, RABL2A, RGPD6, RGPD8, RN7SL297P, RNU6-1180P, RNU6-744P, RPL23AP7, RPL5P9, RPS14F  
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5 OCS5P3, SS18L2, TCAIM, TGM4, TMEM42, TOPAZ1, ZBTB47, ZDHHC3, ZKSCAN7, ZNF197, ZNF197-AS1, ZI  
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-AS1, SPDYE3, SRRT, STAG3, STAG3L5P, STAG3L5P-PVRIG2P-PILRB, TFR2, TRIM56, TRIP6, TSC22D4, UFSP

L5, RPL35, SKA2P1, SNORD90, STRBP, TLK1P1, WDR38, ZBTB26, ZBTB6

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12 K2, MARK2, MEN1, MIR1237, MIR192, MIR194-2, MIR194-2HG, MIR4489, MIR4690, MIR612, MIR6749, I  
13 IR3163, MIR6752, MIR6860, MRPL11, NDUFV1, NPAS4, NUDT8, OR7E11P, OR7E145P, OR7E1P, PACS1, P  
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23 I9, LPAR5, LPCAT3, LRRC23, MIR141, MIR200C, MIR200CHG, MLF2, MRPL51, NANOG, NANOGNB, NANO  
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29 LINC00592, METTL7AP1, NR4A1, OR7E47P, RNU6-574P, RPL7P41, SCN8A  
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39 IERPINE3, SETDB2, SNRPGP11, SNRPGP14, SPRYD7, ST13P4, TRIM13, WDFY2  
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57 P4, UBR1, WDR76, ZSCAN29  
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9 FRG2HP, FRG2IP, FRG2JP, FRG2KP, HERC2P4, HERC2P5, HERC2P8, HMGN2P41, IGHV1OR16-1, IGHV1OR1  
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11 35, SLC35G6, SNORA48, SNORA67, SNORD10, SNORD118, SOX15, SPEM1, SPEM2, SPEM3, TMEM102, TM  
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13 12L, SLFN13, SLFN14, SLFN5, SNORD7, TAF15, TBC1D3B, TBC1D3F, TBC1D3G, TBC1D3H, TBC1D3I, TBC1D  
14 TBC1D3K, TBC1D3L, YWHAEP7  
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21 A6SF2, TMEM161A, TMEM59L, TSSK6, UBA52, UPF1, YJEFN3, ZNF101, ZNF14, ZNF253, ZNF506  
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23 NF324, ZNF324B, ZNF329, ZNF416, ZNF417, ZNF418, ZNF446, ZNF497, ZNF530, ZNF544, ZNF549, ZNF550  
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28 RPL12P3, RPL31P2, RPS2P1, SNTA1, SOCS2P1, SUN5, TP53INP2, TPM3P2, XPOTP1, ZNF341, ZNF341-AS1  
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33 20-3, KRTAP20-4, KRTAP21-1, KRTAP21-2, KRTAP21-3, KRTAP21-4P, KRTAP22-1, KRTAP22-2, KRTAP23-1,  
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35 LVIV-53, IGLVIV-59, IGLVIV-64, IGLVIV-65, IGLVIV-66-1, IGLVV-58, IGLVV-66, KLHL22, KRT18P5, LINC0089  
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51 33, RPS29P17, RUSC2, SIT1, SPAAR, SPAG8, STOML2, SYF2P2, TESK1, TLN1, TMEM8B, TPM2, UNC13B, VC  
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45 33, RPS29P17, RUSC2, SIT1, SPAAR, SPAG8, STOML2, SYF2P2, TESK1, TLN1, TMEM8B, TPM2, UNC13B, VC  
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50 SLC22A9, SLC3A2, SNHG1, SNORA57, SNORD22, SNORD25, SNORD26, SNORD27, SNORD28, SNORD30, S  
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56 NORD19, SNORD19B, SNORD38C, SNORD69, SPCS1, STAB1, TKT, TLR9, TMEM110, TMEM110-MUSTN1, T  
57 4P, FAM90A5P, FAM90A6P, FAM90A7P, FAM90A8P, FAM90A9P, HSPD1P2, HSPD1P3, MFHAS1, MIR466C  
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3 R7E8P, RN7SL293P, RNA5SP253, RNA5SP254, RNU6-1084P, RNU6-842P, RPS3AP34, RPS3AP35, SLC35G5,  
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6 C39A13, SPI1, TRIM49B, TRIM51CP, TRIM51FP, TRIM51GP, TRIM53CP, TRIM64C, TRIM77BP, TYRL, UBTFI  
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32 1, OR6N2, OR6P1, OR6Y1, PYHIN1, PYHIN5P, RAD1P2, RNA5SP60, SLAMF8, SNHG28, SPTA1, VSIG8  
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5, SLC25A20, SLC26A6, SMARCC1, SNRPF4, SPINK8, TMA7, TMEM89, TREX1, UCN2, UQCRC1, USP19, U

SNRPCP8, TMCC1, TMCC1-AS1, TMED10P2, TRH

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32 RPL7L1P3, SNORA14A, SPDYE12P, SPDYE13P, SPDYE14P, SPDYE15P, SPDYE5, SRRM3, SSC4D, STAG3L1, ST  
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35 1, VGF, ZAN, ZCWPW1  
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38 S1, PRSS2, PRSS3P1, RN7SKP174, RN7SL481P, RN7SL535P, RNU6-162P, RNU6-267P, RNU6ATAC40P, SLC  
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43 R7E8P, RN7SL293P, RNA5SP253, RNA5SP254, RNU6-1084P, RNU6-842P, RPS3AP34, RPS3AP35, SLC35G5,  
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P1R26-AS1, PRR31, PTGDS, QSOX2, RABL6, SDCCAG3, SEC16A, SNAPC4, SNHG7, SNORA17A, SNORA17B,

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4 5-199P, RNU6-238P, RNU6-769P, RNU6-834P, RNU6-87P, RPL35AP28, SCN8A, SLC11A2, SLC4A8, SMAGP,  
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45 6-2, IGHV1OR16-3, IGHV1OR16-4, IGHV2OR16-5, IGHV3OR16-10, IGHV3OR16-11, IGHV3OR16-12, IGHV:  
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50 \APT-AS1, MEIOC, MEOX1, MIR2117, MIR2117HG, MIR4315-1, MIR6782, MIR6783, MIR6784, MPP2, MPP:  
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16, LINC01637, LINC01651, LRRC74B, LZTR1, MAPK1, MED15, MIR1286, MIR1306, MIR130B, MIR185, MIF  
25, IGLV3-26, IGLV3-27, IGLV3-29, IGLV3-30, IGLV3-31, IGLV3-32, IGLV3-4, IGLV3-6, IGLV3-7, IGLV3-9, IGL  
6-495P, RNU6-513P, RNU6ATAC22P, RPL4P6, RRP7A, RRP7BP, SEPT3, SERHL, SERHL2, SHISA8, SLC25A17,

TMN1, SYTL1, TMEM222, TRIM63, TRNP1, UBXN11, WDTC1, ZDHHC18, ZNF593, ZNF683

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14 P4, SLC20A1, SLC35F5, TMEM87B, TTL, WASH2P, XIAPP3, ZC3H6, ZC3H8  
15 , POTE, POTEJ, POTEKP, RHOQP2, RN7SKP103, RNA5-8SP5, RNU6-1132P, RNU6-127P, RNU6-175P, RNU  
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21 R7E8P, RN7SL293P, RNA5SP253, RNA5SP254, RNU6-1084P, RNU6-842P, RPS3AP34, RPS3AP35, SLC35G5,  
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33 IP, RN7SL726P, RN7SL787P, RNA5SP285, RNU2-5P, RNU6-368P, RNU6-538P, RNU6-820P, RPL24P8, RPL3  
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3 1, TTC36, UBE4A, UPK2, VPS11  
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11 PPP1R1A, PRR13, RARG, RN7SKP289, RN7SL390P, RN7SL744P, RNU6-333P, RNU6-950P, SMUG1, SMUG1  
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21 CTN2, TMED2, UBC, VPS33A, VPS37B, ZCCHC8, ZNF664  
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46 11, MIR412, MIR431, MIR432, MIR433, MIR485, MIR487A, MIR487B, MIR493, MIR494, MIR495, MIR496,  
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49 HJ1P, IGHJ2, IGHJ2P, IGHJ3, IGHJ3P, IGHJ4, IGHJ5, IGHJ6, IGHM, IGHV1-12, IGHV1-14, IGHV1-17, IGHV1-1  
50 L15-28, SNORD115-29, SNORD115-3, SNORD115-30, SNORD115-31, SNORD115-32, SNORD115-33, SNOR  
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20 2-AS1, RETREG3, RND2, RNU6-287P, RNU7-97P, RPL27, RUNDC1, STAT3, STAT5A, STAT5B, TTC25, TUBG1  
21 \PT-AS1, MEIOC, MEOX1, MIR2117, MIR2117HG, MIR4315-1, MIR6782, MIR6783, MIR6784, MPP2, MPP3,  
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33 \A5SP466, RNA5SP467, RNASEH2A, RPL10P16, RPL12P42, RPS29P23, RPS6P25, RSL24D1P8, RTBDN, SNO  
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40 VTF6A, NTF6B, NTF6G, NTN5, NUCB1, NUCB1-AS1, PLA2G4C, PLA2G4C-AS1, PLEKHA4, PPFIA3, PPP1R15A,  
41 ZNF787, ZNF805, ZNF835, ZSCAN5A, ZSCAN5B, ZSCAN5C, ZSCAN5DP  
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1 6-495P, RNU6-513P, RNU6ATAC22P, RPL4P6, RRP7A, RRP7BP, SEPT3, SERHL, SERHL2, SHISA8, SLC25A17,  
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6 NBPF14, NBPF19, NBPF9, NUDT4P1, OTUD7B, PDE4DIP, PI4KB, PIP5K1A, PLEKHO1, POGZ, PPIAL4C, PPIAL  
7 USC1, RUSC1-AS1, RXFP4, SCAMP3, SCARNA4, SEMA4A, SHC1, SLC25A44, SLC50A1, SMG5, SNORA80E, S  
8 NU4-42P, RNU6-481P, RPL31P11, RPS23P10, RPS23P9, RPSAP18, RRM2P2, SDHC, SETP9, SLAMF1, SLAMF  
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6 4P, FAM90A5P, FAM90A6P, FAM90A7P, FAM90A8P, FAM90A9P, HSPD1P2, HSPD1P3, MFHAS1, MIR466C  
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9 R7E8P, RN7SL293P, RNA5SP253, RNA5SP254, RNU6-1084P, RNU6-842P, RPS3AP34, RPS3AP35, SLC35G5,  
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33 22P17, RPL23AP58, SEMA4G, SFXN2, SFXN3, SLF2, SMARCE1P7, SUFU, TLX1, TLX1NB, TRIM8, TWNK, WBI  
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39 SLC22A9, SLC3A2, SNHG1, SNORA57, SNORD22, SNORD25, SNORD26, SNORD27, SNORD28, SNORD30, S  
40 MIR6750, MIR6751, MIR6879, MIR7155, MRPL49, MUS81, NAA40, NAALADL1, NEAT1, NRXN2, NUDT22,  
41 C, PELI3, PITPNM1, POLD4, PPP1CA, PTPRCAP, RAB1B, RAD9A, RBM14, RBM14-RBM4, RBM4, RBM4B, RC  
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50 PPP1R1A, PRR13, RARG, RN7SKP289, RN7SL390P, RN7SL744P, RNU6-333P, RNU6-950P, SMUG1, SMUG1  
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10 RAJ38, TRAJ39, TRAJ4, TRAJ40, TRAJ41, TRAJ42, TRAJ43, TRAJ44, TRAJ45, TRAJ46, TRAJ47, TRAJ48, TRAJ4

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21 11, MIR412, MIR431, MIR432, MIR433, MIR485, MIR487A, MIR487B, MIR493, MIR494, MIR495, MIR496,

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27 RN7SL429P, RN7SL489P, RN7SL510P, RPL13P4, RPL36AP45, RPP25, SCAMP2, SCAMP5, SCAPER, SEMA7/

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6, LINC01637, LINC01651, LRRC74B, LZTR1, MAPK1, MED15, MIR1286, MIR1306, MIR130B, MIR185, MIF

10B, TRNAU1AP, WASF2, XKR8, YTHDF2

4, SLC20A1, SLC35F5, TMEM87B, TTL, WASH2P, XIAPP3, ZC3H6, ZC3H8

, RPL23AP30, SATB2, SATB2-AS1, SEPHS1P6, SGO2, SPATS2L, STRADB, TRAK2, TYW5

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5 NF35, ZNF445, ZNF501, ZNF502, ZNF660, ZNF662, ZNF852  
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14 C, PELI3, PITPNM1, POLD4, PPP1CA, PTPRCAP, RAB1B, RAD9A, RBM14, RBM14-RBM4, RBM4, RBM4B, RC

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23 GP1, NCAPD2, NECAP1, NIFKP3, NOP2, P3H3, PEX5, PHB2, PIANP, POU5F1P3, PTMS, PTPN6, RBP5, RN7SI  
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9 .6-2, IGHV1OR16-3, IGHV1OR16-4, IGHV2OR16-5, IGHV3OR16-10, IGHV3OR16-11, IGHV3OR16-12, IGHV:  
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11 MEM107, TMEM256, TMEM256-PLSCR3, TMEM88, TMEM95, TNFSF12, TNFSF12-TNFSF13, TNFSF13, TNK  
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14 )3J, TMEM132E, TOMM20P2, UNC45B, ZNF830, ZNHIT3  
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23 ), ZNF551, ZNF552, ZNF584, ZNF586, ZNF587, ZNF587B, ZNF606, ZNF671, ZNF776, ZNF8, ZNF814, ZNF83:  
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33 KRTAP24-1, KRTAP25-1, KRTAP26-1, KRTAP27-1, KRTAP6-1, KRTAP6-2, KRTAP6-3, KRTAP7-1, KRTAP8-1, I  
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36 )6, LINC01637, LINC01651, LRRC74B, LZTR1, MAPK1, MED15, MIR1286, MIR1306, MIR130B, MIR185, MIF  
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AS1, SEMA3F, SEMA3F-AS1, SLC38A3, ST13P14, TCTA, TEX264, TMEM115, TRAIP, TUSC2, UBA7, USP4, Z

SP4, VPS26BP1, WDR6, ZNF589

CP, YBX1P10, YWHAZP6, ZFAND6P1

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SP4, VPS26BP1, WDR6, ZNF589  
-AS1, SEMA3F, SEMA3F-AS1, SLC38A3, ST13P14, TCTA, TEX264, TMEM115, TRAIP, TUSC2, UBA7, USP4, Z

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-AS1, SEMA3F, SEMA3F-AS1, SLC38A3, ST13P14, TCTA, TEX264, TMEM115, TRAIP, TUSC2, UBA7, USP4, Z

CP, YBX1P10, YWHAZP6, ZFAND6P1

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, MIR548I3, OR7E125P, OR7E154P, OR7E157P, OR7E96P, PPP1R3B, PRAG1, PRR23D1, PRR23D2, RN7SL1

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3 , SUB1P1, TDH, USP17L2, USP17L7, ZNF705CP, ZNF705D  
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6 L7, UBTFL9, YPEL5P2  
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45 IGKV2D-30, IGKV2D-36, IGKV2D-38, IGKV2D-40, IGKV3-25, IGKV3-31, IGKV3-34, IGKV3D-11, IGKV3D-15, IC  
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FAG3L2, STX1A, STYXL1, TBL2, TMEM120A, TMEM270, TRIM73, VPS37D, YWHAG, ZP3

16A1P1, TAS2R39, TAS2R40, TAS2R41, TAS2R60, TAS2R62P, TCAF1, TCAF1P1, TCAF2, TCAF2P1, TMEM13

, SUB1P1, TDH, USP17L2, USP17L7, ZNF705CP, ZNF705D

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SOCS5P2, SOHLH1, TMEM141, TMEM250, TRAF2, UBAC1

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4 , SMARCD1, SPATS2, TFCEP2, TMBIM6, TMPPSS12, TROAP, TUBA1A, TUBA1B, TUBA1C  
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45 3OR16-13, IGHV3OR16-15, IGHV3OR16-16, IGHV3OR16-6, IGHV3OR16-7, IGHV3OR16-8, IGHV3OR16-9, I  
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50 3, NAGS, NBR1, NBR2, NMT1, PLCD3, PLEKHM1, PPY, PYY, RN7SL258P, RN7SL405P, RN7SL507P, RN7SL81  
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7, ZSCAN1, ZSCAN18, ZSCAN22, ZSCAN4

R301B, MIR3618, MIR4761, MIR649, MIR6816, P2RX6, P2RX6P, PI4KA, PI4KAP2, POM121L4P, POM121L7  
.V4-3, IGLV5-37, IGLV5-45, IGLV7-35, IGLV7-43, IGLV7-46, IGLVI-20, IGLVI-38, IGLVI-42, IGLVVI-22-1, IGLV  
, SLC25A5P1, SMDT1, SNORD13P1, SNU13, SREBF2, ST13, TCF20, TEF, TNFRSF13C, TOB2, WBP2NL, XPNP

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6-617P, TUBA3D, YBX1P7, ZNF806

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21 , SUB1P1, TDH, USP17L2, USP17L7, ZNF705CP, ZNF705D  
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33 5AP21, SDR42E1P4, SMC5, SMC5-AS1, SNX18P4, SPATA31A3, TJP2, TMEM2, TMEM252, TRPM3, ZFANDE  
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, SMARCD1, SPATS2, TFCP2, TMBIM6, TMPRSS12, TROAP, TUBA1A, TUBA1B, TUBA1C  
-AS1, SOAT2, SP1, SP7, SPRYD3, TARBP2, TNS2, VTI1BP3, ZNF385A, ZNF740

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, MIR539, MIR541, MIR543, MIR544A, MIR654, MIR655, MIR656, MIR665, MIR668, MIR6764, MIR758, N  
8, IGHV1-2, IGHV1-24, IGHV1-3, IGHV2-26, IGHV2-5, IGHV3-11, IGHV3-13, IGHV3-15, IGHV3-16, IGHV3-1  
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20 l, TUBG2, VAT1, VPS25, WNK4, ZNF385C  
21 3, NAGS, NBR1, NBR2, NMT1, PLCD3, PLEKHM1, PPY, PYY, RN7SL258P, RN7SL405P, RN7SL507P, RN7SL81  
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33 RD41, STX10, SWSAP1, SYCE2, TMEM205, TNPO2, TRIR, TRMT1, TSPAN16, WDR83, WDR83OS, ZNF136, ;  
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40 \, RASIP1, RN7SL322P, RN7SL708P, RNU6-317P, RPL18, RPL23AP80, RUVBL2, SAE1, SEC1P, SELENOW, SLI  
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55 R301B, MIR3618, MIR4761, MIR649, MIR6816, P2RX6, P2RX6P, PI4KA, PI4KAP2, POM121L4P, POM121L7  
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, SLC25A5P1, SMDT1, SNORD13P1, SNU13, SREBF2, ST13, TCF20, TEF, TNFRSF13C, TOB2, WBP2NL, XPNP  
.4G, PRPF3, PRUNE1, PSMB4, PSMD4, RFX5, RN7SKP88, RN7SL444P, RN7SL473P, RN7SL480P, RN7SL600F  
SR2, SYT11, THBS3, TMEM79, TRIM46, UBQLN4, VHLL, YY1AP1, ZBTB7B  
:6, SLAMF7, SLAMF9, SUMO1P3, TAGLN2, TOMM40L, TSTD1, UFC1, USF1, USP21, VANGL2

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9 , SUB1P1, TDH, USP17L2, USP17L7, ZNF705CP, ZNF705D  
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ITX5, TAF6L, TEX54, TMEM179B, TMEM223, TTC9C, TUT1, UBXN1, UQCC3, WDR74, ZBTB3  
OTUB1, OVOL1, OVOL1-AS1, PCNX3, PDCL2P2, PGAM1P8, PLCB3, POLA2, PPP1R14B, PPP2R5B, PRDX5, F  
CE1, RHOD, RIN1, RN7SKP239, RN7SL12P, RNU1-84P, RNU4-39P, RNU6-1238P, RNU6-46P, RNU7-23P, RP

-AS1, SOAT2, SP1, SP7, SPRYD3, TARBP2, TNS2, VTI1BP3, ZNF385A, ZNF740

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10 49, TRAJ5, TRAJ50, TRAJ51, TRAJ52, TRAJ53, TRAJ54, TRAJ55, TRAJ56, TRAJ57, TRAJ58, TRAJ59, TRAJ6, TR

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21 , MIR539, MIR541, MIR543, MIR544A, MIR654, MIR655, MIR656, MIR665, MIR668, MIR6764, MIR758, N

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27 A, SIN3A, SNUPN, SNX33, STOML1, STRA6, TBC1D21, TMEM266, TYRO3P, UBE2Q2, UBL7, UBL7-AS1, ULK



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3301B, MIR3618, MIR4761, MIR649, MIR6816, P2RX6, P2RX6P, PI4KA, PI4KAP2, POM121L4P, POM121L7

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12 OTUB1, OVOL1, OVOL1-AS1, PCNX3, PDCL2P2, PGAM1P8, PLCB3, POLA2, PPP1R14B, PPP2R5B, PRDX5, F  
13 CE1, RHOD, RIN1, RN7SKP239, RN7SL12P, RNU1-84P, RNU4-39P, RNU6-1238P, RNU6-46P, RNU7-23P, RP  
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23 L380P, RNU6-485P, RNU6-781P, RNU7-1, RPL13P5, RPS3AP43, SCARNA10, SCARNA11, SCARNA12, SLC2A  
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11 1, TP53, TRAPPC1, VAMP2, WRAP53, ZBTB4

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23 7, ZSCAN1, ZSCAN18, ZSCAN22, ZSCAN4

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33 KRTAP8-2P, KRTAP8-3P, LINC00189, LINC00307, MAP3K7CL, MIR4327, RPL12P9, RPL8P2, TIAM1, UBE3A

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35 3301B, MIR3618, MIR4761, MIR649, MIR6816, P2RX6, P2RX6P, PI4KA, PI4KAP2, POM121L4P, POM121L7

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ZMYND10, ZMYND10-AS1, ZNF652P1

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ZMYND10, ZMYND10-AS1, ZNF652P1

ZMYND10, ZMYND10-AS1, ZNF652P1

L78P, RNU6-682P, RNU7-55P, RPL10P19, RPS3AP33, SNRPCP15, SNRPCP17, SPAG11A, SPAG11B, USP17L:

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IGKV3D-20, IGKV3D-25, IGKV3D-31, IGKV3D-34, IGKV3D-7, IGKV6-21, IGKV6D-21, IGKV6D-41, KCNIP3, MA



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9, TPK1, TRBC1, TRBC2, TRBD1, TRBJ1-1, TRBJ1-2, TRBJ1-3, TRBJ1-4, TRBJ1-5, TRBJ1-6, TRBJ2-1, TRBJ2-2,

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TGAD, ITGAX, KIF18BP1, LINC00273, LINC01566, LINC02167, LINC02184, LINC02190, NAMPTP3, PABPC1

L9P, RNA5SP443, RNU2-1, RNU2-4P, RNU6-1137P, RNU6-131P, RNU6-406P, RNU6-453P, RNU6-470P, RN

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'P, POM121L8P, PPIL2, PPM1F, PPP1R26P5, PRAMENP, RANBP1, RIMBP3B, RIMBP3C, RN7SKP221, RN7SI  
^VI-25-1, IGLVVII-41-1, LINC01658, LINC01659, LINC02556, LINC02557, MIR5571, MIR650, PCAT14, POM:  
EP3, XRCC6, ZC3H7B

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178P, RNU6-682P, RNU7-55P, RPL10P19, RPS3AP33, SNRPCP15, SNRPCP17, SPAG11A, SPAG11B, USP17L:

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MIR770, MIR889, RN7SKP92, RN7SL523P, RNU1-47P, RNU6-91P, RTL1, SETD3, SLC25A29, SLC25A47, SNO  
.9, IGHV3-20, IGHV3-21, IGHV3-22, IGHV3-23, IGHV3-25, IGHV3-30, IGHV3-32, IGHV3-6, IGHV3-64D, IGH  
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21 L9P, RNA5SP443, RNU2-1, RNU2-4P, RNU6-1137P, RNU6-131P, RNU6-406P, RNU6-453P, RNU6-470P, RN  
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33 ZNF20, ZNF433, ZNF439, ZNF44, ZNF440, ZNF441, ZNF442, ZNF443, ZNF490, ZNF491, ZNF563, ZNF564, Z  
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40 C6A21P, SLC8A2, SNORD23, SNRNP70, SPACA4, SPHK2, SULT2A1, SULT2B1, SUMO1P4, SYNGR4, TMEM1  
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55 'P, POM121L8P, PPIL2, PPM1F, PPP1R26P5, PRAMENP, RANBP1, RIMBP3B, RIMBP3C, RN7SKP221, RN7SI  
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EP3, XRCC6, ZC3H7B

, RNU1-13P, RNU1-59P, RNU1-68P, RNU2-17P, RNU2-38P, RNU6-1042P, RNU6-1171P, RNU6-1309P, RN

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U78P, RNU6-682P, RNU7-55P, RPL10P19, RPS3AP33, SNRPCP15, SNRPCP17, SPAG11A, SPAG11B, USP17L:

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RYGM, RASGRP2, RCOR2, RELA, RN7SL309P, RNASEH2C, RNU2-23P, RNU6-1306P, RNU6-45P, RPS6KA4, S  
L37P2, RPS3AP40, RPS6KB2, RPS6KB2-AS1, SART1, SF3B2, SLC29A2, SPTBN2, SSH3, SYT12, TBC1D10C, TE

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IAJ60, TRAJ61, TRAJ7, TRAJ8, TRAJ9, TRAV1-1, TRAV1-2, TRAV10, TRAV11, TRAV12-1, TRAV12-2, TRAV12-

MIR770, MIR889, RN7SKP92, RN7SL523P, RNU1-47P, RNU6-91P, RTL1, SETD3, SLC25A29, SLC25A47, SNOI

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'P, POM121L8P, PPIL2, PPM1F, PPP1R26P5, PRAMENP, RANBP1, RIMBP3B, RIMBP3C, RN7SKP221, RN7SI

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13 P<sub>YGM</sub>, RASGRP2, RCOR2, RELA, RN7SL309P, RNASEH2C, RNU2-23P, RNU6-1306P, RNU6-45P, RPS6KA4, S  
14 L37P2, RPS3AP40, RPS6KB2, RPS6KB2-AS1, SART1, SF3B2, SLC29A2, SPTBN2, SSH3, SYT12, TBC1D10C, TE

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24 \14, SLC2A3, SPSB2, TAPBPL, TPI1, USP5, VAMP1, ZNF384, ZNF705A  
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TGAD, ITGAX, KIF18BP1, LINC00273, LINC01566, LINC02167, LINC02184, LINC02190, NAMPTP3, PABPC1

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AL, MRPS5, MTCO1P48, MTCO3P45, PABPC1P6, PROM2, RN7SL575P, RNA5SP100, RNU6-1320P, RPS24P6

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P13, PCMTD1P2, PPP1R1AP2, RARRES2P10, RARRES2P5, RARRES2P6, RARRES2P7, RARRES2P8, RARRES2

IU6-971P, RPL21P4, RPL7L1P5, RPS26P8, RUNDC3A, RUNDC3A-AS1, SHC1P2, SLC25A39, SLC4A1, SMCO4I

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KP63, RN7SL280P, RN7SL812P, RNA5SP493, RNU6-225P, RNY1P9, RTN4R, SCARF2, SDF2L1, SERPIND1, SL121L1P, PRAME, RAB36, RGL4, RN7SL263P, RSPH14, ZDHHC8P1, ZNF280A, ZNF280B

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RD112, SNORD113-1, SNORD113-2, SNORD113-3, SNORD113-4, SNORD113-5, SNORD113-6, SNORD113-  
V3-7, IGHV4-28, IGHV4-4, IGHV5-10-1, IGHV6-1, IGHV7-27, IGHV7-4-1, IGHVII-1-1, IGHVII-15-1, IGHVII-2;  
, SNORD115-47, SNORD115-48, SNORD115-5, SNORD115-6, SNORD115-7, SNORD115-8, SNORD115-9, TI

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21 U6-971P, RPL21P4, RPL7L1P5, RPS26P8, RUNDC3A, RUNDC3A-AS1, SHC1P2, SLC25A39, SLC4A1, SMCO4I  
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33 ZNF625, ZNF625-ZNF20, ZNF627, ZNF653, ZNF69, ZNF700, ZNF709, ZNF763, ZNF788, ZNF791, ZNF799, ZN  
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40 43, TPRX1, TPRX2P, TRPM4, TULP2, ZNF114, ZNF541, ZSWIM9  
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55 KP63, RN7SL280P, RN7SL812P, RNA5SP493, RNU6-225P, RNY1P9, RTN4R, SCARF2, SDF2L1, SERPIND1, SL  
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U6-884P, RNVU1-1, RNVU1-2, RNVU1-3, RNY4P25, RPRD2, RPS27AP6, RPS29P29, SCNM1, SELENBP1, SE

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AC3D1, SCYL1, SF1, SIPA1, SLC22A11, SLC22A12, SLC22A20P, SLC25A45, SNRPGP19, SNX15, SNX32, SPD  
3X10, TMEM134, TMEM151A, TSGA10IP, UNC93B1, UNC93B5, YIF1A, ZDHHC24

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KP63, RN7SL280P, RN7SL812P, RNA5SP493, RNU6-225P, RNY1P9, RTN4R, SCARF2, SDF2L1, SERPIND1, SL

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14 3X10, TMEM134, TMEM151A, TSGA10IP, UNC93B1, UNC93B5, YIF1A, ZDHHC24  
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P13, PCMTD1P2, PPP1R1AP2, RARRES2P10, RARRES2P5, RARRES2P6, RARRES2P7, RARRES2P8, RARRES2

KP63, RN7SL280P, RN7SL812P, RNA5SP493, RNU6-225P, RNY1P9, RTN4R, SCARF2, SDF2L1, SERPIND1, SL

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5, SLC2AXP1, SLC9B1P2, SNX18P14, TEKT4, ZNF2, ZNF514

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P9, RBM22P12, RBM22P13, RNA5-8SP2, RNA5SP406, RNA5SP407, RNA5SP408, RNA5SP409, RNA5SP410

P1, SOST, SPATA32, SPPL2C, TMEM101, TMEM106A, TMUB2, UBTF



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.C7A4, SLC9A3P2, SMPD4P1, SNAP29, SNORA77B, SOCS2P2, TANGO2, THAP7, THAP7-AS1, TMEM191A, T

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MEM261P1, TVP23BP1, UBE3A

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P1, SOST, SPATA32, SPPL2C, TMEM101, TMEM106A, TMUB2, UBTF

JF823, ZNF833P, ZNF844, ZNF878, ZNF887P

.C7A4, SLC9A3P2, SMPD4P1, SNAP29, SNORA77B, SOCS2P2, TANGO2, THAP7, THAP7-AS1, TMEM191A, T

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MA6C, SETDB1, SF3B4, SV2A, TARS2, TMOD4, TNFAIP8L2, UBE2D3P3, VPS45, VPS72, ZNF687

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YC, SSSCA1, SSSCA1-AS1, STIP1, SYVN1, TIGD3, TM7SF2, TMEM262, TRMT112, TRPT1, VEGFB, VPS51, ZFF

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.C7A4, SLC9A3P2, SMPD4P1, SNAP29, SNORA77B, SOCS2P2, TANGO2, THAP7, THAP7-AS1, TMEM191A, T

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YC, SSSCA1, SSSCA1-AS1, STIP1, SYVN1, TIGD3, TM7SF2, TMEM262, TRMT112, TRPT1, VEGFB, VPS51, ZFF

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P9, RBM22P12, RBM22P13, RNA5-8SP2, RNA5SP406, RNA5SP407, RNA5SP408, RNA5SP409, RNA5SP410

.C7A4, SLC9A3P2, SMPD4P1, SNAP29, SNORA77B, SOCS2P2, TANGO2, THAP7, THAP7-AS1, TMEM191A, T

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MEM191C, TOP3B, TOP3BP1, TRMT2A, TUBA3FP, TUBA3GP, TXNRD2, UBE2L3, USP41, VPREB1, YDJC, YF

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.3, SNORD114-14, SNORD114-15, SNORD114-16, SNORD114-17, SNORD114-18, SNORD114-19, SNORD1:  
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MEM191C, TOP3B, TOP3BP1, TRMT2A, TUBA3FP, TUBA3GP, TXNRD2, UBE2L3, USP41, VPREB1, YDJC, YF

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For Peer Review

PL1, ZNHIT2

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MEM191C, TOP3B, TOP3BP1, TRMT2A, TUBA3FP, TUBA3GP, TXNRD2, UBE2L3, USP41, VPREB1, YDJC, YF

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PL1, ZNHIT2

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MEM191C, TOP3B, TOP3BP1, TRMT2A, TUBA3FP, TUBA3GP, TXNRD2, UBE2L3, USP41, VPREB1, YDJC, YF

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PEL1, ZDHHC8, ZNF74

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14-2, SNORD114-20, SNORD114-21, SNORD114-22, SNORD114-23,

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PEL1, ZDHHC8, ZNF74

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3, TRAV39, TRAV4

14-2, SNORD114-20, SNORD114-21, SNORD114-22, SNORD114-23,

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PEL1, ZDHHC8, ZNF74

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, RNA5SP419, RNA5SP420, RNA5SP421, RNA5SP422, RNA5SP423, SLC25A1P4,

PEL1, ZDHHC8, ZNF74

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\*Note: p-values < 0.05 (before and after correction) are highlighted in red.

Phenotype 1 Code	Phenotype 2 Code	Genetic Correlation Coefficient
14c_i_tb.sumstats	22_i_RA_okada.sumstats	0.1799
14c_i_tb.sumstats	28_i_t1d.sumstats	0.0362
14c_i_tb.sumstats	3_i_allergyany.sumstats	0.2212
14c_i_tb.sumstats	3_i_asthma.sumstats	0.0635
14c_i_tb.sumstats	3_i_atopicdermatitis.sumstats	0.0958
14c_i_tb.sumstats	3_i_childhoodear.sumstats	-0.114
14c_i_tb.sumstats	3_i_crp.sumstats	-0.0959
14c_i_tb.sumstats	3_i_hypothyroid.sumstats	0.1688
14c_i_tb.sumstats	3_i_pbc.sumstats	0.2587
14c_i_tb.sumstats	3_i_psoriasis.sumstats	-0.0042
14c_i_tb.sumstats	3_i_sle.sumstats	0.1447
14c_i_tb.sumstats	5_i_celiac.sumstats	0.1129
14c_i_tb.sumstats	6_i_crohns_liu_05.sumstats	0.2308
14c_i_tb.sumstats	7_i_uc_liu_05.sumstats	0.3414
22_i_RA_okada.sumstats	28_i_t1d.sumstats	0.4149
22_i_RA_okada.sumstats	3_i_allergyany.sumstats	0.0377
22_i_RA_okada.sumstats	3_i_asthma.sumstats	-0.0475
22_i_RA_okada.sumstats	3_i_atopicdermatitis.sumstats	-0.0552
22_i_RA_okada.sumstats	3_i_childhoodear.sumstats	0.0712
22_i_RA_okada.sumstats	3_i_crp.sumstats	-0.0341
22_i_RA_okada.sumstats	3_i_hypothyroid.sumstats	0.3355
22_i_RA_okada.sumstats	3_i_pbc.sumstats	0.27
22_i_RA_okada.sumstats	3_i_psoriasis.sumstats	0.1676
22_i_RA_okada.sumstats	3_i_sle.sumstats	0.4634
22_i_RA_okada.sumstats	5_i_celiac.sumstats	0.2381
22_i_RA_okada.sumstats	6_i_crohns_liu_05.sumstats	0.0873
22_i_RA_okada.sumstats	7_i_uc_liu_05.sumstats	0.1314
28_i_t1d.sumstats	3_i_allergyany.sumstats	0.0224
28_i_t1d.sumstats	3_i_asthma.sumstats	-0.0137
28_i_t1d.sumstats	3_i_atopicdermatitis.sumstats	-0.2101
28_i_t1d.sumstats	3_i_childhoodear.sumstats	0.0249
28_i_t1d.sumstats	3_i_crp.sumstats	-0.0344
28_i_t1d.sumstats	3_i_hypothyroid.sumstats	0.3952
28_i_t1d.sumstats	3_i_pbc.sumstats	0.11
28_i_t1d.sumstats	3_i_psoriasis.sumstats	0.1237
28_i_t1d.sumstats	3_i_sle.sumstats	0.2546
28_i_t1d.sumstats	5_i_celiac.sumstats	0.3214
28_i_t1d.sumstats	6_i_crohns_liu_05.sumstats	-0.0155
28_i_t1d.sumstats	7_i_uc_liu_05.sumstats	0.1891
3_i_allergyany.sumstats	3_i_asthma.sumstats	0.7855
3_i_allergyany.sumstats	3_i_atopicdermatitis.sumstats	0.2458

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2	3_i_allergyany.sumstats	3_i_childhoodhear.sumstats	0.2223
3	3_i_allergyany.sumstats	3_i_crp.sumstats	0.1271
4	3_i_allergyany.sumstats	3_i_hypothyroid.sumstats	0.2043
5	3_i_allergyany.sumstats	3_i_pbc.sumstats	0.0529
6	3_i_allergyany.sumstats	3_i_psoriasis.sumstats	-0.0055
7	3_i_allergyany.sumstats	3_i_sle.sumstats	-0.0096
8	3_i_allergyany.sumstats	5_i_celiac.sumstats	0.1928
9	3_i_allergyany.sumstats	6_i_crohns_liu_05.sumstats	0.0606
10	3_i_allergyany.sumstats	7_i_uc_liu_05.sumstats	0.0448
11	3_i_allergyany.sumstats	3_i_atopicdermatitis.sumstats	0.389
12	3_i_asthma.sumstats	3_i_childhoodhear.sumstats	0.1516
13	3_i_asthma.sumstats	3_i_crp.sumstats	0.1712
14	3_i_asthma.sumstats	3_i_hypothyroid.sumstats	0.0704
15	3_i_asthma.sumstats	3_i_pbc.sumstats	0.0387
16	3_i_asthma.sumstats	3_i_psoriasis.sumstats	-0.0506
17	3_i_asthma.sumstats	3_i_sle.sumstats	-0.0878
18	3_i_asthma.sumstats	5_i_celiac.sumstats	0.1509
19	3_i_asthma.sumstats	6_i_crohns_liu_05.sumstats	-0.0243
20	3_i_asthma.sumstats	7_i_uc_liu_05.sumstats	-0.027
21	3_i_asthma.sumstats	3_i_childhoodhear.sumstats	0.0228
22	3_i_asthma.sumstats	3_i_crp.sumstats	0.2293
23	3_i_asthma.sumstats	3_i_hypothyroid.sumstats	-0.165
24	3_i_asthma.sumstats	3_i_pbc.sumstats	0.0489
25	3_i_atopicdermatitis.sumstats	3_i_psoriasis.sumstats	0.0498
26	3_i_atopicdermatitis.sumstats	3_i_sle.sumstats	-0.0176
27	3_i_atopicdermatitis.sumstats	5_i_celiac.sumstats	0.2192
28	3_i_atopicdermatitis.sumstats	6_i_crohns_liu_05.sumstats	0.1925
29	3_i_atopicdermatitis.sumstats	7_i_uc_liu_05.sumstats	0.0765
30	3_i_atopicdermatitis.sumstats	3_i_childhoodhear.sumstats	0.0575
31	3_i_atopicdermatitis.sumstats	3_i_crp.sumstats	0.1369
32	3_i_atopicdermatitis.sumstats	3_i_hypothyroid.sumstats	0.0199
33	3_i_atopicdermatitis.sumstats	3_i_pbc.sumstats	0.0139
34	3_i_atopicdermatitis.sumstats	3_i_psoriasis.sumstats	0.0139
35	3_i_atopicdermatitis.sumstats	3_i_sle.sumstats	-0.0026
36	3_i_atopicdermatitis.sumstats	5_i_celiac.sumstats	0.1624
37	3_i_atopicdermatitis.sumstats	6_i_crohns_liu_05.sumstats	0.0252
38	3_i_atopicdermatitis.sumstats	7_i_uc_liu_05.sumstats	0.0023
39	3_i_atopicdermatitis.sumstats	3_i_hypothyroid.sumstats	0.0013
40	3_i_atopicdermatitis.sumstats	3_i_pbc.sumstats	0.1365
41	3_i_atopicdermatitis.sumstats	3_i_psoriasis.sumstats	0.2111
42	3_i_atopicdermatitis.sumstats	3_i_sle.sumstats	0.0549
43	3_i_atopicdermatitis.sumstats	5_i_celiac.sumstats	0.0086
44	3_i_atopicdermatitis.sumstats	6_i_crohns_liu_05.sumstats	0.1148
45	3_i_atopicdermatitis.sumstats	7_i_uc_liu_05.sumstats	-0.1161
46	3_i_atopicdermatitis.sumstats	3_i_hypothyroid.sumstats	0.2377
47	3_i_atopicdermatitis.sumstats	3_i_pbc.sumstats	0.1317
48	3_i_atopicdermatitis.sumstats	3_i_psoriasis.sumstats	0.1212
49	3_i_atopicdermatitis.sumstats	3_i_sle.sumstats	0.1212
50	3_i_atopicdermatitis.sumstats	5_i_celiac.sumstats	0.3799
51	3_i_atopicdermatitis.sumstats		
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2	3_i_hypothyroid.sumstats	6_i_crohns_liu_05.sumstats	-0.0051
3	3_i_hypothyroid.sumstats	7_i_uc_liu_05.sumstats	0.0665
4	3_i_pbc.sumstats	3_i_psoriasis.sumstats	0.2745
5	3_i_pbc.sumstats	3_i_sle.sumstats	0.621
6	3_i_pbc.sumstats	5_i_celiac.sumstats	0.0268
7	3_i_pbc.sumstats	6_i_crohns_liu_05.sumstats	0.2419
8	3_i_pbc.sumstats	7_i_uc_liu_05.sumstats	0.3192
9	3_i_pbc.sumstats	3_i_sle.sumstats	0.1392
10	3_i_psoriasis.sumstats	5_i_celiac.sumstats	0.2318
11	3_i_psoriasis.sumstats	6_i_crohns_liu_05.sumstats	0.3432
12	3_i_psoriasis.sumstats	7_i_uc_liu_05.sumstats	0.3851
13	3_i_psoriasis.sumstats	5_i_celiac.sumstats	0.2099
14	3_i_pbc.sumstats	6_i_crohns_liu_05.sumstats	0.1162
15	3_i_sle.sumstats	7_i_uc_liu_05.sumstats	0.1395
16	3_i_sle.sumstats	6_i_crohns_liu_05.sumstats	0.2663
17	3_i_sle.sumstats	7_i_uc_liu_05.sumstats	0.2325
18	5_i_celiac.sumstats	7_i_uc_liu_05.sumstats	0.7133
19	5_i_celiac.sumstats		
20	6_i_crohns_liu_05.sumstats		
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Estimated Error of Genetic Correlation Coefficient	Genetic Correlation Uncorrected <i>P</i> -Value*	Genetic Correlation <i>P</i> -Value After Benjamini-Hochberg Correction*	Genetic Correlation <i>P</i> -Value After Bonferroni Correction*	Genetic Covariance	
0.1028	0.0801	0.17521875		1	0.0282
0.1333	0.7858	0.896836957		1	0.0064
0.0836	0.0081	0.030375	0.8505		0.0271
0.0858	0.4592	0.651567568		1	0.0073
0.1554	0.5375	0.714398734		1	0.0106
0.1108	0.3036	0.496730769		1	-0.0129
0.0925	0.3001	0.496730769		1	-0.0135
0.0956	0.0775	0.173138298		1	0.0168
0.133	0.0517	0.132402439		1	0.0621
0.1284	0.974	0.983365385		1	-0.0015
0.1418	0.3075	0.496730769		1	0.0293
0.1579	0.4746	0.66444		1	0.0259
0.0998	0.0207	0.065863636		1	0.0644
0.1391	0.0141	0.047758065		1	0.0675
0.1351	0.0021	0.0105	0.2205		0.0692
0.0483	0.4354	0.651567568		1	0.0042
0.0701	0.4979	0.687888158		1	-0.0049
0.0851	0.5166	0.704454545		1	-0.006
0.0502	0.1565	0.2934375		1	0.0073
0.0548	0.5336	0.714398734		1	-0.0047
0.0749	7.44E-06	8.68E-05	0.000781379		0.0301
0.0848	0.0014	0.007736842	0.147		0.0609
0.0683	0.0141	0.047758065		1	0.058
0.0629	1.76E-13	5.85E-12	1.85E-11		0.0897
0.0777	0.0022	0.0105	0.231		0.0493
0.0639	0.172	0.316842105		1	0.0234
0.0653	0.0442	0.119		1	0.0246
0.0736	0.761	0.887833333		1	0.0029
0.0772	0.859	0.939		1	-0.0017
0.1169	0.0724	0.16526087		1	-0.0252
0.0678	0.7131	0.860637931		1	0.0029
0.0849	0.6853	0.859412791		1	-0.0056
0.0969	4.56E-05	0.000399044	0.004788525		0.0402
0.1126	0.3287	0.515910448		1	0.0322
0.1014	0.2227	0.403163793		1	0.0474
0.1376	0.0643	0.157011628		1	0.0577
0.0938	6.00E-04	0.003705882	0.063		0.0831
0.0818	0.8501	0.939		1	-0.0048
0.0881	0.0317	0.097897059		1	0.039
0.0357	2.00E-107	2.10E-105	2.10E-105		0.0621
0.0669	2.00E-04	0.001615385	0.021		0.0202

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2	0.0475	2.86E-06	3.76E-05	0.000300594	0.0173
3	0.0457	0.0054	0.02268	0.567	0.0133
4	0.0497	3.98E-05	0.000380071	0.004180785	0.014
5	0.0713	0.4578	0.651567568	1	0.0093
6	0.0546	0.9196	0.965480198	1	-0.0014
7	0.0615	0.8763	0.939	1	-0.0014
8	0.0712	0.0068	0.027461538	0.714	0.0311
9	0.0582	0.298	0.496730769	1	0.0123
10	0.0575	0.4352	0.651567568	1	0.0064
11	0.0741	1.50E-07	3.14E-06	1.57E-05	0.0297
12	0.0415	3.00E-04	0.00225	0.0315	0.0111
13	0.0497	6.00E-04	0.003705882	0.063	0.0167
14	0.0629	0.2631	0.468228814	1	0.0045
15	0.1018	0.7039	0.859412791	1	0.0063
16	0.0673	0.4515	0.651567568	1	-0.0123
17	0.0822	0.2857	0.491778689	1	-0.0118
18	0.0786	0.0548	0.137	1	0.0224
19	0.0617	0.6935	0.859412791	1	-0.0046
20	0.0779	0.7288	0.869590909	1	-0.0036
21	0.0749	0.7606	0.887833333	1	0.0017
22	0.108	0.0337	0.1011	1	0.0227
23	0.0966	0.0876	0.18396	1	-0.0108
24	0.1259	0.6976	0.859412791	1	0.0084
25	0.1157	0.6669	0.853957317	1	0.0123
26	0.1134	0.8764	0.939	1	-0.0025
27	0.1446	0.1294	0.256358491	1	0.0308
28	0.0912	0.0348	0.101310811	1	0.0379
29	0.1016	0.4514	0.651567568	1	0.0106
30	0.0526	0.2745	0.480375	1	0.0056
31	0.0492	0.0054	0.02268	0.567	0.0087
32	0.0701	0.7771	0.896653846	1	0.0032
33	0.0662	0.8336	0.931148936	1	0.0033
34	0.0699	0.9699	0.983365385	1	-3.00E-04
35	0.0773	0.0357	0.101310811	1	0.0241
36	0.0537	0.6394	0.828851852	1	0.0047
37	0.056	0.967	0.983365385	1	3.00E-04
38	0.069	0.9854	0.9854	1	1.00E-04
39	0.0921	0.1381	0.266318182	1	0.0297
40	0.087	0.0153	0.050203125	1	0.0665
41	0.1113	0.6216	0.81585	1	0.0098
42	0.0766	0.9106	0.965480198	1	0.0017
43	0.0628	0.0674	0.160840909	1	0.0286
44	0.0758	0.1256	0.253615385	1	-0.0202
45	0.089	0.0076	0.029555556	0.798	0.0333
46	0.0732	0.0719	0.16526087	1	0.0275
47	0.1242	0.3292	0.515910448	1	0.0139
48	0.0891	2.01E-05	0.000210861	0.00210861	0.0495
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2	0.0569	0.9287	0.965480198	1	-8.00E-04
3	0.0713	0.3511	0.542139706	1	0.0076
4	0.0987	0.0054	0.02268	0.567	0.1443
5	0.0847	2.23E-13	5.85E-12	2.34E-11	0.1873
6	0.1225	0.8266	0.931148936	1	0.0078
7	0.0765	0.0016	0.0084	0.168	0.1023
8	0.0894	4.00E-04	0.0028	0.042	0.0923
9	0.087	0.1098	0.226058824	1	0.0626
10	0.091	0.0108	0.039103448	1	0.1136
11	0.0663	2.28E-07	3.99E-06	2.39E-05	0.2155
12	0.0803	1.62E-06	2.43E-05	0.000170447	0.1701
13	0.105	0.0455	0.1194375	1	0.0566
14	0.0676	0.0857	0.183642857	1	0.0403
15	0.0944	0.1395	0.266318182	1	0.0341
16	0.0798	8.00E-04	0.004666667	0.084	0.1015
17	0.1118	0.0375	0.103618421	1	0.0614
18	0.0568	3.51E-36	1.84E-34	3.69E-34	0.247
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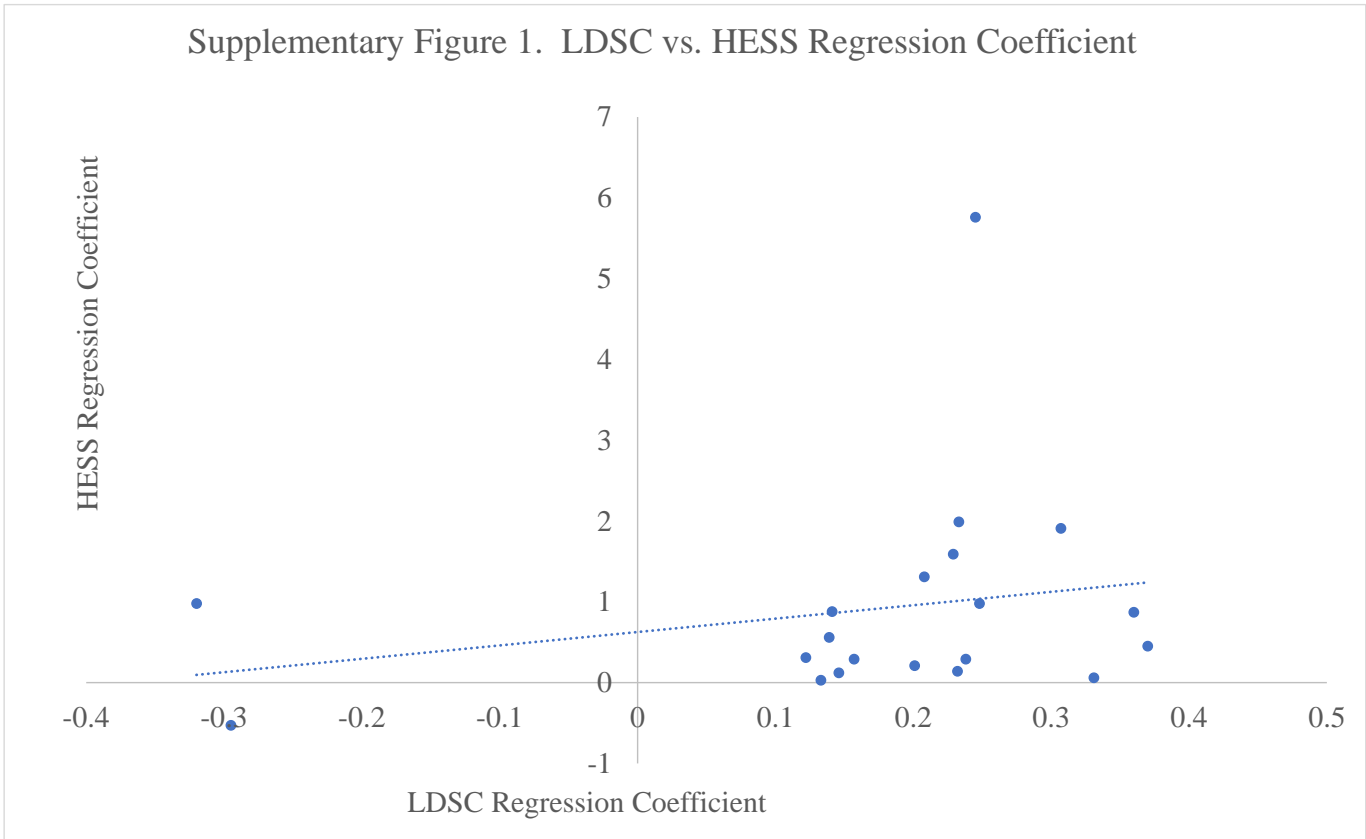
	<b>Estimated Error of Genetic Covariance</b>	<b>Phenotype 1 Estimated Heritability</b>	<b>Phenotype 1 Error of Heritability Estimate</b>	<b>Phenotype 1 Genomic Inflation Factor (Lambda GC)</b>	<b>Phenotype 2 Estimated Heritability</b>	<b>Phenotype 2 Error of Heritability Estimate</b>	<b>Phenotype 2 Genomic Inflation Factor (Lambda GC)</b>
9	0.0143	0.1637	0.0484	1.0802	0.1496	0.0298	1.0466
10	0.0236	0.1601	0.0516	1.0833	0.1945	0.0414	1.1301
11	0.0098	0.1779	0.0481	1.0802	0.0842	0.0062	1.2697
12	0.0097	0.1779	0.0481	1.0802	0.0742	0.0111	1.1779
13	0.0174	0.1532	0.0485	1.0802	0.0797	0.0173	1.0496
14	0.0123	0.1779	0.0481	1.0802	0.0718	0.0062	1.1587
15	0.013	0.1539	0.0453	1.0802	0.1296	0.0253	1.105
16	0.0097	0.1779	0.0481	1.0802	0.0557	0.0089	1.1144
17	0.0297	0.1575	0.0476	1.0802	0.3655	0.0664	1.0557
18	0.0449	0.1545	0.0489	1.0802	0.8085	0.1345	1.0345
19	0.0283	0.1647	0.0472	1.0802	0.2484	0.0443	1.1747
20	0.0354	0.1698	0.0547	1.0772	0.31	0.0495	1.1175
21	0.0268	0.1595	0.048	1.0802	0.4885	0.0625	1.1491
22	0.0241	0.1595	0.048	1.0802	0.2453	0.0338	1.1333
23	0.0298	0.1425	0.0302	1.0466	0.1952	0.0417	1.1301
24	0.0053	0.1495	0.0298	1.0466	0.0839	0.0063	1.2697
25	0.0073	0.1495	0.0298	1.0466	0.0725	0.0112	1.1747
26	0.0093	0.1504	0.0298	1.0466	0.0774	0.0174	1.0496
27	0.0052	0.1495	0.0298	1.0466	0.0709	0.0064	1.1587
28	0.0075	0.146	0.0269	1.0466	0.1292	0.0256	1.105
29	0.0088	0.1495	0.0298	1.0466	0.0538	0.0088	1.1113
30	0.0192	0.1444	0.0305	1.0466	0.3522	0.0623	1.0557
31	0.0239	0.15	0.0293	1.0466	0.7983	0.1364	1.0345
32	0.0157	0.1498	0.0297	1.0466	0.2503	0.0448	1.1747
33	0.0158	0.138	0.0252	1.0466	0.3102	0.0495	1.1175
34	0.0156	0.1497	0.0298	1.0466	0.4809	0.0589	1.1491
35	0.0122	0.1497	0.0298	1.0466	0.2334	0.0345	1.1333
36	0.0094	0.1954	0.0415	1.1301	0.084	0.007	1.2731
37	0.0092	0.1954	0.0415	1.1301	0.075	0.0121	1.1779
38	0.0143	0.1965	0.0413	1.1301	0.073	0.0181	1.0481
39	0.008	0.1954	0.0415	1.1301	0.071	0.0066	1.1651
40	0.0137	0.1945	0.0414	1.1301	0.1364	0.0276	1.1113
41	0.0122	0.1954	0.0415	1.1301	0.053	0.0093	1.1144
42	0.034	0.2099	0.0402	1.1301	0.4082	0.0692	1.0557
43	0.0384	0.1973	0.0422	1.1301	0.7434	0.1372	1.0375
44	0.0294	0.1975	0.0415	1.1301	0.26	0.0477	1.1747
45	0.0245	0.2177	0.0415	1.1207	0.3073	0.0528	1.1207
46	0.025	0.1947	0.0414	1.1301	0.4908	0.0706	1.1523
47	0.0187	0.1947	0.0414	1.1301	0.2185	0.0357	1.1364
48	0.0063	0.0843	0.0062	1.2697	0.0742	0.0111	1.1779
49	0.0061	0.0847	0.0063	1.2697	0.0795	0.0174	1.0496

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2	0.0037	0.0843	0.0062	1.2697	0.0718	0.0062	1.1587
3	0.0049	0.0848	0.0065	1.2664	0.1291	0.0255	1.105
4	0.0033	0.0843	0.0062	1.2697	0.0558	0.0089	1.1144
5	0.0122	0.0845	0.0062	1.2731	0.3655	0.0662	1.0557
6	0.0142	0.0846	0.0062	1.2697	0.8042	0.1344	1.0345
7	0.0088	0.084	0.0061	1.2697	0.2479	0.0445	1.1747
8	0.0115	0.0839	0.0067	1.2564	0.3103	0.0494	1.1175
9	0.0114	0.0839	0.0062	1.2664	0.4876	0.062	1.1491
10	0.0081	0.0839	0.0062	1.2664	0.2422	0.0343	1.1333
11	0.0062	0.0732	0.0112	1.1747	0.0795	0.0174	1.0496
12	0.0032	0.0742	0.0111	1.1779	0.0718	0.0062	1.1587
13	0.0051	0.0739	0.0105	1.1715	0.1291	0.0255	1.105
14	0.0039	0.0742	0.0111	1.1779	0.0557	0.0089	1.1144
15	0.0153	0.0717	0.0114	1.1811	0.3655	0.0662	1.0557
16	0.016	0.0736	0.0111	1.1747	0.8043	0.1344	1.0345
17	0.0107	0.073	0.0111	1.1747	0.2479	0.0445	1.1747
18	0.0122	0.0711	0.0124	1.1587	0.3103	0.0494	1.1175
19	0.0116	0.0732	0.0109	1.1747	0.4876	0.0621	1.1491
20	0.0102	0.0732	0.0109	1.1747	0.2422	0.0343	1.1333
21	0.0056	0.0795	0.0174	1.0496	0.0707	0.0064	1.1587
22	0.01	0.0762	0.0167	1.0496	0.1281	0.0257	1.105
23	0.0063	0.0795	0.0174	1.0496	0.0537	0.0089	1.1113
24	0.021	0.0804	0.0181	1.0527	0.3656	0.0669	1.0557
25	0.0277	0.0775	0.0172	1.0527	0.7872	0.1365	1.0345
26	0.0156	0.0787	0.0168	1.0527	0.2535	0.0443	1.1747
27	0.02	0.0622	0.0177	1.0527	0.3168	0.0503	1.1175
28	0.0171	0.0799	0.0174	1.0496	0.4858	0.0595	1.1523
29	0.0138	0.0799	0.0174	1.0496	0.2414	0.0345	1.1333
30	0.0049	0.0724	0.006	1.1587	0.1291	0.0255	1.105
31	0.0033	0.0718	0.0062	1.1587	0.0557	0.0089	1.1144
32	0.011	0.0698	0.0063	1.1619	0.3655	0.0662	1.0557
33	0.0158	0.0716	0.0063	1.1587	0.8043	0.1344	1.0345
34	0.0092	0.0703	0.0062	1.1587	0.2479	0.0445	1.1747
35	0.0115	0.0709	0.0071	1.1459	0.3103	0.0494	1.1175
36	0.01	0.0711	0.0063	1.1587	0.4876	0.0621	1.1491
37	0.0073	0.0712	0.0063	1.1587	0.2422	0.0343	1.1333
38	0.0056	0.1291	0.0255	1.105	0.0528	0.0086	1.1113
39	0.0196	0.1326	0.0283	1.1082	0.3565	0.0641	1.0527
40	0.0252	0.127	0.0246	1.105	0.7809	0.1304	1.0345
41	0.0192	0.128	0.0261	1.105	0.2487	0.0451	1.1715
42	0.0155	0.1322	0.0306	1.1019	0.31	0.0497	1.1175
43	0.0159	0.1297	0.0254	1.105	0.4801	0.0619	1.1491
44	0.0129	0.1296	0.0254	1.105	0.2345	0.0325	1.1333
45	0.0121	0.0538	0.0091	1.1144	0.3655	0.0662	1.0557
46	0.0154	0.0543	0.0088	1.1113	0.8043	0.1344	1.0345
47	0.0128	0.0532	0.0088	1.1113	0.2479	0.0445	1.1747
48	0.0115	0.0546	0.0094	1.1019	0.3103	0.0494	1.1175
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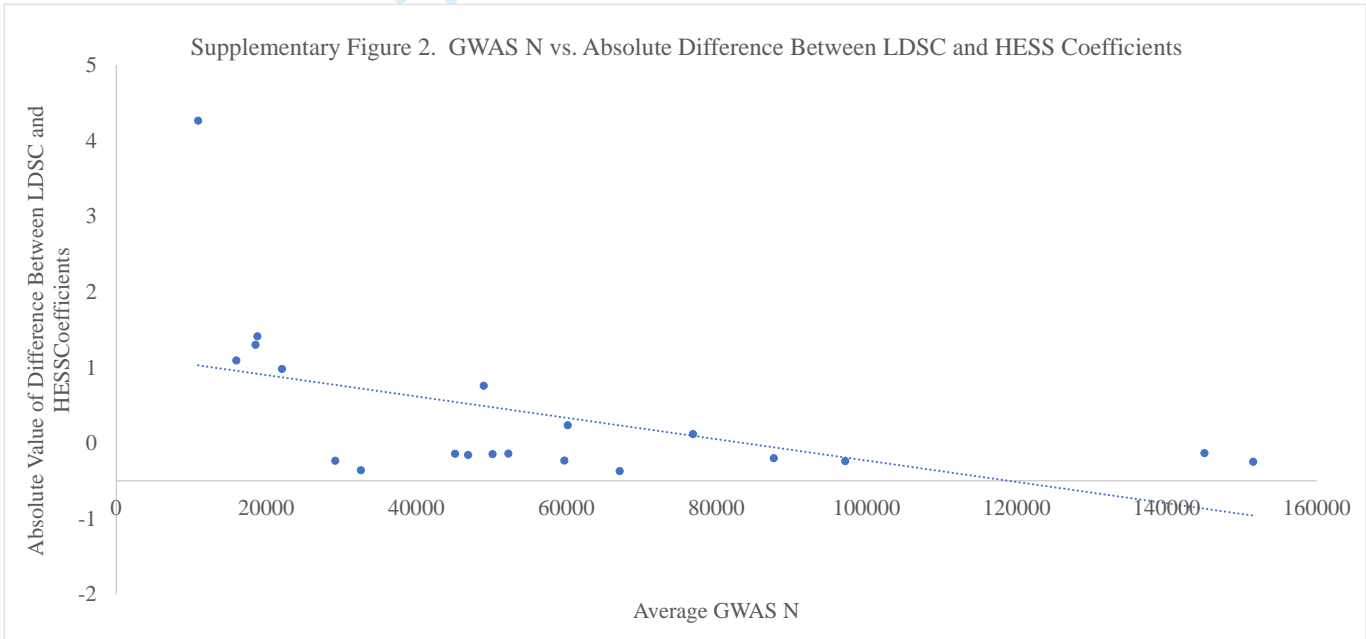
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2	0.0092	0.0538	0.0086	1.1113	0.4876	0.0621	1.1491
3	0.0082	0.0539	0.0086	1.1113	0.2422	0.0343	1.1333
4	0.054	0.3527	0.0646	1.0557	0.7836	0.1411	1.0375
5	0.0351	0.3628	0.0667	1.0557	0.2507	0.0448	1.1747
6	0.0358	0.272	0.0668	1.0466	0.3142	0.0495	1.1207
7	0.0334	0.3661	0.0667	1.0557	0.4886	0.0622	1.1523
8	0.0288	0.3661	0.0666	1.0557	0.2284	0.0366	1.1396
9	0.0386	0.7959	0.132	1.0345	0.2542	0.0442	1.1747
10	0.0485	0.7963	0.139	1.0345	0.3018	0.0504	1.1175
11	0.0458	0.8102	0.1337	1.0345	0.4869	0.0636	1.1523
12	0.0397	0.8102	0.1337	1.0345	0.2407	0.035	1.1333
13	0.0292	0.2364	0.0451	1.1587	0.3075	0.0521	1.1175
14	0.0242	0.2486	0.0443	1.1747	0.484	0.0626	1.1523
15	0.0212	0.2486	0.0443	1.1747	0.2398	0.0345	1.1333
16	0.0317	0.3105	0.0496	1.1175	0.4674	0.0626	1.1428
17	0.0294	0.3105	0.0496	1.1175	0.2242	0.0376	1.127
18	0.0303	0.4887	0.0626	1.1491	0.2453	0.0338	1.1333
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Supplementary Figure 1. LDSC vs. HESS Regression Coefficient



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0.34**	0.13	0.18*	0.17*	0.17*	0.22**	0.23**	0.26**	0.26**	Bipolar Disorder, Hou, 1KGMAF>=05%
0.34**	0.12	0.17**	0.17*	0.18*	0.22**	0.23**	0.25**	0.26**	Bipolar Disorder, Hou, AllSNPs
0.31**	0.15*	0.15*	0.14*	0.14*	0.21**	0.23**	0.25**	0.25**	Bipolar Disorder, Sklar, 1KGMAF>=05%
0.1	0.11*	0.11*	0.09*	0.09*	0.12**	0.14**	0.11*	0.11*	Schizophrenia, 1KFMAF>=05%
0.13*	0.12**	0.08*	0.07	0.07	0.09*	0.1*	0.05	0.05	Schizophrenia INFO>=90%
0.18	0.1	0.12*	0.08	0.1	0.09	0.09	0.1	0.13*	Bipolar Disorder, Sklar, INFO>=90%

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Ulcerative Colitis Liu, INFO>=90%

Crohn's Disease, Liu, INFO>=90%

Crohn's Disease, Franke, 1KGMAF>=05%

Crohn's Disease, Franke, AllSNPs

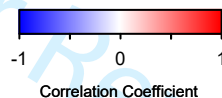
Crohn's Disease, Liu, 1KGMAF>=05%

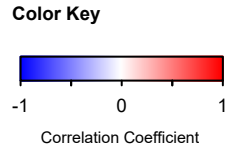
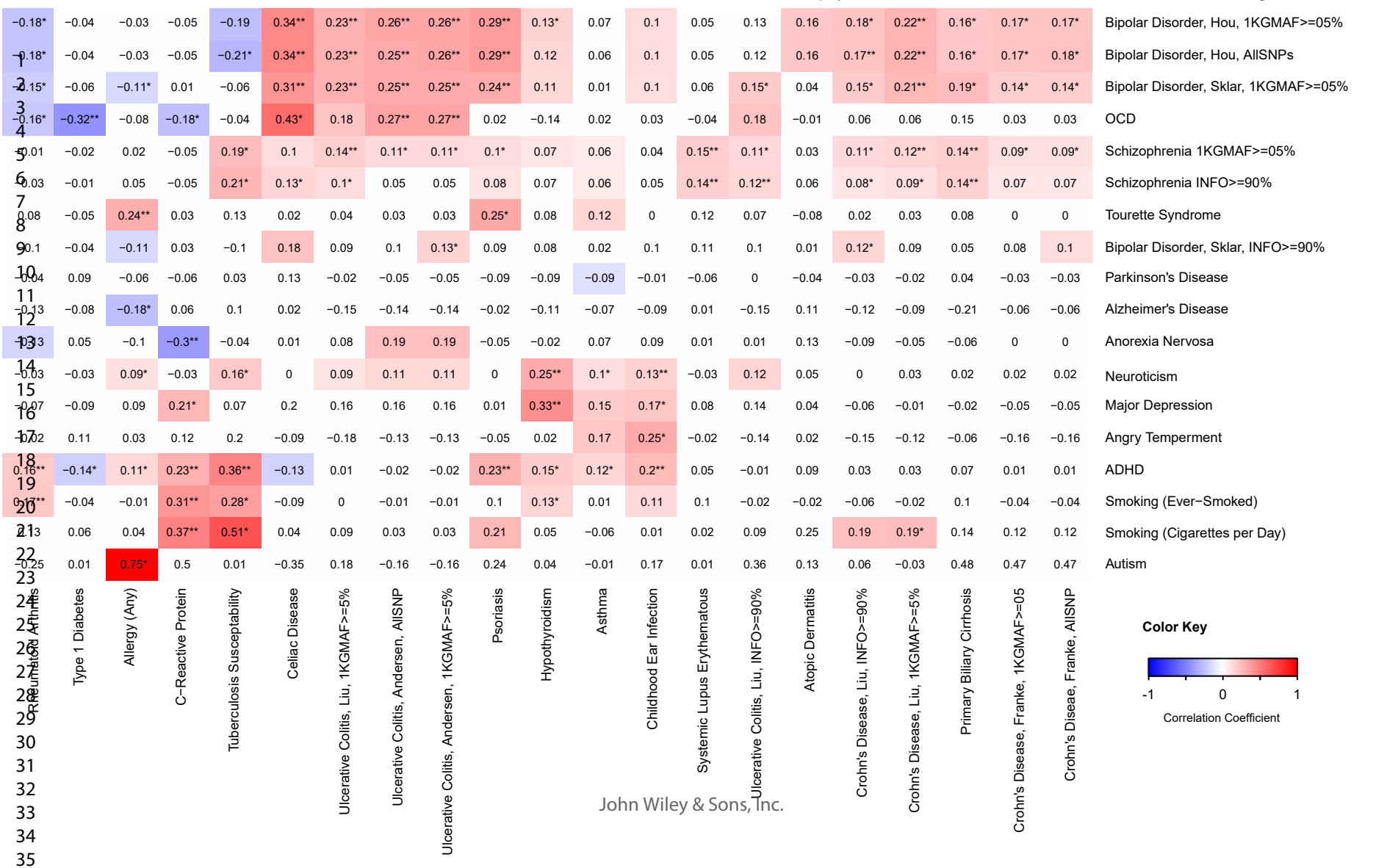
Ulcerative Colitis, Liu, 1KGMAF>=05%

Ulcerative Colitis, Andersen, AllSNPs

Ulcerative Colitis, Andersen, 1KGMAF>=05%

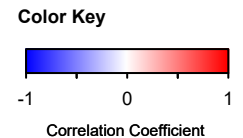
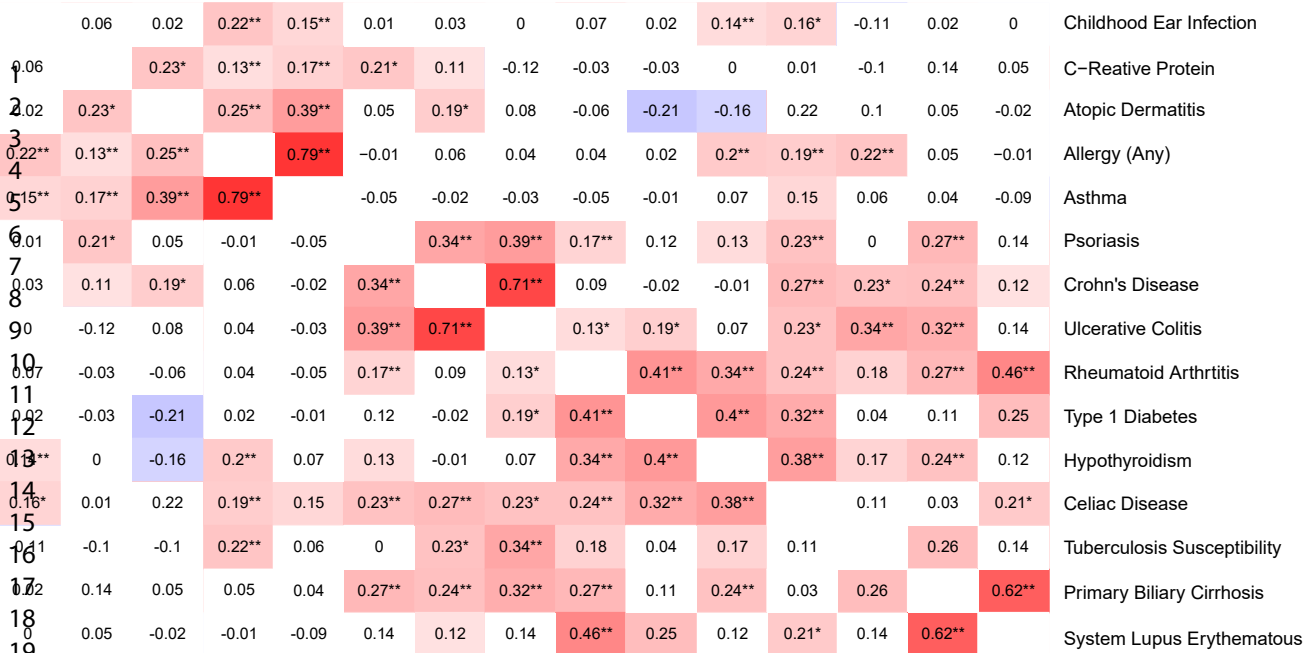
Color Key







American Journal of Medical Genetics Part B: Neuropsychiatric Genetics



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C-Reactive Protein  
Atopic Dermatitis  
Allergy (Any)  
Asthma  
Psoriasis  
Crohn's Disease  
Ulcerative Colitis  
Rheumatoid Arthritis  
Type 1 Diabetes  
Hypothyroidism  
Celiac Disease  
Tuberculosis Susceptibility  
Primary Biliary Cirrhosis  
System Lupus Erythematosus